Boston Zero Waste Plan

Task 6: Suggested Zero Waste Economic Development Approaches

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Resource Recycling Systems

I. Introduction

While Zero Waste Economic Development can include growing jobs and businesses in collection and processing of diverted materials, the primary focus of this document is on the market or "demand" aspects of diversion. This includes activities such as repair, reuse, remanufacture, compost, and manufacture. It involves supporting, retaining, and creating a wide range of jobs and businesses, from small to large scale, that manage a diversity of materials and keep them in the economy rather than destroyed through disposal. Though the focus is on the market side, many of the recommendations here, as well as in the Boston Zero Waste Plan, can also be used to support businesses that collect and process materials.

Municipalities often leave the job of marketing materials diverted from the trash to their contractors, assuming there is little they can to do support markets locally or nationally. As a result, recyclable materials from any given place may end up anywhere around the world, including as far as Asia. However, there are many things that communities can do to support and grow the local demand—or market—side of the recycling loop, consisting of reuse, repair, compost, remanufacture, and manufacture. Reasons for doing so include:

- Local markets create local jobs.
- Local markets can shield the City from some of the ups and downs of international commodities fluctuations.
- Local businesses reduce the greenhouse gas impact in transporting secondary materials across long distances.
- Local businesses bring in tax revenue to the City.
- High-value markets, whether local, national, or international, are more resilient to typical market ups and downs..
- Local Zero Waste businesses can help raise awareness about Zero Waste to their communities.

For the purposes of this document, local is defined broadly. Many of the recommendations here are things that can happen within Boston's boundaries. But helping to develop more markets in the U.S., Northeast, Massachusetts and the greater Boston region can accrue many of the same benefits as developing markets within the City of Boston.

The City has developed a set of Guiding Principles *(will include link)* to guide its Zero Waste planning and implementation. Guiding Principle #3, Support This Work Through Local Business, focuses on supporting businesses that collect, process, and provide markets for recyclable materials:

> *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.*

The Boston Zero Waste Plan includes new services, rules, and outreach and education initiatives that will directly and indirectly support Zero Waste business growth in and around Boston. This document describes some of the ways that Boston can use its recyclable materials to meet the objectives of Guiding Principle #3 on the end use/market side of the recycling loop. Most of the recommendations pertain to developing Zero Waste market development in Boston, while some are regional and farther ranging. By instituting some or all of the recommendations below, Boston can signal and amplify that it is a good place to site Zero Waste industries.

II. Challenges of Recycling Market Development

There are challenges to attracting businesses to any region, particularly Boston. These include:

- Competing against international commodities.
- Lack of adequate supply or demand.
- Expense of land and buildings.
- Loss of commercial and industrial zoning.

These issues, and the proposed ways to overcome them, are addressed in this report.

III. Materials Suitable for Local Market Development

Some secondary materials, like scrap paper, metals, and plastics are commodities, traded on international markets subject to local, national, and international ups and downs. This can make it difficult for local governments to develop local markets, as small, independent businesses would compete with international forces to get materials at a reliable cost and quality. However, this does not mean it is impossible to attract businesses that use these materials. In fact, working with local markets has been shown to provide more stability, for both generators and end-market, during down market times (as we are currently experiencing), and is an excellent strategy for mitigating the geo-political impacts and instability of global markets. In addition, there are materials that operate outside of international commodities markets, where using local markets makes the most sense. These instances include reusable items (furniture, appliances, etc), glass, construction, demolition and deconstruction debris, and organics.

The consulting team identified recyclable and potentially recyclable materials still being disposed (vs. recycled), from all sectors in Boston. Of those, approximately half can benefit from local markets:

- Organics (for rescue as well as composting) (32-34%)
- Construction, Demolition, and Deconstruction Debris (C&DD) (17%)
- Glass (1-3%)[1]
- Reusables

Reusable items in Boston's waste stream, such as appliances and furniture, were not quantified. However, in other localities, these account for about 4 percent of the discards. Initiative B6 of the Boston Zero Waste Plan (all references to Plan will be linked when completed), a ban on the disposal of repairable items, will help keep more repairable and reusable items out of the disposal stream, while reducing trash collection costs.

