

RECOMMENDATIONS TO RETHINK CURBSIDE COLLECTION SERVICES

CITY OF NEWTON
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Executive Summary

This recommendations report was developed by Newton DPW with technical assistance from MassDEP. The scope of this report is focused narrowly on recommendations for improvements to the residential curbside trash and recycling programs with the goals of cost savings, future cost avoidance, environmental benefits, and customer service.

The timing of this report will help inform decision making for the next curbside hauling collection contract that includes recyclables processing (which expires in June 2025) and the trash disposal contract (which expires in June 2028). With anticipated significant cost increases on the horizon due to myriad factors, it is Newton DPW's hope that these recommendations can help us consider programmatic changes to minimize the added cost burden.

Recommendations detailed in the report are summarized below in two sections: Thinking Big Picture and Residential Collection Services.

Section 1: Thinking Big Picture Recommendations

1. Implement a competitive request for proposal (RFP) process for residential services and consider decoupling procurement of services (trash collection, recycling collection, recycling processing, and trash disposal).
2. Enhance collection and processing contracts with incentive programs, education clauses, and innovation clauses.
3. Factor greenhouse gas emissions from residential collection services into the City's Climate Action Plan and evaluate existing route maps to optimize for reduced GHG emissions.
4. Enhance the recycling processing contract to increase fairness of terms for the City.
5. Update the Recycling and Trash Ordinance to clearly define who receives city collection services.
6. Reduce holiday delay schedule for contractors down to the six major holidays.

Section 2: Residential Collection Services Options for Consideration

1. Get more food waste out of the trash by considering a pilot for in-home food waste processing capacity. The advantages of in-home food waste processing include relatively low costs, the costs to City can be paid for using grant funds, fewer logistical challenges, significantly reduced "ick-factor" for residents, low carbon footprint. Three other models were analyzed and deemed less feasible due to costs or logistical challenges.
2. Consider adopting a curbside collection model to increase trash reduction incentives for residents. Options investigated include:
 - a. Reduce the standard issue trash cart size to 35-gallons.
 - b. Phase in a transition from a tax-based funding model to a utility-based funding model between 2025 and 2028 and potentially add variable cart sizing.
 - c. Introduce variable cart sizing with at least two cart sizes and an annual fee in 2025 to offset cost increases.
3. Change cart ownership to the hauler.

Public feedback will be gathered regarding these recommendations to further inform the Mayor and City Council in their decision-making process. Engaged stakeholder groups including the Sustainable Materials Management Commission and Green Newton are important allies to Newton DPW in engaging with the public to gather feedback.

Introduction

In Fall 2020, Newton DPW was awarded a technical assistance grant from MassDEP to develop program recommendations to significantly reduce residential trash tonnage with the primary goals of cost savings, future cost avoidance, and maximizing environmental benefits. The scope of this report is limited to recommendations to advance residential trash and recycling services based on those goals.

This recommendations report focuses on residential collection, particularly curbside collection services, because the city is responsible for providing these services for residents and has a significant amount of control over the service model. Conversely, a larger portion of waste is generated by the commercial sector in most cities. A comprehensive analysis of waste flows within the city would be needed to better understand the extent of waste generated in other sectors including municipal, commercial, institutional, multi-family residential, and construction and demolition.

The current hauling and recyclables processing contract with WM started on July 1, 2020 and expires June 30, 2025. Recommendations in this report are intended for consideration for structural program changes to take effect in future contracts. In addition, Newton will need to seek a new waste disposal contract to take effect on July 1, 2028. The current waste disposal contract with Wheelabrator Millbury started on July 1, 2008, with a term of 20 years.

Significant cost increases in hauling, recyclables processing, and waste disposal services are anticipated in the upcoming contract cycles. Supply chain and labor impacts, only some of which relate to the 2020 pandemic, are anticipated to impact costs for the next hauling and processing contract. Cities that have entered new disposal contracts within the past three years have seen cost increases of 40%.

Refer to Appendix 1 for a full program summary of curbside collection services in Newton.

Background

Since the peak of trash generation in FY04 (31,758 tons), Newton has reduced trash generation by 47% (to 16,714 tons in FY23). This reduction trend has been stagnant over the past 6 years, although there was a temporary tonnage increase during the pandemic shut down. Trash generation averaged 22.8 pounds per household per week in FY23.

Essentially, there are four major services relating to residential management of trash and recycling: trash collection at the curb and hauling to a disposal site, trash disposal (known as the tip fee), recycling collection at the curb and hauling to a processing site, and recyclables processing (also referred to as the tip fee, though this cost is variable based on a formula). Each of these services has its own terms, methodology, and pricing structure. Costs for these services include staffing; vehicles; fuel (variable by distance from starting and end sites); and operation, maintenance, and improvement of facilities.

