

YES! IN MY BACKYARD:

A Home Composting Guide for Local Government

by Brenda Platt and Colton Fagundes

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The Institute for Local Self-Reliance (ILSR) is a national nonprofit research and educational organization that since 1974, has championed local self-reliance, a strategy that underscores the need for humanly scaled institutions and economies and the widest possible distribution of ownership. ILSR's mission is to provide innovative strategies, working models, and timely information to support strong, community rooted, environmentally sound, and equitable local economies. Our Composting for Community Initiative is advancing composting to enhance local soils and community health, support local food production, sequester carbon, cut waste, and create community development opportunities. We are specifically interested in catalyzing distributed food waste composting options – home, community, and on-farm composting – in addition to larger-scale facilities. This report is part of our Neighborhood Soil Rebuilders composter training program and our ongoing work to document working models and share tips for replication.

About the Authors

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Asters in co-author Brenda Platt's garden.
Credit: Institute for Local Self-Reliance

A family tending to a FreeGarden™ Earth compost bin in their backyard. Credit: Oregon Metro

Do-It-Yourself 2-bin compost system.
Credit: Tilth Alliance

The compost demonstration site at City Farmer in Vancouver. Credit: City Farmer

ECO City Farms' worms in Bladensburg, Maryland.
Credit: Institute for Local Self-Reliance

Earth Machines at the Bainbridge Ave. Community Garden in the Bronx. Credit: NYC Compost Project hosted by The New York Botanical Garden.

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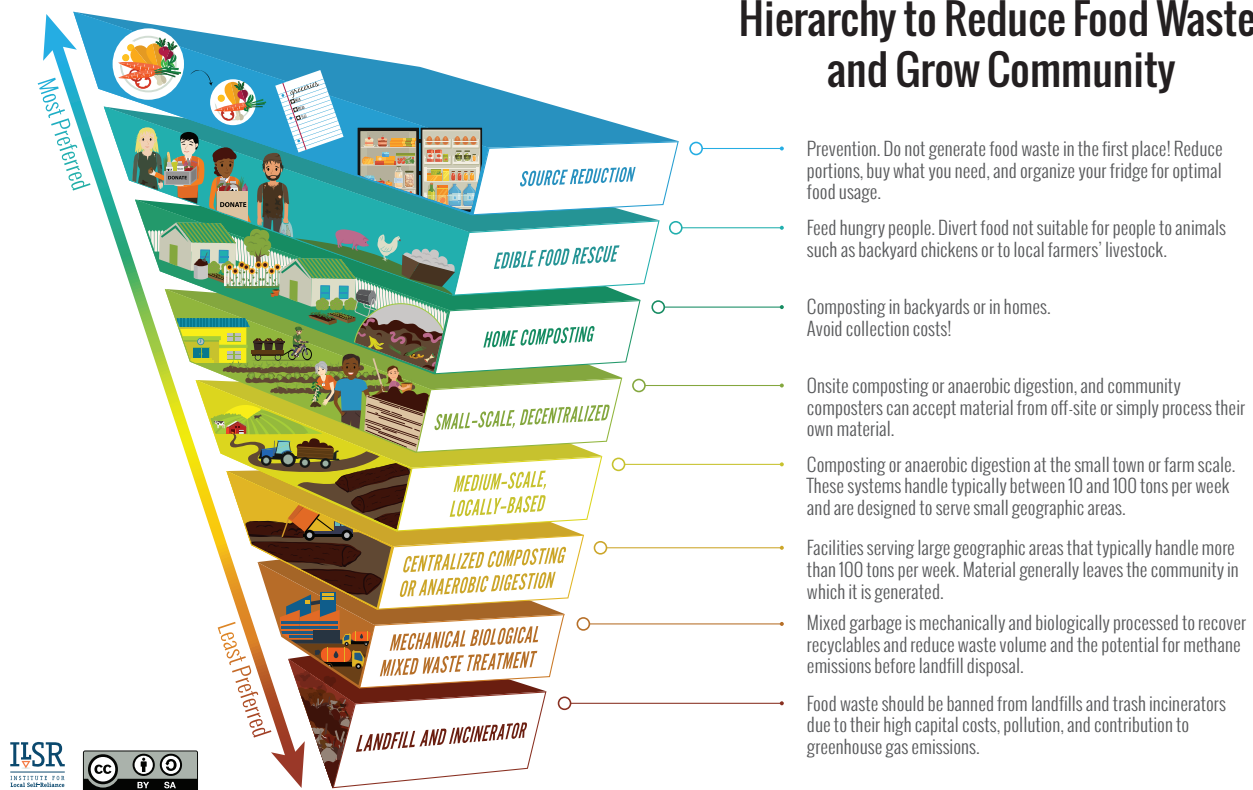
Compost is the dark, crumbly, earthy smelling material produced by the decomposition of organic materials such as food scraps and yard trimmings. When added to soil, compost sequesters carbon, improves plant growth, conserves water, reduces reliance on chemical pesticides and fertilizers, and helps prevent nutrient runoff and soil erosion.¹ At-home or backyard composting has additional benefits. It saves local government money by avoiding the need to collect and process material. By directly engaging citizens in the act of converting waste into a resource, home composting also builds a critical culture of composting know-how. This, in turn, will help build support for larger scale municipal efforts.

With all these benefits, why aren't more people composting at home? There is a misconception that adoption is low due to poor system designs, lack of space, and odors.² We disagree. Adoption is low because citizens are not incentivized to home compost and are not provided the training, guidance, equipment, and exposure to best practices to succeed. Composting is increasingly recognized as the

¹ For a more in-depth discussion of the benefits of composting, see Brenda Platt, et al., *State of Composting in the U.S.: What, Why, Where & How* (Institute for Local Self-Reliance, 2014), available online at: <https://ilsr.org/state-of-composting/>.

² See, for instance, *A Roadmap to Reduce U.S. Food Waste by 20 Percent*, ReFED (Rethink Food Waste through Economics and Data), 2016, pg. 77, available online at: <http://www.refed.com/>.

Hierarchy to Reduce Food Waste and Grow Community



▲ ILSR's Hierarchy to Reduce Food Waste & Grow Community highlights the importance of locally based composting solutions as a priority over large-scale regional solutions. Available for download in poster and other formats at <https://ilsr.org/food-waste-hierarchy>. Source: *Institute for Local Self-Reliance*

predominate method for recycling food waste. Sadly, little attention is paid to home composting, though it is among the best opportunities to reduce food waste, especially in the near-term and especially in areas lacking facilities to compost.

The potential to expand home composting is largely untapped but massive.

Another misconception about home composting is that it can only divert a small portion of residential waste. We disagree with this too. Studies indicate that 23 to 83 pounds per household per month could be diverted through home composting. Personalized training and support increases the potential. For every 10,000 households composting at home, between 1,400 and 5,000 tons per year could be diverted from curbside collection, with potential savings in avoided disposal costs alone ranging from \$72,000 to \$250,000. The future of composting is being shaped right now as cities and states implement strategies to cut food waste. The potential to expand home composting is largely untapped but massive.

Home composting can play a significant role in recovery. But it needs to be resourced and prioritized.

Yes! In My Backyard: A Home Composting Guide for Local Government aims to expand home composting as a vital residential food waste diversion strategy by describing 11 local government initiatives, their lessons learned, and replication tips. We highlight, for instance, the importance of training and educational programs, and providing compost bins at discounted prices. This guide is not intended as a manual on how to compost at home. (See Appendix B for select educational resources.) Nor does it address how to reduce food waste at the source or rescue edible food, both of which are priorities over composting. (See ILSR's Hierarchy to Reduce Food Waste & Grow Community, above.) Rather, this report addresses key considerations for local government in starting a city- or county-run home composting program.

We recognize that more and more U.S. communities are instituting residential food scrap collection programs. Our research in 2017 for BioCycle documented this growth: 326 U.S. communities have government-supported residential

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food scrap curbside collection programs, up from only a handful a decade ago.³ Once households receive food waste collection carts and begin setting out material at the curb, encouraging home composting becomes more challenging. The opportunity to cut costs and encourage local production and use of compost at home will inevitably be lost. This opportunity is potentially quite large. An estimated 35% of all households in America, or 42 million households, are growing food at home or in a community garden.⁴ According to the 2017 National Gardening Survey, the do-it-yourself yard and garden industry is valued at \$36.9 billion and is growing at a slow and steady rate, led by millennials and by growth in food gardening.⁵

Yes! In My Backyard: A Home Composting Guide for Local Government can help municipalities and counties harness this growing interest in home gardening to meet waste reduction goals. We hope this guide will spur local governments to start and implement their own successful home composting programs. Not every household will be interested in home composting. The idea is to encourage those who are interested to take the plunge and offer them the tools they need to be successful: equipment and education. We urge local governments to think of curbside collection of yard trimmings and food scraps as a complement to a home composting program, not a replacement.

Yes! In My Backyard: A Home Composting Guide for Local Government is divided into five parts:

- **Part 1** provides an overview of and lessons learned from the 11 featured programs.
- **Part 2** summarizes why a local government should start a home composting program even if they already collect organics at curbside.
- **Part 3** shares lessons from the profiled programs to guide local governments through the various components of a home composting program (such as affordable bins, education, and a

strong outreach and marketing campaign).

- **Part 4** discusses the problem of antiquated ordinances, which may restrict home composting, and suggests how local governments can instead write laws that actively promote home composting.
- **Part 5** presents case studies of 11 city and county programs – 10 in the U.S. and 1 in Canada.

We urge local governments to think of curbside collection of yard trimmings and food scraps as a complement to a home composting program, not a replacement.

In addition, we have compiled several appendices of resource materials, which are available online:

- Appendix A** - Sample Outreach Materials
- Appendix B** - Sample Print Educational Materials
- Appendix C** - Reports on Local Programs
- Appendix D** - Sample Ordinances
- Appendix E** - Miscellaneous

This report is part of our ongoing work to document working models and share tips for replication. It supplements our other resources on decentralized locally based composting, such as our 2014 publication *Growing Local Fertility: A Guide to Community Composting*.⁶

Feedback and Updates Welcome

Share your feedback, updates, and information about new or innovative programs.

CONTACT US

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3 Virginia Streeter and Brenda Platt, "Residential Food Waste Collection Access In The U.S.," *BioCycle* (December 2017), available online at: <https://www.biocycle.net/2017/12/06/residential-food-waste-collection-access-u-s/>.

4 A. Cort Sinnes, "Food Gardening in the U.S. at the Highest Levels in More Than a Decade According to New Report by the National Gardening Association," The National Gardening Association Learning Library, April 2014, <https://garden.org/learn/articles/view/3819/>.

5 Marketwired Press Release, "National Gardening Survey Says Gardening Grows Thanks to Millennials," *Marketwired*, April 12, 2017, available online at: <http://www.marketwired.com/press-release/national-gardening-survey-says-gardening-grows-thanks-to-millennials-2209448.htm>.

6 Brenda Platt, Institute for Local Self-Reliance, and James McSweeney and Jenn Davis, Highfields Center for Composting (now defunct), *Growing Local Fertility: A Guide to Community Composting* (May 2014), available online at: <https://ilsr.org/size-matters-report-shows-small-scale-community-based-composting/>.



PART 1

Overview of Model Programs and Lessons Learned

Eleven government-supported home composting programs are featured in this report, representing 8 cities, 2 counties, and one metropolitan region. (See Part 5 for individual case studies.) Table 1 lists these jurisdictions, their population, the year their program began, and comparative data on compost bins distributed. The town of Cheverly, Maryland, is the smallest with a population under 7,000; Los Angeles County is the largest, with a population over 10 million. Six are on the West Coast, one is in the Southwest, two in the Northeast, and two in the South. Most are in urban and suburban areas but at least one program spans some rural communities (Napa). The jurisdictions represented in this report show that home composting programs can work in a diverse range of communities, particularly if the local government proactively conducts outreach, provides training, and offers discounts on home composting bins.

▲ A two-bin system in Seattle that can be used for backyard or community-scale composting.
Source: Tilth Alliance

PART 1 Overview of Model Programs and Lessons Learned

TABLE 1. OVERVIEW OF MODEL HOME COMPOSTING PROGRAMS

City/County	Population (2016)	Program Start Year	Total # All Bins Distributed Since Program Start ^a	Last Reported # Bins Distributed in Single Year ^b
Austin	947,890	2010	4,870	581 ^c
Cheverly (MD)	6,469	2011	~400	leveled off demand
Los Angeles County	10,137,915	2005	N/A	1,422
Miami-Dade County (FL)	2,712,945	2014	445	N/A
Napa (CA) ^d	80,416	1997	4,218	120
New York City	8,537,673	1998	20,299	38 ^e
Oregon Metro ^f	1,790,607	1993	109,090	400 ^g
Orlando (FL)	277,173	2015	5,340	N/A
San Diego	1,406,630	2012	1,973	N/A
Seattle	704,352	1989	N/A (35,644 as of 1996)	N/A
Vancouver (Canada)	631,486	1990	~53,000	286

a As of 2018.

b For 2017, unless noted.

c For fiscal year 2015 (July 2014 - June 2015).

d Napa's program is run by the City but covers Napa County. Population figure represents the City's population. The County's population was 142,166 in 2016.

e For fiscal year 2016.

f Oregon Metro is the regional government for the Oregon portion of the Portland metropolitan area. It serves 25 cities in Clackamas, Multnomah, and Washington counties (as well as unincorporated parts of those counties).

g Average per year since 2012.

Source: Institute for Local Self-Reliance, 2018.

The programs in Seattle, Oregon Metro (Portland area), New York City, and Vancouver (Canada) were some of the first home composting programs in North America, and they have distributed far more bins than the other programs featured in this report (see Table 1). Their historical successes are good examples for burgeoning programs. However, more recently, all four of those municipalities have started curbside organics collection and chosen to scale back their home composting programs. In Part 2, Home Composting Integrates with Curbside Collection, we urge local government to continue to encourage home composting even when instituting curbside collection. Except Vancouver, all these programs have stopped subsidizing the bins and instead sell them at wholesale cost to residents, and, except New York City, they have all decreased or discontinued home composting outreach efforts. On the other hand, some of the newer programs reviewed in this report are more active and may offer the best current examples of programs worth imitating.

For example, Orlando's program has the second highest rate of bin distribution within the first year of all the programs reviewed (after Seattle). There were 3,000 requests for a composting bin within two weeks of the program's start. The program has been successful for two reasons: (1) Orlando's marketing and outreach campaign is innovative and ambitious (see Spotlight - Orlando's "Get Dirty" Campaign), and (2) the City provides the bins at no charge to residents (either through pickup or free home delivery). Although demand has slowed since the initial marketing push, the program's organizers plan to build excitement again through more promotion in the near future. Some cities may not be able to follow Orlando's model of free bins and extensive advertising, but jurisdictions that do can expect to see good participation rates in their program.

PART 1 Overview of Model Programs and Lessons Learned

One area for improvement in all our profiled communities is tracking data on how much material is and can be home composted.

Austin's home composting program stands out for its adaptability, flexibility, and diversity of options. Its voucher/rebate system allows residents the freedom to choose any type or model of bin, and Austin offers more ways for residents to get educated about composting than any other program covered in this report (see Spotlight - Austin's Diverse and Evolving Training Options). Austin is also noteworthy for its annual research to assess and improve the program. The City's yearly program reports contain useful information from which other cities can benefit.

Los Angeles County, Napa, Miami-Dade County, and Austin have shown that people will participate in home composting programs even if the programs require residents to take a class in order to receive a discounted bin. Austin offers rebates/vouchers for compost bins after an in-person or online class. The other three programs offer in-person home composting workshops and significantly discounted bins at the site of the workshops. These programs also maintain active outreach campaigns and advertise the discounted bins and the dates and locations of the workshops.

New York City's program has shown that people will compost at home in densely populated urban areas if they have easy access to composting education and bins. (However, the number of new home composters in the city has slowed since the City stopped subsidizing the bins offered to residents.) The City's Department of Sanitation promotes local composting via its NYC Compost Project: it maintains composting demonstration sites throughout the city where residents can purchase composting bins and take workshops; it supports a network of community composting sites (some of which also serve as home composting demonstration sites); and it funds a Master Composter course that encourages graduates to provide composting education (including home composting



▲ Common kitchen scale can be used to weigh food scraps. Source: *Institute for Local Self-Reliance*

education) in their respective neighborhoods.⁷ This decentralized model allows residents throughout the city to obtain home composting bins and education within (or near) their neighborhood.

One area for improvement in all our profiled communities is tracking data on how much material is and can be home composted. Only 2 of our 11 featured programs – Austin and Miami-Dade County – had any specific data on the quantity of material home composted. (See Spotlight - Measuring Quantities Composted Can Demonstrate Savings and Diversion.)

Miami-Dade County tracked gallons of material composted by 25 volunteer households over 3 months. Each household composted an average of 8.52 gallons of indoor materials (that is, kitchen scraps) and 19.61 gallons of outdoor materials (such as plant clippings). This totals 28.1 gallons on average per volunteer participant per month.

⁷ For more information on the NYC Compost Project, visit its website at <http://www1.nyc.gov/assets/dsny/site/our-work/reduce-reuse-recycle/community-composting>. NYC Compost Project programs are carried out by DSNY-funded staff hosted by seven partner organizations, including Big Reuse, Brooklyn Botanic Garden, Earth Matter NY, the Lower East Side Ecology Center, Queens Botanical Garden, Snug Harbor Cultural Center & Botanical Garden, and the New York Botanical Garden.

PART 1 Overview of Model Programs and Lessons Learned

While density figures for food scraps and yard trim can vary widely, we estimate this volume equates to approximately 40 to 60 pounds per month.⁸

Austin conducted a small-scale study in 2013 to calculate the average diversion rate per voucher/rebate distributed. They asked customers receiving vouchers/rebates to volunteer to track and report the quantity of material they diverted from the trash to their backyard composting bin. Participants received color-coded bags and a weigh scale. Each week, the volunteers separately recorded the weight of their trash and the materials they put in the compost bin. The City found that the volunteers diverted an average of 5.4 pounds per week (a diversion rate of 54%). On a monthly basis, this equals 23.4 pounds.

Backyard composting is undervalued and is far more important than previously thought.

A 2010 yearlong study done in the metro Vancouver area (British Columbia) may be the most comprehensive study in North America to date. The participating households received indoor and outdoor scales and personalized Compost Coaching. The average household kept 996 pounds off the curb during the year (83 pounds per month). When extrapolating to all known households who were backyard composting, the study found that the overall municipal waste diversion rate increased from 59.5% to 67.2%, with the single-family diversion rate approaching 70%. Over a 5-year period, the program had invested ~\$16,100 in bin subsidies. Avoided tipping fees during that period attributed to backyard composting totaled ~\$3.5 million. The study's conclusion: backyard

composting is undervalued and is far more important than previously thought.⁹ (See Spotlight - 2010 Study Identified Value and Benefits of Backyard Composting.)

We estimate that for every 10,000 households home composting, an estimated 1,400 tons per year could be diverted from disposal, avoiding ~\$72,000 per year in disposal fees alone.

Based on Austin's more conservative weight data, we estimate that for every 10,000 households home composting, an estimated 1,400 tons per year could be diverted from disposal, avoiding ~\$72,000 per year in disposal fees alone.¹⁰ For every 10,000 households receiving personalized hands-on training and support with subsidized bins, this tonnage could grow to as much as 5,000 tons per year, with avoided disposal fees jumping to ~\$250,000.¹¹ Clearly, investing in a good home composting program represents huge potential savings for local government. However, more data is needed to confirm diversion weights and potential savings. We encourage program managers to incorporate weight studies into their programs.

8 We used density figures published by the U.S. EPA, Office of Resource Conservation & Recovery, *Volume-to-Weight Conversion Factors*, April 2016, available online at: https://www.epa.gov/sites/production/files/2016-04/documents/volume_to_weight_conversion_factors_memoandum_04192016_508fnl.pdf

9 Elizabeth Leboe, "Value and Benefits of Backyard Composting," *BioCycle*, October 2011, Vol. 52, No. 10, pg. 25, available online at: <https://www.biocycle.net/2011/10/19/value-and-benefits-of-backyard-composting/>.

10 ILSR calculated avoided disposal fees using the 2017 U.S. nationwide average landfill tip fee of \$51.82 per ton. See "EREF Study Reveals Increase in Average MSW Landfilling Tipping Fee," *Waste360*, December 19, 2017, available online at: <http://www.waste360.com/landfill-operations/eref-study-reveals-increase-average-msw-landfilling-tipping-fee>. Landfill disposal fees, of course, vary greatly. In the Northeast, average tip fees in 2017 were \$67.27 per ton. But even in the South Central region, where tip fees are among the lowest in the country, they averaged \$36.94 per ton. Using this latter fee would translate into avoided disposal costs of \$51,000 a year for every 10,000 households home composting.

11 Based on the 83 pounds per month per participating household from the North Shore Recycling Program 2010 study. Elizabeth Leboe, "Value and Benefits of Backyard Composting," *BioCycle*. ILSR calculated avoided disposal fees using the 2017 U.S. nationwide average landfill tip fee of \$51.82 per ton.

10 Steps for a Successful Program

STEP ONE

Get initial buy-in from those who will be necessary to implement the program. This includes making sure that local ordinances and health and sanitation departments will not impede home composting.

- See Part 4, **Ordinances: The Good, the Bad, and the Ugly**

STEP TWO

Decide how the program is going to fit into your waste reduction strategies. If you have a successful residential organics collection program, the challenge is getting residents to use their home composter rather than putting everything at the curb.

- See Part 2, **Home Composting Integrates with Curbside Collection**

STEP THREE

Secure dependable multi-year funding. Outside grants and donations can help offset costs.

- See **Spotlight - Partnering to Save More Money**

STEP FOUR

Secure solid supply lines for compost bins. Either issue a request-for-bids from manufacturers or set up a voucher/rebate arrangement with local retailers to stock home composting bins.

- See Part 3, **Composting Bins and Other Equipment: Bin Options, Prices, and Modes of Delivery**

STEP FIVE

Decide on a bin type and price, and means of getting into the hands of residents.

- See Part 3, **Pricing and Delivery of Bins: Finding the Sweet Spot**



▲ New York City's 2006 truck sale. Source: New York City Compost Project

STEP SIX

Set up easily accessible composting education and training. This can include workshops, informational material, and hotlines.

- See Part 3, **Education, Training, and Information**

STEP SEVEN

Advertise the program.

- See Part 3, **Marketing and Outreach**

STEP EIGHT

Provide support to residents after they purchase bins. The success of the program is not just how many bins are sold, but how many are in use.

- See **Spotlight - Orlando's Troubleshooting Hotline**

STEP NINE

Collect data on composted amounts from participating residents and calculate the costs/savings of the program.

- See Part 2, **Save Money**

STEP TEN

Keep data on as many aspects of the program as possible, such as number of bins distributed, number of attendees in workshops, how residents hear about the program, and program expenses. Use this data to analyze and improve the program.

- See Part 3, **Comprehensive Research Agenda**

Key Takeaways and Recommendations

The main purpose of a government-supported home composting program is to increase material composted. Thus, all programs need to carry out three tasks: make home composting bins more accessible to residents, provide composting education and information, and raise awareness of the benefits of composting.

Bins

- Provide composting bins to residents: purchase in bulk through a contract with manufacturers and sell the bins at the wholesale price to residents; subsidize the price of bins; or provide vouchers or rebates to give residents discounts on bins sold at local retailers.
- Offer at least one stationary backyard composting bin model (such as the Earth Machine™). These bins can compost both food scraps and yard trimmings and are relatively cheap.

All programs need to carry out three tasks: make home composting bins more accessible to residents, provide composting education and information, and raise awareness of the benefits of composting.

- Offer a variety of bin types – for example, worm bins, Green Cones, tumblers – to accommodate a range of options and household/backyard situations.

→ **See Part 3, Composting Bins and Other Equipment: Bin Options, Prices, and Modes of Delivery.**

- Include worm or vermicomposting bins to provide an option to individuals without yards or who live in apartment buildings. In addition, unlike other composting systems, vermicomposting can be done with old newspaper and food scraps. Carbon sources like leaves and twigs are not needed.
- Offer enclosed systems that keep rodents out if you're in an urban area with existing rat pressure. Tumblers are generally built off the ground and harder for rats to access. Some stationary backyard bin

manufacturers offer optional bases to prevent access from unwanted critters. Regardless of the system chosen, proper composting in the system is key.

- Subsidize the price of bins for residents, or offer the bins for free, to get more people to start composting.

→ **See Part 3, Pricing and Delivery of Bins: Finding the Sweet Spot.**

- Consider home delivery of bins to interest more residents in home composting.

→ **See Spotlight - Free Bin and Free Delivery: Orlando.**

Education and Training

- Offer education and training to enable home composters to succeed, troubleshoot on their own, and to produce high-quality compost. Composting is not rocket science but there are some key facts people need to know, such as the importance of oxygen, moisture, balancing nitrogen-rich material with carbon-rich material, which materials not to compost, and how to know the compost is ready to use. When people learn how to compost properly, they will, for instance, avoid odor problems. When people learn to always cover food scraps with a thick layer of leaves and forgo adding problematic materials like dairy and meat products, the compost pile is less likely to attract unwanted critters. Training can also provide other basic information about identifying and mitigating rat activity.
- Tie training to bin give-aways or distribution. Training can be optional or required to obtain a composting bin, but requiring training ensures residents are exposed to best management practices. Requiring training does not significantly decrease program participation rates.