For organics, after techniques are used to reduce the generation of food scraps, more edible food can be recovered for food rescue groups to distribute. Food that is not suitable for recovery, along with yard trimmings and soiled papers, can be composted and applied to land in the City or region. Alternatively, food can be processed using anaerobic digestion, where energy can be captured and the digestate composted and used as would any other compost. Composting companies can also make compost targeted to specific uses, creating higher value, including vermi-compost (a composting process using worms) and compost teas.

More effort can be taken to separate high-value materials at construction and demolition sites, and to use more deconstruction methods that will allow reuse.

While Boston's major high-value glass container market has closed, other high-value uses for glass with potential for development include manufacturing glass pavers or decorative tiles, industrial abrasives and feedstock for cement manufacturing. Glass processed for these latter two industrial uses can have more than twice the market value of glass for making containers or used as clean fill. Lower value uses include processing glass into aggregates that can be used in construction as fill, or mixed in asphalt.

[1] Since these figures were measured, Boston's major local glass market closed, making more glass available for market development.

China's National Sword program, which recently created very high standards of cleanliness for imported recyclables, has shaken up U.S. markets. Low quality materials that went to China are now being stockpiled or landfilled until new markets open up. This creates new opportunities domestically. In fact, some Chinese companies are now investing in making recycled products in the U.S..

There are any number of ways that secondary materials can be diverted from disposal and put back into the economy—from small-scale creative reuse by artisans to large-scale manufacturing enterprises.

IV. Zero Waste Businesses in Boston

Boston already has a healthy ecosystem of businesses that divert materials from disposal; there is probably an entrepreneur doing something to keep materials from disposal in every neighborhood. In addition to collectors and processors of various materials, there are used book stores, secondhand and consignment shops, pawn shops, and repair shops of all sorts—shoes, appliances, automotive, clothing, and building materials. Appendix A contains a list of these businesses.

It was difficult to ascertain if any Boston-based manufacturers are incorporating recyclable materials into their manufacturing processes, or if there are any remanufacturing businesses in the City. There is one known manufacturer of recycled gravel products: Boston was a long-term home to Roxbury Technology, a remanufacturer of toner cartridge. However, that company is no longer in business.

V. Strategies for Market Development

Recycling market development techniques are not all that different from any other kind of economic development approach. Techniques focus on ways to retain existing businesses, attract new ones, and support start-ups. Additionally, strategies include developing regional markets for recoverable materials, and boosting efforts that can buffer the City from market ups and downs, such as ensuring high material quality.

Create a Cohort of Zero Waste Businesses

City officials can conduct regular meetings with Zero Waste businesses to learn more about what they do, what they need, and how the City can support them. During the consulting team's interviews with local businesses, several businesses mentioned that they are having trouble finding qualified workers, they need more space, and/or they would like the City to include a link to their business on its Zero Waste website. These are all things the City could address. Additional needs could be identified with open communication channels. In addition, bringing together these businesses helps reinforce a Zero Waste identity for the City, and can create synergies among these businesses. The City could also create a sticker that these companies could put in their windows or on their websites, proudly identifying themselves as Boston Zero Waste businesses.

Educate the Public About Local Zero Waste Service Providers

The City's Zero Waste website and trash app should include information about local businesses that accept from the public reusables, recyclables or compostables and which of them do repair. This directory should be able to be sorted by neighborhood and type of material taken, along with a link to the business. This listing should not only be aimed towards people who have items to repair or donate, but also be formatted as a shopping guide.

Create Mechanisms to Help Businesses Acquire New Land or Buildings

Several businesses mentioned that obtaining land and buildings have become too expensive. The City could look at ways to assist businesses in obtaining new land and buildings through low-interest loans, zoning, and/or grants. The City could also buy a building to house Zero Waste tenants and act as the landlord; one large warehouse could host several reuse businesses. For example, the City of Reading, PA, purchased a 50-

acre industrial site for small recycling and other manufacturing companies. The City of Austin has also been working to develop a "Resource Recovery ReManufacturing Hub" at the closed City landfill.