In 2009-2010, Newton launched its current curbside collection model which uses automated side-load trucks for collection each week of trash and recycling using 64-gallon wheeled carts. This model established an equitable waste set-out limit by volume, which was a significant change from previously having no trash limit. Overflow bags are available for purchase for occasional trash generation over the limit and around 430 residents pay for one or more additional trash carts each year. While some residents recall the implementation of this program as being initially challenging and even controversial at times, the program was soon enough widely accepted and has been successfully running for 13 years.

The waste and materials management landscape in Massachusetts has changed dramatically since the adoption of the automated cart collection program in 2010. Solid waste disposal capacity in Massachusetts and throughout the Northeast has steadily been shrinking as more landfills close and have not been replaced by new in-state or regional disposal capacity. This tightening of disposal capacity has weakened the resiliency of the Massachusetts waste disposal infrastructure, and facility outages that were routinely managed in the past are causing more frequent operational challenges. It is no longer newsworthy when trash is left at the curb for 1-2 days because of a facility outage. Changes in global recycling markets have led to tight recycling capacity, volatile prices, and an overall trend of increased recycling costs in the Commonwealth. The 2018 closure of a large glass processor in Massachusetts also added stress to the recycling markets.

The 2017 Newton DPW *Moving Beyond Solid Waste to Sustainable Materials Management Framework Report* detailed existing city services, programs, and policies and provided ten actionable recommendations to improve residential collection services. Between 2017 and 2022, five of those recommendations have been acted upon in some fashion. The actions taken include

- placing a fee on bulky waste items,
- opening a permanent Swap Shop at the Resource Recovery Center,
- improving the management of the curbside cart fleet,
- restructuring the household hazardous waste collection program,
- and increasing recovery of household food waste.

In 2021, Newton's Sustainable Materials Management Commission (SMMC) published the *Setting the Path to Zero Waste: Recommendations on the Future of Residential Curbside Waste Management in Newton* report. This report includes a robust analysis of how shrinking waste capacity is already and will continue to impact Newton. Further, the SMMC pinpointed six large scale recommendations including:

1. Set residential zero waste goals
2. Implement a citywide curbside organics collection program
3. Incentivize trash reduction with a fee-based variable rate system and/or alternate week collection
4. Strengthen support for extended producer responsibility legislation
5. Increase staffing for the Sustainable Materials Management Division
6. Develop a comprehensive Zero Waste Plan

Understanding how the waste and materials management landscape is evolving in Massachusetts is critical to be proactive in program planning. Broad education of residents about this changing landscape and how it impacts the city budget will be key to gain buy-in and implement further program changes.

Section 1: Thinking Big Picture

Massachusetts is facing a well-documented trash disposal capacity crisis. There are only 3 remaining landfills accepting municipal solid waste, the state's seven waste-to-energy facilities are aging, there is a moratorium on siting new facilities, and neighboring states have begun restricting imports of trash from

Massachusetts¹. These circumstances are resulting in significant cost increases for trash disposal and an increase in exporting of trash to other states, such as Ohio. Refer to the November 2021 report [Setting the Path to Zero Waste](#) published by the Newton Sustainable Materials Management Commission for further information on the need for Newton to reduce waste disposal.

Newton's long-term trash disposal contract expires on June 30, 2028. The bundled service contract for trash and recycling collection service and recycling processing expires on June 30, 2025. Planning and decision making is essential now to consider recommendations and potentially implement changes as new contracts are negotiated and take effect.

Recommendations below could have significant impacts on the next curbside collection contract and/or the next disposal contract:

1. Implement a competitive request for proposal (RFP) process for residential services and consider decoupling procurement of services.

REQUESTS FOR PROPOSALS:

Under Massachusetts General Law (MGL) Chapter 30B, Section 1(b)(30), solid waste contracts are exempt from public bidding requirements. However, it is recommended by the Massachusetts Department of Environmental Protection (MassDEP) that municipalities competitively procure solid waste and recycling services through an Invitation for Bids (IFB) or Request for Proposals (RFP) process to ensure competitive pricing and service quality. If a competitive bid process is used, it is then beneficial to include a clause that allows the municipality to make procurement decisions outside of the formal bidding process, should it deem this to be in the municipality's best interest. The exemption for solid waste services under M.G.L. Chapter 30B gives municipalities the discretion to follow a formal bid process for comparison purposes, and still negotiate with the selected firm to best meet their needs.