PART 1 Overview of Model Programs and Lessons Learned

- Make education or training easily accessible in order to encourage participation. Studies have shown that the main reason people are wary to start composting is that they lack confidence in their composting abilities or believe that composting is always smelly and messy (see Appendix E).
- Hold workshops during fairer weather and in places that are already frequented by residents in order to increase participation.

→ **See Part 3, Choosing Who Provides Compost Education and Where to Hold Composting Workshops.**

Measure, Evaluate, and Improve

- Calculate your program's costs and savings. Overtime, home composting programs can be expected to save local governments more money in hauling and tipping fees than they cost to implement.

→ **See Part 2, Save Money.**

- Solicit volunteers to weigh materials home composted in order to develop more accurate estimations of diversion rates and savings from hauling and tipping fees.

→ **See Spotlight - Measuring Quantities Composted Demonstrates Savings and Diversion.**

- Evaluate your program to determine the effectiveness of current approaches and see where improvements can be made. Data to collect might include: the number of bins distributed, residents' satisfaction with bins, where residents learned about the program (to assess different marketing techniques), the location and times of day the most residents are showing up for workshops.

→ **See Part 3, Comprehensive Research Agenda.**

Outreach and Marketing

- Develop strong outreach efforts and innovative marketing campaigns to increase program participation.
- Invest in a strong marketing push when launching program to get people interested right from the beginning. The program can follow up with cheaper long-term marketing.

→ **See Spotlight - Orlando's "Get Dirty" Campaign.**

- Show residents how they can save money on their waste hauling bills through home composting. This is relevant in communities with volume- or weight-based trash fees (also known as save-as-you-throw or pay-as-you-throw systems).

→ **See Spotlight - Linking Home Composting to Save-as-you-Throw Trash Fees.**

Offer education and training to enable home composters to succeed, troubleshoot on their own, and to produce high-quality compost.

Ordinances

- Review existing laws and rules to make sure none prevent home composting. Update any archaic laws or pass new ordinances to support home composting.
- Focus any new ordinance or rule toward fostering successful and well operated home composting rather than creating prescriptive requirements that may unnecessarily stifle home composting.
- Facilitate budgeting for education and training by passing an ordinance to require the appropriate city/county department provide home composting education and training.
- Instead of imposing fines or shutting down home composting sites that have issues with odors or pests, consider requiring residents in violation of home composting regulations to take a composting class.



SPOTLIGHT: 2010 Study Identified Value and Benefits of Backyard Composting

In 2010, the North Shore Recycling Program (NSRP) in British Columbia, Canada, conducted a yearlong study to determine how much material could be attributed to backyard composting by the average single-family household. (The NSRP, phased out in 2015, was a tri-municipal agency of the City of North Vancouver, the District of North Vancouver, and the District of West Vancouver.) At the time, the North Shore area had 38,132 single-family households. The study found that backyard composting was undervalued and is far more important than previously thought in terms of waste diversion, including source reduction.

The 16 volunteer households weighed and tracked their organic waste composted for an entire year. They were required to participate in two separate trainings sessions: (1) Project Startup, to conduct a presurvey, receive measurement tools, and learn weighing methods; and (2) Compost Coaching, a personalized in-yard training session to optimize their composting practices. Volunteers received indoor and outdoor scales, compost containers, and data recording kits as well as monthly e-newsletter updates and telephone and in-person support throughout the year. At the end of the year, volunteers participated in a follow-up survey.

The study's findings were impressive, including:

- The average volunteer household kept 996 pounds off the curb during the year.
- An estimated 796 pounds per year are backyard composted by households that receive no support or training.
- 79% of participating households increased the amount they composted and decreased the amount of waste set out in garbage after their Compost Coaching session.
- Extrapolating to all North Shore single-family households known to be backyard composting, residents home composted 9,257 to 11,690 tons that the municipalities never needed to handle; this was equivalent to ~1,500 truck trips and was almost the same quantity (11,726 tons) as the yard

trimmings collection service at the time, which cost \$1.5 million in fleet and salary-related collection expenses and \$600,000 in tipping fees each year.

- When North Shore factored in the home composting data, its municipal diversion rate for 2010 increased from 59.5% to 67.2%. The single-family diversion level was higher and close to 70%.
- The extrapolated total avoided tipping fee costs for the North Shore's population of composting households totaled \$874,227 annually. These savings are cumulative as long as the household keeps composting. (Note: these calculations used a \$57.15-per-ton tip fee for yard trimmings and \$88 per ton for garbage. Each participating household saved the municipality \$35.44 in tipping fees each year.)
- Over a 5-year period, the NSRP invested approximately \$16,100 in bin subsidies, and backyard composting had resulted in avoided tipping fees of ~\$3.5 million.
- On-site home composting is an extremely cost-effective method to divert very significant tonnages without requiring intensive municipal services.
- Compared to their habits prior to Compost Coaching, supported study participants increased their diversion of low-quality household papers from the garbage to the compost, kept more leaves for on-site use, used alternative recycling depots for non-curbside collected materials, and altered buying habits to reduce waste at the source.
- With training, NSRP found that households compost almost 220 pounds more each year than unsupported households.
- When contrasted with its low cost of delivery, personalized Compost Coaching services provide immeasurable social and environmental value beyond the direct tipping savings and decreased curbside collection requirements.

Source: Elizabeth Leboe, "Value and Benefits of Backyard Composting," *BioCycle*, October 2011, Vol. 52, No. 10, pg. 25, available online at: <https://www.biocycle.net/2011/10/19/value-and-benefits-of-backyard-composting/>



PART 2

Why Have a Home Composting Program?

The benefits of composting are increasingly recognized. It reduces garbage, cuts landfill methane emissions, recycles yard trimmings and food waste back into the soil, and enhances soil fertility and structure.¹² Composting also makes economic sense. It sustains green jobs and keeps resources out of expensive landfills and incinerators, converting those resources into a marketable and valuable product. With the growing trend to offer residential curbside collection for source-separated organics (yard trimmings and food scraps), why should cities and counties launch home composting programs?

There are many reasons. A robust home composting program:

- Can be implemented faster than large-scale centralized composting systems,
- Can provide a way to divert food scraps and yard trimmings in communities with no facilities,
- Encourages production and use of compost on the same site in which the materials are generated,

▲ Earth Machine™ in backyard. Source: Amy Freeman

12 See ILSR's infographic "Compost: Impacts More than You Think" and more info at our Composting for Community Initiative home page: <https://ilsr.org/composting/>.

PART 2 Why Have a Composting Program?

- Retains organic matter for residential soils,
- Builds a culture of composting know-how and appreciation in the community, which in turn will build support for and participation in citywide food scrap recovery programs and ingrain composting knowledge in the next generation,
- Serves as an important community engagement and education tool,
- Encourages source reduction of food waste, due to direct exposure to the amount of food wasted,
- Can divert significant tonnage from disposal – studies indicate 23 to 83 pounds a month per household,
- Is an extremely cost-effective method to divert significant tonnages without requiring intensive municipal services,
- Avoids the labor and costs of collecting and handling material, leading to considerable savings,
- Saves money on avoided tipping fees at disposal sites (as well as at composting sites) – savings that are cumulative as long as households keep composting,
- Can complement a curbside organics collection program – the two options are not mutually exclusive,
- Contributes to a distributed and diverse food recovery infrastructure, and
- Provides other social and environmental value beyond the direct tipping savings and decreased waste collected at curbside.

One study found that backyard composting was severely undervalued and is far more important than previously thought in terms of waste diversion, including source reduction.¹³

An oft-cited reason for low food recovery levels in the U.S. is lack of adequate capacity to process material. Too often, communities focus solely on developing one or more large-scale composting sites and overlook the

“Home composting makes sense on so many levels – the one that stands out for me, as a new parent, is its ability to connect us and our children to the natural world and to help ignite a passion for protecting our planet.”

— CARL GRIMM, SENIOR SOLID WASTE PLANNER
AT OREGON METRO

fact that composting can be small scale, large scale, and everything in between: backyard bins, community-garden sites, on-site campus systems, farm-based operations, low-tech and high-tech regional facilities. A diverse and distributed infrastructure is needed that encompasses home, community-based, and on-site composting.

These local composting options bring additional benefits: they engage and educate citizens, support citywide composting efforts, enhance local soil fertility, and can be quickly implemented. As mentioned above, home composting offers a further advantage: it cuts collection and material processing costs for local government while providing a free soil amendment to those who home compost. Residential use of compost not only makes lawns and gardens healthier and more beautiful, but also has positive ecological and public health benefits for the community.¹⁴

Those who compost at home are typically motivated to convert their waste into compost to improve the health of their yards, gardens, or potted plants.¹⁵ People have composted at their homes and in their communities for millennia, but the art of composting has largely been lost to the current population in the U.S. Many people have a reason to start composting, they just need some support to get going. Local government can and should spur more people to start home composting.

13 Elizabeth Leboe, “Value and Benefits of Backyard Composting,” *BioCycle*, October 2011, Vol. 52, No. 10, pg. 25, available online at: <https://www.biocycle.net/2011/10/19/value-and-benefits-of-backyard-composting/>.

14 Morris, Jeffrey, and Jennifer Bagby. “Measuring environmental value for natural lawn and garden care practices.” *The International Journal of Life Cycle Assessment* 13, no. 3 (2008): 226-234.

15 Tucker, P., D. Speirs, S. I. Fletcher, E. Edgerton, and J. McKechnie. “Factors affecting take-up of and drop-out from home composting schemes.” *Local Environment* 8, no. 3 (2003): 245-259.

PART 2 Why Have a Composting Program?

Save Money

Home composting programs make economic sense for local governments. Not only are home composting programs much cheaper to implement than curbside programs, but they can also lead to net savings for a local government in the long run. When residents avoid setting materials at the curb each week for pickup, local governments save money in hauling costs and tipping fees. Eventually, these savings will outweigh the costs to operate the programs. The amount of time needed to realize net savings will depend on certain factors such as program expenses, local disposal costs for tipping and hauling, and the number of residents that start home composting.

Program managers can justify continued funding by calculating the costs and savings of their program and showing how long it will take to reach net savings. Programs can calculate costs savings using the following equations:

1. Total annual savings = annual average weight of materials composted per bin in tons X number of bins distributed since beginning of program X tipping and hauling costs per ton
2. Total annual costs = marketing and outreach costs¹⁶ + education and training costs + salaries of program staff/administrators¹⁷ + cost of purchasing composting bins and equipment¹⁸ - (price bins are sold to residents X number of bins distributed)¹⁹
3. Net savings = when total annual savings X (y) > total annual costs X (y), where y = number of years since the start of the program

For example, Orlando uses U.S. EPA reported data on average pounds of food waste generated to estimate the potential diversion from residents composting at home. From this data, Orlando estimated that its program will start paying for itself in just four years from the program start, due to reduced waste tipping and hauling fees. For every 10,000 households composting at home, we



SPOTLIGHT - Measuring Quantities Composted Demonstrates Savings and Diversion

Program managers can get a more accurate idea of how much material could be home composted by asking program participants to track their material. For example, Austin and Miami-Dade County asked volunteers who received subsidized bins to record and report the amount they diverted. Austin provided the volunteers with weigh-scales and Miami-Dade County provided the volunteers with buckets.

Austin's volunteer households composted an average of 5.4 pounds a week (23.4 pounds per month). The City estimates it saves ~\$17,000 annually from avoided hauling and tipping fees. Due to investment in a comprehensive outreach campaign, Austin may take a little longer than other programs to recuperate its investment through savings. Still, the program's managers believe they will achieve net savings in a relatively short amount of time as they get more residents to start composting at home and streamline overall expenses.

Miami-Dade County found that its volunteer households composted an average of 28.1 gallons per month (8.52 gallons of food scraps and 19.61 gallons of yard trim).

In the District of Columbia, data from the Department of Public Works' residential food scrap drop-off program, launched April 2017, illustrates how much material could potentially be home composted. The program accepts the same types of materials typically home composted, plus pasta, rice, and other grains. In 2017, there were 12,024 individual drop-offs. The average weight per drop was 8.27 pounds per week (which equates to 35.8 pounds per month).^a

a Annie White, DC Department of Public Works, personal communication, May 9, 2018.

¹⁶ In some programs this cost might be negligible if the local government has existing advertising channels (such as in Orlando).

¹⁷ The model programs covered in this report do not consider this factor in their program cost calculations. Program administrator salary expenses are generally negligible because the administrative duties generally are assigned to full-time staff who have larger job descriptions (such as Sustainability Project Manager) and spend only a small part of their time on the home composting program.

¹⁸ Or the total value of redeemed vouchers/rebates.

¹⁹ Not applicable for voucher/rebate programs.

PART 2 Why Have a Composting Program?

estimate between 1,400 and 5,000 tons per year could be diverted from curbside collection, with potential savings in avoided disposal costs alone ranging from \$72,000 to \$250,000. See Part 1, Overview of Model Programs and Lessons Learned, page 8.

Home Composting Integrates with Curbside Collection

Home composting programs are worthwhile even in communities with curbside collection services for yard trim and/or food scraps (see Table 2). First, jurisdictions that contract with private hauling companies or private composting facilities can save on hauling and tipping fees, and jurisdictions that own their hauling trucks and composting facilities can reduce fuel costs.²⁰ Second, many residents with yards or gardens will still be interested in home composting even if they have curbside services because they want free nutrient rich humus. In addition, residents who have to pay for curbside pickup service have an economic incentive to home compost. A study produced for Oregon Metro illustrates that money motivates residents to home compost, even when compost collection services are available. The study found that home composters are generally big yard debris generators who compost to keep from incurring extra service charges for setting out extra yard debris for curbside collection.²¹

Home composting provides some benefits to households and local governments that curbside collection cannot. The reverse is true as well. Curbside service can offer advantages to home composters. Curbside programs often, for instance, can accept meat, bones, dairy, and cooked food, all items that should not be composted at home.



▲ Austin launched its residential curbside collection program after its home composting program. Curbside cart shown here. Source: Austin Resource Recovery



SPOTLIGHT - Partnering to Save More Money

Some municipalities may be able to gain outside donations to support the start of a home composting program. In Cheverly, Maryland, partnerships helped the program see positive returns on investment in a short amount of time. With assistance from the Backyard Composting Project, Cheverly has only spent \$4,000 on its program through April 2018 and will have an estimated savings of \$59,000 over ten years. Other municipalities in Maryland may also be eligible for support from the Backyard Composting Project. (Visit www.backyardcomposting.org for more information.) Although most programs will eventually save their local governments more than they cost, those programs that can also get some outside support will see more rapid and apparent pay-offs.

20 As pointed out by our contacts at the City of Napa and the City of Seattle.

21 Market Decisions Corporation, "Home Composting Survey 2004," report produced for Oregon Metro.

PART 2 Why Have a Composting Program?

TABLE 2. STATUS OF CURBSIDE COLLECTION IN FEATURED COMMUNITIES

City	Curbside Collection of Organics
Austin ^a	yard trim and food scraps - pilot phase
Cheverly	yard trim
Los Angeles County	yard trim
Miami-Dade	none
Napa	yard trim and food scraps
New York City ^b	yard trim and food scraps - not in all neighborhoods
Oregon Metro	yard trim and food scraps
Orlando	yard trim
San Diego	yard trim
Seattle	yard trim and food scraps
Vancouver	yard trim and food scraps

a 52,000 households served as of December 2017

b 790,000 households served as of December 2017

Source: Institute for Local Self-Reliance, 2018.

One cannot assume that there is necessarily a cause-and-effect correlation between the introduction of curbside collection of organics in Vancouver and Seattle (and Oregon Metro) and the decline in demand for the program-provided home composting bins in those cities. It is possible the local governments' roll-back of home composting outreach in those cities played just as much (or more) of a role in the decrease in interest for program bins as the introduction of curbside collection.²² We recommend that local governments think of curbside compost collection as a complement to a home composting program, not a replacement.

On-site home composting is an extremely cost-effective method to divert significant tonnages without requiring intensive municipal services.



SPOTLIGHT - Vancouver, Seattle, and Napa Show the Compatibility of Curbside and Home Composting

Interest in Vancouver's program declined when the City introduced curbside collection of compostables (see Table 11 in the Vancouver case study). However, Vancouver's backyard composting website states how a home composting program and a curbside collection program can complement each other.^a On the website, the City recommends that home composters keep fish, meat, dairy, grain products, grease, oil, and cooked foods like pasta and rice out of their backyard bins because these materials decompose too slowly and could potentially cause odors and attract pests. The website asks that residents put these items in their green bin for curbside collection. In this way, the curbside collection program allows households to have the best of both worlds. Residents can create a free soil amendment, and they can divert organics that are not ideal for composting at home.

Similarly, in Seattle, there has been an increase in the past 15 years of the percentage of people saying they take at least some of their yard waste to the curb for pickup (from 59% to 85%) and a corresponding decrease in the percentage saying they compost yard waste at home (from 41% to 30%).^b However, Seattle has conducted surveys that show there is still potential in the city to get more people composting at home. A 2010 survey found that about 10% of Seattle residents who are not currently backyard composting would be likely to start if they received information on how to make the process "easy and pest free."^c Furthermore, the same survey found some people already composting at home needed to repair or replace their bins. These groups of residents represent a potential target for home composting outreach and support, and justify the continuance of Seattle's program.

a "Garden Composters," City of Vancouver, <http://vancouver.ca/home-property-development/garden-composters.aspx>

b FBK Research in association with Seattle Public Utilities, "2010 Home Organics Waste Management Survey," (2010), accessed from http://www.seattle.gov/util/cs/groups/public/@spu/@garbage/documents/webcontent/SPU01_006650.pdf, pg. 9.

c Ibid.

22 Seattle, Vancouver, and Oregon Metro still have home composting programs, but they do not actively promote home composting as much as they did in the past. The cities no longer subsidize the price of home composting bins and they advertise their programs less than they did in the past.



PART 3

Successful Programs: How to Get and Keep People Composting

The best way to encourage people to start composting is by making composting bins and equipment more easily available or cheaper than retail prices.

Home composting programs aim to get more people to compost at home and keep them composting successfully. The best way to encourage people to start composting is by making composting bins and equipment more easily available or cheaper than retail prices (see Pricing and Delivery of Bins: Finding the Sweet Spot, below). However, even with access to discounted bins, many people will not start composting because they are either unaware of composting's benefits, or they believe they do not have the capacity or expertise to start composting on their own.²³ A government-supported home composting program can spread awareness of the benefits of composting through marketing and outreach campaigns (see Marketing and Outreach) and provide composting education and training to help people start composting at home and to keep them composting successfully (see Composting Education, Training and Information).

23 Edgerton, Eddie, Jim McKechnie, and Karen Dunleavy. "Behavioral Determinants of Household Participation in a Home Composting Scheme." *Environment and Behavior* 41, no. 2 (March 2009): 151-69. doi:10.1177/0013916507311900.

PART 3 Successful Programs: How to Get and Keep People Composting

Part 3 shares examples from the programs surveyed in this report to formulate advice for how to best run a home composting program. Local governments have many options. Use this information as a guide for establishing a home composting program that fits your jurisdiction's specific needs and capacities.

Composting Bins and Other Equipment: Bin Options, Prices, and Modes of Delivery

Many residents do not have the knowledge or time to construct their own composting system, even if they are interested in composting. Local governments can provide information on how to build compost bins and piles or provide prefabricated commercial bins at a reduced price. One study conducted for Oregon Metro found that residents using the subsidized prefabricated bins provided by Oregon Metro maintained composting over longer periods of time at a significantly higher rate than those using "pile it up" methods.²⁴ Programs could probably get the most number of people composting successfully if they subsidize prefabricated bins. Some residents may want to build their own bins; it's often cheaper, especially when repurposed materials are utilized. In addition, common do-it-yourself (DIY) systems are the 2- or 3-bin cube systems, which are very effective in facilitating air flow and adequate mass to reach hot temperatures. Certainly encourage DIY folks by providing information and setting them up for success.²⁵

Encourage Do-It-Yourself folks by providing information and setting them up for success.

There are several commercially available prefabricated compost bins (see Table 3, Table 4, and Types of Bins, below). Prefabricated bins are available at home and garden stores and online, but residents may not be



SPOTLIGHT - Composting Tools

Home composting programs can also provide residents with access to free or below-retail-cost composting tools. By providing composting aerators, a program can emphasize the need to regularly mix compost to speed up the process. Vancouver provides free aerators from Wind Digger for pick up when residents purchase a bin. Oregon Metro offers a P845 compost aerator by Bosmere for \$10 less than the retail price.



▲ Oregon Metro sells compost aerators for \$16. Source: Oregon Metro

Local governments can also offer compost pails to use in kitchens. Oregon Metro sells Sure Close kitchen composters for about \$5 less than the average retail price. At the beginning of its home composting program, Austin provided residents with free kitchen compost collectors to residents who attended workshops.



▲ For a limited amount of time Austin provided kitchen compost collectors to residents who attended composting workshops. Source: Austin Resource Recovery

²⁴ Market Decisions Corporation, "Home Composting Survey 2004," report produced for Oregon Metro.

²⁵ Oregon Metro provides information to residents on how to build their own composting bin at <https://www.oregonmetro.gov/tools-living/yard-and-garden/composting/build-compost-bin>.

PART 3 Successful Programs: How to Get and Keep People Composting



▲ The Earth Machine™ (pictured here at the Earth Matter NY demonstration site on Governors Island in New York City) is the most commonly offered standard design backyard compost bin of the programs reviewed in this report. Source: *Institute for Local Self-Reliance*



▲ Many stationary compost bins come packaged in easily transportable and stackable packaging, such as the Soil Saver bin pictured here in Napa. Source: *City of Napa*



▲ Home composting bin options displayed at NYC Compost Project at Earth Matter NY on Governors Island. Source: *Institute for Local Self-Reliance*

aware of these bins, or think they cannot afford them. Local governments can make bins more readily available by offering them at a discounted price to residents through bulk purchasing contracts, a pre-order program, or by directly subsidizing (see Pricing and Delivery of Bins, page 27).

Types of Bins

One first step in setting up a city- or county-run home composting program is to choose which composting bins and equipment to distribute, sell, or qualify for rebates/ vouchers. When deciding which bin to offer or feature in a home composting program, factors to consider include: the bin's ability to provide conditions for materials to compost adequately, the bin's ability to keep out rats and other pests, price, and the ease of assembly and use. A bin's ability to compost adequately, in turn, depends on characteristics such as volume capacity and ability to aerate material (composting needs oxygen!). Bins that are too small may not allow the pile to heat up and actively compost.

Note: ILSR does not endorse any specific brands nor have we tested or vetted specific bins. Tables 3 and 4 list the bins our featured communities utilize. These are not the only options available. Programs interested in different bins than the ones offered by our profiled programs may want to check out online reviews or run a pilot program to test bins before deciding which ones to offer.

Advice to consider:

- Bins need to have openings large enough to allow ventilation and airflow; oxygen is a basic requirement of the composting process.

- Opt for bins with openings no larger than a ¼-inch. Gaps larger than ½-inch are big enough for a rat to squeeze through, while those greater than ¼-inch are big enough for mice.
- To further deter pests, a local government can provide galvanized hardware cloth or bases for stationary bins. The Earth Machine™ and the Soil Saver are two manufacturers that offer optional bottom pieces or bases.
- Systems should ideally accommodate at least 27 cubic feet of material in order to achieve hot composting.

Most programs offer at least one stationary backyard compost bin. These bins have removable tops to add materials and a way to remove finished compost from the bottom. They are built to facilitate composting of both food scraps and yard waste and some manufacturers (such as Earth Machine™ and Algreen Soil Saver) offer optional bottom pieces or bases to help keep unwanted guests out. Some programs surveyed have opted for other bins (see Table 3).

Tumbler composters (such as the Terra Batch Dual Composter offered by San Diego) are generally more expensive than standard backyard bins, but they may be the best option for areas with high-rat pressure. Mixing materials in tumblers is much easier than in standard backyard bins, and are good options in urban areas. Axle drum tumbler varieties have legs that lift them off the ground and make them highly inaccessible to rodents. Base drum tumblers are compact and great for residents with little space to compost. While true with all systems,

PART 3 Successful Programs: How to Get and Keep People Composting



▲ A family tending to a FreeGarden™ Earth compost bin provided by Oregon Metro in their backyard. Source: Oregon Metro



▲ Base drum tumbler compost bin manufactured by Envirocycle at the Earth Matter NY demonstration site on Governors Island, New York City. Credit: Institute for Local Self-Reliance



▲ Axle drum tumbler compost bin manufactured by Mantis at the Earth Matter NY demonstration site on Governors Island, New York City. Credit: Institute for Local Self-Reliance



▲ The Can-O-Worms composting bin is offered by Los Angeles County and San Diego. Source: gstore.com.au



▲ A metal trash can repurposed into a compost bin at the Earth Matter NY demonstration site on Governors Island in New York City. Credit: Institute for Local Self-Reliance



▲ A home-built worm composting bin made by Master Composters in Seattle in 1987. New York City and Napa currently offer in-house constructed worm bins to residents. This option can be more cost-effective than providing pre-fabricated worm bins for residents. Source: City of Seattle

tumblers in particular may not compost properly if overfilled – some empty space needs to be left to allow for airflow and movement of material during turning.