Develop the Workforce

Several businesses mentioned that they are having a hard time finding workers, including general labor and truck drivers. A 2012 study, *Recycling and Jobs in Massachusetts, A Study of Current and Future Workforce Needs*, found that recycling businesses throughout Massachusetts are also having difficulty finding workers with requisite technical skills, licenses, and soft skills. A follow up report found that many businesses do not know about the state's workforce development programs or how to access them, and that workforce development professionals do not always know how to approach recycling businesses. The City can help close this gap. It can make sure that Zero Waste careers are integrated into high school and community college vocational programs. It can also link Zero Waste businesses with workforce development programs, and vice versa. The city could link the Goodwill Industries job training program to local Zero Waste industries. An example of a City working with a private enterprise on Zero Waste job training is the City of Baltimore. That city works with the non-profit Second Chance, which trains workers in deconstruction. Second Chance has the rights to cherry pick materials from any public building scheduled for takedown. It also recruits all new workers from the City's Temporary Assistance to Needy Families (TANF) rolls. These workers are hired for training, and when training is successfully completed, have a guaranteed job at good rates and benefits. The City also provided Second Chance with warehouse space. The enterprise now has 164 workers, up from 6 in 2003, and 200,000 square feet of showroom space.

Ensure That Zoning Supports Recycling and Manufacturing

Boston, as with many cities, is experiencing rapid growth. Land is increasing in value, making it harder for industrial uses to compete against development pressure; land that was formerly used for industrial purposes is being converted into housing and commercial uses. The City should ensure that land stays available for certain Zero Waste uses through preserving industrial zoning. This could be used for manufacturing as well as other Zero Waste activities, such as transfer and processing, including those described in initiative A7 of the Boston Zero Waste Plan, *City Owned Transfer and Processing Facilities*. It would also preserve important existing Zero Waste businesses, Republic Services transfer station and ReEnergy construction and demolition recycling facility. Any redevelopment plans can also require that Zero Waste businesses be included.

The City could create a Recycling Market Development Zone (RMDZ), similar to California's. Companies in an RMDZ could have access to grants, loans, tax reductions, and other types of support. Zones do not have to be contiguous. The City of Los Angeles provides RMDZ benefits to recycling companies that are located in any industrially zoned property. Note that any zoning should keep Environmental Justice considerations in mind.

Use Boston's Recycling Processing Contract to Support Markets

The City can support the types of markets it deems important through its processing contract—this supports local markets as well as those that may not be local, but require higher material quality. Markets that take higher-quality materials tend to be more stable and offer better prices than those that take low-value materials. Some examples of the way the City could use its processing contract to support these markets are to:

- Provide a premium revenue share to its processor for selling to local or higher-quality end markets.
- Put a clause in the processing contract that allows the City to redirect materials for the purposes of local market development.
- Contract directly with end markets and pay the City's recycling processor to sort to that specification, providing higher revenue share if they do so.

Markets exist in Massachusetts and the region for clean glass, certain types of plastics and grades of paper, metals and electronics, as well as materials currently not collected at the curb, such as textiles and organics.

An end-market may even be open to financing upgrades at the processing facility in order to get the quality of material it needs. For example, Eureka Recycling in Minnesota had several end-markets provide them with financing for capital equipment in exchange for long-term supply agreements. The end-market secured a steady stream of quality material at good transportation prices and, in some cases, Eureka sorted to unique grades and specifications that added value to the market.

Develop a Zero Waste Business Attraction Strategy

Boston should develop a strategy to attract new businesses and identify what assistance the City will provide (siting assistance, grants and loans, access to state business assistance, job training, guaranteed feedstock supply, incentives, etc). Once it has done so, the City should prepare a Zero Waste business prospectus that describes Boston's commitment to Zero Waste, its Zero Waste policies and programs, types and quantities of materials available, and types of assistance the City will provide. This prospectus can be a section of the City's economic development website, with links to the City's Zero Waste pages, so that those looking based on jobs or environment can easily find the information, as well as be available in hard copy. Any City staff that is recruiting businesses should know and understand the priority to recruit Zero Waste businesses. The City should have a key staff person in the Economic Development office whose responsibility is to keep this information up to date, search for and reach out to prospective businesses and guide them through the location process, provide any needed assistance, and be an advocate for Zero Waste business development. The City of Austin has such a strategy.

