

# Why Should Baltimore Recycle More?

Institute for Local Self-Reliance  
Washington, DC

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## About the Institute for Local Self-Reliance

The Institute for Local Self-Reliance (ILSR) is a 42-year-old national nonprofit research and educational organization. ILSR's mission is to provide innovative strategies, working models, and timely information to support strong, community rooted, environmentally sound, and equitable local economies. To this end, ILSR works with citizens, policymakers, and businesses to design systems, policies, and enterprises that meet local needs; to maximize human, material, natural, and financial resources, and to ensure that the benefits of these systems and resources accrue to all local citizens. More at [www.ilsr.org](http://www.ilsr.org).

## About the Author

This report was prepared by Neil Seldman, PhD, co-founder of the Institute for Local Self-Reliance and director of the Recycling and Economic Development Initiative in Washington, DC.

Seldman has helped cities such as Los Angeles, Philadelphia and Austin successfully redirect investment from garbage incineration to recycling, composting and reuse. He advises cities and counties on maximizing the recovery of materials from the waste stream, and adding value to the their local economy through processing, repair and remanufacturing. He has been a pioneer of recycling, anti-incineration and zero waste policies.

Seldman has undertaken research and technical assistance projects under grants and contracts from the World Bank, National Science Foundation, US EPA, US HHS, US DOE, Rockefeller Family Fund, CS Mott Foundation and the Ford Foundation.

Seldman was a community and youth organizer in Washington, DC through the Neighborhood Planning Councils, elected youth councils created in 1968 to help the city move forward following the assassination of the Martin Luther King, Jr.

Prior to the founding of ILSR in 1974 Seldman was a manufacturer of consumer goods in New York City and university lecturer in political theory at The George Washington University.



There are two primary reasons why Baltimore should invest in more recycling. Establishing high recycling levels will position the city's residents and businesses for the future, when the costs of incineration and landfill will be more expensive. The city could save citizens and businesses hundreds of millions of dollars by shrinking its waste stream for the next generation.

More immediately, increased recycling means more jobs. Within three years, based on the experiences of other cities, Baltimore could have 500 new direct jobs in this sector of the city's economy. (See Appendix I) In general, for every 10,000 tons of materials incinerated, one job is created. For every 10,000 tons of materials processed for recycling and composting, five to 10 jobs are created. Hundreds more jobs are created when processed materials are used in industry and agriculture.<sup>1</sup> Oakland, CA created 1,000 jobs in the recycling sector in the last 10 years. Based on the results of a recent business report on recycling and jobs in South Carolina, if just one percent of Baltimore residents recycled eight more newspapers per month, it would add \$304,000 to the local economy.<sup>2</sup>

## Expanding Recycling in Baltimore

Mayor Pugh's Transition Report identifies solid waste and recycling management as a top priority, calling for the doubling of the city's recycling rate within one year as a primary strategy to eliminate the use of the downtown garbage incinerator and landfills.<sup>3</sup>

The net cost to the city for incineration at the Wheelabrator Baltimore incinerator is \$50 per ton.<sup>4</sup> The net cost to the city for recycling as of March 2017 was \$18 per ton.<sup>5</sup> For every ton the city recycles, it saves \$32. At current prices, the 25,000 tons per year that the city recycles saves \$800,000. Mayor Pugh's goal is to double the recycling rate within a few years; if that goal is met, the city will save \$1.6 million annually at current prices.

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<sup>1</sup> "[Recycling Means Business](#)." Institute for Local Self-Reliance.

<sup>2</sup> "The Benefits of Increased Household Recycling Rates in South Carolina: A Commodity- Level Analysis." Darla Moore School of Business, University of South Carolina, September 2016.

<sup>3</sup> [Mayor Catherine E. Pugh Transition Report](#). The Mayor also called for solid waste to be a cabinet-level agency, and for the formation of a Solid Waste Commission to coordinate activity of government agencies.

<sup>4</sup> This figure reflects the tip fee at Wheelabrator Baltimore minus the tip fee at the city-owned Quarantine Road Landfill earned by Baltimore for the incineration ash that is dumped there.

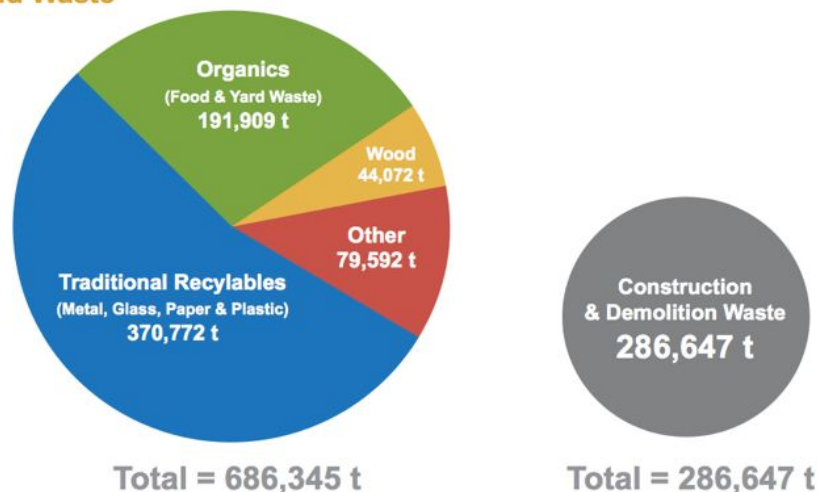
<sup>5</sup> In 2016, the net cost to recycle was \$50 per ton. Increased market value of recycled materials has reduced the net cost of recycling.

While the markets for recycled materials fluctuate, the costs of upgrading the aging incinerator and expanding the ash landfill can be expected to rise in the next few years. Replacement incineration and landfill capacity will steadily increase over time. For example, the installation of selective catalytic reduction (SCR) technology to reduce pollution at Wheelabrator was estimated by air quality officials to cost somewhere around \$70 million, with \$10 or \$11 million in yearly operating costs.<sup>6</sup> The Harford County, MD, garbage incinerator closed after 28 years instead of its projected useful service life of 30 years, because "complete upgrades [would have been] uneconomical and unsuccessful at achieving an increase in operational efficiency."<sup>7</sup>

Baltimore City's contract with Wheelabrator Baltimore expires at the end of 2021 with a city option through 2026. If the incinerator continues to operate beyond 2021, the city will have to expand the capacity of Quarantine Road Landfill.

Baltimore's business institutions and residences generate about 970,000 tons of solid waste a year, including 286,000 tons of construction & demolition debris.