An RFP allows a municipality to evaluate and rank vendors based on best overall value, which combines qualifications, technical approach, and cost. Price is very likely to be the most important criteria when ranking proposals to determine best overall value, but it is not a limiting factor in the decision. According to a 2020 guidance document published by MassDEP titled [A Checklist for Successful Recycling Procurements and Contracts for Curbside Recycling Services](#), an RFP is the most appropriate approach when services cannot be reduced to pre-defined specifications and performance standards. It is the recommended best practice for solid waste collection, recycling collection, and recycling processing services.

Should an RFP process be the direction Newton moves toward, US EPA case studies encourage local governments to provide as much background information as possible, such as waste diversion goals, zero waste plans, relevant local regulations, ordinances, operating statistics, program participation levels, costs by line item, material composition and residue rates.

Highlights in the RFP should include how multiple goals will be weighted and evaluated based on Newton's priorities such as diversion from landfill and incineration, price, qualifications and

¹ *Note: only publicly owned landfills can restrict imports of trash; privately owned facilities would violate interstate commerce laws with restrictions.

experience, services proposed, exceptions to the proposed contract, local jobs, and local economic development.

In addition, RFP's offer a degree of flexibility for municipalities to examine proposals and pricing for services that may be significant changes from the status quo. Massachusetts is unique in that each municipality handles its own waste collection, as opposed to county or regional waste collection systems that are common practice in other states. This is especially inefficient because each municipality is quite small geographically. Borders between municipalities are all too often arbitrary, occurring in the middle of a neighborhood or street. This creates operational inefficiencies where trucks must cross into neighboring communities in order to turn around. To seek operational efficiencies instead, Massachusetts municipalities should consider partnerships or even creating regional waste districts in the long-term.

It would greatly benefit Newton to speak with neighboring communities of Waltham, Watertown, Brookline, Boston, Needham, Wellesley, and Weston to discuss mutually beneficial partnerships on waste collection services that may align with the timing of pursuing an RFP. Potential benefits of such partnerships for curbside collection services include increased purchasing power, creation of operational efficiencies, offset cost increases, reduced administrative burden, reduced fuel use and emissions, and providing better service. Instead of each municipality duplicating work, synergies can be found with educational programming, contract oversight, and customer service. Naturally, there are also possible challenges with the potential for partnership including timing of contracting, services desired, procurement processes, and the risk of damaging neighborly relations.

DECOUPLING OF SERVICES FOR PROCUREMENT:

It may be advantageous for pricing and service terms for a municipality to pursue separate contracts for residential collection of trash, residential collection of recycling, recyclables processing, and disposal contracts. Newton already has a separate disposal contract from residential collection and recyclables processing services. There are numerous vendors in the greater Boston area that could perform these services with the degree of quality Newton residents expect. Newton has thus far opted for a bundled procurement approach for residential trash and recycling collection services along with recycling processing since moving to contracted service. Reflecting on whether this is still the best approach is a worthwhile exercise.

Reasons Newton should consider decoupling procurement of collection and recyclables processing:

- Decoupling can increase the pool of qualified vendors for each service, thus increasing competition
- The cost basis of each service is fundamentally different – residential collection of trash, residential collection of recycling, and processing of recyclables
- Separate proposals will make it easier to evaluate vendors' offerings
- Decoupling provides the opportunity to achieve the lowest cost for each service, resulting in the lowest overall cost for curbside services
- Contractual language for each service can be easier to define clearly in separate agreements
- Each service and service provider can be better monitored, evaluated, and held accountable

The advantages of keeping the current bundled procurement process include:

- Consistent customer service experience for residents
- Potentially lower administrative burden for oversight with fewer contracts

- Possible loss of synergies and efficiencies from a combined collection and processing contract

Services needing to be contracted to maintain existing service levels could be decoupled or bundled in any combination. The extent of services included in the current bundled contract include:

- Curbside collection of trash and hauling to a disposal site
- Curbside collection of bulky waste items (large non-recyclable items) and hauling to a disposal site
- Curbside collection of recycling and hauling to materials recovery facility
- Processing of recyclables at a materials recovery facility
- Dumpster collection service at city buildings and select residential properties
- Curbside collection of whitegoods items (large recyclable items) and hauling to the Newton Resource Recovery Center
- Cart management services including procurement, maintenance, deliveries, swaps, and removals

Dumpster service, bulky waste collection, whitegoods collection, and cart fleet maintenance services are significantly smaller in scale compared to weekly curbside residential collection and less complex in nature. If a decoupled procurement strategy is pursued, each of these services could be procured through individual RFP processes. There is also potential to bundle curbside collection of trash and hauling to a disposal site with the disposal contract. Although, the timing of this combination would be more challenging because of the three-year gap between current hauling and disposal contracts.

