

*Community, Circularity, & Compost: The Case for Community-Driven Food Waste Diversion
Systems in the City of Los Angeles*

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Abstract

To tackle environmental and social issues associated with food waste and loss, the state of California passed and has begun to implement State Bill 1383, the Short-Lived Climate Pollutant Reduction bill. While some California cities have been diverting food waste from landfill for decades, others, like Los Angeles, have a long road ahead of them to reach the diversion goals of the bill. Due to the time-bound nature of the bill, in which California jurisdictions must reach 75 percent landfill diversion by 2025, Los Angeles has begun to implement a variety of programs to handle its massive amounts of food waste. This study looks at the opportunities and success of current programs and uses interview data from a variety of stakeholders in order to make suggestions on how the city of LA can leverage community-driven food recovery initiatives to tackle a variety of environmental issues beyond just diversion goals, including food security, soil health, sustainable development, and economic circularity.

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Introduction

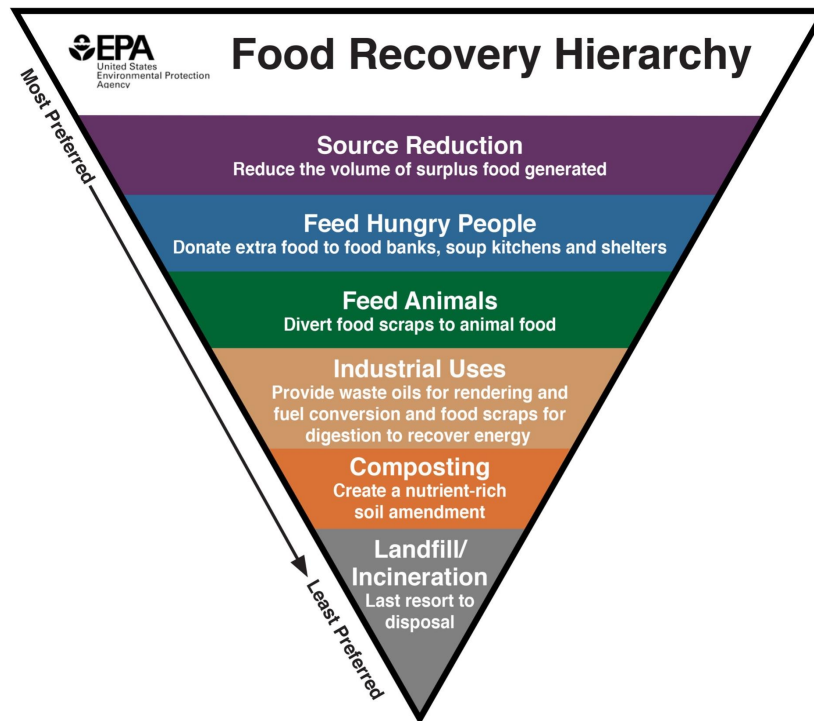
More than one-third of food in the United States is thrown away each year. Most of this wasted food is still suitable for human or animal consumption, but is instead sent to landfill where it emits harmful greenhouse gases that contribute to climate change and detriments to human health. To combat this, the state of California has required all of its municipalities to divert at least 75 percent of their food waste from landfill by 2025, per the implementation of State Bill 1383, California's Short-Lived Climate Pollutant Reduction bill, in the January of 2022. Some California cities like San Francisco have been successful at diverting food waste for several decades, while others are just beginning to build infrastructure to process organic food waste. As the second-largest U.S. city and largest city in California, Los Angeles faces unique challenges to the successful implementation of such a policy, and will require a robust and calculated program that reflects the city's specific needs. As the city begins to roll out their program beginning in January of 2022, benefits and opportunities will reveal themselves. This

begs the questions of: *What are benefits and opportunities for the city of Los Angeles as it implements SB 1383, California's Short-Lived Climate Pollutant Reduction law? How can LA leverage and/or scale existing community driven solutions to support the implementation?*

Background

Each year, the United States throws away 133 billion pounds of food, accounting for more than one-third of the nation's food supply (EPA, 2016). Wasted food results in the use of 24 percent of the world's fresh water, and edible food that is thrown out for cosmetic damage or minor health concerns denies the needs of millions of hungry citizens. The US struggle with food waste presents a major misuse of resources and a general neglect of people in need (Barclay, 2013). If sent to landfill, which is the case for most of America's wasted food, rotting food scraps emit methane, a potent greenhouse gas up to 80 times more effective at trapping heat than carbon dioxide (Environmental Defense Fund). Not only is methane responsible for 40 percent of global warming since the industrial revolution, it also has adverse effects on human health, including premature death (Climate & Clean Air Coalition, 2017). Eighteen percent of U.S. methane emissions are attributable to food waste in landfills, since food scraps require specific conditions to break down, including adequate oxygen, water, and the presence of microbes (Cross, 2013). The conditions that reduce methane emissions and turn food scraps into a nutrient-dense soil amendment are referred to as composting. As of 2018, only 4.1 percent of U.S. food waste was composted (EPA, 2022). While a vast majority of this wasted food is still edible and should be primarily redistributed to feed hungry people, per the Environmental Protection Agency's Food Recovery Hierarchy (Figure 1), the remaining food waste must be responsibly disposed of in a way that does not emit methane, for the sake of human and environmental health.

Figure 1: Food Recovery Hierarchy
Source: US EPA



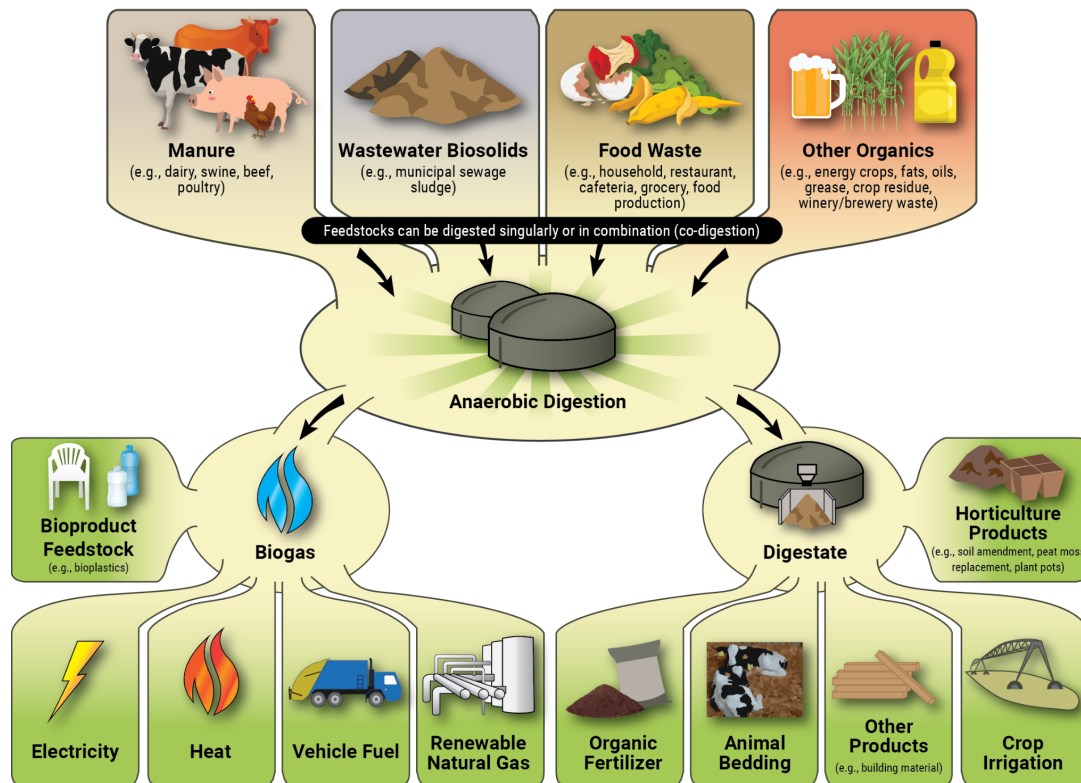
Composting is defined as the natural, but “controlled” process of breaking down organic matter back into soil (Bruni et al., 2020). Carbon-rich organic waste is mixed with other ingredients like water, oxygen, and nitrogen-rich materials like dried leaves in order to encourage decomposition through the attraction of thermophillic (heat-loving) bacteria and fungi, as well as insects. Through this process, greenhouse gas emissions are avoided and the end product provides important nutrients for soil health, aids with water retention, and facilitates microbial and fungal networks in soils. This is generally the definition of composting most frequently used in waste management, but is not the only option, especially for large-scale management needs.