Worm bins are a good option for households that do not have yards (see Table 5). With worm bins, residents can compost inside their house or apartment.

Alternatively, programs can construct their own in-house bins to offer a cheaper option to their residents. New York City sells metal trash cans repurposed into compost bins and also constructs its own worm bins. Napa offers

classes where residents construct their own worm bins for free using materials provided by the program. Outside of the programs reviewed for this report, Mesa, Arizona, repurposes worn out plastic trash carts into compost bins offered to residents for a \$5 delivery fee,²⁶ and Montgomery County, Maryland, offers residents free GEOBIN® composters, which are essentially rolls of recyclable plastic that can be easily assembled into a cylinder 3 feet high, with an adjustable diameter up to 5 feet.²⁷

²⁶ "Backyard Composting Program," The City of Mesa, accessed April 30, 2018, <http://www.mesaaz.gov/residents/solid-waste-trash-recycling-/trash-recycling-for-single-family-homes/backyard-composting-program>.

²⁷ "Compost bin pickup locations," Montgomery County, accessed April 30, 2018, <https://www.montgomerycountymd.gov/sws/composting/bins.html>. The County markets these bins for yard trimming composting only.



SPOTLIGHT - Other Backyard Options

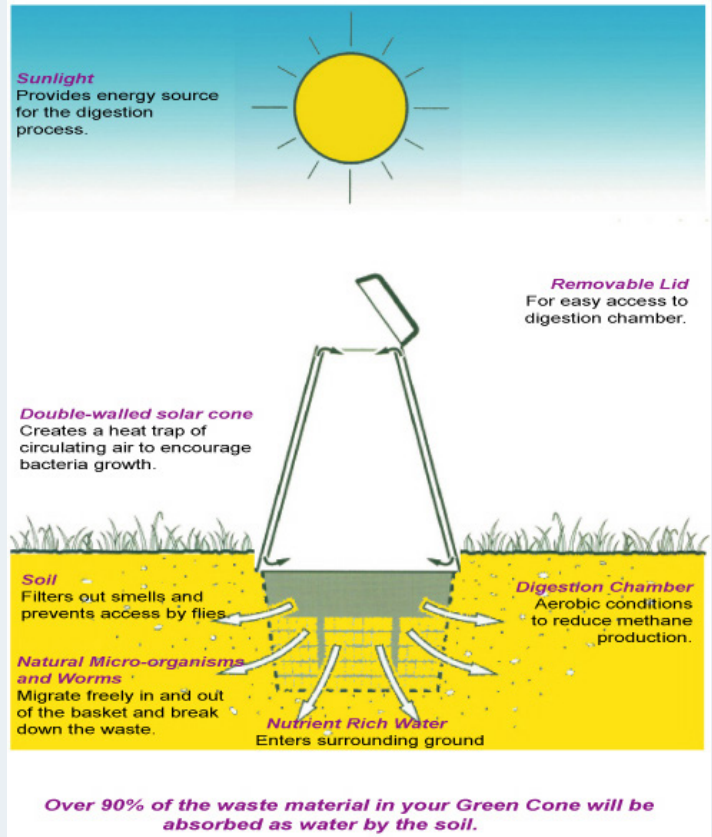
Seattle offers a Green Cone for food scraps and a open-top compost bin for yard trimmings manufactured by Beaver State Plastics, a local company.

Green Cones have two parts: a below-ground basket where the food scraps are buried, and an above-ground part that absorbs sunlight to quicken the decomposition process (see image). Green Cones reportedly work more quickly than standard bins. The manufacturer claims they can safely compost animal waste, meat, and bones (materials to be avoided in standard bins). For those adding animal waste, the manufacturer recommends locating the Green Cone away from any food gardening area and at least 100 feet from any well/water source. Pet waste should not include any litter (clay or other). The Green Cone is not designed to process yard trimmings.

Green Cones may be more appropriate for households that do not have access to a good source of brown materials but still wish to recycle their kitchen scraps. On the other hand, some people may want to compost only yard trimmings. These people can safely use bins with open tops, such as the one provided by Seattle, and may prefer them.

By offering both a Green Cone and an open-top bin, Seattle caters to residents that cannot (or do not wish

How the Green Cone Works



▲ Source: treehugger.com

to) compost both yard trimmings and food scraps together.

However, note that Green Cones do not actually produce compost, but rather release the nutrients of the added materials into the soil around the digester.



▲ Green Cone pictured from left to right, in the ground, above the ground, and with lid off.

PART 3 Successful Programs: How to Get and Keep People Composting

TABLE 3. TYPE AND PRICE OF BACKYARD BINS OFFERED

City	Current Type of Backyard Composter (price)
Austin	Voucher/rebate for any bin (up to \$75 off)
Cheverly	Earth Machine™ (\$20), FreeGarden™ Earth (\$20)
Los Angeles County	Soil Saver (\$40)
Miami-Dade County	Earth Machine™ (free)
Napa	Earth Machine™ (\$20), Soil Saver (\$20)
New York City	Earth Machine™ (\$65), Garden Gourmet (\$65), assembled in-house metal trash can composter (\$20)
Oregon Metro	FreeGarden™ Earth (\$49)
Orlando	Earth Machine™ (free)
San Diego	Vouchers for Soil Saver (\$47.99 after \$30 voucher), Terra Dual Batch Composter (\$129.99 after \$50 voucher)
Seattle	Green Cone (\$119), Beaver State Plastic Recycler Yard Composter (\$80)
Vancouver	Earth Machine™ (\$25 with free aerator)

Source: *Institute for Local Self Reliance, 2018*



▲ Worm bins – manufactured by Transform Compost – provided to Vancouver residents for \$25 after a required 1-hour workshop. Source: *City Farmer*

TABLE 4. TYPE AND PRICE OF WORM BINS OFFERED

City	Current Type of Worm Bin (price)
Austin	Voucher/rebate for any bin (up to \$75)
Los Angeles County	Can-O-Worms (\$40)
Napa	Rebate (\$30), and option to construct own for free at workshops
New York City	Assembled in-house (\$55)
San Diego	Can-O-Worms (\$59.99 after \$40 voucher, comes with mail-in voucher for free pound of worms)
Vancouver	Provided by Transform Compost Systems (\$25 with worms)

Source: Institute for Local Self Reliance, 2018.

Pricing and Delivery of Bins: Finding the Sweet Spot

Local governments can either sell bins at a subsidized price (Napa, Austin, Cheverly, and Vancouver); at the wholesale price (New York, Oregon, and Los Angeles), which still works out to be a savings to the resident; or provide free (Orlando and Miami-Dade County). Data collected in a 2004 Oregon Metro study found that 51% of Oregon Metro residents favored a 1% increase in garbage rates so that all households could have the option to receive a free home compost bin.²⁸ Of the people who already considered composting appealing, 62% felt that Oregon Metro and local governments should subsidize the cost of compost bins to encourage people to compost at their homes; and 11% said maybe.²⁹ Though this study cannot be generalized to apply to other jurisdictions, the findings provide some evidence that most people will not object to the idea of their government subsidizing home compost bins.

The 2004 study also offers some insights into pricing options. The study asked residents at what prices they would “definitely” purchase a bin:³⁰

- At \$15, 18% reported they would definitely purchase a bin
- At \$25, 13% reported they would definitely purchase a bin
- At \$35, 7% reported they would definitely purchase a bin
- At \$45, 2% reported they would definitely purchase a bin

The same study surveyed how different methods of delivering compost bins affected residents’ reported likelihood of purchasing a bin. The order of likelihood was as follows:

1. Delivered to your house
2. Available through neighborhood association

28 Market Decisions Corporation, “Home Composting Survey 2004,” unpublished report produced for Oregon Metro.

29 Ibid, p. 5.

30 These prices do not translate exactly to today’s dollar amounts because of inflation.

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3. Available for purchase on a combination of weekday evening and weekend days during one or two weeks during the year
4. Tied:
 - a. Had to drive 15 minutes or 10 miles to pick it up
 - b. Available for purchase through Metro's website and could be picked up at a central location
5. Sold only through nurseries and home improvement stores
6. Available for purchase only on one or two weekends
7. Had to call Metro ahead of time to reserve it (and then would have to pick it up at a designated time in the future)

Will providing bins too cheap (or free) and easy to obtain lead to people claiming the handout but never using the bins? New York City's program found that charging too little (\$20) resulted in a lot of people buying bins but not actually starting to compost within the first three months. However, Oregon Metro's 2004 study found that when the bins were \$25, only 7% never tried to use their bin. Although it appears programs may face this problem if they offer cheaper bins, the increase in the number of residents participating in the program when bins are cheaper may more than offset the number of claimed bins that go unused. Orlando offers a solution by requiring residents to return the free City-provided bins if they move out of the city or stop using the bin. Although it may be difficult to impossible to enforce this rule, Orlando has had a few people call to have their bins picked up after discontinuing.

Ultimately, most cities and counties will probably decide what price and mode of delivery to offer based on available funding. The data from the Oregon Metro studies and the profiled programs in Part 5 suggest that when bins are affordable and easy to obtain, more people will start composting (see Spotlight - Free Bin and Free Delivery: Orlando). The cheaper the bin, the more people are likely to be interested. Offering cheaper bins may cost the government more, but as shown by Orlando, even programs that offer free bins should eventually pay for themselves through reduced hauling and tipping fees. However, any assistance local governments can provide to home composting will get more people composting than if there is no assistance at all.



SPOTLIGHT - Selling Bins at Bulk Sale Price Instead of Subsidizing

Subsidizing bins so residents can buy them at prices significantly below market value is an effective option to entice residents to pick one up. An alternative is for jurisdictions to simply use their leverage to bulk purchase bins and other composting equipment and pass this savings on to residents. If funding is constrained, this might be a good option.

For example, Los Angeles County does not subsidize the price of the Soil Saver and Can-O-Worms that are provided to residents who attend composting workshops. However, if one were to purchase these products online, Soil Savers generally sell for \$99.99 and up, and Can-O-Worms go for \$80 and up. The County sells both of these for \$40. Oregon Metro, Seattle, and New York City also sell bins to residents at wholesale prices instead of subsidizing.

Another way to offer bins at bulk prices is to set up a pre-order program. ORBIS/Norseman, the manufacturer of the Earth Machine™ bin, offers this, which is a joint project between ORBIS and the jurisdiction. Residents can go to an online pre-order website to order their bin at the discounted bulk price. ORBIS delivers bulk orders to a central site arranged with the jurisdiction; residents pick up their bin there. Milwaukee; Livingston County, Michigan; and Wake Co., North Carolina, have set up pre-order programs. Wake County distributed almost 1,000 bins during its most recent spring 2018 pre-order event.



SPOTLIGHT - Free Bin and Free Delivery: Orlando



▲ Orlando residents and City employees using an Earth Machine™ composting bin with the Green Works Orlando logo pasted on it to indicate that the free bin is owned by the City of Orlando. *Source: City of Orlando*

The City of Orlando provides Earth Machine™ bins for free and delivers them to residents' homes free of charge. The bins are the property of the City of Orlando and must be returned if the resident moves out of the city limits or stops using the composter. The deliveries are made by adding the bins to the trash cart delivery truck's standard routes and cost the City no extra money. The ease with which residents can obtain a compost bin in Orlando has almost certainly been one of the main reasons Orlando's home composting program was able to distribute more bins in a single year than other programs reviewed for this report (although, as outlined in Marketing and Outreach, an extensive multimedia advertising campaign also likely played a major role in the program's success). Miami-Dade County also offers bins for free, but requires residents to pick them up at the County's Solid Waste office. The County's program has been successful, but has not distributed nearly as many bins as Orlando's program. Offering free bins and free bin delivery is a great way to get new people interested in home composting.



SPOTLIGHT - Truck Sales



▲ ORBIS truck sale event of Earth Machines in Duluth, Minn. *Source: Amy Freeman*

Single- or multi-day truck sale events are an option for local governments with more limited resources and program commitment. Truck sale events can also supplement yearlong bin sale programs, or programs can start with truck sale events to test out the interest for home composting and then transition to yearlong sales if the bins are popular. During these events, trucks loaded with composting bins show up to pre-planned locations to sell bins to residents at discounted prices negotiated between a company and the local government. San Diego, Vancouver, and New York City have all held compost bin truck sales in the past. Several bin manufacturers – such as EnviroWorld, the maker of the FreeGarden™ Earth composting bin, and ORBIS/Norseman, the maker of the Earth Machine™ – will partner with local governments to help organize truck sale events. Visit the following link for more information on organizing a truck sale event with EnviroWorld, <http://enviroworld.ca/truckloadsale.pdf>, or <http://www.earthmachine.com/municipal/contact.php> for information on organizing a truck sale event with Orbis/Norseman.



SPOTLIGHT - Vouchers and Rebates

San Diego, Austin, and Napa have chosen to offer a voucher or rebate for composting bins rather than delivering or providing bins for pickup. (Napa offers vouchers only for worm bins.) The primary advantage of vouchers and rebates are to give residents the freedom to choose whichever bin they like. San Diego has chosen to partner with one local chain (with multiple locations) where residents can claim their vouchers. Austin partners with a variety of local stores to offer vouchers and provides rebates for the proof of purchase of a composting bin obtained from any retailer.

By providing vouchers and rebates, both cities were also able to secure free advertising of the program in marketing publications put out by the partnering retailers. San Diego's program saw a significant spike in demand for vouchers when their retailing partners published advertising materials with details on the vouchers. Data collected for Austin's program found that advertising put out by its partnering retailers was the second most common way in which residents found out about its vouchers. Furthermore, vouchers and rebates allow a city or county to take a more hands off approach in the program and not have to deal with ordering or distributing bins.

Compost Education, Training, and Information

Education and training is an essential part of any home composting program. Table 3 lists different options available. According to a study in England, the most important factor determining a person's interest in using a composting bin is the person's confidence in their ability to produce finished compost without creating unpleasant odors or messes.³¹ The study concluded that successful home composting programs will provide residents with information on the facts of composting and advice for problem solving.³² This support may also keep people composting once they have started. A main reason people stop composting is they run into problems. They either fail to produce usable finished compost, or they have pest or odor problems.³³ Programs that provide bins and education support will get people to start composting and help them with issues they may encounter. These programs will also keep people composting for longer.

Furthermore, providing proper composting education helps composters avoid practices that may create nuisance odors or other problems. Because urban areas have tighter constraints on space and closer proximity to neighbors and open dumpsters, there is a higher risk of these problems. Education is a better tool to address these problems than imposing burdensome composting regulations (see Part 4, Ordinances: The Good, the Bad, and the Ugly).

Proper management is the key for all systems.

Improper composting can result in unpleasant odors or attract existing pests that are potential vectors of disease. Such problems can jeopardize the public's perception of composting in their area or possibly create localized health issues. A program that provides home composting bins along with basic composting education can help set composters up for success and reduce these potential risks.

31 Edgerton et al., "Behavioral Determinants," 2009.

32 Ibid.

33 Data supporting this claim found in "2004 Home Composting Survey," produced by Market Decisions Corporation for Oregon Metro in December 2004, unpublished.

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TABLE 5. HOME COMPOSTING EDUCATION AVAILABLE TO RESIDENTS

City	Free In-person Workshop Available	Workshop Required to Get Bin	Master Composting Course	Demo Site ^a	Compost Hotline	Online and/or Print Educational Materials
Austin	✓	✓				✓
Cheverly						✓
Los Angeles County	✓	✓		✓		✓
Miami-Dade	✓	✓				✓
Napa	✓	✓				✓
New York City	✓		✓	✓	✓	✓
Oregon Metro			✓	✓		✓
Orlando	✓				✓	✓
San Diego	✓				✓	✓
Seattle	✓		✓	✓	✓	✓
Vancouver	✓			✓	✓	✓

^a Permanent sites where the public can see compost bins in use.

Source: Institute for Local Self Reliance, 2018.

Preferably, composting programs will provide in-person compost trainings or workshops. If this is not possible, residents must at least have easy access to other sources of composting information, either through demonstration sites, help lines, or via online and printed educational material.

Training/Workshops

Cities and counties should offer residents training in basic home composting practices. In-person workshops will probably be the most effective, but programs can also offer online training. (See Spotlight - Austin's Diverse and Evolving Training Options.)

Some jurisdictions require training to obtain a bin, while others make it optional. All the programs profiled in this report that offer home composting training, provide it for free. Requiring training gives local governments more

confidence that new composters will be successful and take steps necessary to prevent nuisance odors and pests. On the other hand, making the training required may decrease participation. One possible solution is to make the training optional for those who can show they have already received training in the past. This could be done by requiring a quick test, either online or in person. Cities and counties in dense urban areas may deem mandatory training important because of the higher risks of poorly operated compost systems attracting pests and bothering neighbors.

Master Composter Programs

Master Composter certification courses train people in more advanced composting skills and how to teach others about composting. After the training part of the course, most programs require that participants complete volunteer hours in community-based composting education to get their certificate. Courses are generally organized by nonprofits or university extension services,



SPOTLIGHT - Austin's Diverse and Evolving Training Options

Austin's program offers several options for home composting training. To receive a composting bin voucher or rebate, residents must take either an in-person or online class. Program coordinators also collect data to frequently improve the training and how it is provided. Other cities and counties starting a home composting program can learn from the flexibility and adaptability of Austin's approach to composting education.

Online Classes

The online class includes a 15-minute video and brief quiz. In Austin's program, more people claim compost bin vouchers or rebates through the online class than in person. Providing classes online is a potential cost-efficient option for home composting programs that may lead to more people claiming bins, but it is uncertain if such classes are as effective of an educational experience as in-person classes. Austin still sees a significant number of people participating in their physical workshops; some do not claim the subsidized voucher/rebates, but simply attend to learn about composting. Therefore, online classes are not a replacement for in-person classes. Requiring that residents take an online class ensures that new composters have some understanding of the composting process. By hosting



▲ When the weather is nice, Austin Resource Recovery holds compost workshops outside in parks and farmers' markets. During the rainier months, Austin holds the workshops in frequented in-door locations such as libraries. Source: Austin Resource Recovery

in-person workshops in targeted locations, a program can also provide the opportunity for a more thorough educational and hands-on experience and reach those residents that are already composting but wish to gain more training.

Community-taught Workshops

One more option Austin residents have is to hold their own classes using materials provided by the City. These community classes have the choice to use either the online class video, an AV projector presentation, or fact sheet handouts. A community member only needs to sign up online, choose which materials they would like to use, and the City will email that person the appropriate attachments and an Eventbrite link.

and the education they provide is relevant to home composting. In addition to home composting programs, local governments may consider helping to fund and/or provide class spaces for the organizations that run Master Composter courses. Of the programs reviewed in this report, San Diego and New York City support Master Composter training programs alongside their home composting programs.

Master Composter programs do not focus exclusively on home composting, but rather teach techniques for a wide variety of small-scale composting projects (especially community oriented composting projects). However, the "train the trainer" nature of Master Composter programs means that certified Master Composters could be recruited

to teach the introductory courses of home composting programs (either as part of their community outreach requirements or through paid contracting) or, as strongly encouraged in New York City, Master Composters can start community composting sites that double as home composting demonstration sites.

By training trainers, Master Composter programs have an exponential effect that could potentially be a more efficient use of home composting program funds than solely providing introductory workshops. In New York City, the organizers of the Master Composter Certificate Courses ensure that the course has long-lasting community impact through an extensive vetting process to invite only qualified community leaders to participate in the course



▲ The 2016 Master Composter class in Seattle, led by Tilth Alliance, a local nonprofit. Source: Tilth Alliance

out of a pool of hundreds of candidates. If successful, Master Composter training creates a self-sustaining network of decentralized composting outreach that provides home composting information to more people per dollar spent than paying contractors to teach workshops.

Demonstration Sites

Permanently installed composting demonstration sites serve a dual purpose: (1) visitors can learn about composting on their own schedule and view different types of composting systems they can purchase or build to use in their yards or gardens; and (2) the sites can hold workshops offered as part of a home composting program or Master Composter course. Generally, these sites also double as demonstration spaces for other gardening skills and techniques. Maintaining permanent composting demonstration sites could also potentially catch the interest of passers-by with no previous awareness of composting. Of the programs reviewed for this report, New York City, San Diego, Oregon Metro, and Vancouver have permanent composting demonstration sites (see Table 3).



SPOTLIGHT - Different Types of Demonstration Sites

In New York City, the Department of Sanitation's NYC Compost Project programs are carried out by DSNY-funded staff hosted by seven partner organizations. Five of these have demonstration sites: Brooklyn Botanic Garden, Earth Matter NY, Queens Botanical Garden, Snug Harbor Cultural Center & Botanical Garden, and the New York Botanical Garden.

San Diego provides the space for the demonstration site: a compost demonstration garden located outside the City's Environmental Services building. A nonprofit, the Solana Center, teaches the Master Composter course there.

In Vancouver, the City contracts with a local nonprofit, City Farmer, to provide all educational needs for its composting program: demo sites, training, and educational materials.

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Information Hotlines and Educational Materials

If a city or county is not able to provide in-person compost training, it at least could enable easy access to composting information for its residents. This information can come in the form of hotlines or educational materials available online or in print. Even if a home composting program includes an in-person training component, it can also offer these informational resources.

Hotlines

Compost information hotlines can be provided directly by a municipality or through contracting with a third party. New York City provides a Composting Hotline through the City's 311 service, and San Diego and Vancouver contract with local nonprofits. These hotlines can provide information on general and more technical aspects of home composting and serve as the number for ordering bins and scheduling classes.

Online

The director of City Farmer (the nonprofit that Vancouver contracts with) notes that the rise of the Internet has led to less people calling into the organization's hotline and more people looking for composting information online.³⁴ City Farmer estimates that in 2012 there were about one million visitors to its website, which covers a wide variety of urban gardening related topics (www.cityfarmer.info). All the programs reviewed in this report include educational material on their websites. These materials can be original or linked from other online sources (such as universities or other municipalities). Websites can host written educational materials or educational videos. (See the web pages of Los Angeles, Vancouver, and Orlando listed in the links section of their profiles for examples of videos.)



▲ A Master Composter class underway in San Diego. Source: City of San Diego



▲ A Master Composter graduate in Seattle provides educational outreach to the community. Source: Tilth Alliance

In-print

Alternatively, home composting programs can make informational materials available in print. New York City provides copies of some of its online materials in print at its various NYC Compost Project locations and also allows residents to order free printed deliveries of all of the City's online composting materials. The best way to ensure residents who claim bins have access to composting information is to provide hard copies of educational booklets with the bin (as Napa and Orlando do).

³⁴ Michael Levenston, Director of City Farmer, personal communication, September 2, 2016.



▲ San Diego's Compost Garden demonstration site features several bin types and examples of how to use finished compost in gardens. The pictured bins are, from left to right, the Can-O-Worms, the Algreen Terra Dual Batch Composter, and the Algreen Soil Saver. Source: City of San Diego Environmental Services Department



SPOTLIGHT - Orlando's Troubleshooting Hotline

Orlando provides residents with a phone line to call if they have complaints about a neighbor's composting bin or if they need help troubleshooting their own bins. Since the beginning of the program in 2015, there has been one odor complaint from a neighbor of resident using a City of Orlando provided bin. Orlando's program bins are free but technically owned by the City, so they reserve the right to come check on the bins if there are complaints. A program representative

visited the home where there was the complaint and found the resident was putting almost no brown materials and a large amount of onions in their composting bin. This illustrates the type of problem that can result from improper management practices and how easy it is to fix or avoid with proper education or training. One mechanism a local government can use to provide effective composting education is to set up a troubleshooting hotline like Orlando.

Choosing Who Provides Compost Education and Where to Hold Composting Workshops

After choosing what types of composting systems to make available to residents, local governments need to decide who is going to provide the education (see sidebar, Who Provides Composting Education?) and where in-person workshops will be held (Table 6).

When choosing who will create and provide educational materials and teach workshops, consider the following:

- Who are the composting experts available in your community?
- Does your city/county already have a publically owned demonstration site where workshops can be taught? If not, contract with a local nonprofit that maintains compost demonstration sites or community gardens (see profiles on Seattle and Vancouver).
- Do you need a third-party to produce educational materials and provide other services (such as hotlines) in addition to providing in-person training, or will these additional services be produced in-house?
 - If the latter, look to see if University Extension services in your area can provide free compost training (see profiles on Miami-Dade County and Orlando). If they are not available, contracting directly with individual compost experts is cheaper than using a contracting company.³⁵
- Maintaining full-time government-employed compost experts is a more expensive option, but one that makes sense in cities with ambitious and comprehensive decentralized composting programs like New York City's Compost Project (see New York City case study).



Who Provides Composting Education?

CONTRACT WITH A NONPROFIT

San Diego, Vancouver, Seattle

CONTRACT WITH A PRIVATE COMPANY (FOR-PROFIT)

Los Angeles County

CONTRACT WITH LOCAL MASTER GARDENERS

Napa

CONTRACT WITH INDIVIDUAL COMPOST EXPERTS

Austin

PARTNER WITH UNIVERSITY EXTENSION SERVICES

Orlando, Miami-Dade County

ALLOW COMMUNITY MEMBERS TO ORGANIZE CLASSES

Austin

MAINTAIN CITY FUNDED TRAINERS

New York City (its trainers are hosted at 7 partner organizations)



▲ Miami-Dade County residents learn about composting at a workshop led by University of Florida extension educators. Source: Miami-Dade County Master Gardeners

³⁵ According to research done by Austin Resource Recovery. See Austin case study.