This document serves to aid in strategy development for Newton's next procurement process of curbside collection services. Haulers need 18-24 months' notice to plan for procurement of trucks and additional staff to take on a new contract as large as Newton. Five to six trucks for each trash and recycling collection with 13-15 staff are needed to provide weekly service to our 18 square-mile municipality, which takes significant coordination and planning before service starts.

MassDEP has numerous contract resources, including template contract language that can be very useful in RFP and contract development. Several Massachusetts municipalities have incorporated an RFP process and moved to a decoupled model in recent years.

BEDFORD:

In November 2022, Bedford (population 14,100) entered a negotiation with their existing hauler to receive a proposal. By December an agreement was not reached and Bedford released a request for proposals that they had prepared in the event that the negotiation with the existing hauler did not yield the desired outcome. The RFP was crafted as in an "ala carte" style that allowed proposals to be submitted for one or more services contained within the RFP. Services sought included trash collection and haul, recycling collection and haul, recycling processing, yard waste collection, organics collection (which would have been a new service), and trash disposal. Bedford received six proposals for bundled curbside collection services. Bedford moved forward with their original hauler with pricing that was 1.5% lower per year than the previously failed negotiation proposed pricing.

LEXINGTON:

The Town of Lexington had a traditional bundled contract like Newton (including trash, recycling, and yard waste collection) from 1988 through 2019. In FY17, after much consideration, consultation,

public input and program assessment, Lexington DPW determined that a request for proposals for a bundled service contract would be advantageous to combat increasing costs and lackluster service. In 2019 the four proposals received differed drastically, ranging from \$9,078,622 to \$15,419,000. After a variety of factors were evaluated, the low bidder was determined to be the best value. Transition to the new service provider began in July 2019. This change in service providers was communicated to residents via a town-wide mailer, email, and social media. The transition period lasted a few weeks as new drivers learned the routes. Overall, the transition was well received by residents. Lexington will continue to request proposals for services in the future.

CAMBRIDGE:

Cambridge has never bundled recycling collection from recyclables processing, meanwhile Cambridge DPW has maintained operational control of trash collection using city-owned rear-load packer trucks. Additionally, Cambridge has used an RFP process for recyclables collection and recyclables processing since 2000. In Cambridge's last RFP for recycling collection, the two bids received were \$15M and \$23M over five years. Separating out the two services, allows the City more clarity on the true costs of both collection and processing of recyclables. Cambridge will continue to request proposals for decoupled recycling services in the future.

2. Enhance collection and processing contracts with incentive programs, education clauses, and innovation clauses.

Programs can be sculpted within contracts to align the hauler's performance with helping to achieve city waste diversion goals. Such programs could include route optimization, alternative fueled vehicles, and more efficient routes leading to fewer miles driven and lower costs for both the hauler and Newton, in addition to educational programs.

Mechanisms of how the recycling hauler can influence a decrease in recycling contamination could include education and outreach efforts or curbside enforcement. This method of incentivizing waste diversion has been used by cities on the West Coast. Some local governments require very specific outreach and education programs to be implemented in contracts. Contracts can set community education and outreach requirements on specific topics such as:

- Benefits of waste reduction, reuse, recycling, and separating out food waste
- Program implementation information, such as holiday delays
- Information on proper sorting and how to manage commonly confusing materials

Some communities require a separate contractor be used for education and outreach to obtain specialized marketing or multilingual outreach capabilities. Although Newton has one dedicated staff person who implements education and enforcement, many hauling and processing companies in the area have their own marketing campaigns that have already been developed, and in some cases have enormous marketing departments that can customize education materials to meet Newton's needs and quickly distribute educational information citywide. Examples of outreach methods that can be specified in contracts include:

- Traditional outreach: Citywide mailings, bin tags, bill inserts, brochures (can require multilingual materials)
- Direct outreach: Community event outreach and/or door-to-door customer visits (can require multilingual outreach capacity)

- Online and social media: Websites, campaigns or competitions using specified online platforms and tools

Including an "Innovations" clause in a contract can allow Newton flexibility to address issues and change service terms to take advantage of innovation without having to renegotiate the entire agreement. Innovations could include additional materials for recovery (e.g., food waste, cartons, flexible film packaging); collection changes such as separating glass from single stream; or new technology, such as the use of artificial intelligence to reduce contamination.

3. Factor greenhouse gas emissions from residential collection services into the City's Climate Action Plan and evaluate existing route maps to optimize for reduced GHG emissions.

