Sustainable Economies Law Center

DRAFT POLICY GUIDE

Growing Compost:

A Policy Guide to Preserving Critical Community Composting in California

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The Sustainable Economies Law Center has been researching compost law and policy in recent years. Learn more about our work here: www.theselc.org/compost.

SEEKING FEEDBACK:

In late 2016, we worked with Berkeley Law School's Environmental Law Clinic to produce this draft policy brief to guide policymakers in California. We plan to revise and expand upon this draft by the end of 2017, so we would greatly appreciate feedback. To provide feedback, please go to:

www.theselc.org/compostdraft

Thank you!!

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I. INTRODUCTION

Faced with big issues like climate change, California is ramping up efforts to divert organic waste from landfills and transform it into compost. Nearly ten million tons of organic waste end up in landfills every year where it decomposes, producing heat-trapping methane gas. When composted, however, this organic waste can become a resource to rehabilitate degraded land, lower farmers' costs, reduce contamination in water, slow climate change by capturing carbon in the ground, and support food growing in food-scarce urban neighborhoods.

To ensure that California maximizes the potential of organic waste diversion, policymakers must address barriers to the creation of both small and large compost facilities. Around California, community organizations are beginning to form small-scale compost operations to provide a wide variety of environmental and economic benefits to communities. Local composting efforts create jobs and help provide food security in the communities they serve. Community composting facilities are also critical to educating the public about the importance of composting and getting community buy-in for the entire industry, which is struggling to get people to compost at all, let alone to do it properly. These small-scale operations connect children and adults to the food and waste system, teaching the importance of compost to food creation and soil rehabilitation.

To achieve California's environmental goals, policymakers need to maximize the benefits of both industrial and community composting. As cities rush to meet California's ambitious waste diversion target of diverting 100% of organic waste from landfills by 2025, however, local laws and exclusive franchise agreements threaten to eliminate community composting. We need to make sure that does not happen.

To help local and state policymakers and advocates create and preserve space for community composters, Sustainable Economies Law Center (SELC) has conducted interviews with community composting organizations throughout the state to understand the legal obstacles they face. SELC has also reached out to community composters in states with more favorable laws to understand how they have dealt with community composting. SELC's goal is to give local and state policymakers a set of tools to protect and encourage community composting. In this vein, SELC recommends that:

- Lawmakers ensure that community composters can operate even where a municipality has an exclusive franchise agreement with a waste management company. This can be done either through state legislation or by negotiating contractual carve-outs at the local level.
- Local jurisdictions update zoning ordinances that unduly restrict community composting operations;
- CalRecycle approves a list of best management practices for community composters to alleviate local regulatory concerns; and
- CalRecycle revises regulations that currently prevent farmers from creating composting cooperatives.

II. COMPOSTING IN CALIFORNIA

Each year, California accumulates 30 million tons of waste in landfills.[1] Almost one third of this waste is compostable organic material.[2] When left to decompose in a landfill,[3] organic materials release methane, a greenhouse gas 25 times more potent than carbon dioxide.[4]

Composting facilities[5] divert organic materials from landfills and turn them into a useful soil enhancement for community gardens, rural and urban farms, and backyards.[6] New practices also significantly reduce the release of methane during decomposition.

Most composting in California is industrial. The Association of Compost Producers, a composting trade association that acts as the California branch of the national US Composting Council, has about 200 members, which range from relatively small industrial composters[7] to large facilities that process over half a million tons of organic waste a year.[8] The composting processes used vary across facilities, with most using windrows to process organic waste. Due to air and water quality standards mandated by the state, however, the industry is shifting to aerated static piles. Because the costs of such a move are significant, change has been slow.[9] CalRecycle is also promoting development of anaerobic digestion facilities to reduce landfill methane emissions.[10] As of August 2016,

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[1] *Organic Materials Management and Climate Change*, CalRecycle, http://www.calrecycle.ca.gov/Climate/Organics/ (last visited Oct. 28 2016).

[2] *Organic Materials Management and Climate Change*, CalRecycle, http://www.calrecycle.ca.gov/Climate/Organics/ (last visited Oct. 28 2016).

[3] There is not enough oxygen in a landfill for a completely aerobic decomposition process. After the oxygen runs out, anaerobic bacteria – those that thrive in environments lacking oxygen – take over and complete the decomposition of organic waste. Agency for Toxic Substances and Disease Registry, *Chapter 2: Landfill Gas Basics*, https://www.atsdr.cdc.gov/HAC/landfill/html/ch2.html#f2_1 (last visited Nov. 10, 2016).

[4] Organic Materials Management and Climate Change, supra note 1.

[5] California has been working for years to divert organic waste from landfills. In the late 1980s, California was producing more solid waste than any other state in the country, and was at over twice the per-capita rate of most other industrialized nations. Cal. Pub. Res. Code §40000(a). Over 90 percent of California's waste was ending up in landfills, and experts predicted that California would run out of landfill space by the mid-1990s. *Id*. at §40000(c). To avert this crisis, California passed the Integrated Waste Management Act of 1989, which encouraged recycling and the reuse of solid waste, with an eye toward protecting the environment and diverting waste from landfills. *Id*. at §§40000-40511.

[6] CalRecycle describes compost as a "stable, humus-like product [with] . . . many environmental benefits." It is produced through decomposition of organic material such as yard trimmings, food scraps, and paper products. Composters manage the natural decomposition process to ensure conditions that decomposing microbes need to break down organic material effectively. *Compost and Mulch*, CalRecycle, http://www.calrecycle.ca.gov/organics/compostmulch/ (last visited Sept. 17, 2016).

[7] Industrial composting is any process that aims to divert a large portion of the organic waste stream from landfills and process it into compost. While many industrial composting sites are privately owned, some are owned by the municipalities they serve. These facilities can vary in size, with the largest, such as the Griffith Park Composting Facility in Lost Angeles producing over 10 tons of compost every day. *Griffith Park Composting Facility*, City of Los Angeles, https://www.lacitysan.org/san/faces/wcnav_externalId/s-lsh-wwd-s-gw-gpcf?_adf.ctrl-state=z3ms7tw29_4&_afrLoop=5932868487734782#! (last visited Nov. 29, 2016).

[8] Interview with Dan Noble, Executive Director of the Association of Compost Producers (Oct. 18, 2016).

[9] Interview with Dan Noble, Executive Director of the Association of Compost Producers (Oct. 18, 2016).

[10] CalRecycle, Anaerobic Digestion Initiative (June 2011), http://www.calrecycle.ca.gov/SWFacilities/Compostables/AnaerobicDig/Initiative.pdf.

there are fourteen industrial anaerobic digesters in California, with eight in the process of obtaining CalRecycle permits.[11]

Community composting complements rather than competes with these important large-scale efforts and fills key gaps on the local level. Expanding the reach, accessibility, and local benefits of composting by pairing community composting with industrial composting is a critical strategy as California works to achieve its ambitious new waste diversion targets.