#### Baltimore City Annual Solid Waste Generation by Material



Credit: Baltimore Office of Sustainability's 2014 report, *Waste to Wealth: Baltimore Waste Stream Analysis*

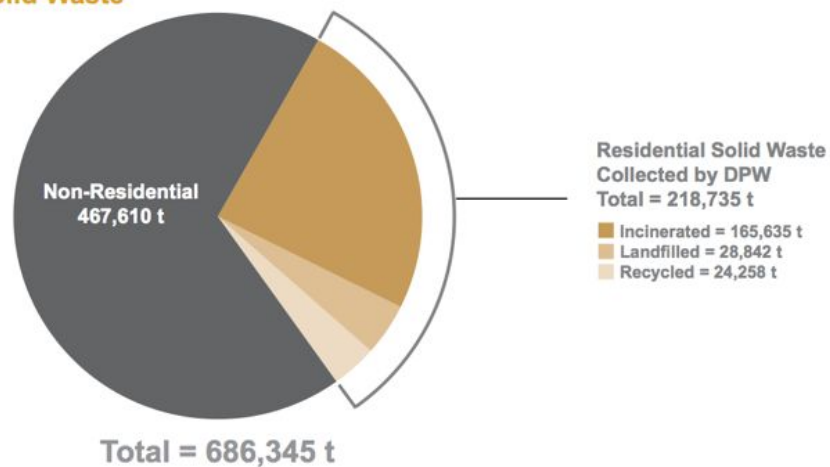
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<sup>6</sup> Fern Shen. "[Critics: BRESO's Proposed Pollution Controls a 'Band Aid.'](#)" *Environment*, January 19, 2017.

<sup>7</sup> Commander, Aberdeen Proving Ground, MD, [Final Draft Supplemental Environmental Assessment](#), May 2009.

Excluding C&D waste, Baltimore businesses, institutions and residences generate about 686,000 tons per year of solid waste. The Department of Public Works is responsible for collecting residential solid waste, which comprises a little less than a third of the waste. A few apartments and about 110 small businesses currently receive recycling services from the city. The vast majority of apartments and businesses hire private haulers to provide garbage and recycling services. Businesses and apartments in Baltimore are required by state mandate to recycle. Most recently, the Department has been reorganized into four quadrants, each of which will be responsible for garbage and recycling collection, street cleaning, litter control and bulky waste pick ups.

**Baltimore City Annual Solid Waste  
Generation by Source**

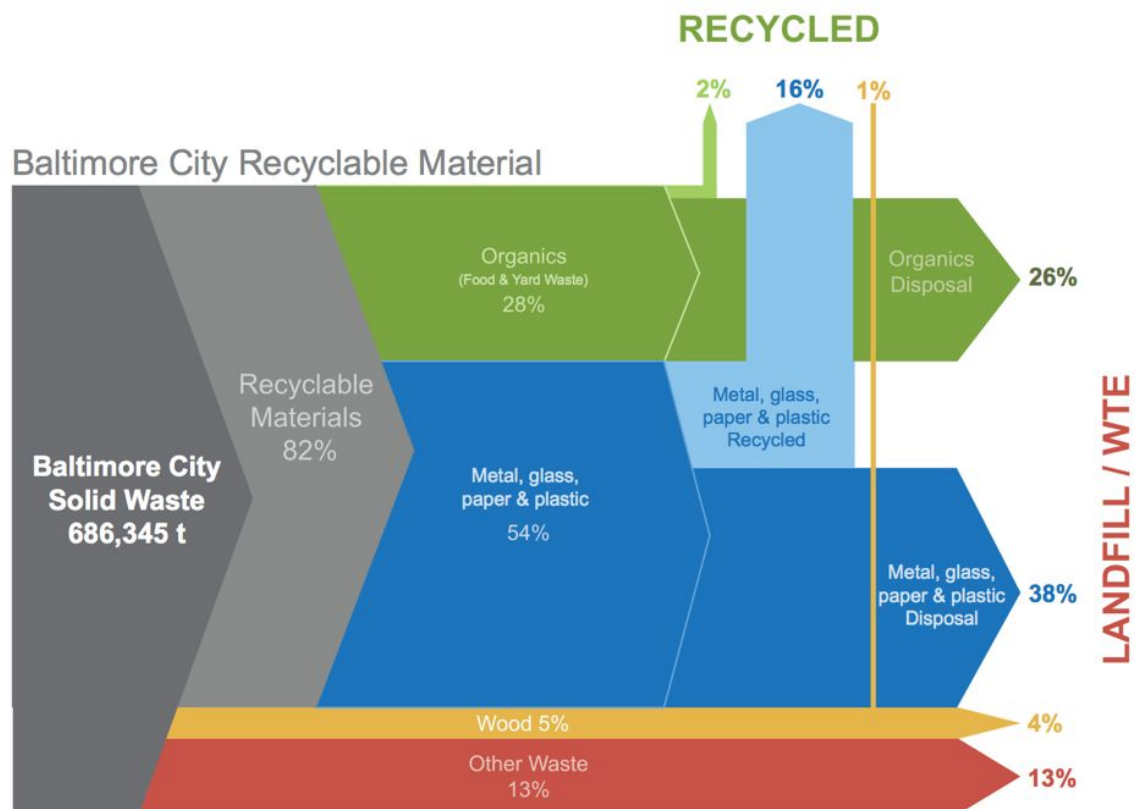


Credit: Baltimore Office of Sustainability's 2014 report: Waste to Wealth: Baltimore Waste Stream Analysis

Baltimore's official residential recycling rate is 28 percent, compared to a national recycling rate of 35 percent.<sup>8</sup>

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<sup>8</sup> Comparing local and national recycling rates is challenging because different states and cities use different methodologies. In Baltimore, the 28% recycling rate includes a 5% credit for incineration plus a 4% credit for source reduction. It also, apparently, includes C&D recycling which comes to 9% of the total. If these three items were deleted from recycling totals, the rate would be closer to 13%.



Credit: Baltimore Office of Sustainability's 2014 report: *Waste to Wealth: Baltimore Waste Stream Analysis*

According to the Baltimore Office of Sustainability's 2014 report, *Waste to Wealth: Baltimore Waste Stream Analysis*, 82 percent of Baltimore's household materials could be recycled or composted. The DPW is responsible for collecting residential solid waste and recycling.

## How to Expand Recycling and Increase the Value of Recovered Materials

### 1. Distribute free recycling containers

Before 2009, DPW provided twice-weekly pickup for garbage and biweekly pickup for recycled materials. After 2009, the DPW began providing weekly pickup for garbage and recycling. At the same time, DPW decreased the size of garbage carts it provides, encouraging less disposal and more recycling.