With the current vendor, trash trucks travel an average of 198 miles per day. This includes the drive from WM's fleet yard in Norton to Newton, performing the routes in Newton, traveling to Millbury to dump the trash, and then traveling back to Norton. With six trash trucks servicing the City each day this equates to 1,068 miles per day, 5,340 miles per week, and a total of 277,680 miles per year.

Recycling trucks travel an average of 110 miles per day. These trucks travel from Norton to Newton, perform the routes in Newton, offload the recyclables at the Avon materials recovery facility, and return to Norton. For six trucks this equates to 660 miles per day, 3,300 miles per week, and a total of 171,600 miles per year.

These mileage totals should be included within the City's greenhouse gas emissions inventory and potentially addressed in the next iteration of the Climate Action Plan.

The number of households served among the five trash day areas (i.e., Monday route, Tuesday, route, etc.) ranges from 6,382 to 7,772. By using route optimization software, the trash day areas could be rebalanced with a more equal number of households per day and the shortest distances to complete each route day could be determined. This has potential to reduce miles traveled within Newton for collection.

Reporting of GHG emissions could be required in a hauling, waste disposal or recyclables processing contract. Reduction in GHG emissions could be incentivized in contract pricing terms.

4. Enhance the recycling processing contract to increase fairness of terms.

After collection, single stream recycling is taken to a material recovery facility (MRF) where materials are mechanically and manually sorted into individual commodity types (e.g., paper, glass, metal, plastic). This is what recycling processing entails.

The cost formula to calculate the monthly per ton recycling processing charge is complex. Essentially, the cost formula calculates a monthly value for one ton of sorted recyclables and subtracts that value from a fixed annual per ton processing fee that is established in the contract. Then the per ton charge is multiplied by the tons collected from Newton each month. The value of the recyclables is determined using a weighted average of each commodity sorted from the recycling stream as a percentage of the total stream (the composition of the recycling stream) multiplied by each commodity's monthly value. Each commodity's monthly value is set by a

commodity index, which is only available through a subscription. Newton subscribes to index pricing from RecyclingMarkets.net through a MassDEP subsidized price.

A common practice among MRFs is to set the monthly composition of the recycling stream based on the *outgoing* commodities, i.e., the sorted stream. The outgoing, now-sorted commodities originate from municipal and commercial unsorted material that was brought to the MRF. This means that Newton's pricing is not currently based on the recyclables that Newton residents generate. Instead, the pricing is based on the output of the MRF, which the City does not have control over.

To ensure that the terms of the formula are fairer to Newton, the pricing must be based on the composition of the recyclables collected in Newton. This composition can be determined by an audit performed at a regular, agreed upon interval. The audit should be performed by a 3rd party or by the MRF while witnessed by city officials using a methodology agreed upon by both parties.

This one change to the formula will significantly enhance the value of Newton's recycling and strengthen Newton's control over pricing as the quality of recycling improves with added investments to educational outreach.

Should an RFP process be used for future procurement of recycling processing services, language pertaining to an annual, biannual, or quarterly composition audit of Newton's material should be included along with a stipulation that monthly pricing be based on the periodic composition audits.

5. Update the Recycling and Trash Ordinance to clearly define who receives city collection services.

Current ordinance language does not clearly state which residential properties shall receive city collection services:

“The department of public works, or its contractor, shall remove and process or dispose of all refuse, recyclable materials and garbage from residential premises, except those residential premises which are required pursuant to special permit or other zoning requirements to make their own private arrangements therefor, which are properly placed in accordance with the requirements of this chapter.”

There has never been a tracking system developed to denote which residential premises are required to provide their own private collection arrangements as specified in a special permit. Therefore, it is currently unknown precisely which properties should and should not receive city service.

Equity, inclusion, and access to recycling services could be improved in city services by specifying in the ordinance that properties with a specified number of units shall receive city service. Best practices include all condominium properties because property owners are assessed at the same property tax rates as single-family properties and multi-family properties with 4 or fewer units. Multi-family properties with more than 4 units should be considered businesses, similarly to how these properties are managed by banks, and should be required to make their own private arrangements.

Newton DPW does not currently know the exact number of households served by the curbside collection program. An estimate of 28,500 households is used. It is common among municipalities

not to know how many households are served. However, it is a figure that would prove useful when considering an RFP for collection services or planning for future cart fleet procurement.

There are 37 large condo and apartment complexes that receive dumpster service provided by the city. Dumpster service for these properties cost \$233,490 in FY23. These properties were all grandfathered into receiving city service because, anecdotally, they were serviced by the city before services were contracted out. Ten of these properties are managed by the Newton Housing Authority. The cost of providing trash and recycling dumpsters at NHA properties totaled just over \$63,000 in FY23.