Common Forms of Industrial Composting: Advantages and Disadvantages

Composting Technique	Advantages	Disadvantages
Turned Windrows This process involves forming and regularly turning long, narrow piles of feedstock. While reintroducing oxygen, turning reestablishes porosity as it breaks up and blends organic material. Loaders, tractors, or drum turning machines are often used to turn the piles.[12]	• Can process from 3,000 to 150,000 tons of waste per year.[13]	• Difficult to control odor.[14] • Requires a lot of space.[15] • Leachate from windrow piles can contaminate groundwater and surface water supplies.[16]

[11] *Anaerobic Digestion Projects (a partial list, August 2016)*, available at http://www.calrecycle.ca.gov/organics/conversion/ADProjects.pdf.

[12] Brenda Platt et al., *State of Composting in the U.S.: What, Why, Where & How, Institute for Local Self-Reliance* 1, 14 (July 2014), ilsr.org/wp-content/.../state-of-composting-in-us.pdf.

[13] Brenda Platt et al., *State of Composting in the U.S.: What, Why, Where & How, Institute for Local Self-Reliance* 1, 14 (July 2014), ilsr.org/wp-content/.../state-of-composting-in-us.pdf.

[14] Brenda Platt et al., *State of Composting in the U.S.: What, Why, Where & How, Institute for Local Self-Reliance* 1, 14 (July 2014), ilsr.org/wp-content/.../state-of-composting-in-us.pdf.

[15] Brenda Platt et al., *State of Composting in the U.S.: What, Why, Where & How, Institute for Local Self-Reliance* 1, 14 (July 2014), ilsr.org/wp-content/.../state-of-composting-in-us.pdf.

[16] *Types of Composting and Understanding the Process*, EPA, https://www.epa.gov/sustainable-management-food/types-composting-and-understanding-process (last visited Nov. 29, 2016).

Composting Technique	Advantages	Disadvantages
Aerated Static Piles Aerated static pile composting consists of piling organic waste in large mounds, and then either blowing or sucking air through them using a system of pipes installed in the grates below the pile.[17]	• Can compost large amounts of compost in 3-6 months.[18] • Simpler odor control because odor-causing particles are sucked into the piping system below the pile.[19]	• Not suitable for composting animal waste or grease from food processing plants.[20] • "Bulking agent" (e.g. woodchips) must be added to solid waste, removed after the composting process, and added to a new batch of organic waste.[21] • Not as effective for processing materials that need to physically break down as they are composted because piles not turned as often.[22]
Anaerobic Digestion Anaerobic composting occurs when raw organic materials are deprived of oxygen in a sealed and contained environment called a "digester," allowing bacteria to break down the organic matter. This process produces methane, a bio-gas that can be burned to produce energy; and digestate, the physical product left over at the end of the digestion process that can be used as compost.[23]	• Methane released from process is converted into renewable fuel to power industrial composting and waste treatment facilities.[24] • Can process compost at a high volume.[25] • Less labor-intensive because it does not require manual turning of compost.[26]	• Process can release substantial odor. • Takes a full year for compost pH levels to stabilize and dangerous pathogens to be killed off.[27]

[17] Composting Council of Canada, Composting Processing Technologies, 5, http://www.compost.org/pdf/compost_proc_tech_eng.pdf.*supra* note 14 at 5.

[18] *Types of Composting and Understanding the Process*, EPA, https://www.epa.gov/sustainable-management-food/types-composting-and-understanding-process (last visited Nov. 29, 2016).

[19] Composting Council of Canada, Composting Processing Technologies, 5, http://www.compost.org/pdf/compost_proc_tech_eng.pdf.*supra* note 14 at 5.

[20] *Types of Composting and Understanding the Process*, EPA, https://www.epa.gov/sustainable-management-food/types-composting-and-understanding-process (last visited Nov. 29, 2016).

[21] *Types of Composting and Understanding the Process*, EPA, https://www.epa.gov/sustainable-management-food/types-composting-and-understanding-process (last visited Nov. 29, 2016).

[22] *Types of Composting and Understanding the Process*, EPA, https://www.epa.gov/sustainable-management-food/types-composting-and-understanding-process (last visited Nov. 29, 2016).

[23] *See Anaerobic Composting*, Alternative Energy Tutorials, http://www.alternative-energy-tutorials.com/aerobic-composting/anaerobic-composting.html (last visited Nov. 29, 2016)

The Future of Compost in California

Composting is an integral part of California's new regulations for waste reduction and climate change mitigation. Assembly Bill 341 requires California to reduce, recycle, or compost 75 percent of current waste by 2020, and imposes specific composting requirements on local governments.[28] Assembly Bill 1383 adds explicit emissions targets to this goal by requiring the State Air Resources Board to implement a plan to reduce methane emissions by 40%, hydrofluorocarbon gas emissions by 40%, and anthropogenic black carbon by 50% below 2013 levels by 2030.[29]

California will need to greatly expand its current composting infrastructure to tackle the new composting mandates laid out by the state legislature. Experts estimate that meeting the state's 2020 waste and emissions reduction targets would require opening or expanding 30 to 100 new composting sites, at an estimated cost of $2 to $3 billion.[30]

It will take years to get all of these improvements and new facilities into place. Cost is one factor, as is the considerable time required to build facilities, demonstrate compliance with regulatory requirements, and obtain necessary permits. In addition to addressing NIMBY issues, existing facilities hoping to expand or transition to better composting techniques must comply with their local air districts' regulations on harmful air emissions, and with regional water boards' restrictions on inert contaminants in compost piles.

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[24] *See Recycling Water and Energy*, East Bay Municipal Utilities District, http://www.ebmud.com/wastewater/recycling-water-and-energy (last visited Nov. 29, 2016).

[25] *See Anaerobic Composting*, Alternative Energy Tutorials, http://www.alternative-energy-tutorials.com/aerobic-composting/anaerobic-composting.html (last visited Nov. 29, 2016).

[26] *See Anaerobic Composting*, Alternative Energy Tutorials, http://www.alternative-energy-tutorials.com/aerobic-composting/anaerobic-composting.html (last visited Nov. 29, 2016).

[27] *See Anaerobic Composting*, Alternative Energy Tutorials, http://www.alternative-energy-tutorials.com/aerobic-composting/anaerobic-composting.html (last visited Nov. 29, 2016).

[28] Cal. Pub. Res. Code § 42649.81

[29] Cal. Health & Safety § 39730.5.

[30] Howard Levinson, Department Direct, Materials Management and Local Assistance, CalRecycle, Panel discussion at Renewable Carbon Management in California (Nov. 1, 2016).

III. CALIFORNIA NEEDS A THOUGHTFUL AND COMPREHENSIVE COMPOSTING POLICY

Ensuring that there are enough facilities and clean organic materials to meet California's ambitious composting goals requires thoughtful planning. State legislators must consider, among other things, what types of facilities to build, where to locate facilities to maximize utility and minimize environmental impacts and NIMBY issues, and how to control for quality so that the end product retains value. Many of these questions stem from the fact that waste diversion is not the only goal inherent to state efforts to divert waste into the compost stream. Compost has significant value in rehabilitating degraded soil, fighting climate change, and in the case of community composting, addressing food insecurity in urban areas, among other things.

Compost Benefit: Soil Health

Organic compost restores nutrients to and protects organic matter in California's soil.[31] Most farms use synthetic fertilizers to encourage fast plant growth; replacing these synthetic fertilizers with compost would improve soil health, lower costs to farmers, and reduce nitrate and pesticide leaching into local drinking water.