For large amounts of food waste, several jurisdictions have turned to industrialized, mechanized processing solutions rather than the smaller-scale, labor-intensive option of composting. Anaerobic digestion is one of these options, in which food scraps are squeezed by machines into digestate and liquid methane gas, which is a viable alternative to fossil fuel (US

EPA, 2023). This process requires heavy machinery that is usually powered with methane biogas produced on-site, closing the energy loop while processing food scraps. The digestate can be added to soils as an amendment, but generally lacks the microbial and fungal activity that is associated with compost. Additionally, these facilities are usually located far from cities due to their large footprint and the noises and smells accompanying the mechanized process.

Figure 2: Anaerobic Digestion Process

Source: US EPA



In recent years, policies have been implemented across the nation to begin to deal with the mismanagement of food and food waste, but California's cities have led the charge since the 1990s. California, the largest U.S. state and fifth-largest economy in the world, sends six million tons of food waste to landfills each year, garnering the state a substantial responsibility to fight food waste (CalRecycle). San Francisco became the first U.S. city to mandate food waste recovery in 1996 (Mugica et al., 2018). This included "advanced waste legislation, financial

incentives, [a] three-bin system, and extensive multilingual outreach to residents and businesses,” which proved successful in diverting waste (Mugica et al., 2018). By 2000, the city had reached 50 percent diversion and by 2011 had exceeded its goal of diverting 75 percent of food waste from landfill with a 78 percent reduction in food sent to landfills (Mugica et al., 2018). Since 2012, the city has successfully diverted more than 80 percent of its food waste from landfills each year, thereby reducing the emission of methane, creating plenty of nutrient-dense soil amendment for use in agriculture, and generating meaningful and well-paying jobs in the process. San Francisco’s “exceptional” food waste recovery program serves as a global example of how cities can responsibly manage their food waste (Mugica et al, 2018). In 2016, the rest of the state became required to follow San Francisco’s example.

In order to encourage other California cities to reach this level of success, former California governor Jerry Brown signed into effect State Bill 1383 in the September of 2016, also referred to as the “Short-Lived Climate Pollutants Reduction Bill” (League of California Cities). SB 1383 mandates food waste recovery in all California cities and municipalities, including edible food redistribution and composting. The timeline of this bill targeted to reduce the amount of organic waste (ie. food and yard waste) sent to landfill in California by 50 percent below 2014 levels by 2020 and 75 percent below 2014 levels by 2025. In essence, this bill mandates the redistribution of edible food to hungry people, and requires that whatever is left over is kept out of the landfill - reflecting the US EPA’s food recovery hierarchy, shown in Figure 1. In addition, jurisdictions are required to procure “recovered organic waste products” in the process of diverting its waste, turning food scraps into new resources such as compost and biogas. These goals promote circularity in California’s food system, and ensure resources are no longer wasted or are causing harm to the environment. While signed in 2016, the implementation

of SB 1383 became delayed until January of 2022 due to a variety of reasons, including the COVID-19 pandemic. As of January 2022, California jurisdictions should have been well on their way towards these goals.

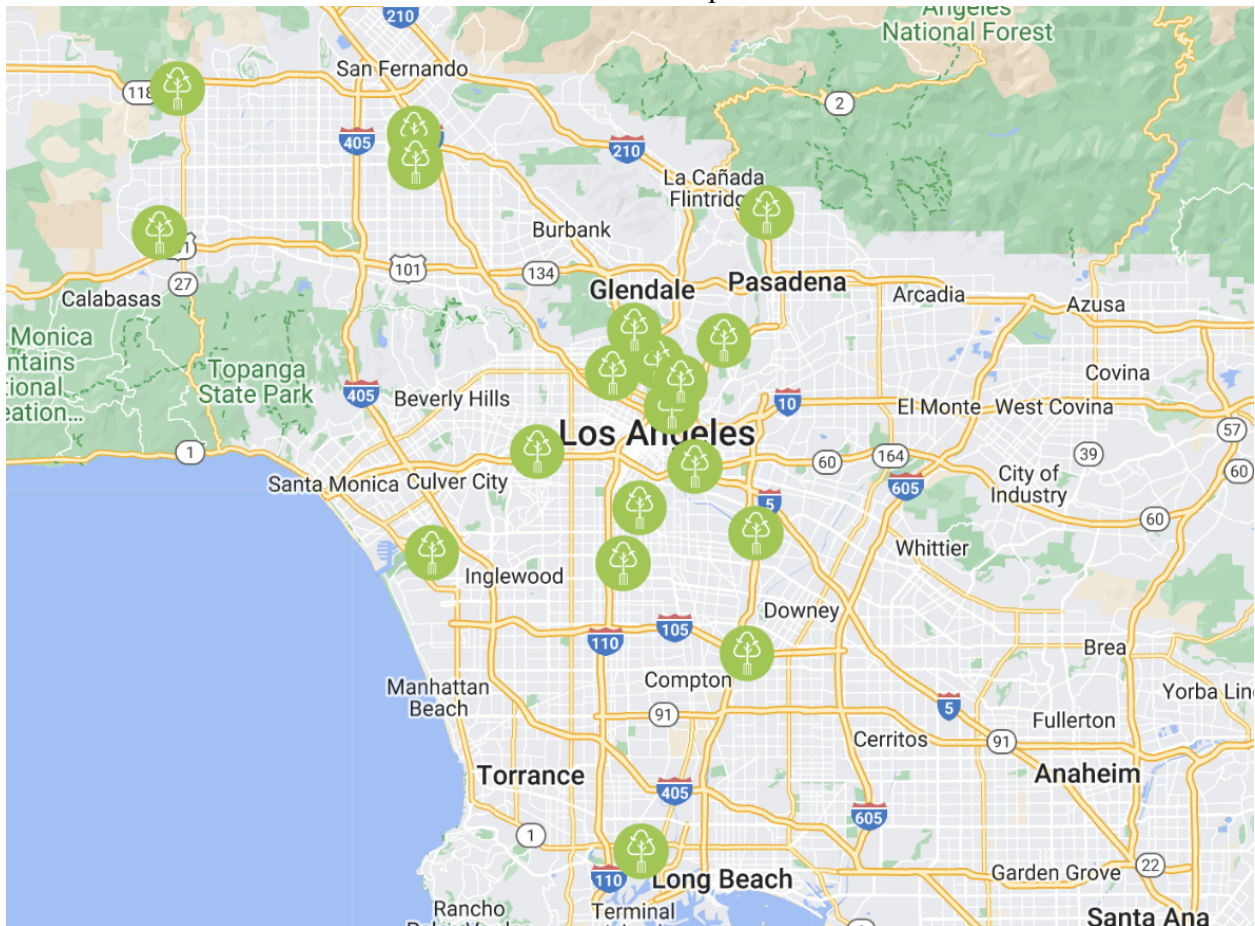
In Los Angeles, the progress towards 75 percent diversion has been much slower than that of San Francisco's. This is due to a variety of factors, including the city's sprawling landscape, a lack of composting infrastructure, and the city's much larger and more diverse population of residents. Within several months of the January 2022 state-wide implementation, the city of LA rolled out a home composting program for 40,000 single-family homes through LA City Sanitation & Environment (LASAN), known as the "Curb Your Food Waste" Program, followed by a January 2023 rollout for all 750,000 single-family homes in the city (LA City Sanitation and Environment). All single-family homes of LA City residents should have received a bin detailing what is and is not accepted in their "green bin" (Figure 3) but received little additional education. Curious and confused residents have had to seek out their own clarification from a variety of stakeholders, including community-based environmental organizations that have stepped up to assist in the transition to mandated composting in Los Angeles.