In 2016, the city took out \$9 million in low-interest loans and provided every household with a 64-gallon trash can. In Westport, where the incinerator is located, community activists are proposing a line item in next year's budget to cover the cost of free recycling containers for all residents in Westport and its adjacent communities of Cherry Hill, Lakeland, and Mt. Winans. Combined, these communities will comprise one complete pickup route. Estimates for citywide distribution of recycling carts is \$2.5 million

*Recommendation: Undertake a pilot project that distributes free recycling carts on the Westport collection route.*

## **2. Unit Pricing or Save More and Reduce Trash or SMART<sup>9</sup>**

Currently, solid waste management and recycling are paid through property taxes and other general revenues. In contrast, SAYT billing systems charge households directly for service based on how much garbage is placed on the curb. Source-separated recyclable materials can be collected at no charge to the residents.

Over 7,000 cities and towns in the US are successfully using a SAYT system.<sup>10</sup> The city of Worcester, MA, is a useful example.<sup>11</sup> In 1993, Worcester moved toward recycling and away from incineration by making recycling mandatory and implementing a SAYT system. Worcester, a city of almost 200,000, has saved \$99 million in disposal costs since 1993, making savings a far more important economic and financial asset than the market price of recyclable materials. "If communities are serious about recycling, they will embrace pay-as-you-throw," says Robert Moylan, the public-works director who started Worcester's SMART program.<sup>12</sup>

The Connecticut State Department of Energy and the Environment (CT DEEP), recently contracted Waste Zero, Inc., a SMART planning company, to provide free assistance to 10 cities in the state interested in implementing and monitoring SMART programs. Rhode

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<sup>9</sup> SMART is also known as Pay as You Throw (PAYT) or Save As You Throw (SAYT). Further details can be found at the [EPA](#), [Connecticut DEEP](#), [Town of Plymouth, MA](#), and [the state of Massachusetts](#) Web sites.

<sup>10</sup> Larger cities also use SAYT: examples include [San Jose](#), [San Francisco](#), and [Seattle](#). For case studies of smaller cities that use SAYT, see [Pay-as-You-Throw Communities](#).

<sup>11</sup> [PAYTNow](#).

<sup>12</sup> See DC Environmental Network Workshop for video of a SAYT workshop conducted for the DC DPW, September 2016.

Island is about to implement the same technical assistance program for cities. In 2009, the Baltimore DPW commissioned a Full Cost Accounting study for solid waste systems that could be used to create a model for an enterprise fund, which is a prerequisite for introducing a SMART system.<sup>13</sup> The DPW has been exploring such a fund.

SMART can also accelerate food waste composting. A SMART program would encourage a range of composting solutions, from backyard/side yard composting among households that have space, to community-scale composting at Baltimore's many community gardens and urban farms, to larger industrial compost facilities. An increase in composting due to SMART would open opportunities for entrepreneurs, such as bike-compost collection enterprises that could help divert food waste generated by restaurants, bars, and grocery stores from the waste stream. Dozens of enterprises are emerging in cities throughout the US, including Philadelphia, Gainesville, Orlando, Boston, Brooklyn, Charlotte, Reno, Austin, New Haven, Sacramento, and Chicago.<sup>14</sup> These enterprises serve areas of several miles each. In Baltimore's Curtis Bay, the Filbert Street Garden is developing a bike-powered enterprise under grants from the Abell and Town Creek Foundations. The project is being facilitated by the Center for Children and Youth Development (CCYD). The Baltimore Parks and Recreation Department is providing access to a 5.5-acre parcel. Farring-Baybrook Park as a dedicated community composting and gardening site. There are many other community gardens in the city as well.<sup>15</sup> SMART would also encourage backyard composting for those households with sufficient space.

In addition to SMART, there are other ways to provide monetary incentives for household recycling. Two private companies, RecycleBank and Rewards for Recycling, provide

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<sup>13</sup> Baltimore DPW, *10-Year Solid Waste Management Plan for 20013-2023*, p. 60. The models from this study are being reviewed. "The City believes that having an enterprise fund to conduct solid waste services will be far more economical for the citizenry while freeing more of the City's monies to be distributed to other City agencies. The Bureau of Solid Waste would have more control over funding its operations and its capital improvement program through the enterprise fund mechanism."

<sup>14</sup> "Growing Community Collection and Composting in Philadelphia." Nora Goldstein, *BioCycle Magazine*, October 2016.

<sup>15</sup> After discontinuing its composting drop-off program for several months while it overhauled its system, [Real Food Farm](#) is once again accepting food scraps at its Clifton Park location. The farm's new system—developed in tandem with the [Institute for Local Self-Reliance](#) and [Urban Farm Plans](#)—follows a co-op model that asks participants to take a one-hour training course before joining and then volunteer one hour per month to maintain membership. Once joined, members can drop off kitchen scraps any time and take home finished compost to fertilize their own gardens. If residents would like to participate but don't have time to volunteer, Real Food Farm also accepts compost via [Compost Cab](#), a collection service that operates in the Baltimore and DC metro areas.



vouchers to households and communities that are honored by both national brand stores and local retailers. Cities provide direct incentives of \$50-\$1,000 to households through random inspection of recycling bins. Seattle coordinates a community-level competition with an annual award of \$50,000 to the leading recycling community, to be used for community improvements.

The development of a site-specific SMART program for Baltimore will be unique to the city. Appendix II presents a step-by-step strategy for a pilot project and implementation protocol.

*RECOMMENDATION: Research the feasibility of implementing SMART for Baltimore households. Explore private and city options for additional rewards for households that recycle regularly.*

### **3. Co-Collection, Bulky Waste Collection, Multifamily Dwellings, and Special Events**

Cities that have implemented innovative hybrid collection protocols and equipment that promote increased recycling achieve higher-quality materials and help reduce contamination of materials in the collection process.

One issue with recycling is the weight of the material, which precipitates worker fatigue. Montgomery County, MD uses a collection approach that keeps paper separate from mixed glass, plastic, and metal. Paper, the heaviest component in the household recycling stream, is collected in wheeled carts that are mechanically lifted into vehicles, eliminating the need for heavy lifting. Lightweight recyclables are collected in traditional recycling bins and loaded into the compartmented truck.

Multi-stream recycling often introduces new scheduling conflicts for collection trucks and their crews. An innovation in Toronto allows one compartmented truck to efficiently collect garbage, recyclables and organic discards. Organics are collected weekly, with garbage and single-stream recyclables collected on alternate weeks. Households have no problem with holding garbage and recyclables for two weeks, as with no wet materials in the carts there is no smell, and the carts have ample capacity. One truck per week handles waste, organics, and recyclables.

Most recently, new SMART projects in Sweden, Norway, and France have been using a one-pass system. In the household, garbage, recyclables, and organics are put in color-coded plastic bags. All bags are put in the same can and the same truck to save on fuel, emissions, and labor. This also saves space; there is no need for each home to have multiple containers. The bags are sorted and sent to their proper location: MRF, AD, or landfill/incinerator. In one region of France, only about 200 pounds per capita goes to incineration; the rest is recovered. By comparison, Washington, DC's per capita is 760 pounds, and Carroll County's is 850 pounds.