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[31] *See Healthy Soils Initiative*, *California Department of Food and Agriculture*, https://www.cdfa.ca.gov/oefi/healthysoils (last visited Nov. 29, 2016).

[32] *See Compost vs. Fertilizer,* SF Gate, http://homeguides.sfgate.com/compost-vs-fertilizer-39096.html.

[33] *See Healthy Soils Initiative*, *California Department of Food and Agriculture*, https://www.cdfa.ca.gov/oefi/healthysoils (last visited Nov. 29, 2016).

[34] *See Healthy Soils Initiative*, *California Department of Food and Agriculture*, https://www.cdfa.ca.gov/oefi/healthysoils (last visited Nov. 29, 2016).

[35] In California, nitrogen runoff is particularly problematic. A 2009 study conducted by the University of California at Davis indicated that 419,000 tons of nitrogen leach into groundwater annually; agricultural application of nitrogen-enriched fertilizer and manure accounted for 88% of that number. *See The California Nitrogen Assessment: Challenges and Solutions for People, Agriculture, and the Environment*, UC Davis Agricultural Sustainability Institute, http://asi.ucdavis.edu/programs/sarep/research-initiatives/are/nutrient-mgmt/california-nitrogen-assessment/ExecutiveSummaryLayout_FINAL_reduced.pdf at 7.

[36] *See Compost vs. Fertilizer,* SF Gate, http://homeguides.sfgate.com/compost-vs-fertilizer-39096.html, *supra* note 32

Compost and Synthetic Fertilizer: Advantages and Disadvantages

Soil Amendment	Advantages	Disadvantages
Synthetic Fertilizer Synthetic fertilizers contain man-made mixes of chemicals like nitrogen, potassium, and magnesium.[32]	• Can be an efficient way to add nutrients to soil.[33] • Can encourage plants to grow in depleted soil.[34]	• Too much causes microbial imbalance and degrades soil quality over time. • Fertilizer runoff[35] pollutes groundwater and encourages algal growth in rivers and streams.[36]
Compost Compost is made of organic, decomposing materials and living organisms like fungi that feed on decaying plant matter.[37]	• Fights soil disease by killing pests and plant diseases.[38] • Prevents soil erosion.[39] • Improves drainage and soil permeability.[40] • Improves soil quality, reducing reliance on chemical fertilizers.[41] • Over time, enhances the chemical make-up of soils.[42]	• Large-scale application to farmland is challenging because compost is bulky.[43] • Releases nutrients slower than fertilizer, so plant-growth benefits are not as immediately clear as after fertilizer application.[44] • Depending on compost source, compost may contain harmful heavy metals.[45]

[37] *See Compost vs. Fertilizer,* SF Gate, http://homeguides.sfgate.com/compost-vs-fertilizer-39096.html, *supra* note 32.

[38] *See Composting Improves Soil Health*, Turning Earth http://turningearthllc.com/what-we-do-2/compost-and-soil-amendments/composting-improves-soil-health.

[39] *See Composting Improves Soil Health*, Turning Earth http://turningearthllc.com/what-we-do-2/compost-and-soil-amendments/composting-improves-soil-health.

[40] *See Composting Improves Soil Health*, Turning Earth http://turningearthllc.com/what-we-do-2/compost-and-soil-amendments/composting-improves-soil-health.

[41] *See* Brenda Platt & Nora Goldstein, *State of Composting in the U.S.*, BioCycle (July 2014), https://www.biocycle.net/2014/07/16/state-of-composting-in-the-u-s.

[42] *See* Brenda Platt & Nora Goldstein, *State of Composting in the U.S.*, BioCycle (July 2014), https://www.biocycle.net/2014/07/16/state-of-composting-in-the-u-s

[43] *See Benefits and Drawbacks of Composting*, Agnet.org, http://www.agnet.org/library.php?func=view&style=&type_id=2&id=20110804100401&print=1 (last visited Nov. 29, 2016).

[44] *See Benefits and Drawbacks of Composting*, Agnet.org, http://www.agnet.org/library.php?func=view&style=&type_id=2&id=20110804100401&print=1 (last visited Nov. 29, 2016).

[45] *See Benefits and Drawbacks of Composting*, Agnet.org, http://www.agnet.org/library.php?func=view&style=&type_id=2&id=20110804100401&print=1 (last visited Nov. 29, 2016).

Compost Benefit: Climate Change Mitigation

Organic compost can play a significant role in climate change mitigation when applied to degraded grasslands and farmland.[46]

The Marin Carbon Project (MCP), a collaboration between "agricultural institutions and producers, university researchers, county and federal agencies, and non-profit organizations,"[47] advocates using compost on California's degraded grasslands to increase soil carbon sequestration. Because compost stimulates plant growth, it increases the amount of carbon dioxide pulled out of the atmosphere through photosynthesis.[48] Compost also improves soil structure and resilience against erosion, thereby reducing the release of carbon and greenhouse gases from soil.[49] Applying compost likewise increases soil fertility and, indirectly, carbon storage in the ecosystem through biomass and sequestration of atmospheric carbon in the soil below the roots of grasses.[50] The benefits of compost come into particular focus when they are compared to other alternatives, like applying manure slurries or chemical fertilizers, which release more greenhouse gases than composted waste.[51]

With the right mix of feedstocks and processes that control for nitrous oxide and methane release, compost could have enormous carbon sequestration potential. At minimum, "[w]e can replace some more damaging [land management] practices," explains Dr. Whendee Silver, an MCP Steering Committee member. Other organizations like the Carbon Cycle Institute are also researching the potential for using compost to sequester carbon dioxide.

Meeting these goals requires increasing the overall quantity and quality of compost, as well as careful management and planning. For example, there is a tension between placing facilities near the largest populations – like Los Angeles and San Diego, which have the highest rate of organic waste in landfills – and ensuring proximity

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[46] Marcia S. DeLonge et al., A Lifecycle Model to Evaluate Carbon Sequestration Potential and Greenhouse Gas Dynamics of Managed Grasslands, 16 Ecosystems 962, 973 (2013), http://link.springer.com/article/10.1007/s10021-013-9660-5.

[47] *Who We Are*, Marin Carbon Project, http://www.marincarbonproject.org/pages/b9-pages/about/who-we-are (last visited Nov. 29, 2016).

[48] *What is Carbon Farming*, Marin Carbon Project, http://www.marincarbonproject.org/carbon-farming (last visited Nov. 29, 2016).

[49] State of Composting in the U.S.: What, Why, Where & How, supra note 9 at 41.

[50] Rebecca Ryals & Whendee L. Silver, Effects of organic matter amendments on net primary productivity and greenhouse gas emissions in annual grasslands, 23 Ecological Applications 46, 47 (2013), c-agg.org/cm_vault/files/docs/38/ryals_and_silver_ecoapps2013.pdf.