Figure 3: LA SAN Kitchen Scrap Bins
Source: LA City Sanitation and Environment



LA Compost and Compostable are two community-driven solutions to LA's food waste issue. LA Compost is a community-based non-profit organization that currently has 17 community food and yard waste drop-off locations around the county, shown in a map in Figure 4 (*Start composting*). This organization operates on a membership model in a variety of community gardens, but also accepts food and yard scraps from all community members at several farmers markets across the city. In their words, "LA Compost hubs are built in places where people coexist - in churches, schools, gardens, and workplaces" (*Learn our story*). This "hub" model LA Compost utilizes is one that is "decentralized," according to their website, and allows for community participation in the process of composting. Compostable is a small business that began in June of 2019 with a goal of "affording people the opportunity to reduce their food waste despite any personal obstacles they may face, such as limited space, busy schedules, or personal discomfort" by offering a paid food scrap pick-up service and consulting (*About: Compostable LA*). Like LA Compost, Compostable also emphasizes "local activations, relationships, and communities through education and partnerships," and the two organizations often work together to pick up and process food scraps, turning them into usable soil amendment (*About: Compostable LA*). These two organizations play a major role in educating and encouraging community composting.

Figure 4: LA Compost Locations
Source: LA Compost



Community composting is a valuable option for waste management, but is often not considered as a viable solution in major cities. Unlike large-scale, industrialized waste management solutions, community-scale composting is decentralized, much like LA Compost’s model. This allows for a variety of benefits beyond food waste diversion from landfill. Namely, “composting locally at the neighborhood or community-level yields many other benefits: social inclusion and empowerment, greener neighborhoods, improved local soils, enhanced food security and fewer food deserts, less truck traffic hauling garbage, more local jobs, and increased composting know-how and skills within the local workforce that is reinforced in the next generation” (Institute for Local Self-Reliance, 2023). There are very few examples of successful,

large-scale community composting efforts in the United States, but has the potential to make profound impacts on communities and environments in sprawling and diverse communities like those in Los Angeles.

While the mainstream discourse of food waste diversion efforts focus on composting, edible food recovery is much more impactful for those in need, and makes an even larger impact on waste reduction in the first place. In addition to community-driven composting operations, Los Angeles city has relied on a variety of edible food recovery and donation organizations to ensure *commercial waste generators* (ie. grocery stores, supermarkets, restaurant chains) are recovering and donating edible food. These organizations partner with commercial waste generators to make sure they are following regulations regarding food donations. The city has made available a series of technical assistance grants to such organizations in order to scale up their recovery efforts. Though not the primary focus of this study, food recovery and donation efforts have been instituted much more profoundly at the community level, since it is communities in need who are receiving the excess food donations. These organizations and their use of grant allocations help to inform how community-based food waste processing may be implemented at the city level, as well.

Literature Review

Literature on organic waste diversion policies summarize the benefits, challenges, and lessons learned from existing programs in cities across the United States, particularly the touchstone example of San Francisco, as well as international applications. Organic waste diversion stands to benefit communities through soil remediation, economic incentives like jobs and savings on health expenditures, and decreased contributions to global temperature rise.

Literature indicates that once a city has determined to move forward with an organic waste diversion policy, implementing the policy should consider the political attitudes of the city, the availability of technological infrastructure, and resident participation. San Francisco's success in implementing a composting program reaching 80 percent diversion is considered the gold standard amongst researchers; thus, the following literature explores how the city approaches each of these elements in its implementation as well as other examples of large-scale composting options in New York City and Italy. This literature will help to place some of the benefits and best practices of waste diversion strategies in other cities in contrast with the challenges facing Los Angeles and provide context for how this study will contribute to large-scale, decentralized community compost discourse for major cities, which is largely absent from current programs and strategies in the United States.

Benefits of Organic Waste Diversion

1. Slows Filling of Landfills

When diverted from landfill, organic waste, or food waste that is uneaten and discarded, has the potential to offer a variety of environmental and economic benefits to communities (Waste360, 2022). Because of the nature of landfills, where municipal solid waste (MSW) is cast into open holes in the ground, they are bound to fill up and a new one is to be dug. This indicates an inherent unsustainability in current waste management programs. Thus, sending less overall mass to landfills will extend the "life" of a landfill (Assamoi and Lawryshyn, 2012). Moreover, food waste is the most harmful of landfill materials in terms of air pollution due to the anaerobic decomposition process occurring in landfills. Landfills are the largest source of methane pollution in the state of California (Rosengren, 2022). Cities can reduce their methane emissions by

recovering food waste and instead sending it to be processed by mechanized digesters and composting operations.

2. Reduces Greenhouse Gas Emissions

Given rising global temperatures as a result of greenhouse gas emissions, reducing the amount of methane in the atmosphere poses an impactful solution to the climate crisis, which not only protects human and environmental health, but also saves money. Methane emission reduction stands to save the state an estimated \$40 to \$100 million per year in healthcare expenditures (Rosengren, 2022). Not all municipalities utilize landfills in their waste management programs, however. Many cities and small towns incinerate their MSW, where the heat from incineration can be used to generate electricity. Research has indicated that less food waste in incineration facilities results in more efficient energy content in incineration facilities (Assamoi and Lawryshyn, 2012). Furthermore, anaerobic digestion machinery can capture methane gas emitted into the atmosphere and convert it to usable energy (Assamoi and Lawryshyn, 2012). Therefore, organic waste diversion not only offers financial savings, but can generate energy that helps to sustain expensive machinery. Beyond improved environmental sustainability, food waste diversion programs also offer a direct financial incentive to constituents. City constituents are often apprehensive of sorting their food waste due to the possibility of increased costs associated with waste management. However, by sorting out food waste from home garbage cans, city dwellers may decrease the number of weekly garbage collection, which can reduce costs overall (Swartz, 2002). Lastly, waste diversion policy has the potential to generate hundreds of new jobs, between the truck drivers, educational outreach, and nonprofit grant dispersion. Organic waste diversion is an effective solution to a variety of urban

environmental and economic issues related to waste management, and has thus been utilized in a multitude of national and international municipalities.

Lessons Learned from Existing Food Waste Diversion Programs

Though San Francisco is often referred to as the first and most successful city to implement a food waste diversion program, it is not the only municipality to implement such a program. Cities such as New York City, NY, Oakland, CA, Austin, TX, Seattle, WA, Portland, OR, Baltimore, MA, and hundreds of others are in the process of requiring food waste separation. Similarly, California was not the first state to mandate waste diversion. The variety of environmental and economic benefits linked to methane reduction and composting of food scraps inspired the state of Vermont to ban food scraps from entering landfills (Rosengren, 2022). Each city and state has implemented its program differently, however, resulting in many useful best practices of successful policy implementation.

1. Standardized Three-Bin System

The structure of a city's organic waste recovery policy has been largely standardized to fit San Francisco's three-bin model (Rosengren, 2022). In this model, waste is sorted at the source of its creation (i.e. by consumers) into landfill, recycling, and food waste or compost bins. This can be done in public settings, like on a sidewalk or in a public park, in business settings like in an ice cream shop, or in one's home. For the purposes of this research, only home sorting systems will be included. The three bin system is the easiest to implement, as it is easy to convey to residents, streamlines the pickup service, and prevents contamination if sorted properly (Rosengren, 2022). Other cities and municipalities, even within California, have opted for single-stream systems, where all waste is put into one container and then separated in a facility, but this is costly and more time and energy consuming than source separation (Rosengren, 2022).

Considerations such as these are what determine the implementation of a successful food recovery policy.

