



ZERO WASTE BOSTON

*Recommendations of Boston's
Zero Waste Advisory Committee*

JUNE 2019



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PHOTOS

Front Cover: The Daily Table, Casella Materials Recovery Facility, Greater Boston Food Bank, Boston Ecovation Center, City compost site, Republic Services Howard Transfer Station, Boston Building Resources, Cradles to Crayons, Waste Management CORE **Back Cover:** Cradles to Crayons, Greater Boston Food Bank, Save that Stuff, Greater Boston Food Bank.

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LETTER FROM THE CO-CHAIRS

Dear Mayor Walsh,

On behalf of the Zero Waste Advisory Committee, it is our privilege to submit to you these recommendations on how Boston can move toward the goal of zero waste.

Over the course of the last year, the Zero Waste Advisory Committee has met to develop recommendations of measures to increase recycling and composting and to reduce trash across all sectors in our city. The Committee is composed of a cross section of Boston—neighborhood residents, community organizations, environmental advocates, and businesses and institutions, large and small.

Informed by the Committee's deep experience, by the expertise of City employees, and by the knowledge and research of a consultant team, the recommendations in this report will help us advance our city towards the environmental, economic and quality of life goals you have set.

The 30 near-term and long-term recommendations in this report will help us reduce the consumption of natural resources and emission of greenhouse gases, and will help us increase our citywide recycling rate to be on par with leading cities across the country. And this work will be sustained through companies providing good, green jobs to residents in the region.

We are confident in the direction that these recommendations chart and their importance to our overall climate action efforts. Implementing them will certainly require a coalition as diverse as the group that developed them. It will require updates to policies and the introduction of new programs; it will require business development and a shared focus across our city. The process of developing these recommendations has shown that we have partners who are ready to get started.

Thank you for giving us the responsibility to undertake the development of this report for our friends and neighbors in Boston. We look forward to the work ahead.

Sincerely,

Christopher Cook & Chris Osgood
Co-chairs, Boston Zero Waste Advisory Committee

INTRODUCTION

BACKGROUND

Achieving zero waste has long been a goal for Boston.

In 2014, the City of Boston's Climate Action Plan update¹—its blueprint for becoming carbon-neutral and climate-ready by 2050—called for the City to launch a zero waste planning process that would identify strategies to move Boston toward zero waste. In 2016, the City held a Zero Waste Summit in partnership with the Zero Waste Boston Coalition to further this goal. As a result of that summit, in 2018, Mayor Walsh appointed a Zero Waste Advisory Committee to give him recommendations for specific actions that would help Boston to achieve the zero waste goal.

As defined by the Zero Waste International Alliance, zero waste is “the conservation of all resources by means of responsible production, consumption, reuse, and recovery of all products, packaging, and materials without burning them, and without discharges to land, water, or air that threaten the environment or human health.”²

This report describes the Zero Waste Advisory Committee's process; its findings about reuse, recycling, composting, and reducing trash in Boston; and its recommended strategies.

ADVISORY PROCESS

As noted, the first step of the process pre-dated the appointment of the Zero Waste Advisory Committee. In 2016, the City of Boston, in partnership with the Zero Waste Boston Coalition (formerly Boston Recycling Coalition), held a Zero Waste Summit that led to the development

of Guiding Principles for Implementing Zero Waste in Boston (see appendix). These principles are:

- 1. Make zero waste a key priority:** *define the goal, develop a strategy, expand resources, work collaboratively*
- 2. Focus first on using less and diverting more:** *lead by example, facilitate residential waste reduction, engage large generators of waste*
- 3. Support this work through local business development:** *work on job training; draw on leadership in innovation and research; encourage measures to improve the safety, health, and jobs of workers; put materials to highest and best use*
- 4. Sustain this work through culture change:** *build a culture of zero waste citywide, engage meaningfully with all stakeholders, embrace all communities, conduct linguistically and culturally appropriate public education, grow the next generation of zero waste leaders*

Between February and December 2018, the Zero Waste Advisory Committee met four times to learn about Boston's existing trash and recycling system, examine best practices from around the country, and develop waste reduction recommendations. The Committee met as a whole, and also broke into sub-groups to discuss issues specific to the residential and commercial sectors. The Committee was supported by a team of technical and facilitation experts, hired by the City, which were led by Perlmutter Associates and included Zero Waste Associates and the Center for EcoTechnology. Staff from the Public Works and Environment Departments also lent their expertise to the process.

Research by the consultants helped the Committee develop these recommendations. White papers, presentations to the Committee, and various draft documents contain extensive details about the current state and capacity of Boston's collection and processing infrastructure, costs and benefits of recommended strategies, case studies about how leading zero waste cities engage the public, and opportunities for economic development. All of these materials are posted on the City's Zero Waste website.³

In addition to the Committee's public meetings, over 40 community and business groups received presentations about the Committee's work.

EVALUATION CRITERIA

The Guiding Principles described above provided the framework for the Committee's work. In addition, the Committee used a broader set of evaluation criteria that are similar to the criteria used in other recent city planning, including Imagine Boston 2030, Climate Ready Boston, Resilient Boston, and Go Boston 2030.

Potential waste reduction strategies were evaluated for:

- 1. Effectiveness:** the amount of change in reduction of trash and increase in reuse, recycling or composting.
- 2. Economic feasibility:** the public and private costs, industry's capacity to take on changes, and potential markets for recycled products.
- 3. Convenience:** time, attention, and effort required to make changes.
- 4. Equity:** the fair, just, and equitable management, distribution, and implementation of zero waste services and policies across Boston's diverse neighborhoods and population.
- 5. Economic development:** effects on jobs, wages, and the creation of new businesses.
- 6. Legal and institutional feasibility:** existing authorities, regulations, and institutional requirements involved in making changes.
- 7. Other benefits:** impact on public health, beautification, energy use, and carbon emissions.