[51] *What are the Lifecycle Greenhouse Gas Implications of Soil Amendments on Rangelands?*, Marin Carbon Project, http://www.marincarbonproject.org/science/lifecycle-ghg-and-soil-amendments-on-rangelands (last visited Nov. 29, 2016).

to agricultural areas where the compost would have the most impact.[52] California also needs to increase overall composting quantity and quality, to meet its diversion goals, to produce quality compost for healthy soils and healthy agricultural systems, and to meet all of the government's climate change priorities. Solving this problem will take more than just an expansion of compost sites in the state. Composters also need access to more high-quality feedstock. This means that more people need to be educated about the importance of carefully sorting and composting their food scraps and yard trimmings, especially in urban areas where plastic contamination of organic waste is a concern.[53] Community composting is a critical part of this effort.

IV. BENEFITS OF COMMUNITY COMPOSTING

Although representing only a small part of the overall composting ecosystem in California, community composting supports the twin goals of mitigating climate change and aiding in soil rehabilitation by educating the public about compost's importance, and increasing the overall supply and quality of compost. Community composting also brings a number of local benefits, from creating jobs and promoting local food security.

Elements of Community Composting

Community composting is characterized by these elements:

- **Compost is processed at sites in the community**, such as community gardens, school gardens, and urban farms by community members. Community members can transport food scraps as they go about their daily lives, or composting organizations can use bikes and small vehicles to pick up food scraps from participants.
- **Community composting facilities take only select organic materials**, generally limited to vegetative matter.
- **Community composting collects source separated materials free of contaminants** and generated by small to medium generators such as restaurants, schools, single and multi family residences.
- **Compost is sold locally, or donated to urban farms**, where it can directly benefit the community. This is particularly important in the context of food insecurity; a lack of reliable access to nutritious food.

The elements defining community composting translate into multiple benefits within and beyond each community, while also supporting California's broader composting goals.

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[52] Brenda Smyth, CalRecycle, Presentation at the California Bioresources Alliance 11th Annual Symposium (Nov. 1 2016). Symposium materials available at: https://www.epa.gov/ca/2016-symposium-renewable-carbon-management-california.

[53] Plastic presents a serious environmental problem because it breaks down into smaller pieces but never completely decomposes. If mixed in with compost, these pieces may be eaten by animals or flow into waterways. *See* Mary Harrington, *Controlling Contamination in Collected Organics*, BioCycle (July 2015), https://www.biocycle.net/2015/07/14/controlling-contamination-in-collected-organic.

Creating Local Jobs and Local Benefits

Community composting empowers people to use a local resource in a way that benefits the entire community. Recycling organic matter locally creates jobs, local revenue, and business opportunities for the community.[54] According to one Oakland composter, community compost "comes from locally produced [waste], goes to local community gardens, produces food for the local community and their families, [is made by] local people, and [takes fewer/less] resources, cost, and energy [than] . . . truck[ing] waste around."

Hands-On Education Increases Composting

By involving local participants, community composting educates participants about food systems and encourages management of compost as a community asset.[55] This means more organic waste gets composted. For example, school composting programs allow young people to learn about the composting process and later advocate for it in their communities and at home.[56] One community composter in L.A. stressed the importance of creating composting hubs in "high schools, museums, churches – places people come together." He has created eight compost hubs in the county to educate students about the harmful effects of landfilling organic waste and the benefits of compost. These hubs of composting activity, he says, helps bring the larger community to a better understanding of composting's benefits.

There is precedent for this sort of approach. The push for recycling began as a grassroots movement, which meant there was already widespread education and ground level buy-in by the time governments began to mandate recycling.[57] Experience thus suggests that community composters can increase the amount of compost available for farming and carbon capture by encouraging more people to compost their waste. As a composter in Brooklyn pointed out: "people who have participated in community composting will already be prepared to compost and will understand why it's important."[58]

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[54] Brenda Platt et al., *State of Composting in the U.S.: What, Why, Where & How*, *Institute for Local Self-Reliance* 1, 14 (July 2014), ilsr.org/wp-content/.../state-of-composting-in-us.pdf., *supra* note 9 at 43.

[55] Brenda Platt et al., *State of Composting in the U.S.: What, Why, Where & How*, *Institute for Local Self-Reliance* 1, 14 (July 2014), ilsr.org/wp-content/.../state-of-composting-in-us.pdf. at 47.

[56] Brenda Platt et al., *State of Composting in the U.S.: What, Why, Where & How*, *Institute for Local Self-Reliance* 1, 14 (July 2014), ilsr.org/wp-content/.../state-of-composting-in-us.pdf. at 47.

[57] For a timeline of the history of recycling in the United States, *see* Sarah Goodyear, *A Brief History of Household Recycling*, Citylab.com, http://www.citylab.com/city-makers-connections/recycling.

[58] Kathryn Garcia, NYC Community Composting Report (2014), https://www1.nyc.gov/assets/dsny/docs/about_2014-community-composting-report-LL77_0815.pdf.

Community Composters Fill Necessary Gaps

Community composting also fills gaps left by industrial composting by serving people who might not have access to composting services offered by their waste hauler. This is true now, as California builds out its industrial composting infrastructure, and will remain true in the future, because industrial facilities cannot reach certain areas of the state. Community composters also ensure that people embrace composting and know how to do it when the composting industry does reach the necessary size.

Addressing Food Scarcity

Urban farms, which sometimes provide healthy food to food insecure people, need high-quality, inexpensive compost to operate and continue to feed locals. In this way, community compost supports local food systems. Further, the high-quality compost created by community composting organizations has numerous benefits, including its nutrient richness and anti-pest properties. This helps make the land we do use for agriculture more productive.

Connecting the Global to the Local

Seeing the local impact of composting helps connect people to an abstract problem like climate change. By grounding the global in the local, community composting increases awareness and support for critical initiatives like the Marin Carbon Project.

Environmental and Economic Gains from Rural Composting

In rural areas, farmers can use organic waste to generate low cost compost. This reduces their costs, because they do not need to buy compost. Applying compost also "increase[s] soil moisture and reduce[s] water seepage below the root zone," thereby reducing groundwater contamination from industrial fertilizers.[59] Farmers can also use significantly less organic compost than they do chemical fertilizers, which means less nitrate leaching into the groundwater. Nitrates are a primary contaminant in California's drinking water, causing blue baby syndrome and other health problems.[60]

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[59] US Composting Council, *USCC Factsheet: Using Compost in Stormwater Management* (2008), compostingcouncil.org/wp/wp.../06/Compost-Use-for-Stormwater-Management.pdf.

[60] Robert L. Mahle et al., *Nitrate and Groundwater* (2007), http://www.extension.uidaho.edu/nutrient/waterquality/PDF/Nitrate%20and%20Groundwater.pdf.

Energy Savings

Large-scale industrial composting is important to rapidly expanding California's composting infrastructure, but it does not create the same social benefits as community composting. Transporting volumes of waste to a centralized, far-removed composting facility not only deprives the community generating the organic matter of a possible resource, but also requires more energy than community composting.[61] Industrial composters need hauling trucks; community composters travel by bike or in smaller vehicles, and may even process waste on-site.[62]

High Quality, Environmentally Friendly Compost

Community composting produces high quality compost from limited materials for use in either urban or rural areas. Industrial facilities have to process a much more diverse range of materials, from compostable packaging to bones. The scale of industrial composting operations also complicates quality control. As a result, industrial compost contains about 5% plastic, as plastic chairs, pill bottles, forks, and old shoes end up being processed alongside organic matter.[63]

In contrast, small-scale community composting facilities are able to select only quality organic waste. Those using vermicomposting (worms) are even more selective, taking only vegetable materials with no meat, bones, or oils.