Examples of Where to Provide Home Composting Training and Demonstration

LIBRARIES

Austin, Miami-Dade County

GARDENING/COMPOSTING DEMONSTRATION SITES

Los Angeles County, New York City, San Diego, Seattle,^a Vancouver^b

FARMERS' MARKETS AND PARKS

Austin

STORES THAT SELL COMPOSTING BINS AND EQUIPMENT

Austin

OTHER PUBLIC LOCATIONS, SUCH AS MUSEUMS, COMMUNITY CENTERS, AND UNIVERSITY EXTENSION OFFICES

Napa

^a Site run by a nonprofit but not funded by the City.

^b Site run by a nonprofit and funded by the City.

When choosing a location to hold in-person home composting workshops, consider:

- What are some locations that people normally frequent?
 - Austin found that more people attended workshops where lots of people would be normally going, such as farmers' markets, city hall, and libraries.³⁶
 - Offering workshops by request to schools, nonprofits, businesses, and other organizations gives residents a convenient option for obtaining composting education and ensures that people will enroll in the class (see profiles on Austin and Seattle).
- Where is infrastructure already set up?
 - Austin found it could save money by choosing locations where chairs, tables, and other necessary equipment were already set up (such as libraries, community centers, and event centers).³⁷
- Would you prefer for the workshops to be more hands on or more oriented around PowerPoints and demonstration?
 - If the former, choose locations like demonstration sites and gardens that already have the composting equipment set up.
 - If the latter, places like libraries, community centers, and event centers may already have chairs, tables, and projectors set up.
- What time of the year is it?
 - Hold more classes when weather is fair — less during cold and rainy days and the middle of the day in hot summers. Spring and summer have the highest attendance in Austin³⁸ and Napa only holds workshops in the spring.

Allow and encourage people to make their own bins.

³⁶ Ibid.

³⁷ "July 2014-2015 Composting Rebate Program Analysis and Recommendations" (Austin Resource Recovery (ARR), n.d.).

³⁸ Sylba Loren, "Home Composting Rebate Program Year13," January 31, 2013.

Comprehensive Research Agenda

Local governments can collect and analyze data on several aspects of their home composting program to increase the program's impact and cost effectiveness and to show how the program is saving the jurisdiction money. A comprehensive research agenda could include several parts:

- Keeping track of how many bins have been distributed and how much residents are composting on average per bin to calculate savings (see Save Money section).
- Keeping track of all expenses. This will help justify continued funding.
- Asking program participants (residents attending classes and receiving program bins) where they heard of the program to find out which forms of marketing and outreach are the most effective.
- Keeping track of what locations and times are the most popular for composting workshops.
- Surveying residents on their satisfaction with the program-provided bins and trying new bins if satisfaction is low.
- Releasing reports that compile and analyze the collected data and make recommendations for how to improve the program (see spotlight, Noteworthy Research and Program Evaluation).

Local governments can also conduct preliminary research on the potential for a home composting program. Collecting data on the stated interest of residents can assure governments that there is interest in home composting in their jurisdiction, and can also identify zones for pilot runs or staggered program rollout (as Austin is currently doing). However, a low rate of stated interest does not necessarily mean there would be no value in starting a program. A pilot study conducted in 1999 by the New York City Department of Sanitation predicted home composting would not have a large impact in the city because the majority of its residents do not have yards or gardens.³⁹ Nonetheless, they concluded



SPOTLIGHT - Noteworthy Research and Program Evaluation

Austin has the most comprehensive research agenda of any home composting program reviewed for this report. The City collects a wide variety of data and uses that data to release annual reports that make recommendations on how to improve the program. Using these recommendations, the program experiments with frequent changes. For more information, see the Austin case study and Appendix C (the actual reports authored by the City).

Oregon Metro commissioned research firms to conduct research on backyard composting trends in the region. The research was less oriented towards evaluating Oregon Metro's program and more towards assessing the potential for expanding the program to more residents. Gilmore Research Group published a report in 1998 and 2001, and Market Decisions Corporation published a report in 2004. Some of their findings may be useful for jurisdictions hoping to start a backyard composting program (see Appendix C).

Also check out the case studies of Miami-Dade County and San Diego. Miami-Dade County has collected data on composting rates to calculate savings. San Diego has collected data on customer satisfaction with the program bins, the program participation rates by zip code, and the number of people receiving program vouchers who actually claimed their discounted bin. San Diego plans to release this data in an official report.

home composting was a worthwhile educational experience for residents, and the program would be a cheap way to get residents composting.⁴⁰

³⁹ Kevin P. Farrell and Martha K. Hirst. "Backyard Composting in New York City: A Comprehensive Program Evaluation." Produced by the New York City Department of Sanitation Bureau of Waste Prevention, Reuse and Recycling, 1999.

⁴⁰ Ibid., pg. 11.

Marketing and Outreach

Effective marketing and outreach are essential to increase participation in home composting programs. Every program surveyed for this report has an outreach component. Some outreach options are on the cheaper side, such as posting flyers around town (like in Napa) or sending out postcards to eligible residents (like in Austin). Others take the more expensive route of placing advertisements in local newspapers, magazines, or radio stations.

The City of Austin asks rebate/voucher recipients where they heard of the program (see Table 6 in the Austin case study). Based on its data, the City has concluded:

- Radio and magazine ads are very cost ineffective,
- Doing targeted postcard mailings is the most cost-effective advertising method,
- Online advertising recruits the most number of participants, and is cost-effective, and
- Examples of free and effective advertising include asking participating retailers to advertise bins (only applicable in a voucher/rebate program) and adding announcements to residents' utility bills.

The people working on Austin's program also have some good ideas about new outreach approaches to try in the future, such as:

- Developing advertising tool kits for partnering compost vendors,
- Creating incentives for a "Refer-a-Friend" program, and
- Using demographic data collected through class surveys to target online advertising campaigns.⁴¹

The 2004 study conducted on Oregon Metro's program offers some other insights into marketing and outreach for home composting programs but we note that these may now be out-of-date given decreasing newspaper readership in the last decade.⁴²



SPOTLIGHT - Linking Home Composting to Save-As-You-Throw Trash Fees

Pay-As-You-Throw (PAYT) or Save-As-You-Throw (SAYT) trash billing systems are those that charge households directly for collection service based on the volume or weight of the trash placed at the curb. These systems are utilized in more than 7,000 U.S. communities and serve as a direct economic incentive for households to reduce the amount of trash set out for collection. In contrast, most households typically can set out unlimited trash cans or bags with no cost penalties; solid waste management and recycling expenses are hidden in property taxes and other general revenues. Cities and counties can increase composting (and recycling) rates by transitioning to SAYT systems and informing residents that they can save money if they divert organics from their trash to composting. For example, Austin provides this information directly on its home composting rebate program website and gives a number that residents can call to learn about saving money by reducing their trash bin size.^a

a: See "Home Composting Rebate Program," City of Austin, accessed April 30, 2018, <http://www.austintexas.gov/composting>.

- The local newspaper was identified by survey participants as the most common source from which they heard of bin sales events.
- The majority (60%) of the Oregon Metro's general population prefers direct mail as one of the best ways to be notified of a home compost bin sale. Garbage bill inserts (29%) and newspaper articles or ads (21%) are also effective methods.

41 Loren, "Home Composting Rebate Program Year13."

42 Market Decisions Corporation, "Home Composting Survey 2004," produced for Oregon Metro in 2004, unpublished.



SPOTLIGHT - Orlando's "Get Dirty" Campaign



▲ For Valentine's Day 2016, Orlando invited residents to "Get Dirty With Their Valentine" by downloading one of these cards after signing up for a free Earth Machine™ bin as a Valentine gift. Source: JenHiatt.com

The success of Orlando's "Get Dirty" campaign speaks volumes to the importance of innovative and fun outreach. In 2015, the City recruited its communications office to develop a creative campaign to spread the word about its new program. They came up with the idea of creating funny videos with innuendos about "getting dirty" composting with your valentine and neighbors, and then posted the videos around social media and played them on a local station. These videos, along with some newspaper stories, led to 3,000 compost bin requests in the first two weeks after the launch of the program. Demand has since slowed significantly, but the program coordinators are planning another outreach push to reach more residents. Orlando produced this campaign at no extra cost to the City by assigning the tasks to the workload of its communications staff.

"We found that appealing to a person's sense of humor, through our 'Get Dirty' campaign, was the most effective way to get someone to pay attention to an important topic like food waste."

— IAN JURGENSEN, GREEN WORKS ORLANDO
SUSTAINABILITY PROJECT MANAGER

A strong outreach and marketing campaign is key to motivating residents to participate in home composting. This is illustrated by the large spike in demand for program bins in Orlando during the "Get Dirty" campaign that has since levelled off. Ambitious early marketing pushes like Orlando's can be followed up with more easily sustained (i.e. cheaper) marketing and outreach methods to maintain growing interest in the program.



PART 4

Ordinances: The Good, the Bad, and the Ugly

Regulations should not unnecessarily hinder home composting. Rather, the goal should be to foster well-operated sites and practices.

Many cities and counties have outdated ordinances or regulations that effectively ban or restrict home composting. These may need to be amended before launching a home composting program. (See Spotlight - Montgomery County, Maryland Identifies Current Code That Restricts Home Composting and Recommends an Inter-Agency Review to Address.) Otherwise, a local ordinance is not necessary to promote home composting; most of the 11 community programs profiled in this report do not have local laws governing home composting. (Napa and Orlando are the two exceptions.) However, a local ordinance can be a tool to prevent bad practices by, for instance, prohibiting nuisance odors or requiring that bins allow for adequate air flow. Napa does the former and Orange County, where Orlando is located, does the latter. Bad practices can create issues and damage the public perception of composting in the area.

We prefer the carrot over the stick approach; that is, laws that require the local administration to provide home composting education

▲ Source: Oregon Metro

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and training, or the creation of a home composting program. Consider the District of Columbia's new law, the Home Composting Incentives Amendment Act of 2018. Passed unanimously May 1, 2018, the Act creates a home composting incentives program in which qualified residents receive either a rebate or a voucher for up to \$75 of the purchase of approved home composting systems. It also requires the City to offer an in-person composting training program, which residents would need to complete in order to qualify for the rebate or voucher; and requires the City to create educational materials about home composting so all residents can learn more about effective at-home composting.⁴³

Contextual factors such as population density and local zoning codes shape each composting ordinance, but all cities and counties could consider the following:

- Ordinances that require composters to follow specific practices are often unnecessarily prescriptive and may deter people from composting. (See Ordinances That Are Too Prescriptive.)
- Instead, to prevent home composting related public nuisances, ordinances could specify certain results to be met (such as "composting shall not create odors, attract rats and other vectors of disease, or create any other sort of nuisance"). (See Preventing Bad Composting Practices.)
- Ordinances should avoid unclear language that may leave composters and regulators unsure of what is and what is not permitted. (See Ordinances with Unclear Scope.)
- Composting ordinances should require the administration to provide an educational and training component. (See Requiring Home Composting Education.)
- Densely populated urban cities may feel the need to establish restrictions. In such cases, lawmakers should strive to keep regulations reasonable and not overly restrictive on size caps, location of composting system, container requirements, prohibited materials, and limitations on exchange of

compostable materials and finished compost. (See What Is Reasonable for Ordinances to Restrict?)

Preventing Bad Composting Practices

When people know how to compost properly, they can avoid offensive odors, rats and other disease vectors, and the release of nutrient-rich liquid into surface water or groundwater (all collectively from here on referred to as 'nuisances'). Education, training, and technical assistance/support can foster good practices and prevent bad practices. A robust and strong education campaign will help prevent careless or ignorant people from damaging the public's perception of composting and thus jeopardizing the growth of home composting.

Ordinances are another tool to foster good practices and prevent bad practices. They can do this by specifying that nuisances are not allowed, stipulating requirements for proper composting, and clarifying what is and is not allowed in home composting systems. Cities may want to be able to take action in cases where someone is being truly negligent or irresponsible. (Ordinances can also mandate education and training. See Requiring Education for Home Composting).

For example, the Residential Composting ordinance in Saint Paul, Minnesota, odors section is a good example of performance-based language:

Odors. Compost shall be properly managed to minimize odor generation and promote effective decomposition of the material.⁴⁴

Chicago's 2007 composting ordinance prohibits composting activities from becoming a public nuisance:

a) *Nuisance.* In no event shall any composting activities be conducted in a manner which creates an odor, litter, dust or noise nuisance, or attracts vectors or pests.⁴⁵

43 Brenda Platt, "Washington, D.C. Home Composting Bill Unanimously Passes City Council," Institute for Local Self-Reliance, May 2, 2018, webpage: <https://ilsr.org/washington-dc-home-composting-bill-passes/>.

44 Saint Paul, Minnesota Municipal Code, "Section 357.08. - Residential composting," accessed May 2, 2018, https://library.municode.com/mn/st_paul/codes/code_of_ordinances?nodeId=PTIILECO_TITXXIXLI_CH357SOWA_S357.08RECO.

45 City of Chicago Municipal Code, "Chapter 7-28, Section 715," accessed May 2, 2018. Retrieve at: <http://library.amlegal.com/nxt/gateway.dll/?f=templates&fn=default.htm>

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These examples from Saint Paul and Chicago allow local officials to take appropriate measures to abate the issue and prevent the violator from repeating the offense. (In Requiring Home Composting Education, we argue that education is the best way to abate and prevent nuisances).

However, many jurisdictions have passed ordinances that are far more restrictive than the rules outlined above.

Ordinances That Are Too Prescriptive

Local governments may be tempted to err on the side of caution and pass ordinances to prevent nuisances by restricting composters within a narrow range of practice. However, regulations that stipulate a long list of prescriptive requirements are unnecessary and may unintentionally ban certain types of composting systems that work well. As long as home composting ordinances clearly outline that residents shall not promote vectors of disease or other public nuisances, giving residents leeway in how to manage their home composting system is preferable.

Certain parts of Chicago's 2007 composting ordinance are emblematic of regulations that are overly prescriptive. If Chicago residents break the following regulations, they could face a fine:

Moisture level. The moisture level of the composting material shall be maintained within a range of 40% to 60% moisture.

Mixing. Composting material shall be mixed or turned at regular intervals as conditions mandate to re-mix ingredients, distribute moisture, rebuild porosity and aid in physical breakdown until composting is complete.⁴⁶

These sections are unnecessarily restrictive, difficult to administer, and may discourage some residents from composting. They assign fines to factors that are sometimes outside of home composters' control (moisture levels) and to home composters that may use methods that



SPOTLIGHT - Napa County: A Good Composting Ordinance

Napa County provides a good model of how to write a composting ordinance that focuses on results-based over prescriptive language. The "Composting—Small volume on-site operations" section of Napa County's municipal code states:

Nothing in this chapter or division shall prevent a person from composting green material or green waste upon their property, provided such composting is conducted on the property where the material was generated or on contiguous property, and is conducted in a manner which will not promote the propagation, harborage, or attraction of vectors, or the creation of public nuisances and no more than two hundred cubic yards of compost, finished compost, or feedstock is on site at any one time.

Napa County's ordinance allows home composters the flexibility to use a variety of composting methods and clarifies that nothing else in the chapter should be construed to prevent composting. Note: The requirement that material be generated on-site is an unnecessary restriction. (For more on this topic, see Exchange of Compostable Materials and Finished Compost.)

Source: https://library.municode.com/ca/napa_county/codes/code_of_ordinances.

⁴⁶ City of Chicago Municipal Code, "Chapter 7-28, Section 715," accessed May 2, 2018. Retrieve at: <http://library.amlegal.com/nxt/gateway.dll/?f=templates&fn=default.htm>.



SPOTLIGHT - Montgomery County, Maryland Identifies Current Code That Restricts Home Composting and Recommends an Inter-Agency Review to Address

Montgomery County, Maryland's newly released report, *Strategic Plan to Advance Composting, Compost Use, and Food Scraps Diversion in Montgomery County, Maryland*, points out how the County's current codes and regulations discourage and even restrict composting of food scraps in backyard compost bins.

- Montgomery County Code Chapter 48, Solid Waste
 - Section 48-1. Definition of garbage includes food scraps.
 - Section 48-17. Disposal by use of compost piles: The use of compost piles for the disposal of garbage is permitted only when the pile is completely rodent-proofed. Compost piles consisting entirely of leaves and dirt do not require rodent-proofing.
 - The code allows for the use of compost piles to dispose of garbage, as long as the compost pile is completely rodent-proofed. The County's solid waste code does not define or mention the use of compost bins.
 - Section 48-9 does not permit accumulation of solid waste to remain on a property.
 - Section 48-10 prohibits the disposal of any garbage on private property unless allowed by the County.
- Montgomery County Code Chapter 22, Fire Safety
 - Section 22-80. Storage of combustible waste: Combustible waste and refuse shall be stored in:
 - (1) Approved containers which are constructed of noncombustible materials equipped with a tight-fitting cover; or
 - (2) An approved bin constructed of noncombustible materials having a self-closing cover that will operate automatically in case of fire inside the bin.

- Montgomery County Code Chapter 26, Housing and Building Maintenance Standards
 - Section 26-9(a)(8). All rubbish and garbage must be stored and maintained in approved containers as required by Chapter 48. Rubbish and garbage must not remain outside of approved storage containers, or containment areas approved for bulk objects, for more than 24 hours.
 - Section 26-9(a)(8)(B) Each occupant of a dwelling, dwelling unit, or individual living unit must dispose of all rubbish and garbage in a clean and sanitary manner by placing it in appropriate containers as required by Chapter 48.

The above code language could be interpreted to essentially ban almost all composting. The language requiring "completely rodent-proofed" is particularly vague and problematic. As mentioned elsewhere in this report, avoiding rat problems has more to do with following proper composting practices than the type of bin or system utilized.

The Strategic Plan recommends that the County conduct a coordinated inter-agency review of existing requirements and restrictions pertaining to backyard/community-scale composting, and make regulatory changes to County zoning and applicable County codes to clarify, and support activities to include food scraps.

Source: Montgomery County Department of Environmental Protection Division of Solid Waste Services, *Strategic Plan to Advance Composting, Compost Use, and Food Scraps Diversion in Montgomery County, Maryland* (April 2018), pp. 21, 41-42. Also see Montgomery County Municipal Code, "Sec. 48-17. Disposal by use of compost piles," accessed May 3, 2018 <http://montgomeryco-md.elaws.us/code/montgom/48-17/>.

do not require mixing, such as worm composting. Keeping compost operations within 40-60% moisture is a best management practice that facilitates composting (and higher levels may produce odors), but it is unreasonable to require 40-60% at all times. Moisture levels below 40% may slow down the composting process but pose no nuisance risk.

The “Moisture” section has since been removed in amendments to the law, confirming that such a provision was unnecessary and burdensome.

Ordinances with Unclear Scope

Some jurisdictions may have outdated ordinances that do not specifically address composting, but that are written in ways that could impede home composting. For example, section 100.6 of Washington, D.C.’s Health Nuisances Title of D.C.’s code states:

It shall be unlawful for any person to do the following: (a) Pile or deposit manure, offal, or garbage, or any offensive or nauseous substance within three hundred feet (300’) of any inhabited dwelling within the District.⁴⁷

The City could avoid confusion by including a provision that clarifies compost is exempt from the regulation, such as: “Nothing in this chapter or division shall prevent people from composting in a properly managed composting system.”

Requiring Home Composting Education

Education and training are critical aspects of any successful home composting program. The U.S. Composting Council (USCC) argues that education can generally improve the poor composting practices that are the root of most composting related nuisances. City and county legislatures can use ordinances to mandate that the appropriate department (such as Public Works or Solid Waste Management) provides home composting education to residents.



SPOTLIGHT - New York City Shows That Home Composting Regulations May Be Unnecessary

Some jurisdictions only address home composting in their ordinances to clarify that home composting is exempt from other regulations. For example, New York City has a chapter of ordinances regulating the protection of water sources. The regulations restricting the proximity of solid waste management facilities to water sources include an exemption for “composting facilities for individual households for personal use.”^a Similarly, the Solid Waste Management chapter of New York City’s Sanitation title includes the following exemption from regulations:

Any regulations promulgated shall not limit the amount or type of solid waste utilized by any person for the purposes of composting, materials recovery from solid waste, or operation of a recycling center.^b

New York City has not seen the need to pass restrictive ordinances. Instead they have a large network of composting demonstration sites and easily accessible composting information and training.

^a Rules of the City of New York, “Chapter 18, Section 18-41,” accessed May 10, 2018, <http://www.nyc.gov/html/dep/pdf/recales/regulations.pdf>.

^b NYC Administrative Code, “Title 16, Chapter 2, Section 16-207,” accessed May 10, 2018, <http://nycclaws.readthedocs.io/nycadmincode/t16/co2/>.

47 District of Columbia Municipal Regulations, “Section 100.6,” accessed May 2, 2018, https://doh.dc.gov/sites/default/files/dc/sites/doh/publication/attachments/health_nuisances.pdf.



SPOTLIGHT - Minneapolis Includes Education in Its Home Composting Ordinance

Minneapolis' composting ordinance requires the City to distribute educational materials. In 2012 and 2015, Minneapolis amended the composting of its Housing: Maintenance Code to include the following educational components:

(h) Educational materials. The city shall prepare and distribute informational materials to assist persons wishing to conduct source-separated organic composting in an efficient manner that minimizes public nuisance conditions.

(i) Abatement. All compost containers and/or compost materials not in compliance with this section shall be declared a public nuisance and are subject to abatement as provided in Chapter 227 of this Code. In addition, the director may require individuals whose compost containers and/or materials are not in compliance with this section to attend a Master Composter or similar educational program as a condition of continuing to compost on a subject property.^a

Following passage of the ordinance, the City created a short but comprehensive educational website that is a step-by-step guide on backyard composting.^b

Note: It is probably not necessary to write into law that home composting can be classified as a public nuisance as Minneapolis has done. (See *What Is Reasonable for Ordinances to Restrict?* for discussion on why the City of Minneapolis deemed it necessary.)

^a Minneapolis Municipal Code, "Title 12, Section 244.770," accessed May 10, 2018. Retrieve at https://library.municode.com/mn/minneapolis/codes/code_of_ordinances?nodeId=11490.

^b Minneapolis Dept. of Public Works - Solid Waste & Recycling, "Backyard Composting," accessed May 10, 2018, http://www.ci.minneapolis.mn.us/solid-waste/yardwaste/solid-waste_yardwaste-composting.

The Minnesota Composting Council and the Association of Recycling Managers have drafted a report titled, *Model Composting Ordinance for Backyard and Small Composting Sites*, that shows how ordinances can implement education as both a preventive measure and a regulatory tool. The model ordinance includes a section that requires local authorities to provide information and technical assistance to residents on backyard and small-scale composting.⁴⁸ By providing education upfront, jurisdictions can prevent composting related issues from occurring.

The model ordinance also requires violators of composting regulations to attend compost training or obtain information on appropriate management practices in some other fashion. If the problem persists, local authorities can require residents to stop composting.⁴⁹ Some jurisdictions might find this a useful backup legal tool.

Minneapolis' 2015 composting ordinance includes education and a requirement that individuals found in noncompliance attend a Master Composter or similar educational program as a condition of continuing to compost on their property. See *Spotlight - Minneapolis Includes Education in Its Home Composting Ordinance*. Those interested in emulating this law might consider mandating that training and technical assistance be provided, preferably in-person composting workshops.

What Is Reasonable for Ordinances to Restrict?

As stated earlier, we prefer a carrot over the stick approach and generally do not think local governments need to pass laws restricting home composting. However, we understand that more densely populated urban cities may want to take extra precautions against potential pest and other nuisance issues. For example, a policy aide that worked on passing two recent composting ordinances in Minneapolis stated that he would prefer to move towards a less prescriptive composting ordinance, but some residents have loudly opposed home composting in their respective neighborhoods, making less prescriptive rules politically impossible for the moment.⁵⁰

⁴⁸ The Minnesota Composting Council and the Association of Recycling Managers, *Model Composting Ordinance for Backyard and Small Composting Sites*, draft report, May 2015, pg. 11, Available online at <http://www.mncompostingcouncil.org/resources-for-compost-sites.html>.

⁴⁹ Ibid, pg. 12.

⁵⁰ Robin Garwood, Policy Aide to Minneapolis Council Member Cam Gordon, personal email communication, July 28, 2017.

For cities/counties that feel they need to pursue an ordinance, there are some things to keep in mind regarding what is and is not reasonable to include. These have to do with restrictions applying to: size, location of composting system, container specs, prohibited materials, and limitations on exchange of compostable materials and finished compost. Regulations should not unnecessarily hinder home composting. Rather, the goal should be to foster well-operated sites and practices.

Size

Establishing size restrictions is controversial, especially because numeric thresholds are often arbitrary. There's a misconception that if home compost operations are too big, they may become a nuisance to neighbors and the public. Sites become nuisances, not due to size, but due to improper practices. If someone is throwing food scraps on top of a small open pile without any effort to cover, mix, or attend to the proper carbon-nitrogen ratio, it could become a smelly mess even if a tiny pile.

All composting related ordinances need to consider local contexts, and population density may be one factor for determining if a size cap is warranted. The more densely populated an area, the less amount of space a composting operation can take up before neighbors might start complaining about perceived nuisance odors or appearance of the site. Then the question becomes: How big is too big? What may be too big for a dense urban city will likely be less of an issue in a rural area. Watch out for setting specific caps that are unnecessarily restrictive and arbitrary.