Take Advantage of Universities in the Region

The Boston area is fortunate to be home to a large number of universities. Within these universities are students and professors that do work that can directly support Zero Waste, including market development. Materials scientists might specialize in glass, textiles, paper or other materials streams. They can develop new ways to utilize secondary materials and provide technical assistance to businesses. Civil engineers can help test new products in the field or validate technologies. Business students and professors can provide business assistance to new or established businesses. Grants can be awarded to students or professors to develop new Zero Waste business ideas. This ecosystem can be engaged to support different aspects of local recycling market development and be part of a Zero Waste Research Initiative, described in A5 of Appendix A of the Boston Zero Waste Plan.

Identify Local Manufacturers That Can Utilize Secondary Feedstock

Boston and the region are home to manufacturers that could potentially substitute locally-generated recyclable materials for virgin ones. University researchers or the Massachusetts Manufacturing Extension Partnership could provide technical assistance to companies to help identify acceptable quantities of materials and determine any equipment adjustments. The State Department of Environmental Protection Recycling Business Development grants may be a source of funding.

Sponsor Demonstration Projects

A barrier that can exist to new products entering the marketplace is the lack of third party validation of performance. Working with universities, the City can act as a demonstration site for new products with recycled content. It can provide land or space for products that would be used in an outdoors environment (for example, this product, which allows more asphalt to be recycled back into paving, or glass or shredded tires in civil engineering uses), it can purchase products for use in City offices and provide testimonials and feedback, or it can publicly demonstrate processes such as deconstruction. The City can also work with university researchers to quantify results of demonstrations.

Provide Recycling Market Development Grants

Initiative C4 of the Boston Zero Waste Plan, Community Waste Prevention and Recycling Grants, recommends a variety of different grant programs that the City could implement to promote Zero Waste, including for market development. These grants could go to university researchers, community-based

organizations, or individuals or businesses to develop enterprises that utilize secondary materials to make new products. It could also go to business ideas that reduce waste. These enterprises might use small or large quantities of recyclables, create artisan or technical products, compost, manufacture or remanufacture. The City of Austin holds a [Re]Verse Pitch Competition that awards prizes for business ideas that repurpose materials from the ICI sector. The former Chelsea Center for Recycling and Economic Development had a Recycling-based Community Economic Development Grant Program. It funded one program in Boston that looked at how to remanufacture dental chairs and hospital beds, which are large sources of waste from the medical community. Unfortunately, the project needed additional funding which was not available. This and other examples of community-based projects can be found on the Chelsea Center website. The City could adapt the Chelsea Center's RFR for its purposes. The City could also consider working with other communities, as long as they utilized City-generated materials, to fund projects outside of the City.

Work with Business Accelerators and Entrepreneurship Programs

The Boston area has a number of business accelerators including Clean Tech Open, Mass Challenge, TIE, and more. There are also school-based entrepreneurship programs, such as BUILD. The City can let these entities know about its interest in Zero Waste, and identify opportunities to partner on the issue to scale up Zero Waste solutions. The City could work with these accelerators to sponsor a challenge specific to Zero Waste.

Use the City's Purchasing Power

The City can help create demand for new products by including them in its purchasing. Initiative B4 of the Boston Zero Waste Plan is for the City to institute an Environmentally Preferable Products purchasing program (EPP). The City can explore giving extra points or preference to locally-made products with recycled content or which reduce waste, or for products made with its own secondary materials. For example, the City could purchase soil amendment from sources that utilize its yard trimmings, which it does not currently do. The City can also review its purchasing contracts to investigate what types of products it could buy that are made locally with recycled feedstock; years ago, it was interested in obtaining recycled plastic sidewalk electric box insulating layers to prevent electrocutions and a Massachusetts manufacturer was able to custom make this. Government procurement can be a source of capitalization for new products and companies.