This type of organic compost yields numerous environmental benefits. The humus in compost makes soil more resilient to erosion by improving the binding ability of soil particles.[64] The adhesive quality of composted organic matter and its large surface areas increase the soil's permeability, porosity, and water retention.[65] Compost keeps rainwater near plant roots, where it is most needed.[66] As compost improves soil quality and structure, it reduces irrigation demands and runoff, conserving water use and protecting watersheds from pollution.[67] Moreover,

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[61] Cat Johnson, *Community Composting Grows from a Seed into a Movement*, Shareable (Jan. 26, 2016), http://www.shareable.net/blog/community-composting-grows-from-a-seed-into-a-movement.

[62] Cat Johnson, *Community Composting Grows from a Seed into a Movement*, Shareable (Jan. 26, 2016), http://www.shareable.net/blog/community-composting-grows-from-a-seed-into-a-movement.

[63] *See Mary* Harrington, *Controlling Contamination in Collected Organics*, BioCycle (July 2015), https://www.biocycle.net/2015/07/14/controlling-contamination-in-collected-organic. , *supra* note 53. Also, a plastic chair in a large compost pile was seen by one the authors of this paper when visiting an industrial composting facility.

[64] Brenda Platt et al., *State of Composting in the U.S.: What, Why, Where & How*, *Institute for Local Self-Reliance* 1, 14 (July 2014), ilsr.org/wp-content/.../state-of-composting-in-us.pdf., *supra* note 9 at 38

[65] *Benefits of Compost*, CalRecycle, http://www.calrecycle.ca.gov/organics/compostmulch/BenefitsOf.htm. (last visited Sept. 18, 2016).

[66] *Benefits of Compost*, CalRecycle, http://www.calrecycle.ca.gov/organics/compostmulch/BenefitsOf.htm. (last visited Sept. 18, 2016).

[67] Brenda Platt et al., *State of Composting in the U.S.: What, Why, Where & How*, *Institute for Local Self-Reliance* 1, 14 (July 2014), ilsr.org/wp-content/.../state-of-composting-in-us.pdf., *supra* note 9 at 39.

applying compost reduces reliance on chemical fertilizers and pesticides, because compost supplies an incremental release of nutrients essential to plant growth.[68] Less reliance on these chemicals, in turn, reduces runoff pollution.[69]

Experimentation and Research Benefits

Community composters are free to design their composting operations to create best practices, and maximize the quality of the resulting product. They can tailor their programs to meet community needs, and may even involve locals in finding the best way to compost. With each improvement, community composters contribute to existing research on and knowledge about composting techniques.

It is important that we preserve space for community composting as California expands its composting capacity. On the one hand, industrial composting is critical for reaching scale and improving industry standards. On the other, community composting enlarges the composting pie and diversifies the quality and content of available compost. Together, community composting and industrial composting create the perfect solution.

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[68] Brenda Platt et al., *State of Composting in the U.S.: What, Why, Where & How*, *Institute for Local Self-Reliance* 1, 14 (July 2014), ilsr.org/wp-content/.../state-of-composting-in-us.pdf., *supra* note 9 at 39.

[69] Brenda Platt et al., *State of Composting in the U.S.: What, Why, Where & How*, *Institute for Local Self-Reliance* 1, 14 (July 2014), ilsr.org/wp-content/.../state-of-composting-in-us.pdf., *supra* note 9 at 39.

V. OBSTACLES TO COMMUNITY COMPOSTING

Legal Background

While California's efforts to promote composting are important, the state framework creates problems for community composting operations. For example, AB 1826 sets up a potentially expensive mandate on local government without providing any state funding.[70] This has incentivized many municipalities and counties to enter into exclusive franchise agreements with large waste management companies, where one company gets the right to haul all of the organic waste produced in a given municipality.[71] The appeal is understandable: exclusive agreements provide cities with the assurance that their waste management goals will be met, and reduces administrative inefficiencies resulting from managing multiple waste haulers in a single jurisdiction.

Unfortunately, exclusive franchise agreements make it very difficult for community composters to operate. With a few narrow exceptions, the franchise holder has the exclusive right to pick up and transport all waste generated in the city.[72] Waste management companies have used these agreements to preclude community composers from picking up waste from residential units and small businesses.[73] The result is that composters cannot aggregate waste from various locations. They are often limited to helping organizations such as schools and churches that generate sufficient organic waste in isolation to compost organic waste on site. The exclusive franchise restrictions also create legal uncertainty, which keeps community composters from expanding their operations.

Further, state legislation has tasked multiple agencies with regulating composting, creating a web of rules that small composters find difficult to follow. The rules are also contradictory. For example, local governments can – and do – pass zoning and nuisance laws that unduly restrict community composting operations. These laws undermine CalRecycle's statewide regulations that seek to facilitate community composting operations by removing permitting burdens.[74] This inconsistency means that community composters do not know whether they are operating legally.

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[70] Cal. Pub. Res. Code § 42649.8. Further, Assembly Bill 1826 set out a framework for local jurisdictions to provide composting. The bill requires businesses to arrange for composting of organic waste, and requires local governments to create a plan to facilitate this composting. By April 1, 2016, businesses that produce eight cubic yards of waste per week must compost. By January 1, 2017, businesses that produce four cubic yards of waste must compost, and by January 1, 2020, businesses producing 2 cubic yards of waste must compost, if the state determines that its waste reduction goals have not been met.

[71] See, e.g., Sam Levin, Oakland's Trash Program Promotes Waste, east bay express, (July 15, 2015) http://www.eastbayexpress.com/oakland/oaklands-trash-program-promotes-waste/Content?oid=4412694.

[72] *See, e.g.,* Mixed Materials and Organics Collection Services Contract: Executed Between the City of Oakland and Waste Management Serves of Alameda County, Inc. § 5.01. The full contract can be found at: http://www2.oaklandnet.com/oakca1/groups/pwa/documents/memorandum/oak051776.pdf

[73] Exclusive franchise agreements have the effect of leaving regulation of the waste hauling space to one waste management company. Because the company alone owns and has the right to collect organic waste, any actor that wants to engage in waste collection must go through the company.

[74] *See* Cal. Pub. Res. Code §§ 40502, 43020, and 43021.

Case Studies: Cities in California

Oakland

"Lisa" started "VermiCommune" a social experiment in her backyard. Lisa bought earthworms and bins, and started making great compost. Her garden flourished. Her friends started giving her their food scraps to process so they, too, would have quality compost to use in their gardens. Lisa had an idea: *What if I could use the entire community's organic waste to help urban farms, community gardens, and my neighbors grow their own food?*

A few months ago, Lisa launched a small pilot project in Oakland – a 2.5-cubic-yard vermicomposting bin that can process up to 100 pounds of vegan organic waste a day – with no odor or run-off. She designed and built the bin herself.

The heart of her composting operation? 100,000 African night crawlers. These worms are bigger, hardier, and faster at processing waste than the common earthworm. Lisa blends organic waste into a mix, buries the waste in her bin, and the worms get to work.