CURRENT COLLECTION SYSTEM

CURRENT RESIDENTIAL COLLECTION IN BOSTON

The residential trash, recycling, and composting programs in Boston are primarily the responsibility of the Public Works Department, with support from the Environment Department.

Residential trash, recycling, and leaf and yard trimmings collection is performed by private haulers contracted by the Public Works Department and paid for by tax revenue. Most residential buildings receive trash and recycling collection once per week. Downtown neighborhoods receive twice-per-week trash and recycling collection services. In 2018, options for residents for trash, recycling, and composting included:

- Trash can be set out for pickup in customer-provided cans or plastic trash bags.
- Recyclable materials are commingled (paper, glass, plastic, and metal are collected together in “single-stream recycling”) and can be set out in wheeled carts provided by the City, customer-provided containers with a recycling sticker, or, for residents in the downtown, clear plastic bags.
- Residents’ leaves and yard waste are collected curbside in leaf bags or open barrels from April to early December.
- The City hosts four events per year where residents can drop off hazardous materials (for example, oil paint, motor oil, and pesticides), clothing and textiles, electronics, and paper for shredding.
- The City offers five “Project Oscar” community compost bins for food scrap collection located throughout the city.

CURRENT COMMERCIAL COLLECTION IN BOSTON

Businesses and institutions in Boston hire private haulers to collect their trash and recyclable and compostable materials. Trash haulers must receive permits from the Public Works Department under the City’s “Ordinance Regarding Recycling Requirements for Waste Haulers” to collect materials from dumpsters larger than one cubic yard, compactors, and large roll-off containers. In 2018, haulers did not need a permit to collect trash and recyclable materials from commercial customers that use smaller bins or wheeled carts. Customers and haulers determine the size and frequency of containers and collection. Materials may be hauled directly to processing and disposal facilities or transferred to long-haul trucks through private transfer stations.

About 78 percent of all discarded materials generated in Boston are from businesses and institutions, including eight percent from construction and demolition activities. The remaining materials are from the residential sector.

CURRENT RECYCLING RATE

The citywide recycling rate, which includes all materials collected from residents, businesses, and institutions that are reused, recycled, or composted, is approximately 25 percent. The residential sector discards 240,000 tons of materials/year, with 50,000 tons of that diverted from disposal for recycling and composting. Total commercial generation of discarded materials is 916,000 tons per year, with 232,000 tons of that diverted from disposal. This amounts

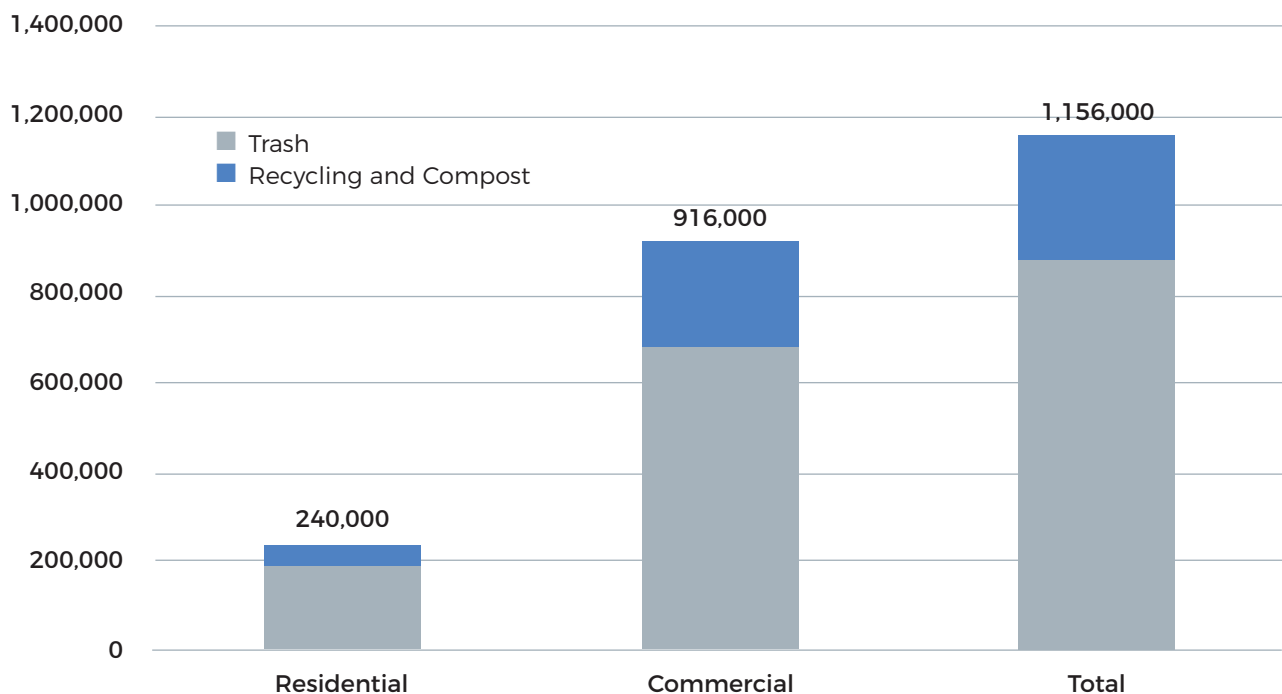
to about 282,000 tons of materials diverted from disposal annually. The remaining 75 percent, 874,000 tons, goes primarily to waste-to-energy incinerators (facilities that burn trash to generate energy); some may go directly to landfills. (See Figure 1.)