Bulky waste collection by DPW trucks and crews is an expensive component of the city's solid waste management system. Oceanside, CA is implementing pilot programs involving repair and recycling of over 50% of used products (furniture, appliances, and mattresses) collected through the bulky waste pickup system. This reduces the overall costs of this expensive service and nurtures an array of reuse enterprises. Baltimore already has a bulky waste pickup call in the program: residents call 311 to schedule these pickups.

Cities with year round debris collection programs collect household food waste in the same green carts.

The city of Baltimore is not responsible for collection of garbage and recyclables in the commercial sector. However, city policy can help gather data on collections in this sector as the basis for stimulating recycling and composting. In 2014, Washington began to require commercial haulers to report data to the city for the first time to enable future planning.

Collection at multifamily dwellings is challenging in most cities. Cities have programs to help recover materials from apartment buildings by requiring dropoff recycling bins for tenants and offering technical assistance for setting up programs, proper signage, and management techniques. New apartment buildings have been required to plan for space for recycling bins. The City of Los Angeles provides recycling services directly to multifamily dwellings.

Cities also provide planning assistance for special event recycling and composting. Cities can make a recycling and composting plan a requirement for planning festival, concert and fair activities.

**RECOMMENDATIONS:**

- *Research the feasibility of using new collection strategies and available equipment to increase recycling and composting through efficient routing and co-collection efficiencies.*
- *Consider adopting mandatory commercial and household recycling as in Philadelphia, New York City, Washington, DC and Worcester, MA, among other jurisdictions.*

#### **4. More Cost-Effective Processing of Recyclables**

Baltimore's DPW currently sends 24,000 tons of recyclables per year to the Waste Management Inc. MRF in Elkridge, MD, for processing of mixed recyclables collected separately from garbage.

Smaller-scale processing facilities located in the city might prove a better fit for Baltimore. These facilities have several advantages: they can run equipment at its rated capacity; they oversee quality control better than centralized facilities that emphasize throughput over quality materials; and they reduce transportation costs and can be operated by city workers or a contracted private company.<sup>16</sup> Atlantic Coast Recycling, Inc. operates single stream MRFs in northern, central and southern New Jersey. The company specializes in recovering high-quality glass, and is interested in locating a facility in Baltimore.

When Washington, DC switched to single-stream and use of the Waste Management MRF, it lost a local minority-owned business with 20 jobs, and now ships 25,000 tons of materials 35 miles to Elkridge, MD every year.

In Alachua County, FL, a single-stream MRF serves 250,000 residents and is located adjacent to the county's Transfer Station and Resource Recovery Park. Baltimore could support two single-stream MRFs.

A "dirty MRF" is another form of processing technology that attempts to recover recyclable materials from mixed garbage with no prior recycling. A dirty MRF is different from a

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<sup>16</sup> In overscaled MRFs, large amounts of glass, paper, and plastic are not recovered for recycling, but instead used as daily cover for landfill operations.

recycling MRF in that the former has no upfront curbside recycling. The MRF is expected to recover recyclable materials from the flow of mixed garbage.

These systems have not performed well economically or technically. In Montgomery, AL, the plant has closed, and in Medina, OH, the system is only recovering four percent or recyclables. Proposed projects in Houston and Indianapolis were cancelled.<sup>17</sup>

**RECOMMENDATIONS:**

- *Explore the feasibility of smaller in-city MRFs scaled for the city's recycling stream.*
- *Do not develop a dirty MRF.*

## **5. Expand Commercial and Household Composting**

Composting combines processing and manufacturing. Yard debris, soiled paper, and food waste are processed jointly to produce a highly valuable product that has year-round local markets. High-quality compost is valued at \$75 per ton. Compost teas and vermicompost (worm tailings) products, which are derived from compost, can yield twice this value.

The Office of Sustainability's Waste to Wealth report recommends that the city adopt policies that promote composting. It also identifies land for composting and incubator for enterprises that add value to organic material--in particular, the use of acreage at the closed Monument Landfill in the northeast part of the city. The city-owned land at the Quarantine Road Landfill in the southern part of the city is also available for composting facilities. Such a "green zone" would allow local and regional companies like Chesapeake Compost, Inc., Compost Cab, The Compost Crew, and Veteran Compost to operate within the city. These companies are not located in Baltimore, but serve commercial clients in the city and bring source-separated organic material to compost sites in the region. For one company, Baltimore is the fastest growing source of materials. A "green zone" would expand these enterprises and employ Baltimore residents in this labor-intensive sector.<sup>18</sup> Waste Neutral, LLC is already operating in the city.

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<sup>17</sup> ["Update on Houston One Bin System Plan."](#) Neil Seldman. ILSR.org; Jan 19, 2016. ["Survey says...Recycling quality harmed by one-bin approach."](#) Neil Seldman. ILSR.org; Mar 3, 2016.

<sup>18</sup> Brenda Platt, ["Compost Impacts More Than You Think."](#) (ILSR, 2016) Benefits include jobs, soil and watershed protection, climate protection and water conservation.

Appropriately scaled anaerobic digestion (AD) plants have been developed to recover methane from source-separated organic discards from households and businesses. Toronto built and operates a 60,000-ton-per-year (200-ton-per-day) facility. Southington, CT built a 40,000-ton-per-year (150-ton-per-day) facility. Washington, DC is exploring a 5,000-ton-per-year facility to process organic materials from schools and government cafeterias. Commercial units are available from 1,000- to 6,000-ton-per-year capacity.

The Office of Sustainability and the Institute for Local Self-Reliance have begun developing a comprehensive compost plan for Baltimore that addresses equity, scale, and value-added components. The Baltimore composting plan will feature backyard composting, community-scale composting, and larger but appropriately scaled citywide composting facilities.<sup>19</sup>

**RECOMMENDATIONS:**

- *Review the citywide compost plan being prepared by the Baltimore Office of Sustainability and the Institute for Local Self-Reliance due for completion in early 2017.*
- *Determine appropriate sections of the city where composting facilities can be operated.*

## **6. Resource Recovery Parks**

The biggest boost to job creation through recycling, reuse, and composting could be the development of a Resource Recovery Park (RRP), involving setting aside land for companies in this sector of the local economy. These industrial parks are reserved for companies that receive, sort, process, and manufacture new products. The businesses located at these parks often work in synergy with each other, and the City of Baltimore could create these parks and provide traditional tax and financial assistance.

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<sup>19</sup> The compost planning process began on September 7, 2016, with a stakeholder summit. Four working groups were formed: home and community scale, infrastructure development (including anaerobic digestion), food waste reduction in schools K-12, and food waste reduction and rescue. Baltimore Office of Sustainability, "From Waste to Wealth: Baltimore Waste Stream Analysis," (2014). The report focuses on food, wood, and C&D materials. It recommends that up to 20 of the 28 acres of the old Monument Landfill be used to incubate new businesses and programs including a Community Greening Center, and that capital and business mentoring be made available to startup companies. It also suggests policy and operational changes within city agencies.