The resulting compost is fluffy and smells like fresh soil. It also controls pests and contains high levels of organic nitrogen, crucial for plant starts and for healing plant roots after transplants. "The worm itself is the beginning and end of everything that has created life on earth," Lisa remarked.

Lisa's next step is to figure out what each type of compost user needs, and how she can tailor her services to suit them. She gives away 25-pound bags of her compost to interested community members with one small request: that they apply the compost to only half of their garden plots and report back on crop yield, pest tolerance, and drought tolerance.

Lisa envisions that, one day, her bins and premium compost will be prevalent in the community: "There could be a bin at every community garden center!" With high quality organic waste becoming high quality compost, waste becomes a valuable local resource, helping to combat food insecurity, employing locals, and increasing the use of pesticide free, organic fertilizer.

Lisa's biggest obstacle is Oakland's exclusive franchise agreement with the country's largest waste management company, Waste Management. Under this contract, Waste Management of Alameda County (WMAC) has the exclusive right to collect and transport waste in Oakland. The terms of Oakland's agreement with WMAC are reflected in Alameda and Oakland's municipal codes. As a result, although Lisa would love to collect and process waste for more local businesses, hauling prohibitions at both the county[75] and city[76] levels prevent her from including any collection services as part of VermiCommune's operations.

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[75] "No person shall establish, operate, or carry on the business of collecting . . . compostable materials . . . within a county collection service zone, unless the board of supervisors has granted or issued an exclusive or nonexclusive franchise permit or other authorization." Alameda, Cal., Ordinances ch. 6.40, art. IV, § 6.40.290(B).

[76] Waste Management of Alameda—the designated Mixed Materials & Organics Collector—has the exclusive right to transport organic materials produced in the City, subject to limited exceptions. Oakland, Cal., Ordinances ch. 8.28, § 8.28.070(A).

Exclusive franchise agreements leave regulation of waste hauling to waste management companies – with troubling results. Since Lisa started VermiCommune, she has approached WMAC multiple times for an exemption from the company's exclusive franchise agreement with Oakland. Her attempts have proven unsuccessful. At one point, WMAC told Lisa that it would only exempt VermiCommune if she processed a single type of waste (e.g., all lettuce). These local restrictions are particularly problematic because state law otherwise permits Lisa to operate. New CalRecycle regulations recognize the importance of community composting, and have specifically exempted vermicomposting, activities that involve temperatures below 122 degrees Fahrenheit,[77] and small composting operations.

San Diego

Sarah worked in the financial sector for 10 years before transitioning to work on waste recovery issues in San Diego. In 2015, her nonprofit organization Inika Small Earth incubated a social enterprise started Food2Soil. Sarah recognized the potential for communities to have a massive impact on waste diversion and recovery. As someone with a background in finance, she saw that there was additional value in waste that was not yet – but could be – recovered in San Diego. So she set out to realize that value.

Sarah, a program manager, and three part-time compost technicians keep Food2Soil running. Food2Soil facilitates a collective effort than enables restaurants, community gardens, and soil-growers to work together to divert organic waste while improving local soil quality and creating jobs within the community. Kitchen staff from participating restaurants source-separate pre-consumer (unprocessed) vegetative matter, which is collected in 6.5 gallon buckets and taken to nearby community gardens or urban farms (the comp-host) for processing. Food2Soil's technicians then manage and monitor the composting process from start to finish using a web-based tracking tool that records data such as feedstock volume, temperature, and turning dates. Once ready, the high-quality and nutrient-rich compost is made available for free-of-charge to the comp-host's member gardeners or farmers. As of 2017, Food2Soil had diverted 42.09 tons of organic waste from landfills and sequestered as much carbon as 31.55 acres of U.S. forests would in one year.[78]

Through Food2Soil, Sarah would like to lay the groundwork for community composting in San Diego. She further hopes to facilitate professional and efficient relationships between skilled community composters, organic waste generators, and community sites that have the capacity and desire to compost. She also imagines waste recovery hubs around San Diego where raw materials of high value can be transformed into a product of high value through secondary or artisanal industries. But Sarah is concerned that municipal laws may prohibit what she is currently doing, and what she wants to do. The Zoning Ordinances of the various cities within San Diego County do not specifically addresses this type of community composting. The City of San Diego's regulations on community

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[77] While vermicomposting is listed as an excluded activity, CalRecycle regulations note that "handling of compostable material prior to and after its use as a growth medium during the vermicomposting process" remains subject to regulation. However, "handling of compostable materials is an excluded activity if . . . the materials are handled in such a way to preclude their reaching temperatures at or above 122 degrees Fahrenheit." 14 C.C.R. § 17855(a)(2), (a)(5)(J).

[78] Food2Soil, *Our Collective Impact*, https://docs.google.com/spreadsheets/d/1CUkbEluuxPkSgbw38viAnDVQxCTzOu9gcNYrTPphFCQ/pubhtml?gid=1466933108&single=true.

gardening allow on-site composting with waste generated on-site or contributed by active gardening members.[79] San Diego's Municipal Code exempts "mixed organics composting facilities"[80] from regulation if they "process or have 500 cubic yards or less of . . . organic material feedstock and active compost on-site."[81] Backyard composting operations, however, are only exempt if "the compost is used on-site."[82]

These municipal laws restrict Food2Compost's operation in two principal ways. First, even if Food2Compost could match composters with community members with backyards, it would not be able to donate or sell any compost from these operations to urban farms and gardens. Second, the Zoning Ordinance severely limits the amount of compost community gardeners can receive, by limiting contributions of organic materials to those from members only.

VI. NEW YORK: ENCOURAGING COMMUNITY COMPOSTING THROUGH REGULATION

Many states are actively encouraging community composting. These states offer California examples of how to successfully integrate community composting into an overall composting plan. One such place is New York, which has taken the lead nationally in community composting.

"Lindsey" came back from a trip abroad with an appreciation for the importance of composting – and the realization that she had no idea how to implement her new-found passion at home in New York City. "I didn't know how to dispose of my food waste now that I knew that it is not environmentally friendly to put it in the garbage," she said. The company she founded to solve this problem, Common Compost NYC, caters mainly to larger producers of organic waste. However, she recently started a pilot program in a handful of New York neighborhoods where bike messengers pick up organic waste from homes and take it to be composted.

New York City supports non-profit community composters with grants and ample zoning variances. The city's Department of Sanitation also offers a Master Composter Certificate Program.[83]

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[79] Zoning Ordinance of San Diego Cty., § 6912. These regulations do not define "active members."

[80] Mixed organics composting facilities are defined as "centers that produce a humus-like material under a process of managed biological decomposition from green materials, leaves, tree trimmings, untreated wood, shrubbery cuttings, kelp, other plant material, manure, or urea that has been source-separated from the municipal solid waste stream." San Diego Municipal Code ch. 14, § 141.0620.

[81] Mixed organics composting facilities are defined as "centers that produce a humus-like material under a process of managed biological decomposition from green materials, leaves, tree trimmings, untreated wood, shrubbery cuttings, kelp, other plant material, manure, or urea that has been source-separated from the municipal solid waste stream." San Diego Municipal Code ch. 14, § 141.0620.