2. Political Atmosphere Must Be Supportive

Perhaps most significant to the success of any environmental policy is the political atmosphere of a given city (Garkowski, 2011). In cases across Canada, as well as in the case of New York City's GrowNYC initiative, having support from local governments was not only easier, but fundamental, to the success of sustained food waste separation (Baptista, 2019). Implementation of policies mandating food scrap diversion usually involve contracts with privately-owned businesses responsible for picking up and processing food scraps, such as Recology in the example of San Francisco. These contracts include state or local funding to create and operate such programs, meaning governmental support is crucial for the inception and sustainment of organic waste recovery policy. Furthermore, even with mayoral or city governmental support, the environmental attitudes of residents also played a role in how much waste was diverted, the level of contamination present, and the sustained participation in waste sorting practices (Garkowski, 2011). Thus, the political environment is important to consider when implementing any waste diversion policy.

3. Infrastructure Matters, but not as Much as Engagement

A city's existing technological infrastructure necessary for processing high volumes of food waste is another crucial component of waste diversion policy implementation (Garkowski, 2011). There is debate amongst scholars in the field about whether high-technology machinery is necessary for effective waste management, but many agree that machinery is necessary to some degree (Rosengren, 2022). This type of machinery, which are most often facilities that extract the methane gas from food scraps, do not exist in an appropriate vicinity to most major cities. Even

when these facilities do exist, they are not equipped to process the amount of food waste generated by the entire city, so new ones need to be built. The costs of building and operating this technology must be considered, but the type of facility necessary for a given city is also important. If residents do not properly sort out contaminants, which is a major source of failure in food waste separation programs, the city may need to consider a facility that helps to sort out contaminants. However, as previously mentioned, there is disagreement over the need for such facilities (Rosengren, 2022). This type of machinery is the most expensive of its kind, and concerns about the quality of the end product are brought into question (Rosengren, 2022 and Gribkoff, 2022). These facilities squeeze the organic materials out of their packaging, which poses the possibility of microplastics contamination and the presence of PFAs in the final product, known as bio-char (Gribkoff, 2022). These concerns are important to bear in mind in terms of environmental impact, but the type of machinery utilized may also have an impact on resident participation.

Resident participation is perhaps the most significant consideration in any policy, especially one that is difficult to enforce, such as properly sorting one's waste (Baptista, 2018). Food waste recovery has additional barriers to participation, such as what scholars call the "ick" factor (i.e. the odor and other unsavory characteristics of food waste) and time spent sorting one's trash (Swartz, 2002). Hence, it is important for policies to include a plan for educating and encouraging resident participation. Scholars disagree on the most effective ways to encourage ongoing participation in food waste recovery. While some argue that financial incentives are the only way to enforce such policy, other research seems to demonstrate no correlation between incentives and sustained participation (Li et al., 2017). Most research, however, seems to support that the most meaningful way to engage residents in food waste recovery is through interpersonal

relationships with those involved in the enforcement and implementation of the policy (Xu et al. 2015). Door-to-door education, volunteer outreach, and everyday interactions with truck drivers, though time-intensive, have proven to pay off, ensuring sustained participation and accurate waste bin sorting (Xu et al., 2015). This is not only due to a more holistic education approach to waste diversion, but it strengthens the trust between constituents and local government (Xu et al., 2015). Enforcement, by way of citations and fees, were largely not discussed in reviewed literature, and has the potential to harm vulnerable populations.

4. Community-scale, Decentralized Composting has its own Unique Benefits

There are very few examples of large-scale composting programs at all in the United States, and even fewer examples of community composting programs being implemented in major cities. However, other countries may provide guidance for cities hoping to implement community-scale food waste diversion programs. Literature analyzing Italy's organic waste management practices reveal some of the benefits of decentralized community composting over what author Cecilia Bruni calls "centralized composting," including lower transportation costs, efficient separation of contaminants, lower maintenance costs, low level skills required for maintenance, and higher quality compost (Bruni et al. 2020). A summary of these benefits can be found in Figure 5 below. Applications of decentralized community compost in Italy also stayed more local, which allows small farms, community gardens, and backyard gardeners to practice subsistence farming and minimizes external costs associated with transportation of finished products.

Figure 5: Main advantages of decentralized composting over centralized composting

Source: Cecilia Bruni et al. (2020)

Centralized	Decentralized
Transportation costs relatively high High operation and maintenance costs	Transportation costs relatively low Comparatively less maintenance costs
A high degree of specialized skills to operate and maintain Advanced technology with highly mechanized equipment Large facilities	Low level skills required Simple technology with labor intense Small facilities
Low quality of compost due to poor separation of wastes with high risk of contamination	High quality of compost since waste is efficiently separated and risks for contamination are minimized
Final product transported to farms or regional markets	Final product to fields or local markets as soil conditioner

Research compiling the implementation of a large-scale composting option using a variety of educational tactics and types of infrastructure is largely missing from the literature. Furthermore, literature does not currently document the value of community composting in major cities such as Los Angeles. As Los Angeles begins implementing its own food waste diversion program, it may include a mix of the above lessons learned from other cities and jurisdictions practicing sustainable food waste management. This study intends to fill gaps in the discourse surrounding decentralized composting, community-scale efforts, and the unique case of Los Angeles.

Methods

To answer the questions of what benefits and opportunities face the city of Los Angeles as it implements State Bill 1383 and how existing community-driven solutions can be scaled to achieve success, interviews were conducted with a diverse pool of stakeholders. Individuals were identified for interviews via online research and snowball sampling. After identifying several stakeholders through Internet research, those interviewees were asked to provide any contacts that could provide additional information, context, or insight. A total of eleven interviews were conducted over four weeks in the winter of 2023.

After receiving approval from the Occidental College Institutional Review Board on December 4th, 2022 to work with human subjects, interviewees were contacted via email and provided their written consent to be interviewed, recorded, and mentioned by name in any final research. Most of the interviewees represented stakeholders within the city of Los Angeles, including LA City Sanitation and Environment, LA Compost, FoodCycle LA, Universal Waste Systems Inc., ReCreate Waste Collaborative, and Compostable LA. Two members of the state-level environmental agency CalRecycle were interviewed, as well as a representative from a food policy council called Long Beach Fresh in order to add perspective on how other cities are addressing this legislation.

Table 1 lists the interview participants for this research. Participants ranged from state-level environmental policy agencies to managers of regional community compost networks. Participants included community compost organizations who are involved in on-the-ground food scrap processing via community composting; members of government organizations who are involved in the implementation of SB 1383 at the state and city level; and waste hauling representatives from both large-scale service providers and small businesses, as well as edible food recovery partners. These groups were put into the same category because their work overlaps to a certain degree by aiding in the recovery and redistribution of both edible food and food scraps. These stakeholders not only represent a diverse pool of those involved in the implementation of SB 1383, from edible food distribution to industrial waste management systems, but also are highly knowledgeable about the bill itself and the impact it has had on their jobs and communities. These interviewees were selected because of their acute knowledge on waste systems, economic circularity, and environmental science.

Table 1: Interview Participants

Role	Name	Description
Community Compost Organizations	Enjoli Ferrari	Compost Hubs Program Manager, LA Compost
	Maggie Smart-McCabe	North East LA Regional Manager, LA Compost
	Renate Boronowsky	Advisory Board Member, Long Beach Fresh
Government	Alex Helou	Assistant Director for the Solid Resources Development Group, LA City Sanitation and Environment
	Michelle Barton	Environmental Supervisor, LA Sanitation and Environment; Program Manager for the Biodiversity and Healthy Soils Programs
	Cara Morgan	Branch Chief of Local Assistance and Market Development, CalRecycle
	Heather Williams	Senior Environmental Specialist, CalRecycle
Waste Haulers / Food Recovery Partners	Eric Newton	Zero Waste Lead Representative, Universal Waste Systems, Inc.
	Monique Figueiredo	Founder and CEO, Compostable LA
	Kendra Schussel	Recycling Outreach Specialist, ReCreate Waste Collaborative
	Nancy Beyda	Executive Director, FoodCycle LA

Each subject was asked the same set of semi-structured interview questions, which can be found in Appendix A. The semi-structured interview format was chosen in order to address the diversity of stakeholders in this pool of interviewees. Though each interviewee was asked the same questions, additional questions could be asked in order to provide greater clarity on topics

specific to each individual. Each interview took place and was recorded on Zoom and transcribed using Otter.ai software. Transcribed interviews were coded by hand using a thematic analysis coding technique. Themes that were identified in the coding process were: *benefits of community composting, issues with industrial compost facilities, collaboration between city and community groups, LA's struggles with SB 1383, pros of SB 1383, education and compliance, soil health and community health, and costs and funding*. Quotes from the interviews were labelled with one or more of these codes, then analyzed in order to take away major findings and themes, which are expanded upon in the following section.