Implications of this recommendation require further analysis to better understand costs, the increased waste diversion potential, and potential to increase equity of recycling access.

6. Reduce holiday delay schedule down to the six major holidays.

When the City performed in-house collection services, city staff were granted holidays off, collection was delayed by one day with service completed on Saturday on overtime. After the City began contracting for residential collection services, the holiday delay schedule was kept the same in an effort to maintain resident expectations. The theory was that residents would expect a collection delay if there were a federal holiday.

Newton currently delays collection services for 12 federal holidays. The only functional purpose to delay collection is to allow staff time off for holidays. While the delays offer contracted staff an opportunity to observe the holidays, there is minimal benefit for contracted staff to observe the same holiday schedule as city staff because there are still five collection day areas within Newton to complete regardless of a holiday, so a collection day on Saturday is always needed to provide service to the entire city each week. This practice results in contracted staff having the holiday off but having a one-day weekend afterward.

Collection service companies find fewer holiday delays to be more efficient for the operation and more desirable by staff. In addition to being administratively burdensome, delays in the collection schedule can lead to unusual problems. For example, in February 2022, a large snowstorm during a holiday week led to a cancellation of a collection day. This was the result of collection week already planned to run on Saturday due to the holiday, a major snowstorm that started early in the morning, and strict Department of Transportation rules controlling the maximum number of hours worked within any 7-day period (hence collection could not take place on Sunday, then restart a new week on Monday because drivers are required to have rest time).

Further, the twelve holiday collection delays consistently generate the most call volume to Customer Service due to resident confusion. There is an average uptick in call volume of about XX% around every federal holiday.

By reducing the holiday delay schedule to the “major six” federal holidays (Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas Day, New Year’s Day) and thoroughly communicating this change to residents, contracted staff would experience less disruption in operational (and personal) routine, there would be less confusion among residents, and less potential for unplanned operational disruptions.

Section 2: Residential Collection Services Options for Consideration

Trash and recycling services are one of, if not the most, public facing municipal service. Most Newton residents engage with the program at least once per week by setting out their blue and green carts. When any changes are made to programs and services, it is easier to enact those changes as a new contract starts than to make a change and work with a vendor during a contract term.

Municipal trash and recycling collection policy requires a sensitive approach because it involves changing residents' behaviors around waste materials in their homes. It is important for all stakeholders to be attuned to this dynamic when planning for materials management policy changes.

There are significant cost implications when a new contract starts for collection and processing services. Part of the cost depends on how much trash and recycling are generated to be managed, so it is logical to enact policies that encourage or incentivize residents to reduce the amount of waste generated.

Further, there are significant environmental sustainability implications from waste and recycling generation. Upwards of 80% of the greenhouse gas emissions in most consumer-goods categories occur in the supply chain to produce and distribute goods to stores. However, that 80% is not within the sphere of control of Newton. If even half of the remaining 20% of GHG emissions from consumer goods come from managing the waste byproducts of the goods (packaging, one-time use items, obsolete or broken durable goods, food waste), Newton has a substantial amount of impact within its sphere of control.

The recommendations below are being put forward with consideration to cost, environmental impact, and convenience for Newton residents.

1. Get more food waste out of the trash.

All the resources that contribute to putting food on the table are wasted when food goes uneaten, including the land, water, labor, capital, chemical inputs, and energy used. Globally, food that is harvested, but not consumed, accounts for about twenty-five percent of all water used in the agricultural sector each year and requires cropland the size of China.

In the United States, over 2% of the nation's energy use is dedicated to growing, manufacturing, transporting, refrigerating, and cooking food that is not eaten. That's the equivalent of 16 billion gallons of gasoline (enough to cover 6 weeks of gasoline use by everyone in the U.S.) or 586 billion kilowatt-hours of electricity (enough to cover the electricity needs of 54 million households for a year).

Food production and disposal create greenhouse gases, contributing to climate change. Globally, food that's harvested but not consumed generates about 8 percent of global greenhouse gas annually making it the world's third-largest greenhouse gas emitter behind China and the United States. Most of these emissions occur during production, so it is imperative to use the food that is grown and divert food waste from disposal.

Currently, Newton encourages backyard composting of food waste and has a preferred vendor agreement with Black Earth Compost who provides subscription curbside organics collection service. There is no data available to know how many residents compost their food waste at home, however, we know that through the city's subsidized compost bin sales that XXX residents have purchased backyard compost bins since 2016. There are over 2,900 subscribers to the preferred vendor curbside subscription service. In FY23, the curbside program diverted 783 tons of food waste from the trash. The cost to dispose of those 783 tons of food waste as trash would have been \$59,585.