Support a Local Materials Exchange

Companies may generate materials that others can use; for example, one company may have packaging materials from received shipments that another company which ships products could use. This kind of reuse activity is even more important environmentally than recycling. The City can promote existing web platforms, such as the U.S. Business Council for Sustainable Development's. Materials Marketplace or web-based exchanges specific to the Northeast. Or, it can set up its own exchange and adopt an Austin Materials Marketplace or LA SHARES-type of web based corporate surplus property program; this program is responsible for over $10 million of products annually flowing from corporations to schools, police and other city agencies and non-profit organizations. The City could also find or fund a warehouse to house materials for groups to access, such as Materials for the Arts in New York City.

Encourage Measures to Improve the Safety, Health, and Jobs of Workers

The City may be limited in what kinds of worker safety and health requirements it can put on employers beyond what State law says. However, it can put requirements on businesses in exchange for assistance. The City could look at what kinds of worker safety and health requirements may be needed and make that a provision of grants, contracts, or other assistance.

Work Regionally

Finally, given the zoning and cost constraints of Boston, the City can work on all of these issues regionally. Just because a market is not in Boston does not mean it cannot impact Boston markets positively. The City

can take a leadership role convening other municipalities in the region to take efforts to retain and expand markets, working with the state DEP or Office of Business Development where needed.

V. Potential Companies that might be interested in Boston

The following companies may have an interest in locating in Boston or the region. Several are recommended by the Institute for Local Self-Reliance (ILSR), which works with Zero Waste companies wishing to expand. Even though not all companies are end markets, they share a commitment to highest and best-use markets.

Markets

Company Name: Aero Aggregates
Description: Producer of foamed lightweight aggregate
Materials used: Glass
URL: www.aeroaggregates.com
Contact: Theresa Loux, tloux@aeroaggregates.com
Other notes: Recommended by ILSR

Company Name: Saint Vincent De Paul of Lane County, Oregon
Description: Non-profit human services organization that has extensive reuse and recycling manufacturing industries
Materials used: Mattresses, books, used candles, appliances, window glass, electronics, textiles
URL: www.svdp.us/what-we-do/recycling-and-manufacturing
Contact: Susan Palmer, susan.palmer@svdp.us
Other notes: Recommended by ILSR

Company Name: Emperor Paper Company
Description: 100% recycled paper manufacturer
Materials used: White office paper, paper coffee cups, cotton clothing
URL: www.epil.one
Contact: Raijan Ahluwalia, raijan.ahluwalia@epil.one
Other notes: Recommended by ILSR

Company Name: ReWall
Description: Manufactures building products
Materials used: Post-consumer cartons
URL: www.rewallsolutions.com
Contact: Jan Rayman, jrayman@rewallmaterials.com
Other notes: conversations with Amy Perlmutter

Company Name: GPB Capital, LLC with holdings in Kompogas/Hitachi-Zosen-Inova
Description: Dry anaerobic digestion for energy and compost using Kompogas technology
Materials used: Yard trimmings, food scraps
Contact: Lex Heslin, lheslin@gpb-cap.com
Other notes: Based on information from Bruce Fulford, GPB Capital may enter into agreement with City Soil and Greenhouse (GPB Capital is the holding company for Capitol Waste)

Collection

Company Name: RoadRunner
Description: Collects "superdata" about waste generation and logistics options; helps waste generators separate materials for high value markets; organizes logistics
URL: www.roadrunnerwm.com/company

Contact: Dean Liappis, dean@roadrunnerwm.com
Other notes: Additional information at www.ilsr.org/the-small-private-sector-to-the-rescue-roadrunner-recycling-inc

Processing

There are several mini-MRF operators that run dual stream MRFs for commercial recyclables that may be interested in the Boston area.

Appendix A

Zero Waste Businesses in Boston

To be attached

Working list at https://docs.google.com/spreadsheets/d/1-DyWYDchPAIEXfjT2PhNvLOFEhO3KTgeMVhM934uk2M/edit#gid=0