Comparison of three Minnesota municipalities – Minneapolis, Saint Paul, and Plymouth – illustrates this issue. (See Spotlight - Minnesota Municipal Ordinances Show That Size Restrictions May Be Arbitrary.) Minneapolis allows a larger size for home composting, 15 cubic yards on lots with structures, than does Saint Paul and Plymouth. Minneapolis is the most densely populated of the three jurisdictions.⁵¹ A Minneapolis official who worked on passing composting ordinances there reports that there have been

⁵¹ 7,535 inhabitants per square mile in Minneapolis, 5,484 inhabitants per square mile in Saint Paul, and 2,160 inhabitants per square mile in Plymouth. Official 2010 U.S. Census Data.



SPOTLIGHT - Minnesota Municipal Ordinances Show That Size Restrictions May Be Arbitrary

Minneapolis

- **Size.** The maximum size for a compost area on lots with a residential structure shall be fifteen (15) cubic yards. The maximum size on lots without a residential structure shall be twenty-five (25) cubic yards for lots under ten thousand (10,000) square feet and one hundred twenty (120) cubic yards for lots over ten thousand (10,000) square feet.^a

Saint Paul

- **Container.** Composting shall be conducted within an enclosed container(s) not to exceed a total of one hundred (100) cubic feet in volume for city lots less than ten thousand (10,000) square feet and one hundred fifty (150) cubic feet for lots greater than ten thousand (10,000) square feet, and five (5) feet high. The container(s) shall be of a durable material such as wood, block or sturdy metal fencing material.^b

Plymouth

- **Containment Structure.** All composting materials shall be contained in a structure constructed of durable material such as rot resistant wood, block, sturdy metal fencing, or in commercially fabricated compost bins designed to contain composting material. Unless the composting structure is a commercial product particularly manufactured for composting purposes, the composting structure shall be no smaller than three feet by three feet by three feet but shall not exceed five feet in width, 12 feet in length and five feet in height.^c

^a Minneapolis Municipal Code, "Title 12, Section 244.770," accessed May 10, 2018. Retrieve at https://library.municode.com/mn/minneapolis/codes/code_of_ordinances?nodeId=11490.

^b Saint Paul Code of Ordinances, "Part II, Title XXIX, Section 357.08," accessed May 10, 2018. Retrieve at https://library.municode.com/mn/st_paul/codes/code_of_ordinances.

^c Plymouth Municipal Code, "Chapter VI. - Public Health," accessed August 7, <http://www.plymouthmn.gov/home/showdocument?id=751>.

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no significant health or nuisance issues related to home and small-scale composting since the latest composting ordinance passed in 2015. Saint Paul's size limit of 100 cubic feet (3.7 cubic yards) for composting on residential lots less than 10,000 square feet seems to be unnecessarily restrictive, especially considering many effective 3-bin home composting systems are larger than 3.7 cubic yards. Instead of capping the maximum size, Plymouth's regulations set a minimum size under which systems should not fall: 3 feet by 3 feet by 3 feet. The exception to this minimum are commercial products particularly manufactured for composting purposes. Just because something is commercially made does not make it inherently better than a homemade version. Allow and encourage people to make their own bins.

System Type

Jurisdictions often require composting systems to be constructed in certain ways or with certain materials. These prescriptive rules are generally designed to serve four purposes: keeping out unwanted critters, avoiding nuisance odors, improving visible appearance of the composting, and ensuring proper aeration.

Some ordinances mandate that composting be conducted in fully enclosed containers. For example, Saint Paul's ordinance requires on-site residential composting to be conducted in enclosed compost containers (see Spotlight - Minnesota Municipal Ordinances Show That Size Restrictions May Be Arbitrary). Chicago requires food scrap composting be conducted "entirely within a fully enclosed container, with no opening having a dimension greater than ¼ inch in any direction."⁵²

Fully enclosed containers help to deter pests, but rodents can chew through most materials used to construct composting containers, including the plastic of prefabricated bins, even hardware cloth given the right motivation. On the other hand, composters following best management practices should be able to adequately prevent pest issues — whether or not they are composting in a fully enclosed container. See Spotlight - Odor and Rodent Considerations.



▲ Red Hook Community Farm in Brooklyn, New York City, demonstrates that if aerated static piles are built and maintained properly, rodent issues are not a problem. Source: Institute for Local Self-Reliance.

Other ordinances include specifications for materials used in the construction of a composting system. For example, Minneapolis requires containers be made out of a durable material (although that is not defined), and stipulates that any wood be free of rot.⁵³ Orange County, Florida's ordinance requires composting be conducted in bins and stipulates that the bins "shall be constructed of wire, wood lattice or other material which allows air to filter through the structure."⁵⁴ (Orlando is in Orange County.) These two examples use language sufficiently broad enough to permit most composting systems except for open piles.

Properly managed compost piles are not unsightly and are not necessarily more conducive to pests than composting conducted in containers. Many densely populated urban jurisdictions permit composting in piles without issue. In New York City, the Red Hook Community Farm in Brooklyn exemplifies a community composting site that utilizes open window piles without rodent problems. The key to its success is good management.

Rats will probably be the main concern that drives certain cities to enact stricter compost container requirements. Chicago recently topped the list of the most rat infested

52 City of Chicago Municipal Code, "Chapter 7-28, Section 715," accessed May 2, 2018. Retrieve at: <http://library.amlegal.com/nxt/gateway.dll/?f=templates&fn=default.htm>.

53 Minneapolis Municipal Code, "Title 12, Section 244.770," accessed May 10, 2018. Retrieve at https://library.municode.com/mn/minneapolis/codes/code_of_ordinances?nodeId=11490.

54 Orange County Code of Ordinances, "Section 28-35," accessed May 10, 2018. Retrieve at https://library.municode.com/fl/orange_county/codes/code_of_ordinances.



SPOTLIGHT - Odor and Rodent Considerations

One of the most common questions people unfamiliar with the composting process have is, what about rats? Rats and other rodents are a part of the urban ecosystem. When people put household garbage in plastic bags on the curb, in open dumpsters, or in bins without locking lids, they are basically hosting a feast for these scavengers and their rapidly expanding families. The longer this garbage sits, the smellier it becomes, and the more attractive to rats and other unwanted guests. Will separating out food scraps and composting them at home invite these unwanted animals into my backyard? The answer is: not if home composters know how to compost properly and follow best management practices.

Many home composters mistakenly locate their systems right up against their fence. It's better to place the bin in an open area and to make sure any clutter is minimized. At least 2 feet of open space all around a home composting system is recommended. Open space makes rodents nervous about predators.

Enclosed systems such as tumblers are often viewed as having an advantage over open systems in their ability to control odors and be rodent proof but proper management is the key for all systems. Adequate aeration or oxygen is essential for optimizing the composting process and preventing it from going anaerobic, which can produce nuisance odors. No matter what system is utilized, composters need to ensure adequate aeration. They also need to balance nitrogen-rich materials like food scraps with carbon-rich materials like leaves. But cooked foods, meat, dairy, fats, oils, and greases should be avoided in backyard systems as these materials can attract rodents.

Open piles that are well-constructed (with a good seal of mature compost) and well-turned (on a schedule that prevents anaerobic conditions) have minimal odors. If they are constructed well — scrupulously incorporating all bits of food that may have rolled away from the pile and then sealed to a uniform depth of at least 6 inches — rodents

are less interested. And if placed appropriately, with open space all around, and turned regularly so rodents see no opportunity for a habitat, open piles can avoid rat issues.

Bins and containers that are filled with a good blend of nitrogen-rich and carbon-rich material and turned on a schedule that prevents anaerobic conditions have minimal odors. Actively managing the composting system will deter critters as well. Like frequently turning a pile, moving a bin around every few weeks will avoid providing rodents the opportunity to set up a habitat. Further, bins or containers need a layer of absorbent material like mulch, wood chips, or fall leaves to soak up any extra liquids. Placing bins on an inhospitable barrier (like cement or a dug-out pit with sand or gravel) is another option to deter rodents.

If a bin or container is placed on cement, "contact water" (water that has come in contact with the active composting process) can be spotted and soaked up quickly with wood chips or leaves that are then incorporated back into the bin. If a foundation, like bare earth, soaks up contact water, over time it can smell. Enclosed systems such as tumblers and bins wrapped in ¼-inch hardware cloth can help keep rats and mice out. To prevent access to food, bins need a full wrap of at least ¼-inch hardware cloth, including the top hatch (rodents are able to climb the sides to get in through the top). But, again, no matter what system is chosen, proper management is needed. Managing odors is key to avoiding rats.

Source: Institute for Local Self-Reliance. Part of this section was adapted from *Growing Local Fertility: A Guide to Community Composting* (Institute for Local Self-Reliance, 2014), p. 16, and based on personal communication with David Buckel, Red Hook Community Farm, Brooklyn, New York (March 20, 2014). Also see ILSR's webinar on "Successful Rat Prevention for Community-Scaled Composting" (June 2017), available online at: <https://ilsr.org/successful-rat-prevention-for-community-composting-webinar/>.

cities in the U.S.⁵⁵ For this reason, Chicago may be justified in requiring fully enclosed containers for composting. However, Los Angeles and New York City (taking spots two and four on the list of top rat infested cities)⁵⁶ have no ordinances regulating home composting. These cities have home composting programs and have not had an issue serious enough to necessitate a restrictive ordinance.

Siting

Some composting ordinances specify the minimum distance a composting system needs to be from property lines, buildings, and waterways. For example, St. Paul's Residential Composting code states that "compost container(s) shall be located at least five (5) feet from lot lines and be placed no closer than twenty (20) feet to any habitable building, other than the resident's own home, nor less than two (2) feet from the alley if any alley exists."⁵⁷

Minneapolis has slightly different regulations for compost container location:

Location on property. The compost container(s) shall not be located closer than one (1) foot from the rear property line and shall not be located in any required front or side yard as defined in the zoning code, nor closer than twenty (20) feet to any habitable building off of the subject property.⁵⁸

Similarly, Orlando prevents residents from composting in front yards or street-side yards.⁵⁹ Preventing residents from locating composting systems in front or side yards is usually done for perceived aesthetic reasons. We urge local governments not to restrict composting to only the backyard. Many people garden in their front yards and successfully compost there too. Side yards may offer ideal locations as well, especially when kitchen doors open on the side of a house, providing

convenient access to the composting bin.

In lieu of prohibiting front or side yard composting, officials could require composting bins or piles be located a minimum distance from lot lines or roads. For example, Cincinnati's Waste Disposal ordinance states that "Household compost piles shall be located: (d) five (5) feet from any lot line; (e) ten (10) feet from any roadway, alley, or other public right-of-way."⁶⁰

Materials Permitted or Prohibited

We do not believe ordinances are needed to regulate what can and cannot be home composted. Rather, we think this is best done through education and training.

Minneapolis is one jurisdiction that prohibits certain materials. According to an official in Minneapolis, the City was pressured by certain residents to enforce stricter requirements on materials that can be composted.⁶¹ As a result, the composting ordinance passed in 2015 in Minneapolis reads as follows:

Acceptable materials for backyard composting.

Composting materials at a backyard compost site are those approved by the Minnesota Rules 7035.0300. Composting materials include: food scraps, garden wastes, weeds, lawn cuttings, leaves, and prunings. Compost piles shall include an appropriate mix of nitrogen-rich materials (or "greens") and carbon-rich materials (or "browns") to reduce odor and ensure adequate composting.

Prohibited compost materials. The following compostable materials shall not be placed in a backyard composting container: meat, fats, oils, grease, bones, whole eggs, milk or other dairy products, human or pet wastes, pesticides, herbicides, noxious weeds, diseased plant material in which the disease vector cannot be rendered

55 Orkin, "Chicago Tops Orkin Top 50 Rattiest Cities List for Third Time," October 16, 2017, <https://www.orkin.com/press-room/chicago-tops-orkin-rattiest-cities-list-third-year-row/>.

56 Ibid.

57 Saint Paul Code of Ordinances, "Part II, Title XXIX, Section 357.08," accessed May 10, 2018. Retrieve at https://library.municode.com/mn/st._paul/codes/code_of_ordinances.

58 Title 12, Section 244.770," accessed May 10, 2018. Retrieve at https://library.municode.com/mn/minneapolis/codes/code_of_ordinances?nodeId=11490.

59 Orlando Code of Ordinances, "Section 60.223," accessed May 10, 2018. Retrieve at https://library.municode.com/fl/orlando/codes/code_of_ordinances.

60 Cincinnati, Ohio Municipal Code, "00053-7. - Waste disposal," accessed May 2, 2018, https://library.municode.com/oh/cincinnati/codes/code_of_ordinances?nodeId=RUREINBOCO_00053GESAS_00053-7WADI.

61 Robin Garwood, Policy Aide to Minneapolis Council Member Cam Gordon, personal email communication, July 28, 2017.

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harmless through the composting process, and any other mixed municipal solid waste that may cause a public health risk or create nuisance conditions.⁶²

The restrictions outlined by this ordinance are reasonable but too prescriptive. With proper training or the right system, individuals could learn to successfully compost some of these challenging materials. Dog excrement, for instance, could be composted in its own system and the compost utilized for non-edible landscapes.⁶³ Bokashi, a pre-composting fermentation process, is gaining in popularity as a way to handle meat, bones, and dairy. A benefit is that rodents are repelled by the sour smell of the bokashi. The Green Cone Solar Compost Digester (see Spotlight - Other Backyard Options) is one system marketed to handle meat, bones, dairy, and animal poop.⁶⁴

Exchange of Compostable Materials and Finished Compost

We do not believe households should be prohibited from collecting food scraps and yard trimmings or distributing free finished compost within their neighborhood. Certain community members who have more time, space, or initiative to compost can ask their neighbors for donations of compostable materials that would otherwise be wasted or sent to centralized composting facilities outside of the community. It's not uncommon for one neighbor to ask another for their grass clippings to help jumpstart their composting pile or for their bags of leaves as a carbon source. These relationships can increase overall composting rates and keep valuable materials within a community. Unfortunately, some local ordinances unnecessarily restrict these activities.

For example, Napa County exempts smaller compost sites from regulation and permits, but only "provided such composting is conducted on the property where the material was generated or on contiguous property."⁶⁵



▲ Information Orlando provides with its bins on what materials that can be home composted. Example of using education rather than law. Source: City of Orlando

Similarly, Chicago requires that residents composting food scraps produce all composted food materials on-site.⁶⁶ Other composting ordinances include similar provisions, and some also require final compost to be used on the property it was generated.

Ordinances should not unnecessarily restrict community compost exchange if money is not involved in the transactions. If there is payment for the goods and services in a composting operation, local governments can regulate the exchanges as business operations accordingly.

62 Minneapolis Municipal Code, "Title 12, Section 244.770," accessed May 10, 2018. Retrieve at https://library.municode.com/mn/minneapolis/codes/code_of_ordinances?nodeId=11490.

63 People should not utilize compost made with any carnivore animal manure in or near edible gardens.

64 See the following link for list of materials that can and cannot go in the Green Cone, <http://www.abundantearth.com/store/GreenConeDigester.html>. For those adding animal waste, the manufacturer recommends locating the Green Cone away from any food gardening area and at least 100 feet from any well/water source. Pet waste should not include any litter (clay or other).

65 Napa County Code of Ordinances, "Section 8.52.100," accessed May 10, 2018. Retrieve at https://library.municode.com/ca/napa_county/codes/code_of_ordinances.

66 City of Chicago Municipal Code, "Chapter 7-28, Section 715," accessed May 2, 2018. Retrieve at: <http://library.amlegal.com/nxt/gateway.dll/?f=templates&fn=default.htm>.



CASE STUDIES

Source: Oregon Metro



Austin, Texas

Program Summary

Austin Resource Recovery (ARR, formerly the Solid Waste Services Department) rolled out the pilot for its home composting program on Earth Day 2010. In 2011, the *Austin Resource Recovery Master Plan* set a goal to distribute composting bin rebates to 10% of ARR's approximately 200,000 customers.¹ ARR gathers data and releases annual analysis reports that recommend how to improve the program's overall success and cost effectiveness. ARR uses the recommendations to make yearly adjustments to the program's components.

In the beginning of the program, customers of ARR's trash and recycling services were eligible for a 75% rebate up to \$75 on the purchase of any home composting bin if they completed a composting class in-person or online and reduced their garbage collection cart to the 32-gallon size option. Free kitchen compost collectors were also initially available to residents taking the class in-person, but are no longer available.²

In 2014, ARR added a voucher option to the program. The \$75 voucher is valid for any home composting products at participating retailers in Austin. Each household is eligible for either one rebate or one voucher. As of 2014, all Austin residents who pay the Clean Community Fee (a required fee for all residences) are now eligible for the vouchers/rebates, meaning that all people, including those living in multi-family residences, can now participate.

ARR no longer requires residents to reduce their garbage collection cart to the 32-gallon size to get a composting bin voucher/rebate, but the department still encourages its customers to compost at home to reduce their monthly waste

▲ At a composting workshop, an ARR employee shows how residents can use rebate/vouchers to obtain different types of home composting systems. Source: *Austin Resource Recovery*



POPULATION:

947,890

PROGRAM START DATE:

2010

BIN TYPE AND PRICE TO RESIDENTS:

Rebates for any bin, and vouchers for any bin available at participating retailers – up to \$75

BINS DISTRIBUTED:

4,870 vouchers and rebates (see Table 6)

TRAINING AND EDUCATION:

Training required to obtain bins

1 Austin Resource Recovery Master Plan, December 2011, available online at: https://www.austintexas.gov/sites/default/files/files/Trash_and_Recycling/MasterPlan_Final_12.30.pdf.

2 Sylba Loren, "Home Composting Rebate Program Year13," January 31, 2013.

hauling bills. (ARR's home composting program web page states, "By recycling and composting, you may be able to downsize your trash cart – the smaller the cart, the less it costs! To change your trash cart size, call 512-494-9400. The City of Austin will deliver a new cart to your house at no extra cost.")³ ARR customers can potentially decrease their monthly garbage collection rate from \$42.85 (for a 96-gallon cart) to \$17.90 (for a 24-gallon cart).

Budget

ARR's budget for the composting program is flexible. See Table 6 for annual expenditures.

Staffing

ARR has one dedicated Senior Planner who manages the program. That position is supported by a Program Specialist who assists with administrative tasks on the composting program as well as other programs. ARR's Marketing and Public Information team supports the composting program in the production of outreach materials and the placement/purchasing of advertisements.

Partners

Five different local outdoor and hardware retail businesses for voucher use; rebate option allows participants to purchase from any retailer

Impact and Benefits/Costs:

589.68 tons of organics diverted and \$17,000 in saved tipping fees (annually)

ARR staff conducted a small-scale study in 2013 to calculate the average diversion rate per voucher/rebate. They asked customers receiving vouchers/rebates to volunteer to track and report the quantity of material they diverted from the trash to their backyard composting bin. Participants received color-coded bags and a weigh scale. Each week, the volunteers separately recorded the weight of their trash and the materials they put in the compost bin. ARR found that the volunteers diverted an average of

5.4 pounds per week (a diversion rate of 54%).

ARR had dispersed 4,200 vouchers/rebates as of August 2016. Program subsidized compost bins thus potentially divert 11.34 tons (22,689 pounds) per week and 589.68 tons annually of organic materials from Austin's waste stream. Austin is charged a tipping fee of \$28.95 per ton. The home composting program is saving the City of Austin up to \$17,000 in estimated tipping fees annually.

TABLE 6. AUSTIN PROGRAM COSTS AND IMPACTS

Year ^a	Total Cost	Class Attendees	Total Classes	Rebates
July 2009-10	\$14,711.96	481	12	153
July 2010-11	\$12,967.69	597	21	352
July 2011-12	\$89,761.73	4,217	129	923
July 2012-13	\$19,681.36	861	43	768
July 2013-14	\$47,936.17	672	49	736
July 2014-15	\$ 40,109.50	466	27	581
Total 1	\$185,058.91	7,294	281	3,513
July 2015-16	N/A	N/A	N/A	628
July 2016-17	N/A	N/A	N/A	729
Total 2	N/A	N/A	N/A	4,870

a Year is July 1 to June 30.

Source: Austin Resource Recovery 2016

Marketing and Outreach

ARR has experimented with a wide variety of marketing and outreach methods for its backyard composting program and is always making adjustments to its strategy to improve effectiveness and cost efficiency. The program's most expensive year was July 2011 to June 2012 (FY 2012) (see Table 6). The majority of the expenses (\$56,740.60) – of the more than \$89,000 spent that year – were on marketing and outreach. Though more people took classes and claimed rebates in FY 2012 than any other year (see Table 6), this increase in participation was not proportional to the growth in expenses.⁴ As a result, ARR cut back on advertising for its FY 2013, but implemented a more targeted outreach approach.

3 "Home Composting Rebate Program | Austin Resource Recovery | AustinTexas.gov - The Official Website of the City of Austin," accessed April 13, 2018, <http://www.austintexas.gov/composting>.

4 Loren, "Home Composting Rebate Program Year13."

Effective and Cost-Efficient/Free Marketing Options

For July 2014 to June 2015, ARR asked all rebate and voucher claimants to report how they had heard of the program. Table 7 summarizes this data along with the cost spent on that specific advertising method for that year and the calculated cost per rebate. The table shows that online advertising is the most effective and cost-efficient method, and that radio and magazine advertisements are highly ineffective and cost inefficient. ARR has cut back on future newspaper, magazine, and radio advertisements to save money.⁵

Table 7 shows that postcards are one of ARR’s most cost-efficient outreach methods (second only to online advertising). In September 2012, ARR sent out postcards to customers who already used 32-gallon size trash cans and were thus eligible for a backyard composter rebate. In the month that the postcards were sent out, more rebates were utilized than any other month the rest of the year.⁶

Some of ARR’s marketing and outreach are free to the City: partnering retailers in Austin that accept the program vouchers promote the discounted bins (highly effective), ARR attaches notifications to customers’ utility bills (fairly effective), and ARR conducts outreach at the department’s booths at farmers’ markets (less effective) (see Table 7).

Training and Education

ARR’s online and in-person home composting workshops include an introduction to the concept of zero waste, basic instructions on backyard composting, an explanation of ARR’s cart pricing tiers, and a review of eligibility criteria to qualify for the rebate. Similar to marketing and outreach, ARR has frequently adjusted its approach to home composting training over the years to increase effectiveness.

For the in-person classes, ARR contracts directly with composting experts to teach in a variety of sites. ARR seeks to be as efficient as possible in reaching the highest number of residents with the workshops by choosing the

TABLE 7. AUSTIN HOME COMPOST PROGRAM MARKETING METHODS

Advertising Means	Cost (\$)	Rebates Received	Cost/Rebate (\$)
Online ^a	8,500.00	172	49.41
Compost Retailer	-	109	-
Friend or family	-	90	-
Newspaper ^b	11,060.00	48	230.42
Post Card	1,136.35	47	24.18
Utility Bill		27	-
News	1,000.00	4	250
Farmers' Markets	-	3	-
Radio	3,048.00	3	1,016.00

a Refers to those who answered with “online,” “Internet,” “City Website,” “ARR website” or “Google.” These applicants may have been impacted by targeted online ads or emails.

b Refers to those who responded with “Austin Chronicle,” “Statesmen,” “Community Impact” or “Newspaper.”

Source: Austin Resource Recovery 2016.

locations and times of the workshops based on analysis of participation rates of past years.

Workshop Instructors

In the first year of the program, ARR contracted with a third party company to teach in-person workshops. In 2011, ARR decided that it would be more cost efficient to directly contract with local instructors with a background in composting.⁷ Also in 2011, ARR hired a temporary planner to assist with program expansion and class instruction and started providing classes in Spanish.

In 2014, ARR added the option for community members to hold their own classes using materials provided by ARR, with the choice to teach the class using the online class video, an AV projector presentation, or a handout fact sheet on composting. Community members sign up online, choose which materials they would like to use, and then ARR emails that person the appropriate attachments and an Eventbrite link.

5 Loren, “Home Composting Rebate Program Year13.”

6 “July 14 Composting Rebate Program” (Austin Resource Recovery (ARR), August 2014).

7 Ibid.



▲ ARR employee conducting an outdoor composting workshop and showing how to use kitchen pails to hold food scraps. Source: Austin Resource Recovery

Choosing When and Where to Hold Composting Workshops

In the beginning of the program, ARR held workshops at farmers' markets, public events and city hall. In 2011, ARR started offering more frequent classes at a wider variety of locations and classes by request for schools, nonprofits and businesses. In 2012, ARR noticed that classes held at places where a large amount of people would be going normally, such as farmers' markets, city hall, and libraries, had the highest attendance rate. Thus, ARR phased out classes where less people were attending and increased the amount of classes held at these popular locations.⁸

In 2015, ARR held all classes at farmers' markets, but findings from the 2015 annual report recommended that the program's operational costs could be lowered by decreasing the amount of classes offered at farmers' markets, where the city had to hire a contractor for set up and take down, and re-incorporate classes at locations such as libraries, community centers and event venues where there is already most of the needed equipment present (such as chairs and tables).⁹

Online Class

ARR's online class includes a 15-minute video and a questionnaire on composting basics that participants must fill out and send in with their rebate/voucher application (see Appendix A). The video class was first offered in FY 2011, and in every year since FY 2012, more people have taken classes online than in person to qualify for vouchers/rebates. About 60% of vouchers/rebates claimed in Austin have come from the online class. In FY 2015, 83% of the rebates came from online class attendees. These findings inspired ARR to improve the quality of the class video in FY 2015.¹⁰

Tips for Replication

- Make participation as easy as possible.
- Offer education to help people understand how to compost and get their questions answered.
- Provide a financial incentive to help people get started.
- Link to pay-as-you-throw pricing system. As people divert more materials from their trash carts, they can downsize, saving money.