Currently, Vermont and California have statewide mandatory food waste diversion laws. Vermont's law is a disposal ban similar to the regulatory approach Massachusetts uses for recyclable materials. MassDEP implemented a commercial organics ban in 2014 for generators of 1 ton of food waste per week or more. In November 2022 the threshold was reduced to include generators of ½ ton of food waste per week or more. This trend indicates that MassDEP may eventually ban all commercial organics and further into the future may put a disposal ban into effect for residential food waste, as well.

Because there is a significant cost to add curbside food waste collection service citywide, pilot programs are a cost-effective next step for Newton to find a sustainable model to divert more food waste. Below are four pilot program models that have been investigated. Each has benefits and challenges. There is no simple, one-size-fits-all solution to getting more food waste out of the trash. The pilot program models are listed in order of recommendation and feasibility.

A. Pilot in-home food waste processing capacity.

Technology has been advancing in recent years to develop residential on-site food waste processing devices, better known as electric countertop composting units. Managing food waste at the point of generation eliminates the logistics burdens and emissions impacts of curbside collection. The countertop composting units are a relatively low one-time cost, which may be favorable over incurring higher annually escalating costs.

Countertop composter units work by creating laboratory-like conditions for organic matter to break down quickly using naturally occurring microorganisms. The conditions created stimulate and accelerate aerobic decomposition through drying, mixing, and cooling. Essentially, these units act as aerobic digesters that are sized for a residential home. A cycle takes between 3-8 hours and reduces the weight and volume of food waste by about 90%. The remaining byproduct, which has a consistency ranging from sawdust to granola, is dry and sterile, thus eliminating odors. The byproduct, sometimes referred to as pre-processed food waste, can be mixed into potting soil or tilled into garden beds in the spring as a beneficial nutrient amendment. Another option is to store the byproduct and drop it off at a food waste drop-off location. If the byproduct is placed on top of soil the food waste will rehydrate and attract wildlife.

Units are typically the size of a bread machine or similar countertop appliance. They are extremely energy efficient, using approximately 0.8 kWh per cycle, which is similar energy use to having a desktop computer run for the same period of time. Sensors within the unit automatically stop a cycle when the moisture level reaches zero.

One company, Foodcycle Science, is actively working with municipal governments to pilot their countertop composter units, called the FoodCycler, as a solution for cities to get food waste out of residential trash. In the municipal pilot program they have designed there are two FoodCycler models available: the FC-30 can process 2.5L per cycle and the Eco 5 model can process 5L per cycle. The municipal pricing of the units, which is reduced compared to retail pricing, is \$249 for the FC-30 and \$349 for the Eco 5, plus shipping. This company has over 80 municipal partnerships currently. Nelson, British Columbia (population 10,600) has purchased units for every household to serve as their primary food waste diversion method after running a successful pilot.

An initial pilot program in Newton would consist of 750 households. The pilot program offered by the company includes all educational training materials and surveys of pilot participants. Customer service and technical assistance are also offered by the company during the pilot.

Through pilots run by other municipalities, a subsidy model has proven to be cost effective and well-received by residents. The municipal subsidy (i.e., cost covered by Newton) proposed by Foodcycle Science is \$100 per unit. The municipal subsidy can be paid by grant funds received from MassDEP for the Recycling Dividend Program. Costs of a pilot program are outlined below.

Total Invoiced Amount

	Price	Quantity	Total
FoodCycler FC-30 Municipal Rate	\$249	325	\$80,925
FoodCycler Eco 5 Municipal Rate	\$349	425	\$148,325
Shipping Estimate			\$8,100
Total Invoice Amount			\$237,350

Net Municipal Cost

	Price	Quantity	Total
Total Invoice Amount			\$237,350
Less Resident Contribution: FC-30	\$149	325	\$-48,425
Less Resident Contribution: Eco 5	\$249	425	\$-105,825
Net Municipal Cost			\$83,100

This model serves as a good alternative for reluctant residents that find traditional food waste diversion systems to be messy or inconvenient. There is strong potential long-term for countertop composter units to be part of a multi-pronged approach to get food waste out of the trash in Newton.