COMPOSITION OF TRASH IN BOSTON

Though Boston residents, businesses, and institutions currently only reuse, recycle, or compost 25 percent of their discarded materials, at least 75 percent of what is disposed as trash is potentially recyclable or compostable. (See Figure 2.) This estimate comes from statewide studies of

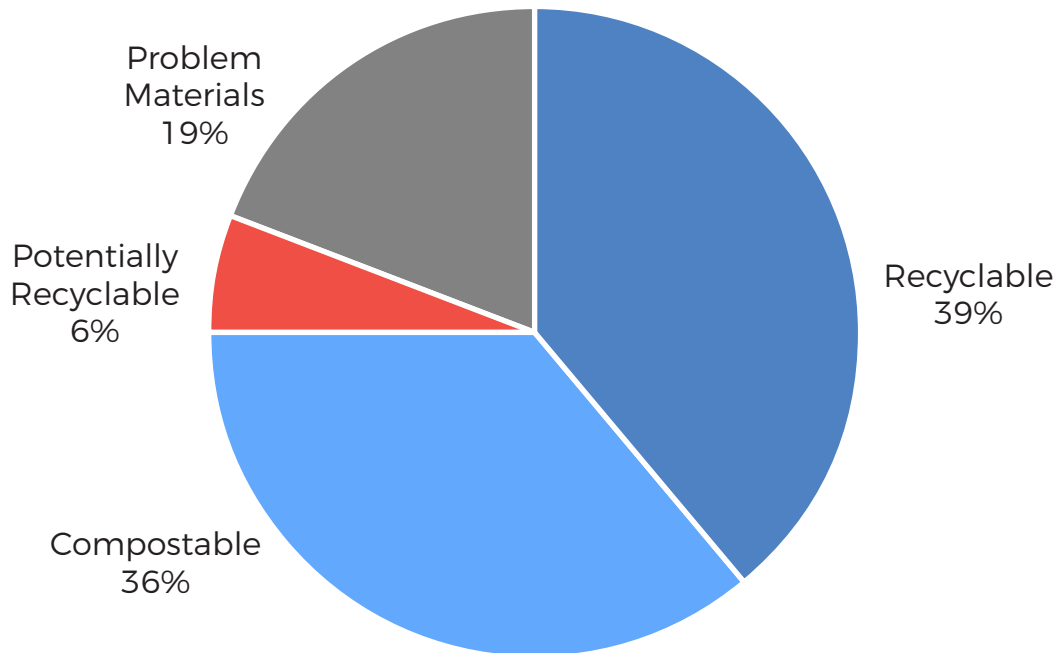
the composition of the disposed materials taken to landfills and incinerators. Recyclable materials include paper, plastic, metals, glass, and textiles. Compostable materials include food, food-soiled paper, plant debris, wood, and soils. Potentially recyclable materials include materials that are recyclable from a technical standpoint, but may not have a strong infrastructure or collection system yet, such as expanded polystyrene (i.e., Styrofoam®) and plastic bags. Problem materials include things that can't be reused, recycled, or composted now due to high cost, or lack of technology or markets, such as treated wood, diapers, and composite materials (items made of multiple materials).

FIGURE 1: BOSTON'S RESIDENTIAL AND COMMERCIAL ANNUAL TRASH, RECYCLING AND COMPOST TONS



Source: Perlmutter Associates 2018, derived from Boston Public Works Department "FY 17 Actual Tonnages and Tip Fee by District;" Mass DEP "2017 Solid Waste Data Update" (includes MSW, C&D and Non-MSW disposal); California Department of Resources Recycling and Recovery "2014 California Commercial Generator Waste Study" (Tons Per Employee Per Day).

FIGURE 2: COMPOSITION OF TRASH IN BOSTON



Source: Perlmutter Associates 2018, derived from MSW Consultants “2016 Waste Characterization Study in Support of Class II Recycling Program” (Saugus, SEMASS, Haverhill)

BOSTON'S PROCESSING CAPACITY

There are many facilities in and around Boston that recover and process the city's materials. These include:

- Food rescue and donation organizations
- Reuse and repair facilities
- Material recovery facilities for processing recyclable materials
- Construction, demolition, and deconstruction processing facilities
- Composting and anaerobic digestion facilities

- Other facilities that handle specialty materials (for example, mattresses)

The following chart summarizes issues related to materials processing capacity in Boston. Overall, lack of capacity is not a big concern. However, this could change if material quality is not made a priority, increased rent or continued development causes facilities to close, or materials markets do not improve. Satisfactory capacity does not mean there are not opportunities to create new industries in Boston to manage the city's materials.

STATUS OF BOSTON'S CURENT ZERO WASTE INFRASTRUCTURE

Food Rescue and Donation	Capacity OK. Rescue groups want more food. They would like help with promotions and with coordination with regulatory agencies.
Reuse and Repair Facilities	Capacity OK. Lack of space, changing zoning, and rising rents may impact capacity in the future.
Materials Recovery Facilities	Facilities are slowing down sorting lines; running materials through lines more than once; adding equipment, shifts, and more labor to meet higher quality standards; companies are considering adding more capacity.
Construction, Demolition, and Deconstruction Processing Facilities	Capacity OK. Landfills that take residuals from processing facilities are closing. Will be important to develop markets/uses for those residuals.
Composting Facilities	No permitted facility in or near the city has the capacity to take all of the city's food scraps and soiled paper.
Anaerobic Digesters	There is capacity at Waste Management's CORE processing facility and Greater Lawrence Sanitary District to process Boston's food scraps with biosolids. In addition, at least one private company is interested in siting an anaerobic digestion facility in the city that could take mixed yard trimmings, soiled paper, and food scraps, without biosolids. No facilities currently digest soiled paper.
Special Materials (rigid and film plastics, electronics, and household chemicals)	Capacity OK. Markets for some types of plastics may be an issue. In addition, lack of space and cost has limited creation of a permanent household hazardous waste facility (for household chemicals like paint, motor oil, pesticides, and cleaning agents).