Findings and Analysis

Interviewees provided insight into the strengths and weaknesses of SB 1383 in addressing issues of food insecurity, sustainable waste management, emissions reduction, and soil remediation. While most interviewees agreed that the bill has been successful in addressing its food insecurity goals in a meaningful way, they also identified shortfalls. Among these shortfalls includes greenhouse gas emissions and quality of soil amendments generated by industrialized waste management solutions and the city's lack of a robust educational campaign. Interviews called attention to the ways in which the city of LA has been leveraging its relationships with a variety of community-centered stakeholders, particularly LA Compost, and how the city might continue to do so as it pushes forward with its waste diversion goals. Interviewees also provided a list of recommendations in order to help the city reach compliance in a meaningful way, not only to reduce the emission of short-lived climate pollutants, but also to help boost urban soil health and community health in Los Angeles.

Table 2: Summary of Interview Findings

Key Finding	Sub-Findings
<i>Industrialized composting solutions do not meet the state’s climate goals, including air quality and soil remediation.</i>	<i>Anaerobic digestion as a composting solution will create additional pollutants in the atmosphere.</i> <i>Anaerobic digestion does not create quality soil that comes back to the community that created the food waste.</i>
<i>Community composting is a viable solution for food waste diversion in the city of Los Angeles.</i>	<i>Community composting aids in the meaningful education of LA residents more than industrialized options.</i> <i>Decentralized community composting has the potential to support physical health, economic circularity, and other community needs.</i>
<i>SB 1383 Adequately Addresses Food Insecurity Issues in LA.</i>	<i>SB 1383 has had a meaningful impact on edible food waste diversion in the city of LA.</i> <i>Support for non-profit, community-driven food recovery organizations make edible food waste diversion successful in Los Angeles city.</i>

Industrialized composting solutions do not meet the state’s climate goals, including air quality and soil remediation.

Because of SB 1383’s tight timeline, with jurisdictions expected to fall into full compliance by 2025, issues have arisen for stakeholders trying to comply with such quick deadlines. While these timebound goals are necessary for climate health, they have resulted in rushed solutions. “People are desperate to comply,” says Monique Figueiredo. “Comply, comply, comply. If all we focus on is **compliance instead of diversion**, we’re losing the whole narrative.” In an effort to quickly comply with statewide mandates, the city of LA has looked to **anaerobic digestion as a solution** for LA’s massive amounts of food waste. These facilities are efficient at

diverting waste from landfill, which Figueiredo says has become “the name of the game” as politicians and city legislators become “overwhelmed and overworked.” Efficiency, however, does not always mean efficacy. While the interviewees stated that a variety of tactics is necessary to address the issue of food waste in Los Angeles, they also agreed across the board that these industrial facilities, often located far beyond city limits, do not truly address the climate goals of the legislation. If the bill seeks to reduce “short-lived climate pollutants,” as its title indicates, it is paramount that *all* emissions from food waste management are reduced. Additionally, the bill requires jurisdictions to procure “recovered organic waste products” in the process of diverting food waste, which most meaningfully requires the procurement of a viable soil amendment. Anaerobic digestion was cited by interviewees as a poor option for creating viable soil amendments due to contamination and a lack of fungal activity. So, while anaerobic digestion diverts food waste from landfill and produces energy from methane gas extraction, it does not meaningfully address other major climate goals of SB 1383.

Anaerobic digestion as a composting solution will create additional pollutants in the atmosphere.

Interview participants were concerned that anaerobic digestion would result in additional pollutants in the atmosphere due to the industrialized nature of the facilities, as well as their physical distance from the creation of the food waste. While “[food] is being diverted in larger amounts than it ever has been before,” says LA Compost representative Enjoli Ferrari, “**it is also traveling further** than it was to be processed even further than the previous landfills that we were taking it to.” Other interviewees echoed that this increased travel distance would result in more carbon dioxide emissions into the atmosphere. Michelle Barton of LA SAN says, “a lot of the material from the Organics LA curbside collection is going up to the Central Valley... and

beyond. Those have a **much larger trucking footprint.**” As an example, the Anaergia Bioenergy facility in Rialto, CA is one of the largest and newest solutions to the food waste issue in LA, but is located 60 miles outside of the city. Additionally, according to Alex Helou of LA SAN, this facility requires the food scraps to be processed prior to arriving at the facility, meaning the food scraps travel an extra 65 miles from another facility in Sun Valley to be processed. Helou also mentions that Anaergia needs over 700 tons in order to operate, but the city is not producing nearly that amount daily. This means, despite travelling these extra distances, the facility is not producing organic waste products in an efficient manner. Furthermore, the question of where these facilities are built also came up in conversation with Monique Figueiredo, who remarked that “These are disenfranchised communities that need the economic boost. So they're gonna take an anaerobic digester and put it in their community because it gives them jobs and whatever, even if it's polluting.”

Interviewees expressed their frustration with industrial waste processing facilities, but were eager to share their enthusiasm regarding alternative solutions. “Rather than needing to truck the material far distances,” says Michelle Barton, “it makes a lot of sense to focus on limiting the drive to a site to be five miles.” Community compost sites and regional hubs offer a possible solution to these issues by **limiting the distance food waste is travelling**, as well as allowing the application of locally-processed compost to urban areas, thereby boosting soil health which can allow for greater carbon sequestration. Nearly all of the interview participants shared the plethora of benefits of locally-generated compost.

Anaerobic digestion does not create quality soil that comes back to the community that created the food waste.

Among the concerns of interviewees, the quality and locality of the organic waste product generated by anaerobic digestion was one of major interest, particularly from community composting representatives and environmental specialists who are involved in soil health research. Interviewees expressed their perceptions of the products made from anaerobic digestion, which were largely negative. “The material after that anaerobic sludge is so garbage for our soils because it's so far from fungi-dominated on a scientific level,” says Monique Figueiredo. If all we do is anaerobic digestion, “We just won't get that same quality [of compost],” says Maggie Smart-McCabe. In other words, anaerobic digestion can process high volumes of food scraps, but does not generate a helpful soil amendment. Given we have “lost a third of our farmable land in the last 60 years,” according to Figueiredo, it is important that SB 1383 not only focus on the diversion of food scraps, but the use of food scraps to create a viable soil amendment that can be applied throughout the state.

Beyond the quality of the finished product, interviewees shared that the product often does not come back to the community from which it came. “When it's commercial,” says Renate Boronowsky, “it tends to be something where the community doesn't really get the compost afterwards.” Cara Morgan of CalRecycle says that “building the circular economy [in California]” is the focus of SB 1383 and others addressing climate and food issues. Because the end products are not making their way back to the creators of the waste, circularity is not happening with industrialized solutions. Several participants argued that if the end product does not come back to one’s own community, it feels the same to them as sending food scraps to landfill. However, community composting offers a solution to these issues.

Community composting is a viable solution for food waste diversion in the city of Los Angeles.

Community composting aids in the meaningful education of LA residents more than industrialized options.

Because of the fast-approaching deadlines of SB 1383, the roll out of programs has been quick, but to the detriment of education on waste diversion. The city rolled out its curbside collection program city-wide in the beginning of 2023 without much publicity and with very few educational materials. The kitchen pails, which were distributed to all 750,000 LA City households on Martin Luther King, Jr. Day, have pictures that show what can and cannot go in the green curbside bins. Interview participants shared concerns that this campaign failed to help residents comprehend *why* organics diversion matters. Figueiredo speculated that without “real education,” the city would see “National Sword happen again,” in which China stopped accepting recycled materials from the United States because it was so contaminated with non-recyclable waste. In this case, the concern was that these industrialized facilities would stop accepting material if residents and businesses did not receive proper waste sorting education. Due to the size and population diversity of the city of Los Angeles, a comprehensive educational campaign would have been impossible for the city to take on, but interviewees agreed that community composting efforts have and addressed this educational gap.