Contact

Ashlee Fisher, Senior Planner at Austin Resource Recovery [no longer with ARR]

Links

Home Composting Rebate Program

<http://www.austintexas.gov/composting>

Composting Information

<http://www.austintexas.gov/department/composting>

Home Composting Online Class

<https://youtu.be/mBFMxFtsjfs>

⁸ Ibid.

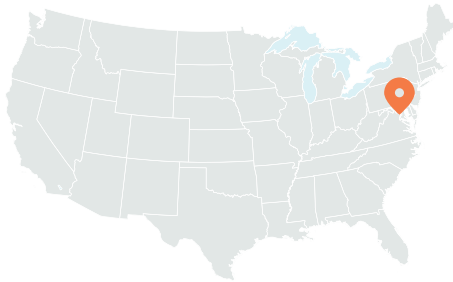
⁹ "July 2014-2015 Composting Rebate Program Analysis and Recommendations" (Austin Resource Recovery (ARR), n.d.).

¹⁰ "July 2014-2015 Composting Rebate Program Analysis and Recommendations."



Cheverly, Maryland

▲ FreeGarden™ Earth offered by the Backyard Composting Project. Source: Institute for Local Self-Reliance



POPULATION:

6,469

PROGRAM START DATE:

April 2011

BIN TYPE AND PRICE TO RESIDENTS:

FreeGarden™ Earth from Enviro World Corporation – \$20

BINS DISTRIBUTED:

Approximately 400 total in 2014

TRAINING AND EDUCATION:

No training available

Program Summary

Doug Alexander, a resident of Cheverly and the organizer of the Newspapers in Education Institute’s Backyard Composting project, chose Cheverly to be a pilot program for the Backyard Composting project. He started the program with \$4,700 in grant funding from the town of Cheverly, the nonprofit Chesapeake Bay Trust, and other local non- and for-profit organizations. He used that money to buy Soil Saver composting units from Horizon Plastics for \$40 a bin. He then sold these bins for \$20 to residents, both onsite at the Cheverly Community Market and via email request. The money from the sales was used to purchase additional bins. Currently, residents can purchase bins at the Cheverly Department of Public Works (DPW), and if needed, the DPW can also deliver bins to residents.

Starting in 2013, Doug Alexander solidified the model that he now uses in Cheverly and other participating jurisdictions. The same year, the Town of Cheverly started budgeting about \$1,500 per year for the Backyard Composting project in its jurisdiction. The Backyard Composting project will match an investment of \$6 to \$11.50 by a jurisdiction to purchase pallets of EnviroWorld FreeGarden™ Earth compost bins (the exact amount matched is determined by the price of the shipping contract arranged with the particular jurisdiction, as discussed below). The Backyard Compost Project now offers these bins instead of the Soil Saver. The participating jurisdiction also pays an additional \$20 per unit that can be recouped through charging residents for the bins. Each bin actually costs only \$31 through the project’s contract with the vendors, but shipping varies from \$3 to \$14 per bin depending on the volume of the order and shipping location. Other municipalities throughout Maryland are now participating in the Backyard Composting project, with the latest delivery of 800 bins to Frederick, Bowie, Greenbelt, Brunswick, and Boonsboro costing \$31 per unit plus \$3 each for shipping. The project guarantees that municipalities’ investments will be returned within a year of the launch of the program or the project will refund the difference.



Turning trash into treasure
 Doug Alexander of Cheverly checks on the progress of his compost pile. Sept. 27 Alexander is making an effort to get 25 percent of Cheverly's single-family households composting, which is expected to save the town \$150,000 in waste tipping fees during 10 years.

In 2014, the Project reached 400 bin sales within Cheverly. Sales per year are now fairly low. As people move in and out of the town each year, it is likely that the number of bins in use in Cheverly has leveled out at around 400, which is 25% of its 1,600 single-family homes.

Budget

Cheverly originally budgeted \$4,500 for three years starting in 2013, and has invested just under \$4,000 to date. Now that residents are only buying about 20 bins per year, the town is barely spending any money to maintain the program.

Staffing

Mostly run by Doug Alexander as a volunteer resident. Cheverly Department of Public Works provides bins at its facility or by delivery.

Partners

The following nonprofit programs have donated to the program in Cheverly: The Cheverly Garden Club, Progressive Cheverly, The Friends of Lower Beaverdam Creek, and Chesapeake Bay Trust. These donated funds were matched by the Town of Cheverly and the Backyard Composting project, increasing the funding to \$16,000 total. Doug Alexander recommends that towns secure this sort of outside funding so that the municipality maximizes the potential amount of money they can get from the project's matching grant.

Impact and Benefits/Costs

The expected savings for the Town of Cheverly is about \$147.50 per bin over 10 years: a number based on an estimated 0.25 tons of organic waste diverted per household per year times \$59 per ton for tipping and hauling fees in Cheverly times 10 years. With about 400 bins in the backyards of Cheverly households, this equates to \$59,000 dollars in savings over ten years minus \$4,000 in expenditures. Also, Cheverly calculates they are diverting 100 tons of compostable material a year and reducing the amount of methane gas being released from landfills by 20 tons.

◀ A local newspaper did a story on Doug Alexander and the program in Cheverly.
 Source: Doug Alexander

Marketing and Outreach

Cheverly has advertised the discounted bins through a newsletter on local matters, which is sent out to residents each month, and through a Google listserv called the Cheverly Exchange, which is sent out to about 900 residents.

Training and Education

There are two educational webinar/videos — one for municipalities, one for residents at backyardcomposting.org

Tips for Replication

- Determine who will be responsible for implementation. The municipality, a Green Team, a nonprofit, a community group, or even an individual can take responsibility for implementing the Backyard Composting program.
- Keep a spreadsheet database of resident orders.
- Ask for donation/grants from local businesses, nonprofits, and individuals to increase available funding.

Contact and Grant Information

Doug Alexander, Director of Backyard Composting Project, Newspapers in Education Institute

Phone: 301-275-3473 7732802

Email: doug@niein.org

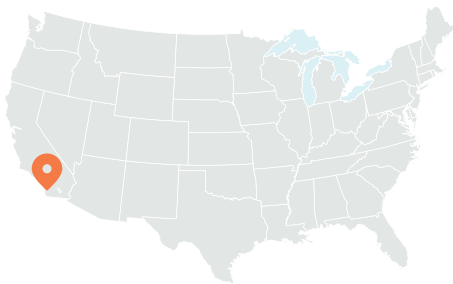
Links

www.backyardcomposting.org



Los Angeles County, California

▲ Home composting workshops in Los Angeles County are held at Smart Gardening Learning Centers. Source: Los Angeles County



POPULATION:

10,137,915

PROGRAM START DATE:

2000

BIN TYPE AND PRICE TO RESIDENTS:

Soil Saver – \$40

Can-O-Worms – \$65 with worms

BINS DISTRIBUTED:

Total number N/A. From 2013 to 2017, the County distributed 825, 905, 831, 952, 804 Soil Savers and 779, 793, 793, 647, 618 Can-O-Worms, respectively each year.

TRAINING AND EDUCATION:

Training required to obtain bins

Program Summary

Los Angeles County’s Department of Public Works (DPW) Environmental Programs Division promotes home composting as part of its Smart Gardening program. At the end of select workshops given at county demonstration sites, residents can opt to purchase discounted bins. Workshop participants can buy a Soil Saver backyard bin for \$40 or a Can-O-Worms with African red worms for \$65. They are limited to a maximum of two of each type of bin per household.

Budget

Los Angeles County’s Smart Gardening budget is approximately \$350,000 a year. This covers bin purchase, Smart Gardening workshops, maintaining ten Smart Gardening Learning Centers, workshop and bin promotion, and other expenses such as building school gardens.

Staffing

There are no staff working full time on home composting promotion at Los Angeles County. A full-time county employee, Beverly Jones, is the principal manager of the Smart Gardening program. As part of the program, she also manages the backyard composting component. The County contracts with Bio Contractors to teach the Smart Gardening workshops and distribute the bins after each class.

Partners

Local environmental service contractor, Bio Contractors, provides compost training and educational services for the County.

Impacts and Benefits/Costs

The County could not provide any other information on diversion rates or benefits. Los Angeles County obtains the Soil Saver for \$58.41 and the Can-O-Worms for \$60.57 through a contract with the wholesale distributor Triformis Corporation and pays Bio Contractors \$500 to \$800 per class.

Marketing and Outreach

Los Angeles County Environmental Services posts flyers on its website to advertise each individual Smart Gardening workshop (see Appendix A). Also, the cities within Los Angeles County where a given workshop is going to take place, will sometimes promote through their own means.

The County occasionally promotes the home composting bins more directly such as through mailing residents promotional postcards (see Appendix A). The postcards cost approximately \$900 per set of 2,500. Also, the County sometimes puts advertisements and coupons for the bin program in its newsletter (see Appendix A). The coupons allow residents to buy the Soil Saver for \$25 and the Can-O-Worms for \$30.

▲ Top: An advertisement and bin discount coupon in the Earth Wise Newsletter mailed out by Altadena and Kinneloa Mesa (see Appendix A for the full newsletter). Source: Los Angeles County Public Works

Bottom: Side two of a Smart Gardening postcard mailed to residents. Source: Los Angeles County Public Works



▲ A home composting workshop in Los Angeles County. Source: Los Angeles County

Training and Education

Los Angeles County requires that residents take 1.5 hour workshops to obtain the subsidized bins. The County contracts with local firm Bio Contractors to offer

Beginning and Advanced Smart Gardening workshops several times a month at one of ten Smart Gardening Learning Centers. The Centers, located throughout the county, are equipped with educational and demonstration materials designed for the Smart Gardening workshops, including various backyard and worm composting bins. The beginner workshops give hands-on instruction on the basic techniques of composting, worm composting, water-wise gardening, and grass cycling. Advanced workshops cover organic gardening, landscaping with native drought-tolerant plants, and integrated pest management. The County's Smart Gardening website includes an educational booklet and video on backyard bin composting, and an educational booklet and video on worm composting, both produced by Bio Contractors.¹¹

¹¹ For the videos see <https://dpw.lacounty.gov/epd/sg/videos.cfm>. For booklets, see Appendix A.

Tips for Replication

- Hire enthusiastic pro-instructors to lead your workshops.

Contact

Beverly Jones, Smart Gardening Specialist at LA County Environmental Department

Email: bjones@dpw.lacounty.gov

Links

LA County Smart Gardening

https://dpw.lacounty.gov/epd/sg/gen_info.cfm

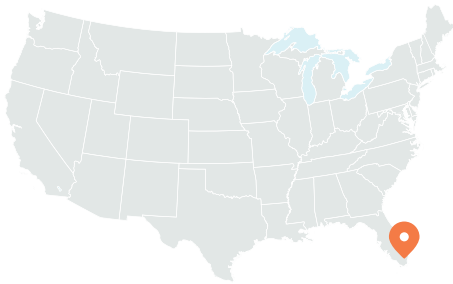
Information page on subsidized bins

<https://dpw.lacounty.gov/epd/sg/>



Miami-Dade County, Florida

▲ Demonstration of an Earth Machine™ composting bin at a workshop held in Miami-Dade County. Source: Miami-Dade County



POPULATION

2,712,945

BIN TYPE AND PRICE TO RESIDENTS:

Earth Machine™ – free

BINS DISTRIBUTED:

445

TRAINING AND EDUCATION:

Training required to obtain bins

Program Summary

Miami-Dade County's program is a partnership between Miami-Dade County Solid Waste Management (SWM) and the University of Florida/Institute of Food and Agricultural Sciences Miami-Dade County Extension (UF Extension Miami-Dade). The program is mostly carried out through the UF Extension Miami-Dade, but SWM provides the funding. After attending a backyard composting workshop organized by UF Extension Miami-Dade, residents can obtain a voucher for a free Earth Machine™ at the SWM office. SWM buys the bins and holds them until a resident picks one up with a voucher that verifies s/he has attended a compost class.

The County decided the Earth Machine™ was best for its program for multiple reasons: the bin is durable and easy to transport in a car, other municipalities use the Earth Machine™ in their home composting programs, and ORBIS/Norseman (the manufacturer) is set up to deal with government accounts.

SWM's home composting program contributes to Miami-Dade County's GreenPrint plan. SWM states the following on its composting web page:

This pilot program is a model of environmental stewardship integrating interagency collaboration, cost-efficiency, and community involvement to raise awareness and make prudent use of resources to help preserve our Miami-Dade County natural environment.¹²

¹² "Home Composting," Miami-Dade County, accessed April 14, 2018, <http://www.miamidadegov/solidwaste/home-composting.asp#4>.

Budget

The program has no set budget.

Staff

The Urban Horticulture Agent and Master Gardener Coordinator at the UF Extension Miami-Dade runs outreach and education. Volunteers who have completed the Master Gardener certificate course teach the classes.

Partners

SWM procures the funding for the program, and orders, stores and distributes the bins; UF Extension Miami-Dade carries out education and outreach.

Impact and Benefits/Costs

The coordinator of Miami-Dade's home composting program, Adrian Hunsberger, collected data on composting amounts from participant volunteers and calculated the program's impacts.¹³

Impact

After taking the composting class, 25 participants volunteered to document their experience with the program bin for three months (see Appendix C for how they were instructed to self-collect the data). On a per-month basis, each participant composted an average of 8.52 gallons of indoor materials (that is, kitchen scraps) and 19.61 gallons of outdoor materials (such as plant clippings). This totals 28.1 gallons on average per volunteer participant per month. Miami-Dade County has distributed 445 bins. Thus, program participants home compost an estimated 12,500 gallons of indoor and outdoor materials per month (or 150,000 gallons per year).

Costs

Miami-Dade County has purchased bins in four different rounds:

- January 2017 – 100 units at \$64.14 per unit (\$6,414)
- October 2015 – 125 units at \$61.90 per unit (\$7,738)

- April 2015 – 125 units at \$61.90 per unit (\$7,738)
- September 2014 – 120 units at \$119.64 per unit (\$14,357)

The County's total costs have been \$36,244. The cost for storage and handling of the compost bins is minimal and was absorbed by the Home Chemical Collection Program.

Marketing and Outreach

To promote the program, UF Extension Miami-Dade posts fliers, issues press releases (see Appendix A), places articles in its Green Bytes newsletter, and publicizes the workshops on its online calendar. The County's website, miamidade.gov, also advertises the program on the main solid waste management page.

Training and Education

Workshops

UF Extension Miami-Dade organizes home composting workshops taught by Master Gardener volunteers and the Urban Horticulture Agent. The workshops give formal training in proper home composting techniques and management. The schedule is posted on the extension website's calendar of events and the classes are held in public places such as libraries and parks.¹⁴ Some of the workshops offered also cover education on worm composting and rain barrels.

Online Materials

Miami-Dade County maintains educational materials on its home composting web page.¹⁵ There is a brief overview of the composting process and the difference between "green" and "brown" materials. The website also has links to more in-depth educational material: a brochure made by the Miami-Dade County Extension (see Appendix A) and two educational web pages maintained by other University of Florida county extension offices.

¹³ Personal communication via email, Adrian Hunsberger, February 23, 2017.

¹⁴ See UF/IFAS Extension Miami-Dade County website, <http://sfyl.ifas.ufl.edu/miami-dade/>.

¹⁵ See Miami-Dade County Solid Waste Management website, <http://www8.miamidade.gov/solidwaste/home-composting.asp>.

Survey Study

In 2015, the County Extension collected survey results from 200 workshop participants in the home composting program.¹⁶

When asked if they would start composting after the class,

- 66% said “yes,”
- 2% said “maybe,”
- 2% said “no,” and
- 20% already composted.

When asked if they felt more confident composting because of the program, 90% of participants said “yes” and 10% said “maybe.”

When asked if they were willing to share their new knowledge, 88% said “yes” and 12% said “maybe.”

When asked to score on a scale of 1 to 5 (5 being best),

- Self-assessed knowledge gained = 4.6
- Satisfaction = 4.8
- Usefulness of the material = 4.8

Contact

Adrian Hunsberger, M.S., Urban Horticulture Agent and Master Gardener Coordinator at University of Florida/IFAS Extension Miami-Dade County

Phone: 305-248-3311 ext. 236

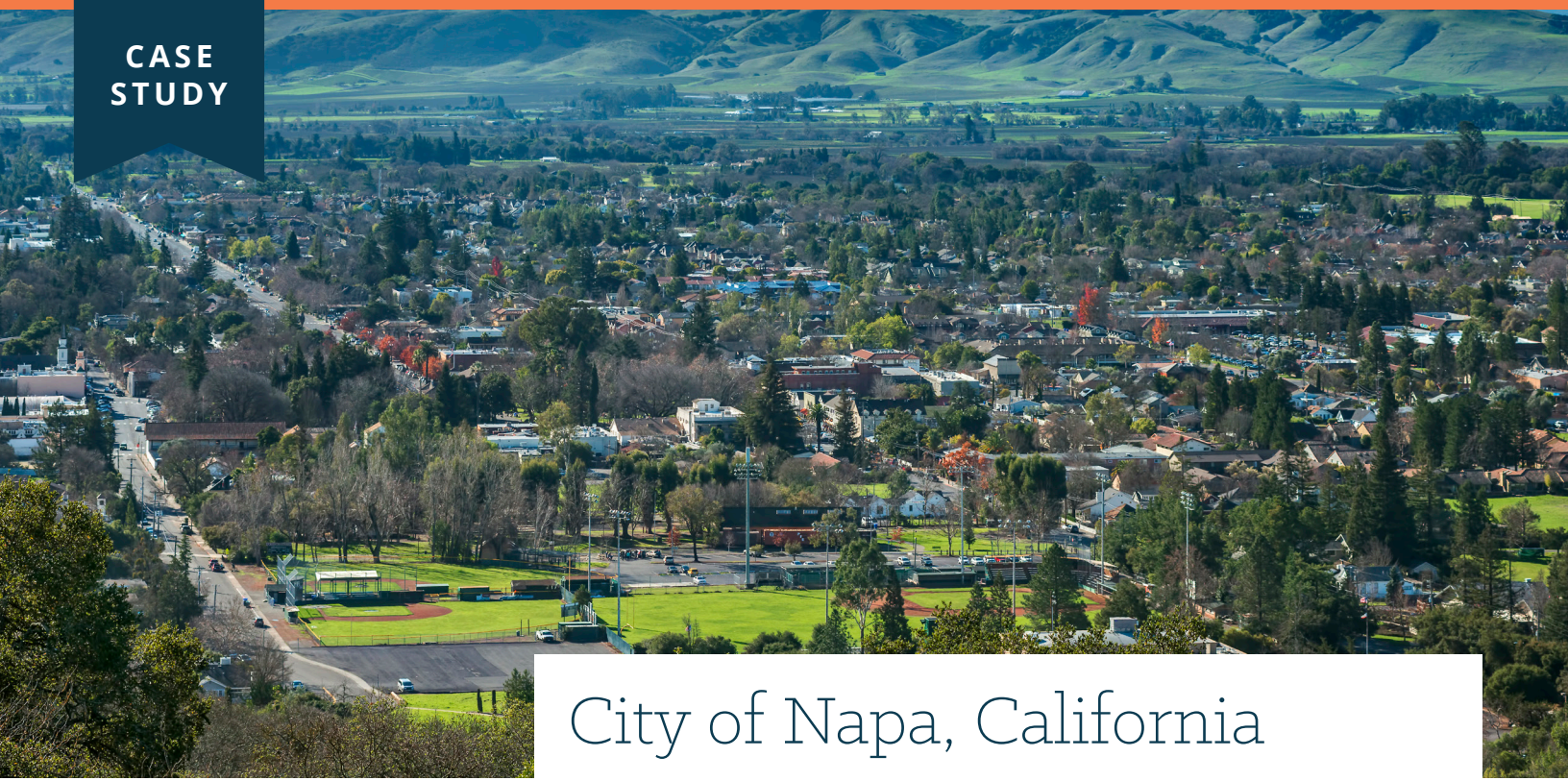
Email: aghu@ufl.edu

Links

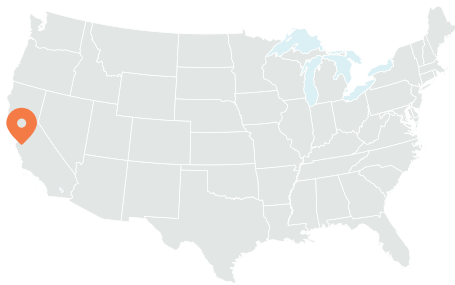
County's home composting website

- <http://www8.miamidade.gov/solidwaste/home-composting.asp>

¹⁶ Ibid.



City of Napa, California



POPULATION:

80,416

PROGRAM START DATE:

1997

BIN TYPE AND PRICE TO RESIDENT

Soil Saver – \$20, Earth Machine™ – \$20, Worm bin – free, constructed in workshops using materials supplied by the City of Napa and Napa County, Rebate – \$30 towards a worm composting bin, a lawnmower retrofit, or a mulching lawnmower

BINS/REBATES DISTRIBUTED:

4,218 total,¹⁷ Earth Machine™ – 660
Soil Saver – 559, Worm Bins – 210,
Rebates – 39

TRAINING AND EDUCATION:

Training required to obtain bins

Program Summary

Since 1997, the City of Napa has contracted with Napa County Master Gardeners to offer free composting workshops to all residents living within Napa County (qualifying residents include those living in the City of Napa and those living in other towns in Napa County). After the workshop, residents can choose among several options for composting equipment discounts.

At first, the City gave away free bins to workshop attendees. Throughout the years, the City has tried a variety of other discounts and bins, and now offers residents four options. (See Appendix C for sales summaries of all options made available over the years.) In 2008, Napa started offering the Earth Machine™ for \$20 each. In 2010, the City also started providing Soil Saver bins for \$20 each after finding that those bins were getting favorable reviews at the home composting program in Los Angeles County. The Soil Saver is currently Napa’s most popular offering. Alternatively, as of 2010, workshop attendees can choose to receive a \$30 mail-in rebate towards one of the following: a worm composting bin, a mulching lawnmower, or a mulching retrofit for lawnmowers. Napa also offers two worm composting workshops each year, where participants build a worm bin out of materials provided for free by the program.

Budget

The City of Napa draws upon its recycling budget to fund the backyard composting program as needed. Surrounding jurisdictions within the county also cover some costs for participants coming from those jurisdictions.

¹⁷ From 1997 through the end of 2016, including bins that are no longer offered.

Staffing

The City of Napa's Department of Public Works handles the website, sign-ups, and record-keeping for the program with Chris Shoop, the Recycling Coordinator, as the head manager.

Partners

The City pays the University of California Master Gardeners of Napa to teach workshops.

Impact and Benefits/Costs

Napa uses the estimate from the California Department of Resources Recycling (CalRecycle) that each household composter in use keeps 850 pounds of material away from curbside collection each year. Several years ago, a survey found that 88% of households that had taken the program's class in Napa were still home composting.¹⁸ If still valid, an estimated 4,274 households in Napa County are composting out of the total 4,857 that have taken a class.¹⁹ That equals about 1,816.5 tons diverted from curbside collection every year as a result of the bin program. The tipping fee for the transfer station used for much of Napa County is \$68 a ton, but because much of Napa also has curbside composting, we can assume a large portion of food scraps and yard trimmings not being composted at home in the county are going to the composting facility owned by the City of Napa rather than the transfer station. If Napa did not have curbside collection, the home composting program would be saving it \$123,522 in tipping fees per year. Still, the City recognizes that the program saves money in reduced fossil fuels used for the trucks picking up curbside organics.

The City of Napa pays \$32 for each Earth Machine™ and \$58 for each Soil Saver and then charges \$20 a bin, resulting in a \$12 net expense per Earth Machine™ and \$38 net expense per Soil Saver. In 2015, the City distributed 38 Earth Machines, 78 Soil Savers, and four \$30 rebates. Thus, Napa's net costs that year were \$456 for Earth Machines, \$2,964 for Soil Savers, and \$120 for rebates – a total of \$3,540. In addition, the City spends around \$300 on print material and pays \$1,000 per year to Napa County Master Gardeners to teach classes. In all,

▲ A flyer mailed to residents in Napa County. Residents can tear off the bottom part and mail it in to register for a home composting workshop. Source: City of Napa

the home compost program cost the City of Napa \$4,840 in 2015.

Marketing and Outreach

Napa mails out brochures advertising the program with residents' garbage bills.