Source: Perlmutter Associates 2018

RECOMMENDATIONS

There are significant opportunities to reduce trash and increase reuse, recycling, and composting collection and processing in Boston. These opportunities include:

- Supporting and expanding businesses that can reuse, recycle, or compost the 75 percent of materials in the trash that are reusable, recyclable, or compostable.
- Modernizing trash and recycling systems to be more efficient, effective, and equitable.
- Increasing education and awareness about trash reduction and proper recycling.
- Developing programs to collect additional materials.
- Linking waste reduction with economic development to support existing jobs and businesses and create new ones.
- Enforcing existing state and local bans.
- Enacting new policies (such as bans, fees, or new rules) that support waste reduction.
- Collecting better data to identify where to set priorities and to modify policies and programs.

To address these opportunities, the Zero Waste Advisory Committee recommends that the City focus on 30 strategies within four core categories:

1. Reduce and Reuse
2. Increase Composting
3. Recycle More and Recycle Right
4. Inspire Innovation

Across these four categories, there are 22 near-term strategies the City can advance in the next five years, and nine longer-term strategies that the City should continue to explore.

These strategies reflect the levers that City government has to help the community get to zero waste: build a culture of zero waste; implement programs and policies that encourage zero waste; and encourage the development of business and infrastructure that support zero waste.

By implementing these strategies, Boston can increase its overall recycling rate from 25% to 80% or more.

REDUCE AND REUSE

Reducing the creation of materials that wind up being discarded in the first place is the highest priority because it achieves the greatest environmental benefit. Right now, Boston's residents and businesses generate roughly 1.2 million tons of materials annually (25% is reused, recycled, or composted and 75% is disposed in incinerators or landfills). Through the efforts below, that number can be reduced.

SHORT-TERM STRATEGIES TO ADVANCE

1. *Conduct Citywide Public Education Campaigns*

Develop campaigns to increase waste-reduction behaviors including: promotional campaigns in multiple languages, use of advertisements, and public service announcements. Recognize individuals and institutions who are leading the way by building on the Mayor's successful Greenovate Waste Reduction Awards.⁴

2. Provide Targeted Waste-Reduction Outreach and Technical Assistance

Inform residents, businesses, and institutions of waste-reduction opportunities, services, and rules and integrate zero waste into Greenovate Boston. Use face-to-face techniques. Partner with community-based organizations, community centers, student groups, and others for in-person training and programs.

3. Reduce Problem Products & Packaging

Building off of the City's plastic bag ban, explore policies that can reduce the use of foodware or packaging that is hard-to-reuse, -recycle, or -compost.

4. Divert More Reusable Goods

Convene existing reuse and surplus food donation businesses and nonprofit organizations to collaborate in identifying ways in which the City can support their efforts.

LONG-TERM STRATEGIES TO EXPLORE

5. Divert Even More Reusable Goods

Increase the diversion of reusable goods including curbside pickup by appointment or on a regular basis, and voluntary take-backs at local retailers.

6. Keep Repairable Products from Disposal

Explore programs, events, and policies that divert products that can be reused, repaired, or easily dismantled from the trash.

INCREASE COMPOSTING

More than 35% of what is currently thrown away is compostable. This is nearly 310,000 tons of materials generated each year that could be composted and reused for other purposes. In addition, compost itself can help store carbon in the soils and reduce the amount of carbon dioxide in the atmosphere.

SHORT-TERM STRATEGIES TO ADVANCE

7. Expand Residential Yard Waste Options

Provide a residential yard waste collection or drop-off option for as many months as needed.

8. Pilot Programs to Handle Residential Food Scraps

Design and phase in, over the course of several years, programs to divert food scraps and food-soiled paper from household trash. When feasible, prioritize processing of compostable materials separately from sewage sludge.

9. Expand Commercial Composting

Promote collection of food and food-soiled paper from businesses and institutions. Encourage haulers to provide compostable materials collection services.

10. Increase Compost Capacity

Continue to explore and encourage the development of businesses that expand local compostable material processing capacity and options.

LONG-TERM STRATEGIES TO EXPLORE

11. Take Residential Composting Programs to Scale

Based on an evaluation of the composting pilots in the first five years, take the effective residential composting programs to scale.

12. Increase Commercial Composting Even More

Require haulers to collect food and food-soiled paper from their commercial customers for compostable materials processing.

RECYCLE MORE AND RECYCLE RIGHT

Nearly 40% of what is tossed as trash in Boston today could have been recycled. Over 340,000 tons of these materials generated annually can be made into new products. This includes materials that are typically considered recyclable such as paper, plastic, metal, and glass, and also materials thrown away at construction sites like wood, drywall, bricks, concrete, and asphalt.

SHORT-TERM STRATEGIES TO ADVANCE

13. Educate Boston Residents, Businesses and Visitors to Recycle Correctly

Create how-to guides, uniform messages, universal recycling and trash signs, website resources, and mobile apps. Promote resources such as the Massachusetts Department of Environmental Protection's Recycling IQ Kit informational materials,⁵ the RecycleSMART⁶ materials app, the RecyclingWorks⁷ commercial technical assistance program, and the Green Team⁸ school education program.

14. Expand and Enforce State and Local Waste Reduction and Recycling Requirements

Require residents and businesses to reduce waste and to separate their recyclable materials from trash. Explore incentives such as providing City-sponsored trash collection services to multifamily and mixed-use buildings only when they meet minimum recycling standards.

15. Reinforce Waste-Reduction Goals through the Collection System

Phase in standard-sized wheeled carts for trash collection where appropriate.

16. Create New Commercial Hauler and Generator Rules

Require all commercial haulers to provide minimum levels of recycling collection services to all of their commercial customers and to report on services provided and quantities of all types of materials collected. Support commercial customers in recycling correctly through the use of incentives and mandates. Phase in reporting requirements starting with large commercial customers.