Eric Newton, a Universal Waste Systems, Inc. representative said, “If we're going to make things less convenient, which is in truth what we're doing – rolling back convenience, making it more challenging – **[residents] need to know why.**” Kendra Schussel seconded this sentiment, stating that “The focus, in my opinion, also needs to be on the why of it, as opposed to just saying ‘you must now do this.’” Community compost organizations play a large role in conceptualizing the entire food system and the waste cycle – from growing food, to eating it, to

putting what's left back into the earth – which leads to a cleaner end product. According to Heather Williams, **“It makes you more cognizant of what is going into your soil. I don't think people connect it if it's just going into your bin.”** Newton said that by keeping the cycle local, it helps residents, business owners, and other stakeholders envision how one's food waste can be used to “bring carbon out of the air and create healthy soils at the gardens in *your* neighborhood.”

Furthermore, community composting proved to be impactful in helping residents visualize how much food waste they create, and encourage them to reduce the amount of waste they bring to community drop-off sites. Through the act of dropping off food scraps at a farmers market or community garden, residents become aware of when they may be able to reduce the amount of food wasted in the first place. Helou cites this as one of the key markers of success in achieving the goals of SB 1383. “Our goal is not to increase composting,” he said, “if we can recover it before it hits the bin, that's really where we measure our success.” Enjoli Ferrari summarized this behavioral shift in the following quote:

The waste industry has made it so easy for us to be okay with the concept of like, we put it in the dumpster and it's gone, away. And when you actually engage in dropping off your food scraps each week, you're like, ‘Oh, dang.’ **The actual physical step of carrying it and seeing it, I think, is really impactful for creating that change that we want to see.**

Decentralized community composting has the potential to support physical health, economic circularity, and other community needs.

Throughout nearly every interview, one of the clearest benefits of community composting is its ability to build community, which is currently missing from industrialized waste management programs, but necessary for encouraging circularity. In many cases, “the community compost site is a community garden,” says CalRecycle's Heather Williams, which provides a plethora of other benefits to communities, especially lower-income communities

lacking equitable access to fresh and nutritious food. “It cannot be overlooked,” Williams says, “the benefit of the quality of the produce and accessibility of fresh produce like that in LA.

[Residents] could be growing their own food in their own neighborhood with their own food scraps.” Additionally, she says the increased green space made through community gardens provides mental health benefits, as well as hosts a site where people can “feel involved, be part of the solution, and exchange knowledge and information about things they care about,” which can include waste management, food insecurity, and other issues facing their community. This is particularly important for residents in a city like Los Angeles, argues LA Compost’s Maggie Smart-McCabe. Not only does LA’s physical size, language and income diversity, and urban landscape make it hard for folks to interact with each other, but “there are a ton of people coming in and working for these extractive industries [we have in LA], and not really taking the time to being a part of local community initiatives, working with [their] local community garden or really caring about the community that [they] live in.” This is an issue that can be addressed by increased access and interactions with community spaces, especially if residents are encouraged to drop off their food scraps regularly at a farmers market or community garden.

In addition to building community through communal green and agricultural spaces, an investment in community composting provides what Michelle Barton of LA SAN calls “brown jobs,” or green jobs that have to do with soil health. These are “**meaningful jobs,**” says Monique Figueiredo, that are “**creating self-reliance within [one’s] community.**” This is key in LA Compost’s model; LA Compost hires for “souls, not skills,” according to Enjoli Ferrari, which gives lower-income communities an opportunity to learn new skills in sustainable fields that are good for the planet as well as helping their own communities flourish. Green jobs are a pinnacle of sustainable development, and are key to building the circular economy California aims to

achieve through SB 1383 and other resolutions. While jobs in traditional and industrial waste management could be considered green jobs, community composting and community garden-scale careers provide jobs that are local and involved in their immediate surroundings, which has a plethora of benefits for individuals and their communities.

The decentralized nature of community composting is an additional strength cited by many interview participants. As has been mentioned, LA struggles with sprawl, which means food scraps picked up by city-contracted companies have to travel long distances, and that the finished soil amendment product has a more difficult time making it back to individual communities. Community composting not only localizes the process of food scrap drop off and compost pickups, but also allows disadvantaged communities to directly benefit from the additional benefits of having a farmers market or community garden in their own neighborhoods. “Decentralized community composting is an easy way to get [soil amendment] to people at a low price that is beneficial for them,” said Renate Boronowsky. This decentralized model is a pinnacle of LA Compost’s model, explains Enjoli Ferrari, “because then you're not only specifically involved with the super local community, but also we're not as reliant on hauling to faraway locations.” Michelle Barton said that the decentralized model allows policy planning to address questions such as, “Where are these [waste] sources coming from? Where are the farmers market drop offs in relation to potential parks? Also, where's the community's need? What areas do we really want to be serving?” These questions are not addressed when the city’s primary solution is a pickup system similar to that of trash and recycling, because it does not change the system of interacting with waste, circularity, and community health. Community composting in a decentralized model poses the potential for a strong solution to LA’s struggle with food waste in a way that can provide additional social, economic, and health benefits to LA

residents.

Table 3: Summary of Community Composting Benefits to Reach CA Climate Goals in Los Angeles City Cited by Interviewees

Challenge	Meeting State Environmental Goals			Sustainable Development / Economic Circularity & Resiliency		
	Improved Soil Health	Localized Waste Systems	Increased Green Spaces	Green Job Creation	Building Communal Spaces	Healthy & Affordable Food Access
Enjoli Ferrari	X	X		X		X
Maggie Smart-McCabe	X	X	X		X	X
Renate Boronowsky	X		X			
Alex Helou	X					
Michelle Barton	X	X	X	X		
Cara Morgan	X				X	
Heather Williams	X	X	X		X	X
Eric Newton	X	X	X			X
Monique Figueiredo	X	X				
Kendra Schussel						
Nancy Beyda						
Total	9	6	5	2	3	4

SB 1383 Adequately Addresses Food Insecurity Issues in LA.

While interviewees debated the best solution for the food scrap recovery process in LA,

stakeholders reported success in building sustainable systems of recovering and redistributing edible food in the city of LA. This success is supported by a variety of grant offerings for food recovery efforts, increased communication between stakeholders, and a dependence on community-driven solutions.

SB 1383 has had a meaningful impact on edible food waste diversion in the city of LA.

Interviewees agreed across the board that State Bill 1383 has been successful in motivating stakeholders within the city to begin diverting their food waste from landfill. The bill has forced major commercial waste generators, primarily larger grocery stores and supermarkets, to not only donate as much food as possible, but keep track of where it goes and report diversion data to the state, which will account for a huge portion of food waste in Los Angeles. While many of these commercial waste generators have had processes for edible food donation prior to the bill, “now they don’t have a choice,” according to Nancy Beyda of FoodCycle LA. This is perhaps one of the most notable successes of the bill in Los Angeles, according to the interviewees. On who she thought SB 1383 targets the most, Monique Figueiredo said, “I think a lot is put on consumers or individual action, and there's something to say for that... but I think it has to be paired with knowing that the major generators are being held accountable, or else it feels hopeless when you're an individual. So I think that [SB 1383] does that well. It's saying that [the big guys] need to be responsible for the products [they're] producing.” While it is important for individuals to practice food waste reduction and separation from landfill, the larger impact will be seen as more grocery stores and restaurants fall into compliance.