Alachua County, FL, has developed a RRP. Its first occupant is the county-owned Materials Recovery Facility (MRF), that separates and bales incoming materials. The materials will be available to companies that are located in the surrounding 40-acre RRP. Alachua will not have composting companies use the RRP, as there are ample sites available in the county for composting operations, including the county's closed landfills. Austin, TX, is developing a similar RRP, referred to as a reManufacturing Hub, covering 105 acres.<sup>20</sup>

In San Luis Obispo County, CA, the Solid Waste Management Department developed a mini RRP that reduces garbage tip fees for haulers that drop off recyclables and compostable materials prior to tipping loads of garbage.

Most recently, closer to home, Montgomery County, MD has created a RISE Zone, or [Regional Institution Strategic Enterprise Zone](#), as a state program aimed at economic development and job creation. Commercial and industrial businesses in the zone can benefit from real estate and income tax.<sup>21</sup>

#### RECOMMENDATIONS:

- *Research the feasibility of RRP's for the City of Baltimore.*
- *Explore the possibility of state assistance in planning and providing incentives to companies located in these industrial parks.*

## 7. Expand Recycling of Construction and Demolition (C&D) Debris

In the last few years, cities and counties have imposed special permit requirements for companies applying for demolition permits. Companies must put up a bond prior to demolition. The bond is reimbursed when companies show that they have recycled at least 50% of its C&D debris. One jurisdiction, Monrovia, CA, requires 75% recovery of this material derived from building demolition. The national average for C&D recovery is estimated at 70%.

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<sup>20</sup> [Austin \[re\]Manufacturing Hub](#)

<sup>21</sup> ["College Park now a special Maryland business incentive zone."](#) Karen Goff. Baltimore Business Journal. Jan 6, 2017.

Austin, TX just passed regulations that may readily apply to Baltimore by phasing in mandatory recycling of construction and demolition waste from households and commercial buildings.

*RECOMMENDATIONS:*

- *Seek information and advice from jurisdictions that have implemented these C&D recycling initiatives.*
- *Identify potential sites for RRP's and adjust zoning appropriately.*

## **8. Reuse or Repair and Resale**

Reuse and repair generate higher value and less environmental impact than recycling or composting. Based on data in a 2007 report analyzing the waste stream of the state of Delaware, reusable products were just under 3% of the waste stream and \$550 per ton when repaired and resold. Transposed to Baltimore's 200,000 tons per year of the household waste stream, 6,000 tons of reusable products would be worth over \$3 million for the city's economy.

Baltimore already has three excellent nonprofit reuse enterprises. Second Chance deconstructs buildings and resells used building materials in its warehouses located in downtown Baltimore. It has grown in the last 13 years to 165 workers, recruited and trained from the city's unemployed and underemployed residents. Humanim is a robust social enterprise that specializes in deconstruction of public housing facilities and other reuse operations that employ challenged and hard-to-employ residents. The nonprofit organization has recently opened Brick+Board, which specializes in sorting and selling materials recovered from deconstructed buildings. The Loading Dock, a nonprofit reuse store, has been operating in Baltimore since 1980 and reached self-sufficiency in 1990.

Yet another Baltimore innovation in reuse is the city-owned wood recovery enterprise at Camp Small, operated by the Division of Forestry within the Department of Parks and Recreation. Wood chips, fallen tree, decayed trees, storm debris are processed into compost for use by the city agencies. Selected trees are sold to the private sector which has

been a boon for woodworking shops and related businesses. This program was started by a loan from the city's Department of Finance which is being repaid through revenues earned by the enterprise. Camp Small has allowed the city to avoid an estimated \$300,000 in site clean up costs. The project will save \$60,000 annually as future cleanup costs are no longer necessary.

In Lane County, OR, St. Vincent de Paul (SVDP) has created a network of repair enterprises for mattresses, furniture, appliances, cars, books, and textiles that employs 500 workers. Since the 2008 recession, the company has added 100 jobs and raised wages. Sales of repaired products are sold through 13 thrift stores that reduce the cost of living for low-income residents.

SVDP has replicated these companies in 10 East Coast cities from Lowell, MA to Orlando, FL. Baltimore is a likely location to add to the growing network of social enterprises.

Located in Upper Marlboro, Prince George's County, MD, eWorks deconstructs electronic scrap in a joint venture with the city and nonprofit organizations. Recovered machines are repaired and sold or processed to recover valuable working parts and alloys. eWorks operates in partnership with Melwood, a nonprofit enterprise that employs challenged workers.

Both SVDP and eWorks are keenly interested in locating repair and reuse enterprises in Baltimore as joint ventures with Baltimore-based nonprofits.

In Gainesville, FL, through cooperation with the Department of Public Works, the city's franchise hauler Waste Corporation of America (WCA), and local nonprofit The ARC of Alachua County, electronic scrap is placed curbside on designated days. It is picked up by ARC for processing and deconstruction, allowing for recovery of working machines, parts, and valuable alloys for resale. According to Steven Joplin, Gainesville's Solid Waste Manager, ARC recycles about two tons of e-scrap per month for the city of Gainesville residential collection program. Not only does this save the city in disposal fees, it also provides workplace training for adults with disabilities.

In Oakland, CA, St. Vincent de Paul initiated a dropoff, reuse, and recycling collection program for electronic scrap involving 50 churches in Alameda County. Each Sunday, electronic scrap is placed in a walk-in container adjacent to the church, protecting the value



of the electronic devices. SVDP of Oakland collects the donations and brings them to available markets established by the California electronic scrap advanced disposal fee system.

In Berkeley, San Francisco, and Portland, OR, thousands of tons of reusable materials and products are recovered by nonprofit enterprises that have permission to gather items from the floors of the garbage transfer stations before they go to landfills. These and other cities nurture Repair Cafes and Repair Stations, where staff and volunteers train residents. The Digital Rights network is pressing for additional assistance from original equipment manufacturers to provide repair kits and tools to people who purchase their products.

#### RECOMMENDATIONS

- *Expand the reuse sector in Baltimore beyond building materials, through conversations with reuse enterprises that are interested in locating in Baltimore.*
- *Develop plan for a reuse hub for refurbishing and resale for profit and not for profit enterprises.*

## 9. Bans and Take Back Programs

Regulations eliminating dangerous and hard-to-recycle materials should accompany comprehensive recycling. Take Back programs recycle toxic products such as batteries, carpets, paint, mercury switches, light bulbs, medical sharps, and mattresses. These materials are returned to or collected by manufacturers for reuse or safe disposal.