17. Lead by Example at Public Facilities

Set waste-reduction goals by department or building, and annually report diversion and waste reduction. Expand the number of recycling containers paired with trash containers at public facilities (e.g. City buildings, parks, schools) and with compost containers, if food is served nearby.

18. Expand Recycling During Construction Projects

Explore approaches that increase deconstruction, recycling, and source separation at construction and demolition sites. Consider requiring recycling plans, phased in by type and size of project, to demonstrate compliance with state waste bans.

19. Increase Transparency About Costs

Identify ways to show the financial impacts of not recycling, potentially leveraging existing opportunities such as the City’s budget and property tax bills.

20. Expand Infrastructure for Recycling “Hard to Recycle” Materials

Explore expanding the City’s paint drop-off program and similar services by creating neighborhood drop-off centers for recyclables and hard-to-reuse, -recycle, or -compost materials. Make the new system more accessible, particularly to those who live in apartments or work in small businesses.

21. Require Zero Waste Strategies for Public Events

Develop best practice guidelines, and require managers of large venues and organizers of public events to start implementing them.

LONG-TERM STRATEGIES TO EXPLORE

22. Create a More Equitable Collection System

Redesign the residential collection system to a more equitable, cart-based system that incentivizes reduction, reuse, recycling, and composting. Ensure that any impacts do not unfairly burden low-income residents.

INSPIRE INNOVATION

To get to zero waste—and to provide a model for other municipalities to do the same—will require further product, technology, and business model innovation. Boston can take steps to spark that innovation here.

SHORT-TERM STRATEGIES TO ADVANCE

23. Expand the City’s Environmentally Preferable Purchasing Practices

Update the 2008 Executive Order and guidelines on sustainable food, waste reduction, and environmentally preferable purchasing. Train and support staff in waste reduction and environmentally preferable purchasing. Expand environmentally preferable purchasing through use of state contracts and vendors for sustainable products. Require City agencies to use City-made compost or purchase compost and other soil amendments from local composters where possible.

24. Set Zero Waste Reduction Goals and Metrics

Annually report diversion, waste reduction, and other quantities for the city as a whole, and municipal operations specifically. Establish a short-term goal (for example, 40% by 2025 or 50% by 2030) once more data is available.

25. Advocate for Redesign and Take-back of Products

Advocate for redesign and take-back of products that are not reusable, recyclable, or compostable (including paint, mattresses, and electronics). Participate in the Massachusetts Product Stewardship Council and Product Stewardship Institute.

26. Support Green Jobs

Develop job training programs that support the many occupations necessary to operate a zero waste system. Support measures to improve the safety, health, and jobs of workers in solid-waste jobs, such as by ensuring that vendors meet their obligations under Boston's Living Wage Ordinance and report to the City on OSHA violations and actions taken to address them.

27. Create a Zero Waste Economic Development Strategy

Support development of new reuse, recycling, and composting processing, manufacturing, and retail businesses and robust markets (including collection, repair, resale, and manufacturing) for reusable, recyclable, and compostable materials.

LONG-TERM STRATEGIES TO EXPLORE

28. Fund New Ideas and Approaches

Provide community and business grants for waste reduction, reuse, repair, recycling, and composting outreach and business development.

29. Support a Zero Waste Research and Development Network

Organize a network of businesses and organizations to share best practices, organize workshops and webinars, and expand research to innovate and find solutions for hard-to-reuse, -recycle, or -compost materials.

30. Explore the Feasibility of City-Owned Trash and Recycling Infrastructure

Identify potential sites for a City-owned transfer and processing facility or existing facilities that could be purchased, then conduct study to evaluate their feasibility.

IMPACT

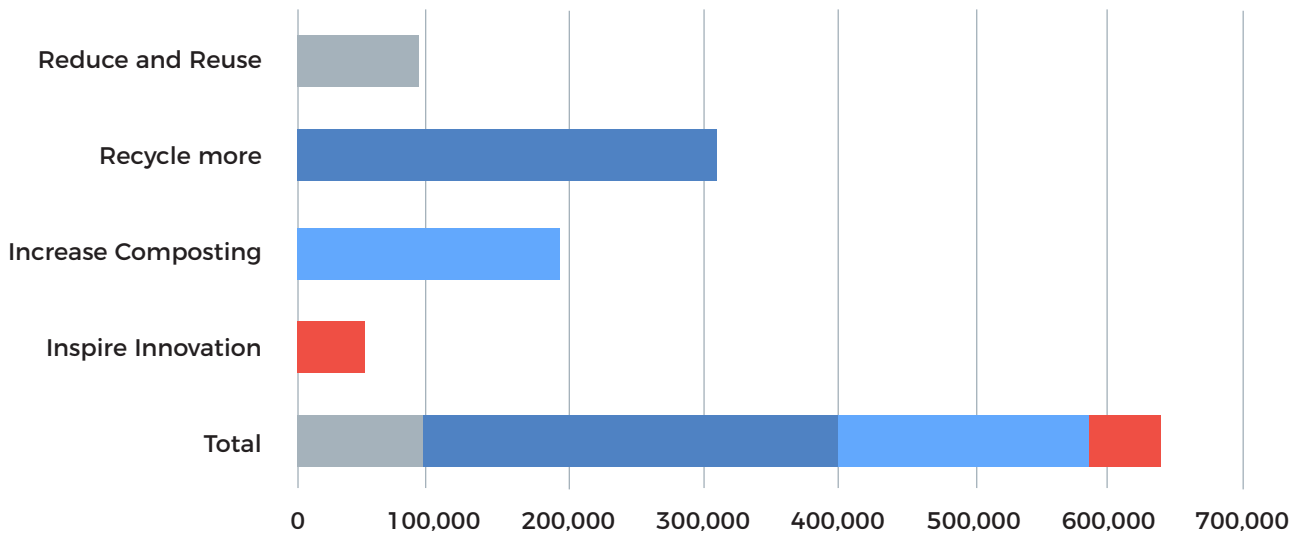
RECYCLING RATE ESTIMATES AND GREENHOUSE GAS EMISSIONS REDUCTION POTENTIAL

Implementing the recommended strategies will reduce trash, and increase recycling and composting, by about 638,000 tons per year or 55 percent. This would increase Boston's overall recycling rate from approximately 25 percent to 80 percent. (See Figure 3.) For comparison, current recycling rates in other leading zero waste cities are: San Francisco (83 percent), Los Angeles (76 percent), Seattle (59 percent), and Austin (42 percent).