While compliance is currently low for these commercial food waste generators – with interviewees citing between ten and twenty percent compliance – SB 1383 has created pathways

for generators to be connected with food recovery organizations. Prior to SB 1383, Kendra Schussel's position as a recycling outreach specialist did not exist. Now, her position exists specifically to assess a business' compliance and capacity and connect them with food recovery organizations. Similarly, Nancy Beyda said that FoodCycle LA has been able to expand to fulfill the needs of businesses and recovery organizations via microgrants from the city. These grants provide technology, transportation, and technical assistance to food recovery organizations that are having difficulty meeting the demand from major waste generators they are serving. This has been made possible by the SB 1383 requirements that hold jurisdictions accountable for reaching these targets. This type of top-down policy enforcement was cited as one of the strengths of SB 1383, rather than relying on food waste recovery organizations and major waste haulers to solve this issue on their own.

Support for non-profit, community-driven food recovery organizations make edible food waste diversion successful in Los Angeles city.

While the top-down enforcement of SB 1383 has provided the necessary and time-bound motivation for the city to recover edible food, the dependence on community-driven solutions, such as FoodCycle, ReCreate Waste Collaborative, and others, is responsible for the success of the programs city-wide. Alex Helou of LA SAN and Cara Morgan of CalRecycle explained that SB 1383 inspired grant opportunities for food recovery organizations to upgrade to new technology and transportation systems that would aid in their collection and distribution of edible food from major waste generators. Examples of grant spending included app development for communication between major waste generators (ie. Trader Joe's, Whole Foods) and food recovery organizations, purchasing refrigerated vans to keep foods at a safe temperature prior to consumption, and building additional storage space at recovery organizations. These projects

have allowed a diverse variety of decentralized nonprofit and for-profit community-based organizations to start or ramp up their edible food recovery efforts. While it is a smaller group of recovery organizations that are in direct contact with major waste generators, there is a large number of food distribution organizations, often attached to community centers like churches, gardens, and other communal spaces. This partnership, decentralized and community-based in nature, has been highly successful thus far in Los Angeles, and offers an example of how this model can be applied to other aspects of the waste system, like composting.

Stakeholder recommendations

Though not directly asked to provide recommendations, nearly all of the stakeholders had suggestions for improving how LA will achieve SB 1383's climate goals or, more broadly, how SB 1383 can be improved to help jurisdictions reach compliance with the bill. These stakeholder-provided recommendations can be loosely grouped into the following categories: providing funding and building infrastructure, offering a diversity of solutions, and increasing communication between stakeholders.

Providing funding and building infrastructure

Funding was a clear concern for most stakeholder groups, particularly for those in community-driven solutions. While SB 1383 gives the option for jurisdictions to enforce compliance through fines, it does not provide incentives for businesses or residents to participate in the goals of the legislation, which is cited as a flaw by a variety of stakeholders that were interviewed. Some small businesses will suffer if not given financial incentive to comply, some interviewees stated. "Some [businesses] are run by three people [and] they don't have the time or bandwidth to hire another role" to help them comply, says Kendra Schussel. "I think some

businesses should get a grant to comply, because they really can't afford it," seconded Eric Newton of UWS. LA Compost agreed with this notion that certain stakeholders should get paid in order to incentivize them to participate. For some residents, the education gap is larger than it is for others, said Enjoli Ferrari. In particular, she says that "communities who may need support with interpretation, or who are also dealing with extreme elements of life and need a little bit more encouragement," should be offered a stipend for them to "be able to provide the time... to learn about these things [composting and food systems]." Interviewees identified other areas where additional state funding is necessary for infrastructure needs. "[The city] does not yet have all the infrastructure or the facilities to process all of our food scraps," says Maggie Smart-McCabe. While the city has invested in the creation of more industrial solutions, not as much funding has gone into building out community composting infrastructure, including community garden space and region hubs. Furthermore, investing in a variety of solutions is necessary for the city to reach compliance with this legislation.

Offer a diversity of diversion options for residents

Interviews indicated that offering a diverse range of options for residents and businesses to comply is necessary to reach compliance with state food waste diversion laws. "We need diversity and redundancy," said Monique Figueiredo. "We need to start taking notes from the food system about ... the importance of prioritizing many players." To most interviewees, this means that the curbside collection program should not be the only option, and that community composting and home composting should be made very apparent for all residents. A priority for LA Compost, according to Maggie Smart-McCabe, "is **ensuring that community composting is very clearly still an option for residents to choose** to use as their means of diverting waste from landfill community composting or composting at home." Furthermore, prioritizing the

“unique benefits of composting locally,” as discussed in previous sections, is the key to success identified by LA Compost. Figueiredo argues that the curbside program dissuades local solutions because of the requirement to pay for the city to pick up one’s waste, whether you use the city’s services or not. Alex Helou of LA SAN argued contrary to this, comparing the sanitation department to public education: “People say, ‘I do not generate waste, why should I be paying for the service?’ Well, even if you don't have kids, you still have to pay for the school system.” Overall, interviewees opposed this sentiment and agreed with Figueiredo, especially since home and community composting are free and effective solutions; in other words, why should residents be required to pay for a service that is free elsewhere? A middleground offered by Eric Newton was a “pay as you throw” payment system in which residents are charged by the pounds of waste they create, as opposed to the static payment system currently employed by LA SAN, which is \$36.32 per month for all three bins. While this may pose issues for multi-family homes and apartments, it further incentivizes the reduction of waste, or other compost solutions, in the first place. “If you can show that you're complying with the law in an alternative means,” says Figueiredo, “then you should be able to opt out. Whether that is sending a picture of your backyard system or Compostable sends a monthly report of your impact, you should be able to opt out of your green bin and not pay for that service.”

Improve communication between stakeholders

Several interviewees cited miscommunication with other stakeholders as a challenge to reaching compliance. While Eric Newton and Kendra Schussel cited miscommunications from CalRecycle and LA SAN as a struggle, LA Compost and Compostable said residents have become confused, too. Eric Newton recounted a specific event in which LA City Sanitation and Environment audited businesses which were technically under UWS jurisdiction, which caused

confusion for the businesses about who they report their compliance to. Furthermore, Kendra Schussel stated that because some larger and chain businesses are run by corporations that may be headquartered out-of-state, certain compliance issues are not made clear to store managers. These issues with reporting and compliance with businesses must be addressed by the city and the state in order to make sure business owners are aware of their legal obligations as well as their options. Residents also must be made aware of their options, especially as the city's mandates begin to be financially enforced via fines in 2024, says Enjoli and Maggie of LA Compost. "People are asking so many questions," says Enjoli Ferrari. "Like, 'Oh, do I still need to bring my food scraps here [to an LA Compost hub/farmers market stand]?" As residents begin to be fined for any issues with compliance, educational gaps must be addressed and residents must be made acutely aware of the variety of compliance options available to them through the city, LA Compost, Compostable, and home composting. As with any policy, it is important to make sure all stakeholders are aware of how they fit into the policy. "[The state] needs to be communicating with the cities and the communities within those cities that are going to be most impacted by this," says Renate Boronowsky.

Recommendations

Based on the demonstrated success of community composting in reaching SB 1383 goals, and given the challenges presented by interviews with stakeholders, it becomes clear that there are several recommendations to be made in order to ensure compliance, as well as make sure that the legislation is doing what it intends to do.

Table 4: List of Recommendations

Prioritize community composting in LA through investments in community gardens and technical support for nonprofit organizations

Encourage a diversity of solutions in LA City

Statewide: Develop and include statewide goals for soil remediation

Statewide: Provide built-in state financial incentives for compliance

Prioritize community composting through investments in community gardens and technical support for nonprofit organizations.

While it is true that Los Angeles likely has more food scraps than community composting can handle, it is clear that community composting is a necessary piece of the puzzle. Due to its decentralized format, community-building nature, educational opportunities, and ability to create a circular economy, community composting helps resolve the variety of Los Angeles-specific issues that pose a challenge to meeting California's climate goals. LA's sprawling layout and its language, educational, and income diversity are some of these significant issues, which can be addressed by community composting. Thus, it is apparent that decentralized community composting must be prioritized. This means, at the city level, LA must provide funding for community compost infrastructure. This funding should be awarded via grants to community compost initiatives; for example, grants should be awarded to groups or neighborhoods to build compost receptacles in a community garden or urban farm or to hire a community member to maintain the compost pile. Grants could also be awarded to LA Compost or similar non-profit organizations seeking to bring these kinds of services to existing community gardens, or to allow organizations to purchase or rent land for brand new composting hubs in neighborhoods without.