Training and Education

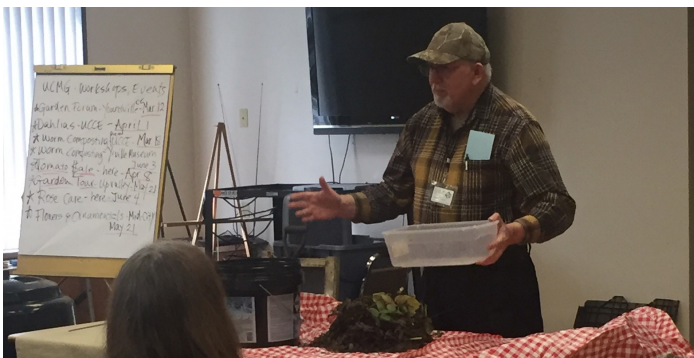
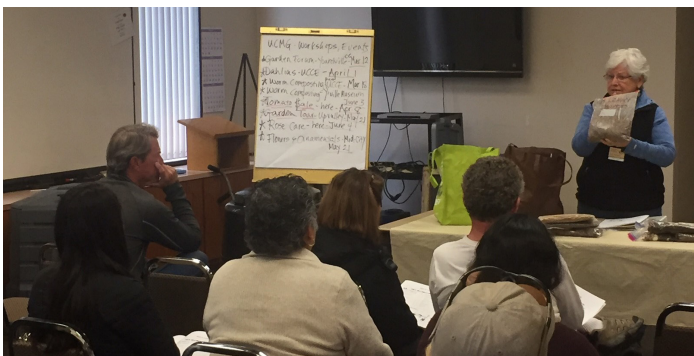
The City of Napa offers an average of eight composting workshops and two worm composting workshops a year. In 2016, these classes were held between March and June. Participants must sign up ahead of time through the Internet or mail. Each attendee receives a copy of the guidebook *Home Composting in Napa* produced by Napa County Master Gardeners. Between the beginning

18 Personal communication via email, Chris Shoop, Management Analyst II (Recycling Coordinator), City of Napa Department of Public Works Recycling Division.

19 As of the end of 2015. Data obtained from spreadsheet in Appendix E.



▲ A resident taking home a Soil Saver bin provided by the City of Napa. Source: City of Napa



▲ Photos of the worm composting workshops where participants learn about worm composting and make their own worm composting bins with free materials. Source: City of Napa

of the program in 1997 and 2018, approximately 5,000 people have attended the workshops. The City pays \$1,000 per year to the Napa County Master Gardeners group to do the instruction for the classes and about \$300 a year to refund the costs of printing the guidebooks. Residents can also call Napa County Master Gardeners for composting tips and troubleshooting.



▲ A guidebook handed out to workshop attendees. Source: City of Napa

Tips for Replication

- Have knowledgeable and credible instructors to teach classes.
- Utilize various channels to get the word out about the availability of the classes.
- Offer a quality bin at a heavily discounted rate so that attendees can easily put classroom knowledge into practice.

Contact

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Phone: 707-257-9520

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Links

Home web page for the composting programs

<http://compost.naparecycles.org/>



New York City, New York

▲ Jodie Colón, a project manager for NYCCP, set up an Earth Machine™ in her apartment parking lot. Source: NYC Compost Project Hosted by The New York Botanical Garden



POPULATION:

8,537,673

PROGRAM START DATE:

1998

BIN TYPE AND PRICE TO RESIDENT (TAX INCLUDED)

Earth Machine™ – \$65 with optional \$20 rodent screen

Garden Gourmet – \$65

Metal can compost bins made from repurposed trash cans – \$20

Worm bin – \$55

BINS DISTRIBUTED:

20,299²⁰

TRAINING AND EDUCATION:

Training available but not required to obtain bin

Program Summary

In 1993, the New York City Department of Sanitation (DSNY) created the NYC Compost Project (NYCCP), which initially established compost programs at the City’s four botanical gardens. The NYCCP emerged out of several DSNY pilot studies that assessed citywide opportunities to encourage composting. After the pilot studies, DSNY determined that it was more cost effective to encourage home-based composting than to facilitate composting-specific collection services.²¹

In 1998, the NYCCP started offering subsidized Earth Machine™ compost bins for \$20 each at Compost Givebacks weekend events held twice a year in each borough. A distributor for Norseman Environmental (now ORBIS Corporation) and the manufacturer of the Earth Machine™, staffed the Givebacks and sold the bins directly to NYC residents out of a truck. Near the beginning of the program, NYCCP surveyed all residents who purchased bins and found that many had not set up their bins three months after purchase. As a result of the survey, the NYCCP concluded the \$20 they charged for each Earth Machine™ was cheap enough for residents to buy without feeling obligated to start using right away.

Today, DSNY’s Bureau of Recycling & Sustainability funds and manages the NYCCP in all five boroughs through teams hosted at NYC’s botanical gardens and three nonprofit organizations. The NYCCP’s website states that the Project’s aim is “help reduce waste in NYC and rebuild City soils by giving New Yorkers the knowledge, skills, and opportunities they need to produce and

20 From July 1998 to June 2016.

21 “Local Law 42: A 2012 Assessment of Composting Opportunities in NYC,” The New York City Department of Sanitation, 2012.



▲ Old metal trash cans repurposed into compost bins are available for purchase at the Lower East Side Ecology Center in NYC. The one pictured here is featured at the New York Botanical Garden Home Gardening Center in the Bronx. Source: NYC Compost Project Hosted by The New York Botanical Garden

use compost.” The project offers outreach and education on small-scale composting and provides community composting sites throughout the city with technical and networking support.

New York City does not currently subsidize bins to residents. Bins are obtained at wholesale prices and sold to residents at this price, plus tax. All five boroughs, the New York Botanical Garden, the Brooklyn Botanic Garden, the Lower East Side Ecology Center, and the Snug Harbor Cultural Center and Botanical Garden offer Garden Gourmet Compost bins for \$65 and stainless steel compost cranks for \$35. The Queens Botanical Garden has Earth Machine™ compost bins available for \$65 each with an optional \$20 rodent screen, and also offers stainless-steel compost cranks for sale, which are

manufactured by Lotech Products. The Lower East Side Ecology Center also sells compost bins fashioned out of metal garbage cans for \$23 and worm bins assembled from purchased parts for \$55 that come with a pound of red wiggler worms.

NYCCP chose to offer the Garden Gourmets at more sites than the other bins because they have a smaller footprint than the Earth Machine™, making them more suitable for households with smaller backyards, and because they come boxed, which enables residents to receive them by UPS or carry them on public transit. In 2018, Garden Gourmet bins were discontinued by their manufacturer and NYCCP is currently seeking a replacement to offer to residents.

Bins Distributed

The program’s peak sales were in FY 2001 (July 2000 – June 2001) when 5,045 backyard compost bins were sold. In fiscal year 2012, the number of bins sold was 362.²² Bin sales have been under 200 each year since. The lowest sales were in fiscal year 2016, at 38 bins sold.



◀ A Garden Gourmet Bin at the NYC Botanical Gardens Compost Demonstration Site. The New York City program is the only program surveyed in this report to offer a Garden Gourmet bin. Source: Institute For Local Self-Reliance

Budget

NYCCP could not provide this information. It is difficult to separate the budget that NYCCP dedicates to home composting from the overall expenses on its many community level composting activities.

²² “Local Law 42: A 2012 Assessment of Composting Opportunities in NYC,” 42.



▲ Two program-provided Earth Machines in use at the Bainbridge Ave. Community Garden in the Bronx. Source: NYC Compost Project Hosted by The New York Botanical Garden

Impact and Benefits/Costs

A pilot study conducted in 1999 by DSNY found that promoting reduced priced bins to residents would likely make an insignificant impact to New York City's overall waste stream because only a small percent of the city's residents have yards and gardens.²³ Nonetheless, DSNY concluded that the program would be a cost effective way to encourage people to compost, and that, "Backyard composting also has educational benefits in that it promotes awareness of where waste goes and how it is managed."²⁴

Similarly, a report put out by the DSNY discusses how NYCCP's work in smaller scaled up source-separated organics collection program diverts more waste:²⁵

NYCCP and community composting play an important role in supporting citywide organic waste diversion through OCP [NYC's Organics Collection Program]. They raise awareness about what compost is and its benefits through outreach and education, and by using compost to grow food and care for green spaces in NYC neighborhoods. Making and using compost locally demonstrates firsthand to New Yorkers that apple cores and eggshells are not garbage—they are useful resources.²⁶

Staffing

DSNY funds permanent staff members at seven partner organizations.

Partners

NYCCP programs are carried out by seven DSNY-funded teams, which are hosted by partner organizations in each borough: Big Reuse, Brooklyn Botanic Garden, Earth Matter NY, the Lower East Side Ecology Center, The New York Botanical Garden, Queens Botanical Garden, and Snug Harbor Cultural Center & Botanical Garden.

Marketing and Outreach

The home compost bins are advertised by each NYCCP site through e-newsletters, flyer distribution, and web pages. Further, NYCCP staff conduct composting outreach activities. In 2012 they attended over 500 composting outreach activities throughout New York City, where they interacted with over 10,000 people.²⁷

23 Robert Lange, "Backyard Composting in New York City: A Comprehensive Evaluation" (New York City Department of Sanitation, 1991), https://www1.nyc.gov/assets/dsny/docs/about_1999-backyard-composting_0815.pdf.

24 Ibid., 11.

25 "2014 NYC Community Composting Report" (The City of New York Department of Sanitation, n.d.), https://www1.nyc.gov/assets/dsny/docs/about_2014-community-composting-report-LL77_0815.pdf.

26 Ibid., 6.

27 Ibid.

Training and Education

Each NYCCP location offers composting workshops throughout the year (reaching over 4,000 attendees).²⁸ Workshops cover topics such as indoor and outdoor composting, building composting bins, sustainable gardening and lawn care, and caring for street trees.²⁹ For people seeking more advanced composting education, the NYCCP also offers an eight week Master Composter Certificate Program once a year in each borough. The \$40 course (with scholarships available) trains participants in the intricacies of how to create, maintain, and improve home and community-scale composting operations.³⁰

The DSNY has created a variety of educational materials to assist and encourage New York City residents, agencies, and institutions to compost. These materials include brochures and tip sheets covering a wide range of topics pertaining to backyard and worm bin composting that are available for free in PDFs online or in print form by request.³¹ The DSNY web pages also include links with information on compost drop-off sites, the city's network of community compost sites, and instructions on how to purchase home compost bins and equipment in each borough.³²

The City maintains a Compost Helpline at each host site that answers frequently asked composting questions, including how to get free compost, where to buy compost bins and accessories, and what the Master Composter Program involves. There were 1,800 calls to the Compost Helpline in FY 2012.³³

Demonstration Sites

In New York City's botanical gardens, NYCCP maintains demonstration sites that exhibit various compost systems suitable for residential backyards, schools, and community



▲ Sign introducing the New York Botanical Garden Composting Demonstration Site.
Source: Institute for Local Self-Reliance

gardens. For example, at the Brooklyn Botanic Garden, NYCCP has maintained a demo site since 1993 that currently displays a Biostack, an Earth Machine™, a Garden Gourmet, and examples of homemade bins such as the circular wire mesh bin, a compost bench, a wooden two-bin system, and a repurposed trash can composter.³⁴

Through the Demonstration Site Program, NYCCP designates some of the city's most exemplary community-run composting locations as official demonstration sites. Demonstration sites must fulfill a certain amount of outreach and education each year to maintain their status. There are approximately 50 demonstration sites in New York City that hosted more than 300 activities in FY 2012. NYCCP staff help community compost sites meet composting standards needed to become a Demonstration Site.³⁵

28 "Local Law 42: A 2012 Assessment of Composting Opportunities in NYC."

29 "DSNY - Community Composting," accessed April 14, 2018, <http://www1.nyc.gov/assets/dsny/site/our-work/reduce-reuse-recycle/community-composting>; "Local Law 42: A 2012 Assessment of Composting Opportunities in NYC."

30 "DSNY - Master Composter Certificate Program," accessed April 14, 2018, <http://www1.nyc.gov/assets/dsny/site/contact/master-composter-certificate-course>.

31 Links to material available at: <http://www1.nyc.gov/assets/dsny/site/our-work/reduce-reuse-recycle/resources-community-composting>

32 See, for instance, "DSNY - NYC Food Scrap Drop-Off Locations," accessed April 14, 2018, <http://www1.nyc.gov/assets/dsny/site/services/food-scraps-and-yard-waste-page/nyc-food-scrap-drop-off-locations>.

33 "Local Law 42: A 2012 Assessment of Composting Opportunities in NYC."

34 "Home Composting Exhibit - Brooklyn Botanic Garden," accessed April 14, 2018, https://www.bbg.org/collections/gardens/home_composting_exhibit.

35 "Local Law 42: A 2012 Assessment of Composting Opportunities in NYC."



▲ A 3-bin system with informational signs on display at the Bronx Botanical Garden. Source: Institute for Local Self-Reliance



▲ Sign introducing the Governors Island composting demonstration site. Source: Institute for Local Self-Reliance

Contacts

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Phone: 212-437-4642

Email: mmanela@d sny.nyc.gov

Jodie Colón, NYC Compost Project Manager, The New York Botanical Garden, Bronx

Phone: 718-817-8021

Email: jcolon@nybg.org

Links

New York City Composting Project Home Page

<http://www1.nyc.gov/assets/dsny/site/our-work/reduce-reuse-recycle/community-composting>

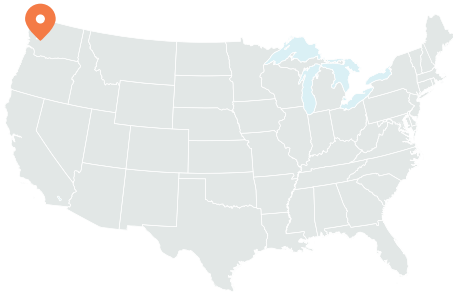
Compost bin and equipment information

<http://www1.nyc.gov/assets/dsny/docs/composting-equipment-cp-equip.pdf>



Oregon Metro, Oregon

▲ A family tending to an Oregon Metro provided FreeGarden™ Earth compost bin in their backyard.



POPULATION:

1,790,607

PROGRAM START DATE:

1993

BIN TYPE AND PRICE TO RESIDENT:

FreeGarden™ Earth compost bins – \$49

BINS DISTRIBUTED:

109,090³⁶

TRAINING AND EDUCATION:

No training available

Program Summary

Oregon Metro – the regional planning government for the Oregon portion of the Portland metropolitan area – started selling backyard compost bins in 1993. By 2012, it had sold 109,090. Oregon Metro sells home composting bins at wholesale prices to residents at a government-run recycled paint store called Metro Paint. At Metro Paint, residents can obtain FreeGarden™ Earth bins by Enviro World for \$49 each, P845 Compost aerators by Bosmere for \$16 each, and Sure-Close kitchen pails for \$8 each. In the past, the local government sold Earth Machine™ backyard composting units. Oregon Metro decided to switch to FreeGarden™ bins because Metro’s review of composting bin manufacturers gave Enviro World the highest overall scores in a wide range of criteria covering performance, materials, sustainability, corporate responsibility, and cost.

The program reached peak sales in 1996 with 13,564 bins sold. In October 2011, Portland became the first city in Oregon Metro to start curbside collection of food scraps. Since 2012, bin sales have declined, and now average 400 a year.

Budget

The program has no set budget. Oregon Metro purchases around 500 bins at a time.

Staffing

Carl Grimm, a Senior Solid Waste Planner working on resource conservation and recycling at Oregon Metro, advises on bin specification and program design (see Appendix D for a copy of the most recent request for proposals for composting bins issued by Oregon Metro). The Hazardous Waste Operations program carries out the rest of the program tasks, such as stocking and sales at Metro Paint.

36 From 1993 through the end of 2011.

Partners

Metro Paint, a regional government-run recycled paint store, holds and sells the bins to residents.

TABLE 8. OREGON METRO ANNUAL BIN SALES

Year	Bin Sales
1993	909
1994	7,400
1995	10,958
1996	1,3564
1997	9,621
1998	8,406
1999	8,994
2000	9,514
2001	7,930
2002	6,107
2003	5,596
2004	3,131
2005	1,309
2006	2,495
2007	3,014
2008	3,656
2009	2,925
2010	1,784
2011	777

Data calculated from spreadsheet provided by Oregon Metro. Source: Institute for Local Self-Reliance, 2018.

Oregon Metro sells home composting bins and equipment at a City-run recycled paint store located near downtown Portland. Source: Oregon Metro



Impact and Benefits/Costs

Oregon Metro could not provide this information.

Marketing and Outreach

While Oregon Metro used to conduct a more extensive publicity campaign for its compost bin program, it has ceased doing so in recent years.

Training and Education

Oregon Metro no longer offers a comprehensive compost education program, but it maintains two home composting demonstration sites: one at the Blue Lake Natural Discovery Garden located in a public park and the other at the Oregon Zoo. These sites are open to the public every day for self-guided tours and feature home compost bins, a worm bin, interpretive signs, and free brochures. Oregon Metro invests about \$15,000 per year for seasonal educators to maintain the Discovery Garden and lead weekend family programming. Oregon Metro also answers home composting questions via its Recycling Information Center Hotline through a partnership with Oregon State University Extension Service Master Gardeners.

Tips for Replication

- Subsidize bins for residents.
- Make sure the bin you distribute is rodent resistant (with a floor, lid, and no holes or gaps larger than ¼ inch).
- Collaborate with your jurisdiction's authority on disease vector control.
- Be proactive and upfront with composting education and support – workshops, demonstration sites, a hotline, and ideally a Master Composter Program that generates community engagement and support.
- Do the math. Make sure the program makes sense from a financial standpoint, that you are reaching community residents equitably, and that you are evaluating your efforts for future improvements.



▲ Mixing an Oregon Metro provided FreeGarden™ Earth compost bin.

Contact

Carl Grimm, Senior Solid Waste Planner, Oregon Metro

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Email: Carl.Grimm@oregonmetro.gov

Links

Oregon Metro's web page for composting education

<http://www.oregonmetro.gov/tools-living/yard-and-garden/composting>

Information on the compost equipment available through Oregon Metro

<http://www.oregonmetro.gov/tools-living/yard-and-garden/composting/buy-composter>

Instructions for a do-it-yourself backyard bin

<http://www.oregonmetro.gov/tools-living/yard-and-garden/composting/build-compost-bin>

Get DIRTY

this Valentine's Day!

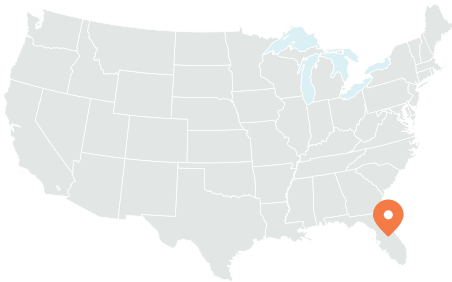
WANT TO GIVE YOUR LOVED ONE SOMETHING SPECIAL FOR VALENTINE'S DAY?

Give them a free backyard composter from Green Works Orlando!

When you sign up, you will also receive a Valentine e-card.

Composters will be delivered during Spring 2015.

Orlando, Florida



POPULATION:

277,173

PROGRAM START DATE:

February 2015

BIN TYPE AND PRICE:

Earth Machine™ from ORBIS Corporation – Free to residents (City retains ownership)

BINS DISTRIBUTED:

5,340 as of December 2017

TRAINING AND EDUCATION:

Training available but not required to obtain bin

Program Summary

The City of Orlando's Solid Waste Division launched a backyard composting program as part of Mayor Buddy Dyer's Green Works Orlando initiative. Residents living within Orlando city limits can register on the City's website to obtain a free Earth Machine™. The City's Solid Waste Division then schedules a time to deliver the bin directly to the requesting household.³⁷ The City's garbage cart delivery staff adds compost bin deliveries to their routes. Alternatively, residents can pick up a bin at home composting workshops. The City opted to use the Earth Machine™ because the manufacturer offers discounts for large-scale purchases. The Earth Machine™ also met several standards set by the program: they were built to the right dimensions for successful composting, they were more durable than some other prefabricated composters (such as tumblers), they were easy to assemble, and they had a 10-year warranty.

The City of Orlando technically maintains ownership of compost bins they distribute to its residents. This gives the City the right to inspect compost bin placement and use, and residents must consent to this stipulation. The bins feature a "Green Works Orlando, Mayor Dyer's Green Initiative" sticker to brand the initiative. Thus far, the City has only had to inspect one bin. A neighbor of a household using a City bin called to make an odor complaint. The home composting program manager scheduled a meeting with the resident to inspect the composter and found that the gentleman was not putting enough dry material into the Earth Machine™. This quick and simple troubleshoot fixed the problem, and there have been no follow-up complaints.

³⁷ "Composting," *City of Orlando Public Works - Solid Waste*, accessed April 14, 2018, <http://www.cityoforlando.net/solidwaste/composter/>.



▲ Orlando's home composting website features this banner of an Earth Machine™ home composting bin with the Green Works Orlando logo. Source: City of Orlando

Budget

The program has no set annual budget. The City provides bins to all residents who request them and orders the bins based on demand.

Staffing

Ian Jurgensen, an employee for the City of Orlando Solid Waste Division, manages the composting program as part of his role as the Sustainability Project Manager for Green Works Orlando. He coordinates with the Solid Waste Division on purchasing, logistics, and marketing. Other aspects of the program are divided up and added to the tasks of appropriate City staff. Bin delivery is managed by the garbage cart delivery staff, and advertisement development is assigned to the Office of Communications and Neighborhood Relations.

Partners

The University of Florida Orange County Extension Office teaches home composting workshops.

Impact and Benefits/Costs

As of December 2017, Orlando had delivered 5,340 bins. Nearly 3,000 of these were delivered in the first few months of the program. Demand for the free bins has slowed since the initial marketing and outreach push, but the program's organizers expect renewed interest with future promotion.

Although Orlando has not measured the amount of materials diverted by program bins, the City has noticed that yard waste trucks have reduced their tipping weights

since the program's start. The program organizers used the EPA's figures for average weight of food waste discarded per household to calculate that the program should pay for itself in about four years through reduced waste hauling and tipping fees. Jurgensen notes that this calculation does not include yard trimmings diverted via home composting, meaning that the program would actually pay for itself in less than four years.

The cost of each composter depends on how many the City orders per delivery: between \$33-37 per unit. Advertising and marketing are all done using existing City staff and social media/print media outlets, so there are no additional marketing costs. Costs to deliver bins to residents are marginal because the composters are delivered by cart delivery drivers on their normal delivery routes.



▲ One of the two Valentine Day cards that residents could use to gift an Earth Machine™ bin to a loved one as part of the "Get Dirty" campaign. Source: City of Orlando

Marketing and Outreach

The City of Orlando's Office of Communications and Neighborhood Relations led the home composting program's marketing campaign. The Office's Graphics team, Multimedia team, and other collaborating divisions designed a "Get Dirty!" campaign to launch the program. The campaign started in February 2015 with the "Get Dirty With Your Valentine" video (see Appendix A). The City posted the videos on its Facebook and Twitter accounts. Links in the posts sent people to the home composting web page. After filling out the bin request form, residents could download one of two Valentine's Day card PDFs to "gift" the compost bin (see Appendix

A). The Facebook post was viewed 3,432 times, reached 10,664 people, and was shared 55 times in the first two weeks. The Twitter post reached 1,850 people. In addition, a local television station ran the video every hour during the first weekend after the program was launched, and the local newspaper, the Orlando Sentinel, ran a feature story on the front page twice in two weeks (see Appendix A).³⁸ Orlando expanded the campaign in summer 2015 with the “Get Dirty With Your Neighbor” video (see Resources - Videos).

Orlando also advertises the bins and workshops through social media posts and flyers distributed at neighborhood meetings.³⁹



▲ During summer 2016, the City of Orlando pushed for residents to “Get Dirty with their Neighbors” through a social media campaign and television advertisements. Source: JenHiatt.com

The City incurs no extra costs to produce the program’s marketing material. The Communications staff adds the work to their normal tasks, and they use existing advertisement space in a local newspaper and local television station. The actors in the Get Dirty videos were City staff.

Training and Education

Backyard compost training workshops are organized by Jurgensen and taught by a representative from the University of Florida Orange County Extension Office. Jurgensen sets up the location, seating, and materials, and the representative brings a laptop and projector. As

of December 2017, Orlando had held 12 workshops with a total of 161 people attending.

The City also provides a variety of composting educational materials for residents to access. The program bins come with printed instructions specific to the Earth Machine™ and Orlando; instructions are in the *Backyard Composting Handbook* designed and produced by the City (see Appendix B). The City’s backyard composting web page has links to composting information and three short how-to videos that cover compost “prep,” “maintenance,” and “harvesting.”⁴⁰



▲ First page of the guide book sent out to residents with their free Earth Machine™. Source: City of Orlando Department of Public Works

Tips for Replication

- Education, such as composting workshops, is key.
- Learn as you go. Do not be afraid to adapt your program to the circumstances as they reveal themselves.
- Have initial buy-in from those who will be necessary in implementing the program.
- Communicate well within and between the departments that will implement the program.
- Think through how you are going to deal with complaints. This is especially important for jurisdictions that do not have an ordinance that outlines how to address odor complaints.

³⁸ Jen Hiatt, “Get Dirty’ Composting Social Media Campaign,” August 10, 2015, <http://jenhiatt.com/index.php/portfolio-item/get-dirty-composting-campaign/>.

³⁹ Orlando advertised on the social media platform *Next Door*. <https://nextdoor.com/agency-post/fl/orlando/city-of-orlando-office-of-communications-neighborhood-relations/get-dirty-composting-workshop-and-giveaway-tomorrow-night-22673654/>.