Trash disposed would decrease from 874,000 tons per year to 236,000 tons per year when all programs are fully implemented.

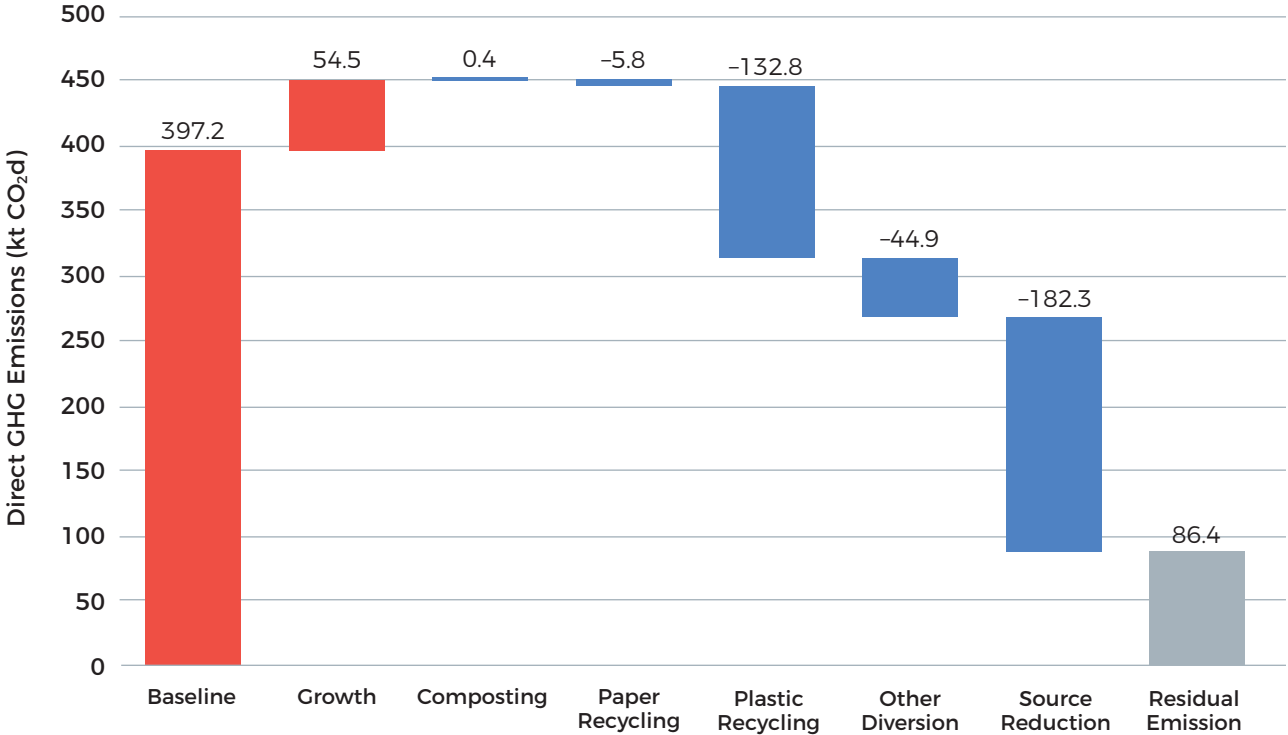
Waste prevention, recycling, and composting activities also reduce greenhouse gas emissions. In 2017, the processing (i.e., waste combustion, composting, etc.) of the city's discarded materials generated about 393,000 tons of CO₂e, about 6 percent of Boston's total greenhouse gas emissions. Increasing the diversion rate to 90 percent would reduce annual direct emissions from discarded materials by more than 78 percent relative to the 2017 baseline. (See Figure 4.) The residual emissions mostly stem from the combustion of the last 10 percent of solid waste and some direct emissions from composting and collection services.

FIGURE 3: BOSTON'S ZERO WASTE STRATEGIES ESTIMATED ANNUAL TONS REDUCED, REUSED, RECYCLED, AND COMPOSTED



Source: Perlmutter Associates, 2018

FIGURE 4: GREENHOUSE GAS REDUCTION FROM INCREASED WASTE REDUCTION



“Other” refers to textiles, mattresses, tires, electronic waste and other miscellaneous materials.

Source: Carbon Free Boston Summary Report, Figure 36: Pathway to 2050 in Municipal Solid Waste⁹

IMPLEMENTATION

GOALS AND MILESTONES

Full implementation of the recommended zero waste strategies should increase Boston's recycling rate from 25 percent to 80 percent.

The Zero Waste Advisory Committee recommends that the City adopt a goal of reaching an overall recycling rate of 80% by 2035 and 90% by 2050. The mid-term goal is achievable based on implementation of these zero waste strategies and the experience of other zero waste leadership communities. The long-term goal is consistent with the City's ambitious goal of carbon neutrality by 2050.

The composition of materials in the trash stream has evolved over the years and will continue to do so. End-markets will also change. The City will need to continually look at the materials in the trash and match them to the best strategies to meet these goals in accordance with its Guiding Principles.