Furthermore, grants should be able to be used to expand farmers market hubs for pickups, as well as pay for transporting the food scraps away from the farmers markets and to a regional hub for processing (ie. grants would fund trucks, labor, and other tools for transporting and processing food scraps).

Allow for and clearly educate on the diversity of diversion options for residents in LA city.

Because residents currently are required to pay for the curbside collection program, no matter how they dispose of their food scraps, there is little incentive to utilize community compost options aside from value alignment. Many people stand to benefit from a “pay-as-you-throw” payment system, especially those who are actively reducing the amount of waste they are disposing of. This encourages community composting, since it is a free alternative to the curbside collection program, but does not penalize those who choose to use the curbside option. Thus, the variety of options becomes more fairly accessible to residents, especially as more funding is put into building more community composting infrastructure across the city. Of course, the city may require some kind of monitoring system to ensure those who are not using the city-provided option are still disposing of their food waste appropriately, which can be done through proof of membership with LA Compost, proof of a home composting system, or through Compostable LA’s records.

Statewide: Develop and include statewide goals for soil remediation

One of the critiques of the statewide food waste diversion legislation is that it focuses too much on diversion from landfill, and not enough on food waste capture for soil health. Nine of the eleven interview respondents mentioned soil health as a major benefit of diverting waste from landfill, but the bill does not currently have a specific target of improving soil health. Given

soils are being depleted at unsustainable rates, and given LA's issues with food deserts and arid, contaminated landscapes, it is important for Los Angeles and cities across the state to remediate their soils. As mentioned in interviews, compost has the ability to hold more water, which can reduce the risk of flooding, sequester more carbon from the atmosphere, and produce higher nutritional value fruits and vegetables. Considering that California has issues with flooding and arid soils, as well as accounting for 13 percent of the nation's agricultural production, the benefits of compost as a soil amendment stand to benefit California in particular (USDA). Currently, the priorities of the bill are primarily for landfill diversion, methane gas emissions reduction, and the creation of some type of organic waste product, but not specifically compost or soil amendment. While these goals are important, there is not currently a distinct emphasis on soil health, which should be worked into the law in order to encourage community composting and other non-industrialized solutions to food waste processing. Just as there are emissions reductions targets, there should be specific goals to increase the production of high-quality compost and to apply said compost to specific areas in need of soil remediation, prioritizing urban areas.

Provide built-in state financial incentives for compliance

One major shortfall cited across most interviews argued that, without state funding, the incentive to quickly and effectively reach compliance is absent in many jurisdictions. Los Angeles, in particular, has more work than other cities in the state because of its large and diverse population, as well as its sprawling layout. Thus, equitable funding for incentives would help LA City to reach these targets, as well as reward other cities and jurisdictions that are already falling into compliance. State funding would allow for greater grant dispersal for large-scale community composting projects, technical assistance for non-profits, educational

campaigns, and even paid opportunities for residents to participate and learn more about food waste diversion, as was suggested by several interviewees.

Discussion

While a majority of interview respondents agreed that community-scale composting and food waste diversion tactics are important for Los Angeles due to the variety of benefits explored above, it was also emphasized that a variety of options are necessary for residents to choose from. The volume of food waste created by a city such as Los Angeles, including industrial food waste, grocery and supermarket waste, and municipal waste, would be likely too much for even the most robust community composting system. Additionally, there are other crises facing the city that are more pressing and require more funding, so it may be difficult to allot more funding to small-scale organic methods. That being said, community composting has not yet been explored at a large scale and the potential to create high-quality, local compost has not yet been realized in any major city in the U.S. Additionally, because community-driven composting programs are most often tied into a community garden space, this style of composting solves a variety of other social and environmental issues in urban areas, including increased green space, carbon sequestration, food security, community resiliency, green jobs, and many more. As has been mentioned, the impact community composting operations have had on education regarding waste diversion and food systems has been immense. The city would be remiss not to explore the option of a large-scale community composting diversion program, and should consider anaerobic digestion as a last resort as a destination for the city's food scraps.

Additionally, while the US EPA's Food Recovery Hierarchy (Figure 2) prefers the creation of biogas or biofuel over the creation of compost or soil amendments, the interviewees

conveyed a passion and urgency for soil remediation in California and Los Angeles in particular. In this way, it is important to consider the specific environmental needs of an individual jurisdiction; LA has opportunities for other renewable energy resources like wind and solar farms, so biofuel may not be as large of a market. Soil health, however, is a component of the work that LA City Sanitation and Environment (LA SAN) does, thus it would benefit them to prioritize the programs that will ensure clean, microbially-active, and nutritious compost. As previously mentioned, these kinds of community-based diversion programs will help residents see the full picture of waste management and how it can benefit themselves and their community, which will increase residential diversion rates more impactfully than would financial incentives or fines.

Limitations

One major limitation with this research includes that a survey of residents – whether through an online survey or interviews – was not conducted. Residents are one of, if not the largest group of stakeholders affected by SB 1383, thus a survey of their habits and use of composting options should be evaluated. Another major group of stakeholders absent from this analysis is business owners of food waste-generating operations, such as restaurants and grocery stores. Additional research may also analyze the distribution of anaerobic digesters in the Los Angeles area compared to the distribution of community compost sites in order to determine if there are disparities along racial, economic, or educational boundaries.

Additional limitations to this study are that many of the stakeholders that were interviewed are employees of the institutions involved in food waste management and/or receive funding from the city to operate their organizations. Their employment or grant receipt may

complicate and limit their answers. Interviewees that own or work for businesses were clearly more willing to be critical of the state and the city, while those who worked with the city or at the state level seemed more cautious about their critiques. This is a clear limitation to the extent to which certain aspects of the policy are working will or not.

Conclusion

While State Bill 1383 seems to be addressing some major food waste diversion goals in terms of edible food recovery, it is clear that there are opportunities for improvement in the city of Los Angeles. These interviews demonstrated the various and necessary community and environmental benefits that community composting options can achieve, which could be the first large-scale example of community composting in the country. The sprawling landscape, diverse population, and need to meet compliance quickly in Los Angeles gives the city a bigger lift than other areas of the state, which means it will need a robust and unique strategy to reach climate and diversion targets. If the city moves too fast, it may overlook options that can more effectively and meaningfully meet target goals and create valuable green jobs and nutrient-dense soil amendment in the process. Community composting serves as an educational resource for residents of Los Angeles, not only for learning how to separate one's waste, but also for why it is important to do so, which is necessary for conceptualizing the circular economy California wishes to build through this bill. Furthermore, community composting encourages community health benefits through the creation of more community gardens, urban green space, green jobs, and community-building. Lastly, the recovered waste product generated through community composting is much healthier for soils, which California desperately needs, than through industrial anaerobic digestion facilities. There are viable actions the city can take in order to not

only reach compliance with State Bill 1383, but surpass the requirements of the bill in order to ensure a livable future for all residents of California's largest city.

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Appendix A: Semi-Structured Interview Questions

- What is your job title and what are your responsibilities?
- Can you describe the current basic processes of food waste diversion in LA? Who are the major stakeholders? Who is responsible for reaching success?
- What relationships and/or contracts are in place with waste haulers, businesses, and community organizations?
- What do you identify as the biggest challenges in achieving the goals of SB 1383 in LA?
- What is the city's role (meaning city-employed entities) in ensuring LA is meeting these targets?
- What is the role of community-driven solutions in meeting these targets? What is the relationship between the city and these groups?
- Who does SB 1383 target the most?
- What distinguishes LA's struggles with food waste diversion from other areas of California?
- What do you identify as some of the success in food waste diversion thus far?
- In your opinion, what is key to success? How will LA get there?
- How do you think your organization/business's role will change as the state implements and begins enforcing State Bill 1383?