In San Luis Obispo County, CA, the Integrated Waste Management Authority requires retailers that sell paint, household batteries, fluorescent tubes, CFLs, mercury thermostats, sharps (needles), and unwanted medicine to take those products back from the public. The Integrated Waste Management Authority collects those products from the retailers and then sends them for recycling or proper disposal. The distributors of the products reimburse the Authority.<sup>22</sup>

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<sup>22</sup> [San Luis Obispo County Integrated Waste Management Authority - Ordinances.](#)

Product bans have proliferated in the last five years. Jurisdictions in the Washington, DC, metropolitan area have banned products such as Styrofoam. Single-use plastic bags have been banned, while other jurisdictions require a \$.05 fee for their use.

Forty-seven states have declared bans on at least one product, including electronic scrap and yard debris. In Vermont, a 2015 universal ban on recyclable materials from landfills and incinerators has already resulted in a 5% reduction in the state's overall waste. Disposal bans are effective when the necessary infrastructure for recycling, composting, and reuse are in place and convenient for households and businesses. These products compose just 1% each of the solid waste stream, but have deleterious impacts on the environment, wildlife, and processing at MRFs. Bans typically are phased in to give manufacturers and businesses time to transition to acceptable materials and products. Seattle banned significant amounts of recyclable materials from disposal from homes and apartment houses in 2005 that led to a jump in recycling rates from 59% to 71%. Fresno also imposed a ban on recyclables from businesses in 2005. Their recycling rate jumped from 32% to 64%.

*RECOMMENDATION: Review bans and Take Back policies and programs from jurisdictions throughout the US.*

## **10. Green Procurement and Source Reduction**

By stating a preference in their procurement protocols, cities can stimulate demand for products that contain recycled materials, last longer, and can be reused. Alameda County, CA saved \$120,000 from 2004-2014 by reducing paper use and purchasing recycled paper.<sup>23</sup> City efforts in this area are well documented by San Francisco's Responsible Purchasing Network.<sup>24</sup> City policies can require labeling or illustrations that identify products that last

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<sup>23</sup> Bob Sly. "Zero Waste as a Business Decision." Zero Waste San Diego, January 2016.

<sup>24</sup> Responsible Purchasing Network. Also see [specific policies and guidelines](#) for the Seattle Green Purchasing and Contracting program.

longer.<sup>25</sup> Prince George's County has a checklist of steps local government and businesses can take to reduce waste at its source.<sup>26</sup>

Cities have also prepared comprehensive databases on reuse enterprises in their jurisdiction for citizens and businesses. These range from longstanding organizations such as Goodwill Industries to smaller neighborhood-based Swap Shops. Many universities have established Move Out programs, in which the school provides drop-off containers for students to deposit unwanted but valuable clothes, furniture, computers, and appliances. These goods are then delivered to area churches for distribution to low-income residents, thus avoiding disposal fees at landfills or incinerators. Cities have also provided sales tax exemptions, grants, and other subsidies to the local reuse sector. Companies such as Oakland's Repair Revolution provide education and technical assistance as well as inspiration for their customers.

*RECOMMENDATION: Research successful procurement policies that have reduced waste and reduced costs for other cities.*

## 11. Education and Public Awareness

There are two benefits of implementing recycling and composting programs in schools: they reduce the Public School system's waste and disposal costs; and they have the indirect benefit of teaching students recycling and compost literacy—what recycling and composting are, how to recycle and compost, and the benefits of doing so. This knowledge is then brought back home, thus educating the entire family. Recycling and composting are gateways for more comprehensive learning about nature, the environment, energy, and the connection between household practices and drivers of climate change. Familiarity with composting and natural systems reduces the chances of young people developing nature deficit disorders, which hamper the development of intelligence.

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<sup>25</sup> A recent [European Economic and Social Committee \(EESC\) study](#) shows consumers are more likely to buy products that last longer if lifetime information is clearly displayed on the label with illustrations. Also see Shawna D. Ganley. "[GREEN PRODUCT PROCUREMENT POLICY IN THE EUROPEAN UNION: TREATMENT OF LIFECYCLE CARBON ANALYSIS AND ENVIRONMENTAL PPM RESTRICTIONS.](#)" (Center for Climate Change, 2013)

<sup>26</sup> "Draft Zero Waste Strategic Plan for Prince George's County, MD." Department of the Environment and Waste Management. September 2016.

In 2012, Baltimore City Schools initiated composting pilot projects in several schools. The pilot was developed and managed by Keith Losoya from Waste Neutral, LLC and a former Sustainability Commissioner.<sup>27</sup> The program at the Federal Hill Prep School is thriving and can be replicated in other public schools. Since 2010, Waste Neutral, LLC has been operating compost programs at 5 private schools in Baltimore.

The Baltimore DPW already engages in public education on recycling. Its programs can be strengthened through career development programs including industry internships, on-site garden programs, award programs, and adjustments to curricula. There is an abundance of in-school education and general public awareness materials ready for adaptation. Public awareness programs must include the use of social media, government websites, inserts in utility bills, mascots, flyers, door hangers, daily newspapers, weekly papers, and community bulletin boards.

**RECOMMENDATIONS:**

- *Create an education and public awareness task force to identify and adopt infographics, lesson plans, articles, and books available on the subject, which can be easily integrated into any public or private school system.*
- *Develop industry internship programs for Baltimore High School and Baltimore Community College students.*
- *Ensure the Green Healthy Smart Challenge reaches all schools and places an emphasis on education and action related to recycling and composting.*
- *Expand the school compost program initiated in 2012 by Baltimore City Schools and Waste Neutral, Inc.*

## **12. Special Arrangements with Selected Companies and Industries**

A number of companies and associations provide assistance to cities to expand recycling and add value to the recycled materials.

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<sup>27</sup> See, [2012 09-13 final Composting Pilot in Baltimore Schools Case Study.pdf](#).

Ripple Glass Company and Strategic Materials, Inc. work in several cities to recover high-quality glass, even as many companies exclude glass from curbside collection. These companies need the glass for new containers, abrasives, and insulation products. Ripple Glass hauls glass for the glass recycling program in Fayetteville, AR, at no charge to the city. The Glass Packaging Institute recently initiated a technical assistance program for cities interested in recovering more glass from their waste stream.

Other companies want glass for the abrasives and cement industries. Recently, Baltimore County succeeded in attracting QRS, Inc., which manufactures products from mixed recycled plastic.<sup>28</sup>

The Closed Loop Fund, started in 2014, is a social impact investment fund with \$100 million available from large US corporations. Loans to cities are made interest free. Since 2014, the fund has invested \$19 million in cities for infrastructure. The QRS plant in Baltimore County received a \$2 million loan from this fund.<sup>29</sup>

The Recycling Partnership is another corporate fund that provides grants to cities to increase the efficiency of curbside collection programs.<sup>30</sup> The Recycling Partnership recently invested \$2.2 million in Eureka, a community based non-profit enterprise that collects and processes recyclables in Saint Paul and Minneapolis, MN.