Figure 5 lists each zero waste strategy and the recommending timeframe for implementation.

DATA AND REPORTING

Measuring performance will be an important part of determining the pace of implementation and the need to adjust policies and programs. For the residential sector, more complete and accurate data could also help to attract more potential contractors, who would have more confidence in calculating prices for services.

Through the City's own data collection and through requirements for contractors and permit holders, it is important to track the quantity of:

- Trash collected and disposed.
- Recyclable materials collected and marketed, minus any residue disposed.
- Compostable materials collected and processed, minus any residue disposed.
- Bulky items and other reusables collected.
- Products and materials repaired and reused.

In addition to the total amount of materials collected and the overall recycling rate, it would be useful to measure three other metrics:

- **Disposal per capita:** Because Boston's population and economy are growing rapidly, it is possible that Boston could increase its recycling rate, but still increase the total amount of discarded materials generated in the city. It is important to monitor both the overall quantity of disposal and the quantity per person and household and per dollar of economic activity. This metric also provides a good way to see how the city is performing compared to other communities around the country.
- **Carbon reduction:** Waste reduction and recycling contribute to the City's carbon reduction goals. Through implementation of the recommended zero waste strategies, Carbon Free Boston estimates that a 90 percent diversion of waste could reduce annual direct emissions from waste by 78 percent.

FIGURE 5: BOSTON'S ZERO WASTE TIMELINE

Short-Term 2019–2024

Long-Term 2025–2035

Reduce and Reuse	Reduce and Reuse
<ul style="list-style-type: none"> 1. Conduct Citywide Public Education Campaigns 2. Provide Targeted Waste-Reduction Outreach and Technical Assistance 3. Reduce Problem Products & Packaging 4. Divert More Reusable Goods 	<ul style="list-style-type: none"> 5. Divert Even More Reusable Goods 6. Keep Repairable Products from Disposal
Increase Composting	Increase Composting
<ul style="list-style-type: none"> 7. Expand Residential Yard Waste Options 8. Pilot Programs to Handle Residential Food Scraps 9. Expand Commercial Composting 10. Increase Compost Capacity 	<ul style="list-style-type: none"> 11. Take Residential Composting Programs to Scale 12. Increase Commercial Composting Even More
Recycle More and Recycle Right	Recycle More and Recycle Right
<ul style="list-style-type: none"> 13. Educate Boston Residents, Businesses and Visitors to Recycle Correctly 14. Expand and Enforce State and Local Waste Reduction and Recycling Requirements 15. Reinforce Waste-Reduction Goals through the Collection System 16. Create New Commercial Hauler and Generator Rules 17. Lead by Example at City Facilities 18. Expand Recycling During Construction Projects 19. Increase Transparency About Costs 20. Expand Infrastructure for Recycling “Hard to Recycle” Materials 21. Require Zero Waste Strategies for Public Events 	<ul style="list-style-type: none"> 22. Create a More Equitable Collection System
Inspire Innovation	Inspire Innovation
<ul style="list-style-type: none"> 23. Expand the City’s Environmentally Preferable Purchasing Practices 24. Set Zero Waste Goals and Metrics 25. Advocate for Redesign and Take-back of Products 26. Support Green Jobs 27. Create a Zero Waste Economic Development Strategy 	<ul style="list-style-type: none"> 28. Fund New Ideas and Approaches 29. Support a Zero Waste Research and Development Network 30. Explore the Feasibility of City-Owned Trash and Recycling Infrastructure

- **Value to local economy:** The recommended strategies will spur economic activity by recovering value from materials that are currently being discarded, creating and retaining jobs in reuse, recycling, and composting services, and opening up opportunities for innovation and efficiency. To the extent feasible, the City should track the economic effects of these initiatives.

Reporting on these metrics can be linked to the City’s budget process and annual goal setting.

REGIONAL COORDINATION

Because the City alone can’t change product design, materials often don’t stay within municipal borders, and businesses that utilize diverted materials may need more materials than Boston can generate, waste reduction will require regional coordination and cooperation. Programs through the Commonwealth and through organizations such as the Metro Mayors Coalition are important to continue and expand. Significant areas to collaborate on are expansion of recycling and composting capacity, economic development and labor strategies, extended producer responsibility, and outreach efforts to reduce contamination, encourage all to reduce and recycle correctly, and create a culture of zero waste.

FUNDING

Fully implementing the strategies in these recommendations would require increased staff support, collection and processing of recyclable and compostable materials, and development of new zero waste infrastructure.

Many of the waste-reduction initiatives will reduce costs through avoided collection and disposal fees and greater efficiencies. The cost savings can be used to invest in other measures that may not have immediate payback.

Costs within waste management sector are in flux. Based on currently available data, as much as \$58 million in annual residential and commercial program costs citywide (for implementation, collection, and processing) could be needed to fully implement these recommendations. However, an estimated \$40 million could also be saved annually through reduced trash collection and disposal costs. The net cost amounts to roughly \$5 per household or business per month.

Supplemental or alternative funding could be obtained from existing grant programs, such as:

- Massachusetts Department of Environmental Protection’s Recycling Dividends and other grant programs.¹⁰
- The Recycling Partnership.¹¹
- State or City workforce development funds.

Funding could also be obtained through:

- Fees on products or producers as included in some of the recommended initiatives.
- Payments of environmental fines directed to zero waste programs.
- Development of project conditions and mitigation fees to spur private investments.
- New permitting requirements for commercial trash haulers.
- Enforcement of recycling requirements.

CONCLUSION

Pursuing the goal of zero waste will make Boston, and its residents, businesses, and institutions, more efficient, resilient, and sustainable. It will make the city healthier for its residents and for its economy. It will contribute to Boston's goals for climate and environmental protection. Phased in over time, the waste-reduction strategies will require changes in behaviors at home, work, play, and school, and financial and intellectual investment. The rewards are many.