[82] Mixed organics composting facilities are defined as "centers that produce a humus-like material under a process of managed biological decomposition from green materials, leaves, tree trimmings, untreated wood, shrubbery cuttings, kelp, other plant material, manure, or urea that has been source-separated from the municipal solid waste stream." San Diego Municipal Code ch. 14, § 141.0620.

[83] *See* Master Composter Certification Program, N. Y.C. Dep't. of Sanitation (last visited Nov. 29, 2016) http://www1.nyc.gov/assets/dsny/zerowaste/residents/master-composter-certificate-program.shtml.

That New York's regulatory framework is favorable to community composting is a combination of forethought and good luck. New York's Department of Sanitation created the NYC Compost Project in 1993 to encourage home and community composting.[84] This program was expanded in 2012, and the Department of Sanitation gave city funds and management support to three high performing community composting sites.[85] Further, because of the infamous historical relationship between the city's waste management companies and the mafia, New York maintains tight regulatory control of the industry through its Business Integrity Commission.[86] While the Business Integrity Commission does not see its role as promoting community compost, it has limited the power of large-scale waste haulers, which indirectly protects community composters.[87]

Under the guidance and care of the city, community composting has taken off in New York. There are 225 compost sites affiliated with the NYC Compost Project.[88] These vary in size from 1 square foot to over 20,000 square feet – larger than four basketball courts.[89] While volunteers staff most compost sites, 21 percent employ paid staff.[90] Lindsey's bicycle collection program, for example, employs a site manager and two paid employees to operate the bikes.

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[84] *See* Master Composter Certification Program, N. Y.C. Dep't. of Sanitation (last visited Nov. 29, 2016) http://www1.nyc.gov/assets/dsny/zerowaste/residents/master-composter-certificate-program.shtml.

[85] *See* Master Composter Certification Program, N. Y.C. Dep't. of Sanitation (last visited Nov. 29, 2016) http://www1.nyc.gov/assets/dsny/zerowaste/residents/master-composter-certificate-program.shtml.

[86] *See* About BIC, N.Y.C. Bus. Integrety Comm'n (last visited Nov. 29, 2016) http://www.nyc.gov/html/bic/html/about/about.shtml.

[87] Some composters actually see the Business Integrity Commission's focus on combating organized crime as a hindrance to small-scale composting. For example, they make it very difficult and expensive for community composters to get hauling permits. *See* Garcia, *supra* note 2 at 20.

[88] Kathryn Garcia, NYC Community Composting Report (2014), https://www1.nyc.gov/assets/dsny/docs/about_2014-community-composting-report-LL77_0815.pdf at 6.

[89] Kathryn Garcia, NYC Community Composting Report (2014), https://www1.nyc.gov/assets/dsny/docs/about_2014-community-composting-report-LL77_0815.pdf at 6.

[90] Kathryn Garcia, NYC Community Composting Report (2014), https://www1.nyc.gov/assets/dsny/docs/about_2014-community-composting-report-LL77_0815.pdf at 6.

VII. RECOMMENDATIONS

Community composting has the potential to bring numerous environmental and social benefits to municipalities. To create space for community composting, policymakers at both the state and local levels need to take action that would ensure that community composters can operate legally as long as they follow best practices.

The recommendations below detail a few options the state and localities have in providing room for community composters in waste diversion and management. They include: (1) adding carve-outs to exclusive franchise agreements; (2) eliminating the statewide ban on farmers composting on other people's land; (3) amending zoning laws; and (4) adopting best practices guidelines.

1. Create a Statewide Exemption from Exclusive Franchise Agreements

We recommend that California require municipalities to exempt community composters from their exclusive franchise agreements with waste management companies.

Problem:

Oakland – Lisa's biggest obstacle is Oakland's exclusive franchise agreement with Waste Management of Alameda County (WMAC). Under this contract, WMAC has the exclusive right to collect and transport waste in Oakland. The terms of Oakland's agreement with WMAC are reflected in Alameda and Oakland's municipal codes. As a result, although Lisa would love to collect and process waste for more local businesses, hauling prohibitions at both the county[91] and city[92] levels prevent her from including any collection services as part of VermiCommune's operations.

Sacramento – "Daniel" and his crew at "Compost Collaboration" pick up source-separated waste on bikes and take it to urban farms and community gardens in food insecure communities. While Sacramento is currently a multi-hauler jurisdiction and has not granted an exclusive franchise agreement to any one facility, it is possible that either the city or the county will implement an exclusive franchise agreement with a major waste management company sometime in the near future. If it does, Compost Collaboration may not be able to collect and transport organic waste.

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[91] "No person shall establish, operate, or carry on the business of collecting . . . compostable materials . . . within a county collection service zone, unless the board of supervisors has granted or issued an exclusive or nonexclusive franchise permit or other authorization." Alameda, Cal., Ordinances ch. 6.40, art. IV, § 6.40.290(B).

[92] Waste Management of Alameda — the designated Mixed Materials & Organics Collector — has the exclusive right to transport organic materials produced in the City, subject to limited exceptions. Oakland, Cal., Ordinances ch. 8.28, § 8.28.070(A).

Los Angeles – The County is divided into eleven zones, each of which grants a ten-year exclusive contract to one hauler.[93] As each zone will only permit one hauler to collect waste, community composters would not be able to haul and process off-site waste.

Solution:

The state could pass legislation exempting community composting operations that meet certain qualifications from exclusive franchise agreements. This could take the form of a blanket exemption, a requirement that municipalities include specific contractual language that creates a carve-out for small operations, or a requirement that local codes be amended to grant hauling rights to community composters alongside waste management companies, among other options. A legislative mandate could state that, for example:

> "The provision by a business or residence of up to 1 cubic yard of green material or vegetative material to and collection of such material by a composting organization conducting an excluded activity as per 14 Cal. Code Regs. § 17855 shall not constitute a breach by the city, county, or local agency of a franchise, contract, license, permit, or otherwise that provides the agency, other local agencies, or solid waste enteprises the exclusive right to provide solid waste handling services of any class or type within all or any part of the territory of the local agency."

Alternatively, a contractual insert could state, for example, that:

> "This agreement does not prevent hauling, collection, or distribution of green material, or vegetative material per customer by a composting organization conducting an excluded activity as per 14 Cal. Code Regs. § 17855."

As a third option, local governments could act on their own to require or encourage exclusive franchise holders to accept a carve-out for community composting operations in the franchise agreement. The language from the contractual insert above might be a good starting point.

2. Eliminate Farm Composting Limitations

We recommend that California revise CalRecycle regulations that currently prevent farmers from creating composting cooperatives.

Problem:

Sonoma –Hoping to produce the compost needed for agriculture collectively, a group of farmers in Sonoma came up with the idea of creating a farmer composting cooperative that would operate as a single permitted entity. Members would attend annual workshops on composting techniques and applicable regulatory

[93] Soumya Karlamangla, *Trash Haulers Will Compete for Exclusive Rights to L.A.'s Garbage*, L.A. Times (April 15, 2014), http://articles.latimes.com/2014/apr/15/local/la-me-garcetti-zero-waste-20140415.

requirements. Select farmers in the cooperative would be in charge of composting the members' organic materials, but every member would have access to the resulting compost. This cooperative would allow farmers to make use of the waste their farms are generating to increase crop output and improve the environment. Despite these benefits, state law stands as an obstacle to its realization.