#### RECOMMENDATIONS:

- *Initiate exploratory talks with Baltimore based and national foundations to provide funds for determining best practices for the city including costs and time frame for implementing new infrastructure facilities.*

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<sup>28</sup> "QRS Opens One-Of-A-Kind Plastics Recycling Facility in Baltimore County." (Baltimore County News, November 17, 2015)

<sup>29</sup> [Closed Loop Fund's First \\$20M of Investments in Recycling Infrastructure Demonstrates Recycling Makes Economic Sense For Cities And Industry this America Recycles Day](#). PR Newswire, 2016)

<sup>30</sup> The [Recycling Partnership](#) originally started as the Curbside Value Partnership in 2003. It became The Recycling Partnership in April of 2015.

- *Contact industry loan and grant funds to investigate opportunities for Baltimore's recycling efforts.*
- *Contact proactive companies and industries to explore special projects for the city of Baltimore.*
- *Develop infrastructure for reuse enterprises through fiscal and contracting policies.*

### **13. Resources Available to Baltimore Agencies**

There is no cookie-cutter approach to planning, implementing and managing comprehensive municipal recycling. However, by properly implementing the state of the art in SAYT, distributed composting and product repair and resale, Baltimore can reach high levels of recycling and diversion of its current solid waste stream and benefit from reduced costs, reduced pollution, increased jobs, and community resilience.

Detailed, site-specific studies are needed to determine immediate and short-term steps that can be taken to reduce incineration and increase recycling and economic opportunities in the city.

ILSR suggests that the new administration, working with the Department of Public Works and Office of Sustainability, take advantage of two invaluable resources:

- Peer-to-peer communications, conferences, and workshops with representatives of other cities that have successful comprehensive recycling programs. Other cities are interested in sharing their experiences and best practices, and helping disseminate knowledge on how to roll out a comprehensive recycling program.
- Experienced recycling and economic development specialists are available to construct a Baltimore-specific implementation/investment plan for a comprehensive recycling program.

City agencies do not need to solely shoulder the entire cost of researching, developing, and implementing a comprehensive recycling program. Local foundations and state resources can be tapped to pay for research and analysis, to be matched by the city's subsequent infrastructure investments for transforming the solid waste system into one that nurtures and maximizes recycling and economic development.

Financing for the development of infrastructure for comprehensive recycling and economic development can derive from the avoided costs of incineration, state and municipal bonds, and private sector investors. The Maryland State Recycling Trust Fund, which collects fines from companies that do not comply with the state's minimum content regulations among other fines for environmental infractions, is available to the city.<sup>31</sup>

*Recommendation: The city should hire or appoint a staff person to manage this process, including conducting pilot projects around recycling and composting.*

## Summary of Recommendations

### 1. Distribute free recycling containers

- *Undertake a pilot project that distributes free recycling carts on the Westport collection route.*

### 2. Unit Pricing/Pay-As-You-Throw

- *Research the feasibility of implementing SAYT for Baltimore households.*
- *Explore private and city options for additional rewards for households that recycle regularly.*

### 3. Co-Collection, Bulky Waste Collection, Multi-family Dwellings, and Special Events

- *Research the feasibility of using new collection strategies and available equipment to increase recycling and composting through efficient routing and co-collection efficiencies.*
- *Consider adopting mandatory commercial and household recycling as in Philadelphia, New York City, Washington, DC and Worcester, MA, among other jurisdictions.*

### 4. More Cost-Effective Processing of Recyclables

- *Explore the feasibility of smaller in-city MRFs scaled for the city's recycling stream.*
- *Do not develop a dirty MRF.*

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<sup>31</sup> See, Maryland Department of Legislative Services, Solid Waste Management and Recycling in Maryland, January 2017, p. 30-33; at <http://mgaleg.maryland.gov/Pubs/LegisLegal/2017-Waste-Management.pdf>

## 5. Expand Commercial and Household Composting

- *Review the citywide compost plan being prepared by the Baltimore Office of Sustainability and the Institute for Local Self-Reliance due for completion in early 2017.*
- *Determine appropriate sections of the city where composting facilities can be operated.*

## 6. Resource Recovery Parks

- *Research the feasibility of RRP for the City of Baltimore.*
- *Explore the possibility of state assistance in planning and providing incentives to companies located in these industrial parks.*

## 7. Expand Recycling of Construction and Demolition (C&D) Debris

- *Seek information and advice from jurisdictions that have implemented these C&D recycling initiatives.*
- *Identify potential sites for RRP and adjust zoning appropriately.*

## 8. Reuse or Repair and Resale

- *Expand the reuse sector in Baltimore beyond building materials through conversations with reuse enterprises that are interested in locating in Baltimore.*
- *Develop plan for a reuse hub for refurbishing and resale for profit and not for profit enterprises.*

## 9. Bans and Take Back Programs

- *Review bans and Take Back policies and programs from jurisdictions throughout the US.*

## 10. Green Procurement and Source Reduction

- *Research successful procurement policies that have reduced waste and reduced costs for other cities.*

## 11. Education and Public Awareness



- *Create an education and public awareness task force to identify and adopt infographics, lesson plans, articles, and books available on the subject, which can be easily integrated into any public or private school system.*
- *Develop industry internship programs for Baltimore High School and Baltimore Community College students.*
- *Expand the school compost program initiated in 2012 by Baltimore City Schools and Waste Neutral Group, LLC.*

## 12. Special Arrangements with Selected Companies and Industries

- *Initiate exploratory talks with Baltimore-based and national foundations to provide funds for determining best practices for the city including costs and time frame for implementing new infrastructure facilities.*
- *Contact industry loan and grant funds to investigate opportunities for Baltimore's recycling efforts.*
- *Contact proactive companies and industries to explore special projects for the city of Baltimore.*
- *Develop infrastructure for reuse enterprises through fiscal and contracting policies.*

## 13. Resources Available to Baltimore Agencies

- *The city should hire or appoint a staff person to manage this process, including conducting pilot projects around recycling and composting.*

## Appendix I: Potential Two-Year Growth of Recycling-Related Jobs in Baltimore

(assuming a 50% recycling rate)

Sector	Number of jobs	Sources of jobs
Building deconstruction	40	Continued growth of Second Chance and Humanim
Construction and Demolition	100	Continued growth of private and public sector processing and reuse
Government Crews and Regulators	40	Collection, administration, regulation
General Reuse	150	Community hubs for refurbished appliances, mattresses, gym equipment, electronic parts, refurbished computers, automobiles plus books and textiles
Composting	200	Collection, processing, sales, landscaping, grounds management, nurseries, community and home gardens, highway maintenance, agriculture
MRF	60	Private and public sectors
<b>Total jobs created: 590</b>		

Based on operating government agency programs and recycling enterprises such as St. Vincent de Paul, Lane County, OR; Eureka Recycling, Saint Paul, MN; Humanim and Second Chance, Baltimore; The Reuse People, Oakland, CA; eWorks, Prince George's County, MD; Revolutionary Recovery, Philadelphia, PA; Veterans Composting, Aberdeen, MD; Compost Cab and The Compost Crew, Washington, DC.