The City will play a key role in developing the policies, programs, and infrastructure for zero waste and developing incentives and outreach programs to make it easier and more convenient to participate.

By implementing these recommended strategies, Boston will become a leader in zero waste, and will inspire innovation from all sectors and throughout the region that will reinforce its ability to meet its zero waste goals.

The Boston community is ready to take on this challenge.

ENDNOTES

1. https://www.boston.gov/sites/default/files/greenovate_boston_2014_cap_update.pdf
2. <http://zwia.org/standards>
3. <https://www.boston.gov/departments/environment/zero-waste-boston>
4. <http://www.greenovateboston.org/2017greenovateawards-waste>
5. <https://www.mass.gov/how-to/massdep-recycling-iq-kit>
6. <https://recyclesmartma.org>
7. <https://recyclingworksma.com>
8. <https://thegreenteam.org>
9. <https://www.greenribboncommission.org/wp-content/uploads/2019/01/Carbon-Free-Boston-Report-web.pdf>
10. <https://www.mass.gov/service-details/massdep-waste-recycling-grants-assistance>
11. <https://recyclingpartnership.org>

APPENDIX

Guiding Principles for Implementing Zero Waste in Boston: Boston Zero Waste Summit 2016

In 2015, the City of Boston with its partners in the Boston Recycling Coalition received a grant from the Commonwealth of Massachusetts Department of Environmental Protection to hold a Zero Waste Summit and, based on those discussions, develop a set of guiding principles that would assist the City in reaching a long-term goal of zero solid waste.

VISION

Boston is a leader in waste reduction by 2022.

STATE OF WASTE IN BOSTON

The Boston community generates over 600,000 tons of solid waste annually. About 60 percent of the waste comes from commercial, institutional, and industrial activities. 40 percent of waste is generated by residents. Since FY2008, when the City launched its “Recycle More, Trash Less” campaign, Boston residents have increased their diversion (recycling) rate from 12 percent to 21 percent in FY2016. City government operations account for about one percent of all waste, and three-quarters of that is from public schools.

The City’s 2015 Climate Action Plan Update includes the strategy “Make progress toward a waste- and litter-free city,” with the associated action, “Launch a zero waste planning process.”

GUIDING PRINCIPLES

1. MAKE ZERO WASTE A KEY PRIORITY

Boston will create a waste policy that mitigates climate change, reduces climate emissions and other environmental and public health impacts,

saves money, supports economic mobility and creates good jobs for Boston residents. As part of this work, the City will:

- **Define the Goal**
Boston will build from the Zero Waste International Alliance’s definition of zero waste to define the goal.
- **Develop a Strategy**
Boston will establish a plan to advance zero waste in all sectors of the Boston community. Implementation of this plan would start in Fiscal Year 2018. The plan will include specific metrics, milestones, and timelines.
- **Expand Resources For Change**
Whether through partnerships, policies or direct funding, Boston will expand support for zero waste engagement, education and enforcement.
- **Work Collaboratively**
Recognizing that this is a shared challenge, Boston will work collaboratively with other communities in the region and other major U.S. cities in this work.

2. FOCUS FIRST ON WASTING LESS, DIVERTING MORE

Through this plan, Boston will develop and adopt policies that will support waste reduction; significantly increase repair, reuse, recycling, composting, and remanufacturing; and enable the City to meet its zero-waste milestones. As part of this work, the City will:

- **Lead by Example**
While accounting for roughly only 1% of the city’s total waste, the City of Boston recognizes it has an opportunity and responsibility

to lead by example. Consequently, the City will examine and implement policies to reduce, reuse and recycle more. This may include—among other actions—using municipal procurement to support zero-waste goals; evaluating city contracts for waste reduction opportunities; creating model waste reduction and recycling programs at all City properties and facilities, including schools and housing; and engaging all City departments in zero-waste planning and implementation.

- **Facilitate Residential Waste Reduction**
Residential waste accounts for about 40 percent of the city’s waste stream, and the City manages contracts that provide waste and recycling services to all Boston residents. The City will work with service providers, Boston residents, and large residential building owners and property managers to identify changes that support zero waste goals. It will also continue discussions with regional stakeholders to develop regional zero-waste solutions.
- **Engage Large Generators of Waste**
60% of waste comes from commercial, industrial and institutional partners. The City will work with the largest waste generators, such as colleges, universities, hospitals, and commercial businesses to waste less and divert more. The City will explore incorporating zero-waste requirements into major permitting, planning, and project reviews.

3. SUPPORT THIS WORK THROUGH LOCAL BUSINESS

Recognizing that the successful implementation of a zero waste system requires not just local policies but a local industry, the City will work with workers and businesses to ensure that they are prepared to support these new policies.

This may include working with job training programs to include needed zero waste skills; supporting new and emerging zero-waste jobs for Boston residents, including youth; and drawing on Boston’s leadership in technological innovation and research to put discarded materials to their highest and best use.

Throughout this work, the City will encourage measures to improve the safety, health, and jobs of workers.

4. SUSTAIN THIS WORK THROUGH CULTURE CHANGE

Acknowledging that achieving and sustaining zero waste will be a collective accomplishment, the City of Boston will focus on how to build a culture of zero waste, citywide. This will include engaging meaningfully with all stakeholders in a zero waste planning process; embracing industry workers, communities of color, low-income communities, and youth as critical zero waste partners; conducting large-scale, linguistically and culturally appropriate public education; and growing the next generation of zero-waste leaders by developing youth specific programs.



ZERO WASTE BOSTON

*Recommendations of Boston's
Zero Waste Advisory Committee*

May 2019

<https://www.boston.gov/departments/environment/zero-waste-boston>