⁴⁰ All educational materials can be found at <http://www.cityoforlando.net/solidwaste/composter/>



▲ Orlando's backyard program is part of Orlando Mayor Buddy Dyer's (pictured on right) Green Works initiative. Source: City of Orlando

Contact

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Links

City of Orlando's Composting Web Page

<http://www.cityoforlando.net/composter>

Get Dirty Campaign Videos

<https://www.youtube.com/watch?v=f5SqNGCMVpc>

<https://www.youtube.com/watch?v=7ChzRfxPhol>

Newspaper Stories

<http://www.orlandosentinel.com/news/environment/os-orlando-compost-bins-how-to-20150316-story.html>

<http://www.orlandosentinel.com/news/breaking-news/os-orlando-compost-valentine-20150210-story.html>



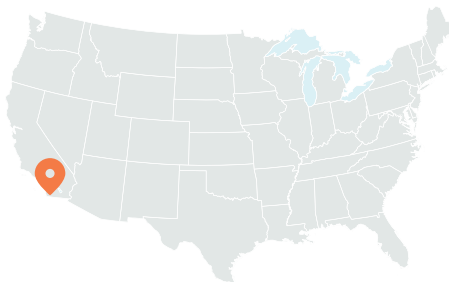
City of San Diego, California

▲ A compost demonstration site owned by the City Environmental Services Department and run by Solana Center. Source: City of San Diego Environmental Services Department

Program Summary

The City of San Diego's Environmental Services Department (ESD) distributes discount vouchers for home composting bins to residents in conjunction with Dixieline Lumber & Home Centers, a San Diego county hardware store chain. To obtain a voucher, residents fill out an application available on the City's web page (recyclingworks.com) or at three Dixieline Lumber & Home Centers locations within San Diego city limits. Environmental Services then emails the vouchers to residents with a brochure called *A Guide to Backyard Composting* and links to additional resources. The web page clarifies: "One voucher per household, proof of residency required, while supplies last." Residents can claim a \$30 voucher for a Soil Saver unit, a \$50 voucher for a Terra Dual-Batch Tumbling Composter, or a \$40 voucher for Can-O-Worms unit. The Can-O-Worms also comes with a voucher for a free pound of red wiggler worms (residents pay the cost of shipping from Triformis Corporation). These vouchers are redeemable at any of the three Dixieline Lumber & Home Centers' San Diego locations. (See Appendix A for voucher, application, and other resources.)

In the past, the City annually held compost bin truck sale events with three stops, ending at the San Diego's SDCCU Stadium (San Diego County Credit Union Stadium). City staff were present at the event to pass out vouchers for



POPULATION:

1,406,630

PROGRAM START DATE:

November 2012

BIN TYPE AND PRICE TO RESIDENTS (AFTER VOUCHER)

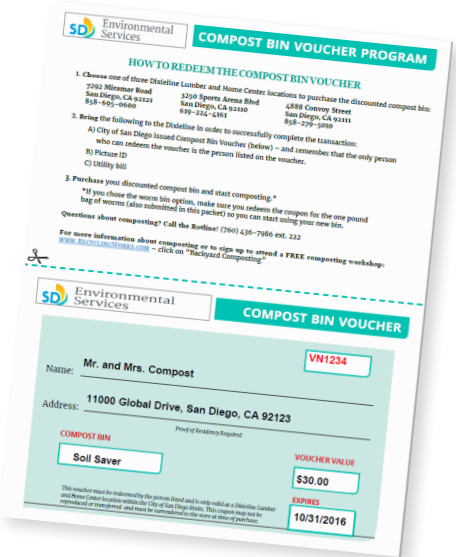
Soil Saver – \$47.99 + tax
 Can-O-Worms from Triformis Corporation – \$59.99 + tax
 Terra Dual Batch Composter – \$129.99 + tax

VOUCHERS DISTRIBUTED/ REDEEMED FROM 2014-2017:

3,715 distributed / 1,973 redeemed

TRAINING AND EDUCATION:

Training available but not required to obtain bin



▲ Sample voucher sent to a resident for a Soil Saver unit. Printed vouchers used to be sent through mail to residents, but now the City sends them out as PDFs via email. Source: City of San Diego, Environmental Services Department

the bins. That former program was discontinued due to budget cuts, but new funding allowed the City of San Diego to start the current year-round program in 2012. The City's Recycling Specialist designed the current program in order to provide residents with more bin options and the ability to see bins in-store before deciding which to buy.

The Department has not yet released analysis of its bin or home composting programs, but it has begun inputting data and plans to release a report in the future.⁴¹ The report will include information such as the number of vouchers claimed per zip code and per bin type, the number of people still using bins, and any problems people have encountered using the subsidized bins. The information will be collected via Survey Monkey from residents who agreed to be contacted in the voucher application. The feedback will be used to adjust and improve the program.

TABLE 9. SAN DIEGO NUMBER OF VOUCHERS DISTRIBUTED/REDEEMED BY YEAR AND BIN TYPE

Bin Type	2014	2015	2016	2017
Soil Saver	457/269	519/300	421/199	463/193
Can-O-Worms	317/204	296/172	228/120	251/134
Terra Dual Batch Tumbler	180/100	264/152	159/67	160/63

Source: City of San Diego Environmental Services Department

Budget

The total yearly budget for San Diego's program is \$50,000, which comes out of the City's recycling funds. There has yet to be a year where funds have been exhausted. Recently, the Department has decreased both paper usage and mailing expenditures by switching over to an email format for its vouchers.

Staffing

The bin program is managed by Edward Baskin, the City Recycling Specialist. He spends an estimated 15% of his time on the program.



▲ An advertisement posted in the elevator of the San Diego Environmental Service Department shows (from left to right) the Soil Saver, Terra Dual Batch Composter, and Can-O-Worms. Source: City of San Diego Environmental Services Department

Partners

Vouchers are redeemable at Dixieline Lumber & Home Centers, a San Diego hardware store chain. The City also contracts with a nonprofit organization, Solana Center for Environmental Innovation, for a variety of services, including composting and waste reduction.



▲ San Diego advertises the home composting program on the City's waste hauling trucks. Source: City of San Diego Environmental Services Department

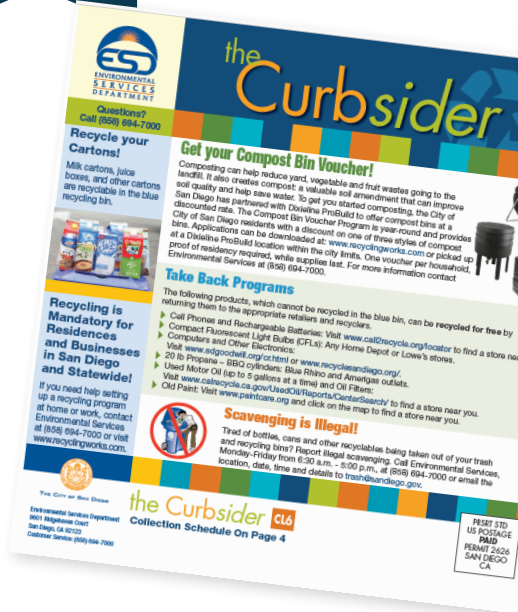
Impacts and Benefits/Costs

This information was unavailable at the time of writing.

Marketing and Outreach

The Department advertises the bin program by distributing flyers, passing out applications at community events, posting on social media, and displaying signs on its trucks. Included in the appendix is an advertisement posted in ESD's elevator. The Department always mentions the program in its annual newsletter called The Curbsider, which is sent out to the approximately 280,000

41 The program administrators were able to share with ILSR some of the information that will go into that report. We used the information for Table 9.



▲ Left: An advertisement in the fall 2012 newsletter, The Curbsider. Source: City of San Diego, Center: An advertisement sent out in the Winter 2014 newsletter, The Curbsider. Source: City of San Diego, Right: An advertisement in one of Dixieline Lumber & Home Centers weekly flyers mailed to residents. Source: City of San Diego Environmental Services Department

single-family City-served residences (see Appendix A). Dixieline Lumber & Home Centers also promotes the program; there is always a spike in interest when they feature the discounted bins in their weekly ads that are mailed to approximately 300,000 residents (see Appendix A).

Education and Training

The City contracts with Solana Center to provide six free 2-hour composting workshops a year, a Master Composter course, and a compost hotline called the Rotline. The workshops are held throughout the city, while the Master Composter course is taught at a compost demonstration garden located outside the Environmental Services building. The workshops cover backyard composting and vermicomposting basics, what composting is and why it is important, tools and materials needed to compost, which items are compostable and which are not, and how to harvest and use compost. The 5-week Master Composter course costs \$25 in materials fee and requires attendance once a week and completion of 30 hours of community outreach in composting education and promotion.

Tips for Replication

- Ensure residents are using their bins correctly. Getting the compost bin in the hands of your residents is only half the battle.
- Work with a good partner that has solid supply lines.

Contact

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Email: EBaskin@sandiego.gov

Links

The City of San Diego's Backyard Composting Site

- 🔗 <https://www.sandiego.gov/environmental-services/recycling/residential/composting>
- 🔗 <https://www.sandiego.gov/environmental-services/recycling/residential/compostbinvoucher>

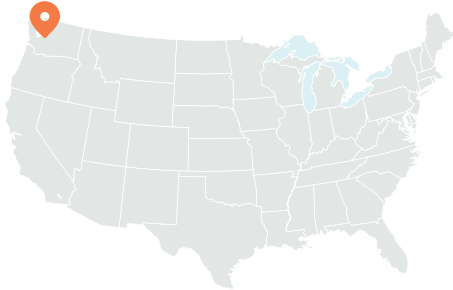
Solana Center

- 🔗 <https://www.solanacenter.org/>



Seattle, Washington

▲ Seattle started publicly supporting composting with the first Master Composter program in the world in 1986. *Source: City of Seattle*



POPULATION:

704,352

PROGRAM START DATE:

1986

BIN TYPE AND PRICE TO RESIDENTS (PLUS TAX)

Green Cone Food Composting Bins – \$119
 Beaver State Plastics Recycler Yard Composter – \$80

BINS DISTRIBUTED:

Total N/A

TRAINING AND EDUCATION:

Training available but not required to obtain bin

Program Summary

Seattle was one of the first cities in the U.S. to have a home composting program. In 1986, the Seattle Solid Waste Utility, now the Seattle Public Utilities (SPU), created the first Master Composter program in the world in collaboration with the nonprofit Seattle Tilth Association (now Tilth Alliance). From 1990 until 1994, Seattle offered residents yard trimming composting bin delivery and educational services at no charge, and in 1993, added food waste composting bins to the program.⁴² In 1994, the City began charging a subsidized fee for both yard and food waste composters. In the very early years, the program focused on home delivery of bins and home consultation on composting education, but by the mid-1990s the program switched to centralized workshops/education and pick-up locations. By the end of 1995, approximately 23% of Seattle households had received a yard waste compost bin (see Table 1) and 4% (6,600) had received a food waste compost bin from the City.⁴³



◀ A 1994 visit by SPU to a resident's home to provide home composting education. In the past, home education visits were a pillar of Seattle's home composting program. *Source: City of Seattle*

42 Cascadia Consulting Group, Inc., "City of Seattle 1995 Home Organics Waste Management Survey" (1996), http://www.seattle.gov/util/cs/groups/public/%40spu/%40garbage/documents/webcontent/1995HOME_200312021402244.pdf, pg. 3.

43 Ibid.

Currently, SPU sells Green Cone solar digesters from Compostec (\$119) for food scraps and the Recycler Yard Composter (\$80), made by local manufacturer Beaver State Plastics, for composting yard trimmings. Residents order online or over the phone and can pick up the bins at the Seattle Conservation Corps office. For \$15, the Conservation Corps will deliver the bins to residents within City limits (up to three). SPU stocks and sells the Beaver State Plastics' yard bins because they are made with 100% locally collected recycled plastic. Previously SPU provided locally made wooden slat bins.

SPU no longer subsidizes the compost bins, but rather sells them to residents at the price SPU receives in contracts with the bin manufacturers. Seattle residents save money by purchasing the solar digesters from SPU; Green Cones sell for \$180 on the manufacturer's website.⁴⁴ Beaver State Plastics' bins are not available through standard retail outlets. In the past, the City subsidized the bins. For example, in 2008 the Green Cones were two for \$40, one for \$25, with a limit of two per household; and the yard bins were \$25 each, limited to one per household.⁴⁵

In 2011, SPU decided to stop subsidizing the backyard bins because most residents in Seattle have access to curbside collection of organic materials. Curbside collection of yard trimmings began in 1989 and food scraps collection began in 2005. Both expanded steadily (for example, yard trimmings collection reached 60% of the city in 1995), and as of 2010, 97% of Seattle had both types of curbside organics collection. Seattle's residents have been composting at home less as the rate of curbside collection has increased. Still, the City encourages backyard composting because it can reduce the number of collection trucks on the road and the fossil fuels those trucks consume.⁴⁶

TABLE 10. CUMULATIVE YARD SCRAP COMPOST BINS DISTRIBUTED IN SEATTLE (LATEST DATA AVAILABLE)

Year	1st Bin	2nd Bin
1989	6,032	0
1990	10,794	0
1991	18,110	0
1992	26,801	200
1993	31,282	450
1994	33,500	750
1995	35,102	1,107
1996	35,503	1,141

Source: Jennifer Bagby, Seattle Public Utilities, "Measuring Backyard Composting" (May 5, 1998), available online: https://www.seattle.gov/util/cs/groups/public/%40spu/%40foodyard/documents/webcontent/measuring_200312041149203.pdf

Budget

SPU's 2017 contract with Tilth Alliance was about \$85,000 for the Master Composter/Soil Builder volunteer program (Seattle only), and about \$230,000 for the Garden Hotline (which serves all of King County with information on natural yard care, including composting and compost use). SPU anticipates continuing these services going forward.

Staffing

SPU's Resource Conservation Planner manages the contract and directs outreach work with Tilth Alliance. Bin sales and distribution are managed by Seattle Conservation Corps (part of Seattle's Parks Department).

Partners

Seattle Tilth, a nonprofit organization, provides a variety of home composting educational resources.

Impact and Benefits/Costs

N/A

Marketing and Outreach

SPU no longer carries out any marketing and outreach efforts for its home composting program.

44 "Green Cone Solar Composter Digester," accessed April 27, 2018, <http://www.abundantearth.com/store/GreenConeDigester.html>.

45 Lisa Stiffler, "Cheap Compost Bins in Seattle," *Seattle Environmental News*, May 15, 2008, <http://blog.seattlepi.com/environment/2008/05/15/cheap-compost-bins-in-seattle>.

46 Personal communication, Justin Maltry, Program Coordinator, Tilth Alliance.

Training and Education

Master Composter Course

Under contract from SPU, Tilth Alliance manages a Master Composter/Soil Builder program for Seattle residents and a Garden Hotline for all of King County. Historically, the Master Composter/Soil Builder program has trained volunteers to teach others about backyard composting. It now has expanded to other resource conservation topics including recycling, natural yard care, and water quality. The once-a-year certification course encompasses 33 hours of classroom learning (including field trips), followed by 35 hours of volunteer outreach, which should be completed within one year of the training. Through Tilth Alliance, Seattle residents can request these volunteers for certain activities, such as giving hands-on clinic demonstrations, setting up informational tables at events, giving lectures or formal presentations, or providing assistance at events for sorting waste, recycling, and composting.



▲ A Master Composter course in action in Seattle in 2015. Source: Tilth Alliance

Composting Hotline and Online Materials

The Garden Hotline provides the public with phone, email, and social media access to experts on a variety of gardening, yard care, and other resource conservation topics, including composting and soil building techniques. Through the Hotline, residents can also request free hard copies of composting and gardening educational brochures. The brochures are also available on the Tilth Alliance and SPU websites. The Garden Hotline staff also research gardening practices, publish articles, and give workshops and seminars on green gardening and integrated pest management.

SPU's website includes a Backyard Composting page that offers a variety of tips and resources on composting (including links to Tilth Alliance) and provides a PDF of a composting guide booklet (see Links below). The page also provides instructions on how to construct a composting system at home.

Demonstration Sites

Tilth Alliance maintains compost demonstrations at several of its community learning site gardens. These are not funded by the City.

Tips for Replication

- Have a clear idea going in on what materials will be accepted, and what the drivers behind the program are. Will residents be composting just yard waste, or will food waste also be included? Is the focus of the program waste reduction, climate change mitigation, decreased landfill usage, or cost savings?
- Identify dependable multi-year funding, whether from waste utility, grants, or other sources, and determine the metrics those funders will require to prove success.
- Choose strategies you can afford and that will engage the most citizens. People will build their own bins if they're excited and have good information.



▲ A Master Composter course in 2015 held at one of the demonstration sites managed by Tilth Alliance. Source: *Tilth Alliance*

Contacts

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Justin Maltry, Program Coordinator, Tilth Alliance

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Links

Backyard Composting page on the Seattle Public Utilities website

<http://www.seattle.gov/Util/EnvironmentConservation/MyLawnGarden/CompostSoil/Composting/index.htm>

The Garden Hotline

<http://gardenhotline.org/>

Tilth Alliance

<http://www.seattletilth.org/>

SPU Organics Waste Management Surveys 1995-2010

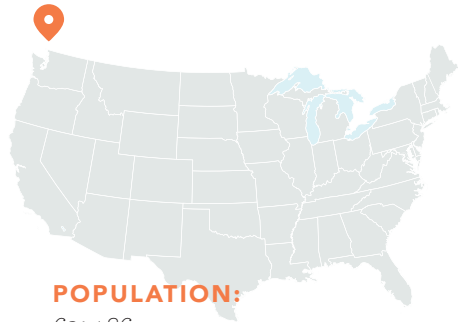
<http://www.seattle.gov/util/documents/reports/solidwastereports/surveys/>

CASE STUDY



Vancouver, British Columbia

▲ Worm bins manufactured by Transform Compost and sold to Vancouver residents for \$25 after the one-hour required workshops. The number for the compost hotline is pasted onto the side of the bins. *Source: City Farmer*



POPULATION:

631,486

PROGRAM START DATE:

1990

BIN TYPE AND PRICE TO RESIDENTS

Earth Machine™ from ORBIS Corporation – \$25 CAD (comes with free Wingdigger Aerator from Redmon) Worm bins made by Transform Compost – \$25 CAD (comes with worms, instructional book, bedding, trowel)

BINS DISTRIBUTED:

Approximately 53,000 total Earth Machine™ – approx. 47,000 Worm bins – approx. 6,000

TRAINING AND EDUCATION:

One-hour training required for worm bins

Program Summary

Vancouver's home composting program was inspired by a resolution passed by the Vancouver City Council in February 1989 to reduce Vancouver's waste stream by 50%.⁴⁷ The City's subsequent waste reduction strategy included multi-material recycling and composting. It started selling subsidized bins in 1990.

Vancouver's Solid Waste Management Branch administers the program. The Branch issues a request for bids when it needs more composting bins and generally purchases around 300 units at a time. Residents can obtain Earth Machines at the subsidized price of CAD \$25 per unit at the South Vancouver Transfer Station; this is about half the local retail price. Residents can also pick up a free aerator at the transfer station when they purchase an Earth Machine™.⁴⁸ In 1993, Vancouver began distributing subsidized worm bins.⁴⁹ The worm bins are currently CAD \$25 each and provided by the local company Transform Compost Systems. The bins come with a tray, lid, worms, bedding, and instructions, and are sold at the Vancouver Compost Demonstration Garden after a required one-hour training session taught by the nonprofit City Farmer Society.

In 2010, Vancouver began collecting fruit and vegetable scraps at curbside; in 2012, all food scraps were added. Since then, residents of Vancouver have purchased increasingly fewer bins per year (see Table 10). Though other municipalities in the Greater Vancouver Regional Area have decided

47 Paul Henderson, "Composting in Vancouver: 10 Years of Progress," City Farmer, July 10, 1999, <http://www.cityfarmer.org/CompostPaul.html>.

48 City of Vancouver, "Garden Composters" (January 9, 2015), <http://vancouver.ca/home-property-development/garden-composters.aspx>.

49 Henderson, "Composting in Vancouver: 10 Years of Progress."

to discontinue bin programs in recent years, the City of Vancouver plans to keep its program. Vancouver’s garden composting web page shows how backyard composting and municipal compost collection can work in tandem. The web page recommends that home composters keep fish, meat, dairy, grain products, grease, oil, and cooked foods like pasta and rice out of their backyard bins because these foods decompose too slowly and could potentially create odors and attract pests. Vancouver asks residents to put these items in their curbside compost bins. In this way, home composters can make sure no food scraps go to waste.

If demand for backyard compost bins continues to decrease (see Table 11), Vancouver will consider switching from yearlong bin sales to a one- or two-day-a-year truck sale event. The City held regular truck sales in the past, but in the last ten years, it only had one in 2010, where it sold 786 units in a single day.

TABLE 11. ANNUAL BACKYARD BIN SALES IN VANCOUVER

Year	# Units Sold at Transfer Station	# Units Sold at Truckload Sale
2006	865	
2007	920	
2008	1,680	
2009	1,420	
2010 ^a	1,048	786
2011	1,269	
2012 ^b	744	
2013	467	
2014	326	
2015	286	

a Beginning of curbside collection of food and vegetable scraps

b All food scraps allowed in curbside collection program

Budget

In 2014, Vancouver Solid Waste Management had a \$100,000 budget for program promotion; the purchase of composters, aerators, and worm bins; and other miscellaneous expenses. Selling bins offset the program’s expenses by approximately \$15,000.

Staffing

Doug Thomas of the Solid Waste Management branch organizes procurement and sales of the Earth Machines. Receivers at the Vancouver South Transfer Station staff the bin pick-up service for residents. The nonprofit City Farmer Society provides a variety of other services (see below).

Partners

City Farmer Society, a Vancouver-based urban agriculture nonprofit organization, provides a variety of educational resources for home composting.

Impact and Benefits/Costs

To date, Vancouver has sold approximately 47,000 backyard bins. Though demand for bins has decreased since implementation of curbside collection, the reduced tipping and transport fees justify the continuance of the program.

▲ An advertisement for the discounted worm bins and free workshop printed in two different March 2012 editions of the Westender newspaper. The total cost of taking out the space for both advertisements was \$289.76. Source: Solid Waste Division, City of Vancouver

Marketing and Outreach

Vancouver has advertised the program with printed material and online media (see Appendix A). In the future, the City’s Recycling Coordinator, Doug Thomas, believes that the City will likely promote the program more than it has in the last few years to rebuild interest.



▲ The compost demonstration site at City Farmer. Source: City Farmer


Training and Education Demonstration Site and Worm Bin Workshops

City Farmer’s location includes a climate adaptation garden, green roof, cob shed, organic food garden, permeable lane, natural lawn, water wise garden, and worm and backyard composters.⁵⁰ Vancouver helps fund the nonprofit in order for the facility to double as the Vancouver Compost Demonstration Garden, where City Farmer’s staff also teach the required one-hour worm composting classes on behalf of the City. The City of Vancouver reimburses City Farmer for compensation paid to the worm bin workshop instructors, \$40 an hour.

Composting Hotline and Online Educational Materials

The City of Vancouver helps fund a hotline run by City Farmer that provides information on the benefits and mechanics of composting. Residents also call the hotline to schedule worm bin workshops. In 1999, City Farmer calculated that approximately 9,000 people a year visited its garden or phoned into the hotline.⁵¹ City Farmer was not able to give more updated estimates, but the organization’s manager notes that Internet resources are more relevant today.⁵² In 2012, City Farmer estimates there were about one million visitors to its website.⁵³

City Farmer provides worm composting guides and educational videos on its website,⁵⁴ and produced a how-to-backyard-compost video (featuring the Earth Machine™) for the City of Vancouver’s web page.⁵⁵

A PDF guide to home composting that is downloadable from the City of Vancouver’s home composting web page.  Source: City of Vancouver



50 “About City Farmer – City Farmer News,” accessed April 27, 2018, <http://www.cityfarmer.info/about/>.
 51 Henderson, “Composting in Vancouver: 10 Years of Progress.”
 52 Personal communication, Michael Levenston, Manager, City Farmer, September 2, 2016.
 53 CityFarmer.info covers a wide variety of gardening and urban farming topics.
 54 “Wormcomposting – City Farmer News,” accessed April 27, 2018, <http://www.cityfarmer.info/wormcomposting/>.
 55 Vancouver, “Garden Composters.”



▲ A worm composting workshop in action at the City Farmer demonstration garden.
Source: City Farmer

Tips for Replication

- Figure out how the program is going to fit into your waste reduction strategies. If you have a successful residential organics collection program, then the challenge is getting residents to use their backyard composter rather than putting everything at the curb. Vancouver's backyard composting program began when there wasn't anything resembling organics collection, so the uptake was good. Thomas is not sure how successful the program would be if it were rolled out now.
- Promote backyard composting and subsidize purchases in order to sell more bins.
- Provide support to residents after they purchase bins. The success of the program is not just how many bins are sold, but how many are in use.

Contact

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Email: doug.thomas@vancouver.ca

Links

City of Vancouver Home Composting Bin Websites

<http://vancouver.ca/home-property-development/garden-composters.aspx>

<http://vancouver.ca/home-property-development/apartment-worm-composters.aspx>

City Farmer (partnering nonprofit organization)

<http://www.cityfarmer.info/>