Solution:

Farmers should be able to form a cooperative wherein composting would take place on select farms, with the resulting compost available to every member of the cooperative. To accomplish this, CalRecycle regulations must be revised to eliminate the following restrictions:

(1) Restrictions on the type of feedstock farmers may use. Unless they comply with applicable CalRecycle regulations, farmers are only allowed to use "agricultural material" as their compost feedstock. The regulations define "agricultural material" as "material of plant or animal origin, which results directly from the conduct of agriculture . . . and similar activities undertaken for the production of food or fiber for human or animal consumption or use." 14 Cal.Code Regs. § 17852(a)(5). These restrictions keep farmers from composting a number of materials, such as food waste from restaurants or landscaping materials.

(2) Restrictions on where farmers can source organic material for composting. As the CalRecycle regulations are currently written, farmers can only compost their own agricultural materials. *Id*. At § 17855(a)(1). Eliminating this restriction would allow them to compost using materials from off-site.

(3) Restrictions on what farmers can do with the compost they create. Section 17855 of the regulations restrict not only sources of organic material used, but what farmers can do with the compost they produce. The section excludes a composting operation only "if it handles agricultural material *derived from an agricultural site,* and *returns a similar amount of the material produced to that same agricultural site*." *Id*. at § 17855(a)(1) (emphasis added). Under this section, farmers cannot share compost – wherever the agricultural material came from is where the compost created from it must go.

3. Placing Limits on Municipal Regulation of Community Composting

We recommend that California require local jurisdictions to update zoning ordinances and laws that unduly restrict community composting operations complying with best practices.

Problem:

San Diego – Although CalRecycle encourages community composting by exempting small-scale composting with off-site materials,[94] city regulations have not caught up.[95] The City of San Diego's regulation of backyard composting (similar to many other city ordinances) limits composting, whether by limiting what feedstock can be composted or how the resulting compost can be used.

Solution:

A mandate that local jurisdictions allow community composting operating under specified conditions ensures that municipalities do not add regulatory hurdles to community composting beyond what state law requires. Municipalities would have flexibility in determining how they implement the statewide mandate.

Specifically, local zoning ordinances would not be allowed to ban or limit community composters' ability to compost food scraps from off-site waste producers, except with regard to volume of feedstock or active compost on-site. Further, local government should not be able to ban community composting from areas zoned for residential or commercial use, provided that composters follow best practices.

The legislation could state, for example:

> "Notwithstanding any local regulations or ordinances to the contrary, no city, county, or local agency shall:
>
> a) Prohibit composting organization conducting an excluded activity as per 14 Cal. Code Regs. §17855;
>
> b) Prohibit a business or residence from providing up to 200 gallons per week of green or vegetative material to an organization conducting an activity exempted under (a); or
>
> c) Restrict organizations conducting an activity exempted under (a) from selling or donating compost to urban farms, community gardens, educational facilities, or carbon capture projects."

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[94] Prior to the 2016 amendments, CalRecycle regulations exempted 1) operations that handled up to 500 cubic yards of "compostable materials . . . *generated on-site*" and 2) "non-commercial composting" of materials "*generated and used on-site*." The relevant section no longer contains an "on-site" requirement: "composting green material, agricultural material, food material, and vegetative food material, alone or in combination, is an excluded activity if the total amount of feedstock and compost on-site at any one time does not exceed 100 cubic yards and 750 square feet." 14 C.C.R. § 17855(a)(4) (emphasis added).

[95] *See infra* San Diego's community gardening and backyard composting regulations.

4. Adopt Best Practices for Community Composting

We recommend that CalRecycle identify or approve a list of best management practices for community composters.

Problem:

Los Angeles – Tiara Kelly, who works at the Los Angeles Local Enforcement Agency, received a complaint from a citizen about a smelly community compost site that had been opened next to her home. As a home gardener herself, Kelly was sympathetic to the composter, but she felt that the person writing the complaint had legitimate grievances as well. Kelly cited the composter, but was distressed to learn that they did not know about the simple steps they could have taken to reduce the odor from their pile.[96]

Solution:

Best practices help ensure that community composting operations do not create a nuisance. In residential areas, best practices would address neighbors' concerns about odor, vectors, and perceived health risks. As long as composters complied with these practices and stayed below a certain size threshold, they would not need to go through a state or municipal permitting process.

Training local enforcement agencies[97] on best management practices for community composting would increase understanding, and improve their relationship with community composters. Community members could also report violations to local regulators, who could fine the relevant composter or temporarily shut down his/her operations until they comply with best practices.

Organizations such as the Institute for Local Self-Reliance (ILSR) and the Highfields Center for Composting have provided online guides and toolkits for compost site operators. These guides cover topics such as optimal carbon to nitrogen (C:N) ratios, temperature, oxygen level, moisture, particle size, pH, and bulk density (the weight of the composting material by volume).[98] The ILSR also warns composters about "what to avoid" in selecting feedstocks and handling food scraps.[99] For example, "using the correct C:N ratio, mixing wet feedstocks with porous bulking amendments, [and] aerating the composting system" are possible steps that composters can take to control odor.[100]

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[96] This scenario is hypothetical, but based on a real situation.

[97] Local enforcement agencies carry out the State's waste management programs. They are responsible for "ensuring the correct operation . . . of solid waste facilities" and "guaranteeing the proper storage and transportation of solid wastes." *Local Enforcement Agency (LEA) Central*, CalRecycle http://www.calrecycle.ca.gov/LEA (last visited Nov. 29, 2016).

[98] Brenda Platt, Neighborhood Soil Rebuilders' Capstone Project Compost Best Management Practices & Monitoring Guide, Institute for Local Self-Reliance, (Oct. 1, 2015), https://ilsr.org/composting-best-practices/#Oxygen.

[99] Brenda Platt, Neighborhood Soil Rebuilders' Capstone Project Compost Best Management Practices & Monitoring Guide, Institute for Local Self-Reliance, (Oct. 1, 2015), https://ilsr.org/composting-best-practices/#Oxygen.

[100] Brenda Platt, Neighborhood Soil Rebuilders' Capstone Project Compost Best Management Practices & Monitoring Guide, Institute for Local Self-Reliance, (Oct. 1, 2015), https://ilsr.org/composting-best-practices/#Oxygen.

To ensure that best management practices conform with the most current science on composting techniques, CalRecycle (perhaps with the help of ILSR and/or other organizations) would be well advised to update these practices regularly to reflect the iterative learning of entities like the Marin Carbon Project.

VII. CONCLUSION

Composting is a vital tool that California can use to divert waste from landfills and fight climate change. Maximizing these benefits requires the state to embrace both industrial and community composting. Community composting facilities are critical to educating the public about the importance of composting and getting community buy-in for the entire industry. For community composters to educate the public about the importance of composting, create local jobs, and provide support to food producers in urban deserts, state and local governments must create a space in which community composters can thrive. SELC has proposed four concrete steps that governments can take, informed by our conversations with composters both in California and in New York. When community composting flourishes in California, everyone reaps the benefits.