# APPENDIX II: Program Design and Development

(Key Components)

1. **Waste Snapshot:** Collect key data and document the current solid waste situation in Baltimore through review of documents and meetings with city officials. This information will serve as a foundation for informing the subsequent program design and analysis. Key items to be reviewed, documented, and analyzed include:

- a. Current collection models/protocols/norms for trash and recycling across the various municipalities and in unincorporated areas
- b. Number of households and residents served
- c. Annual residential MSW tons (total and by municipality)
- d. Annual residential recycling tons (total and by municipality)
- e. Average pounds of waste per capita disposed of annually (total and by municipality)
- f. Current fees collected from residents (including a sampling of subscription offerings for compost collection)

2. **Program Recommendation:** Outline three countywide SAYT program design options and how they would work. The key options to be evaluated are:

- a. Bag-Based SAYT
- b. Tag-Based SAYT
- c. Variable Rate Cart System

Key items to be addressed for each option include:

- a. Waste Reduction Effectiveness
- b. Operational Benefits and Challenges
- c. Pricing and Revenue Management

3. **Benefits Analysis:** Estimate the financial and environmental impacts of the three SAYT program options over 1, 3, 5, and 10 year periods. Assess and project the following:

- a. Expected waste reduction (tons per year)
- b. Expected recycling increase (tons per year)
- c. Net financial impact
- d. Environmental impacts (using EPA WARM, Waste Reduction Model)

4. **Summary Report:** Report for City of Baltimore (in PowerPoint presentation form) that

- a. Summarizes Baltimore's objectives
- b. Summarizes the Waste Snapshot
- c. Summarizes program type comparison
- d. Recommends the optimum program type

5. **Stakeholder Meetings:** Present recommendations and analyses to Baltimore's agency staff, Mayor, and City Council. Upon approval of plan, conduct meetings with stakeholders including businesses, environmental and civic organizations, and unions.

## Timeline

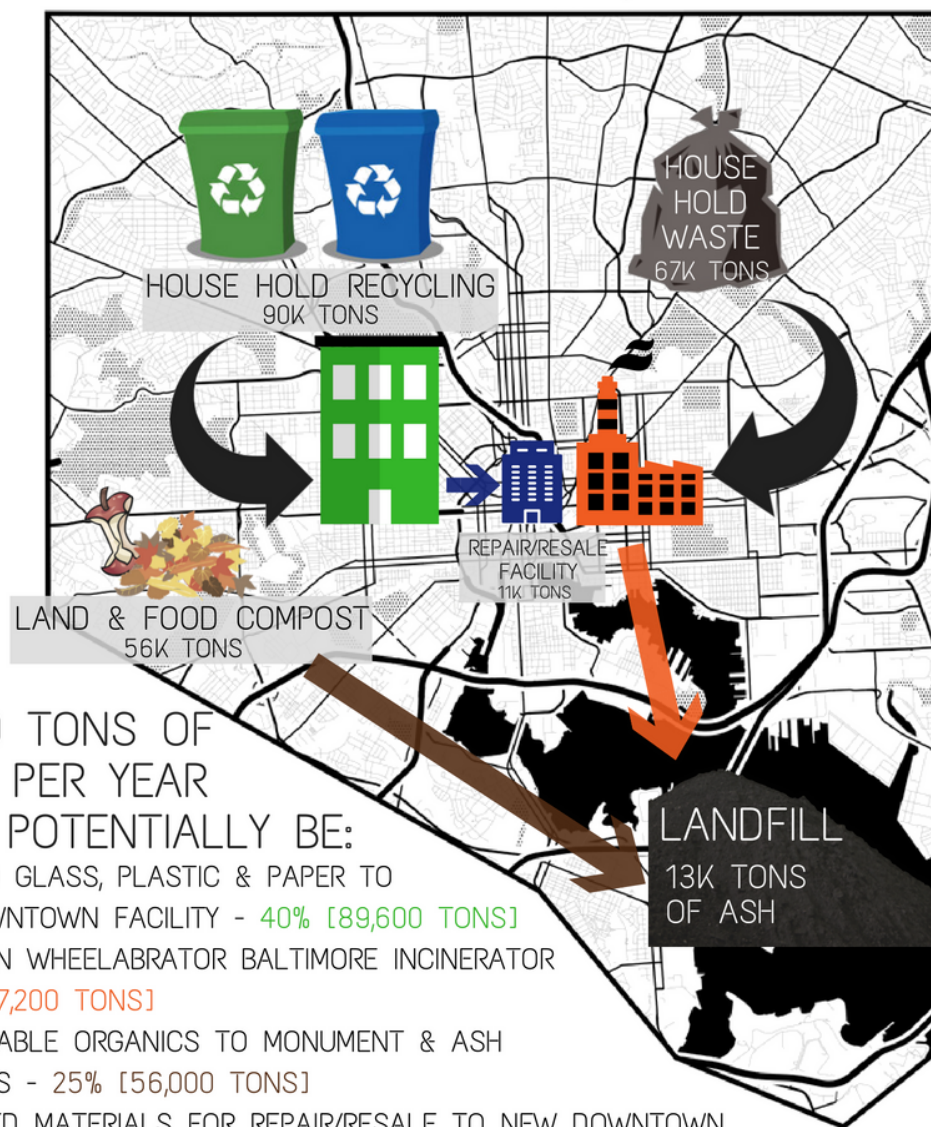
The Waste Snapshot, Program Recommendation, Benefits Analysis, and Summary Report can be completed within 60 days, assuming availability of data and access to stakeholders.

## Appendix III: Baltimore Waste and Recycling Scenarios

### BALTIMORE, MD



# BALTIMORE, MD



224,000 TONS OF  
WASTE PER YEAR  
COULD POTENTIALLY BE:

- RECYCLED GLASS, PLASTIC & PAPER TO NEW DOWNTOWN FACILITY - 40% [89,600 TONS]
- BURNED IN WHEELABRATOR BALTIMORE INCINERATOR - 30% [67,200 TONS]
- COMPOSTABLE ORGANICS TO MONUMENT & ASH LANDFILLS - 25% [56,000 TONS]
- RECOVERED MATERIALS FOR REPAIR/RESALE TO NEW DOWNTOWN FACILITY - 5% [11,200 TONS]