Cost to City per household: \$110.80

Pros: Relatively low cost, cost to City can be paid for using grant funds, few logistical challenges, significantly reduced ick-factor for residents, low carbon footprint, low administrative burden

Cons: Less convenient than curbside collection model that residents are accustomed to, residential cost for unit, minor residential cost for ongoing electricity use

Feasibility: Highly feasible to launch a pilot program within 1 year; ongoing program could be modeled after backyard compost bins sold at a subsidized price

B. Pilot separate food waste collection performed by DPW for one year.

Following the model that Cambridge uses for curbside food waste collection and leaning on DPW's experience with yard waste collection, one packer truck could be rented, and two new positions created or two existing staff temporarily reassigned. The pilot program would provide weekly curbside food waste collection for approximately 1,000 participating households in each trash day area. Residents would be required to opt-in for the no-cost pilot program service. Software can be used to create routes and track the set-out rate among participants. Routes would be created to collect only from participating households instead of going down every street each week. In this model, collected food waste would be transported to a nearby facility accepting residential food waste. The two nearest facilities are the WM CORE in Charlestown (13mi) and Hidden Acres Farm in Medway (20mi).

Using an estimate of 12 pounds of food waste collected per household per week, that equates to 30 tons per week. In this model, with Newton paying a tip fee at a commercial facility that is expected to be roughly the same as the trash tip fee (\$75/ton), there is no cost savings by removing food waste from the trash. In addition, costs would increase compared to current service to cover the truck, staff, and routing software.

Estimated costs for a pilot include:

1-year rental of one rear load packer truck + fuel	\$120,000
Two staff (inc. benefits)	\$200,000
Tip fees	\$117,000
Locking carts	\$30,000
Routing software	\$10,000
	<hr/>
	\$477,000
Grant fund contribution	<hr/> (\$120,000)
Total cost to City	\$357,000

Although there is a cost increase for piloting this service model, this increase is minimal when compared to contracting out for collection service.

Cost to City per household: \$357

Pros: Similar collection model to current yard waste collection program, optimized collection efficiency using routing technology, no out-of-pocket cost to residents, convenient for residents

Cons: Relatively high cost, grant funding is not available to pay for full cost, numerous logistical and coordination challenges, high administrative burden

Feasibility: Low feasibility to launch pilot within 3 years due to significant cost

C. Pilot co-collection of food waste with yard waste.

This model has been a common practice in many West Coast municipalities for over a decade and other municipalities have found value in combining these services. If co-collection is deemed a feasible option for Newton there would be no additional costs for weekly curbside collection since Newton DPW now operates yard waste collection. MassDEP has indicated there is no immediately obvious regulatory barrier to piloting this model.

Newton DPW offloads yard waste at the Resource Recovery Center at Rumford Avenue, which is a big factor in how DPW can provide yard waste collection service cost effectively. A hauler is then contracted to transport the yard waste to a commercial compost site. The co-collection model would be feasible by working with a commercial compost site that would accept yard waste mixed with food waste.

Concerns that would need to be solved before launching a pilot effort include ensuring that co-collected materials are mixed well during the high-volume yard waste seasons of spring and fall and arranging for hauling of the material as quickly as possible in the summer when temperatures are warmer and yard waste is less voluminous. Because the intention is not to compost the co-collected materials onsite, with ample hauling of the material to a commercial composting site there should be a low risk of odors and pests.

Winter poses an interesting dilemma to this collection model primarily because DPW staff are responsible for snow and ice management operations. One option is to make the co-collection program seasonal and match the food waste collection service with seasonal yard waste collection. Evanston, IL runs their co-collection program in this manner. Aside from the co-collection service, they have a food waste contractor that offers “winter gap” seasonal service for a fee. Another option is to run fewer trucks in the winter to only collect food waste. There would be expected occasional service disruptions due to snowstorms, but it would be highly unlikely for a resident to experience more than a one-day delay in service. Alternatively, residents who want winter food waste collection could be required to opt-in for service. This would allow DPW to develop routes to only service participating households, thus increasing efficiency.

Cost estimates for this model are difficult to pinpoint but are expected to be insignificant. Newton is charged by the yard waste hauler by the cubic yard. Although food waste is heavy, it does not generally have a high volume. Thus, there would be a negligible increase in volume of yard waste hauled out.

Cost to City per household: nearly zero, exact figure undetermined

Pros: No out-of-pocket cost to residents, convenient for residents, low carbon footprint compared to adding additional trucks for separate food waste collection, minimal operational impact for curbside collection, potential for low administrative burden in the long-term

Cons: Numerous operational, logistical and coordination challenges with properly managing collected material; high administrative burden to achieve an effective model; potentially high risk of failing

Feasibility: Low feasibility to launch pilot within 3 years due to numerous operational, logistical and coordination challenges

D. Pilot phased opt-in contracted curbside collection service.

If pilot efforts above are tested and do not provide a sustainable solution to get more food waste out of the trash, the city could consider contracting out for curbside collection service. A phased-in pilot program could be designed to allow for financial planning.

Watertown has recently started a program following this model. Their City Council approved funds of just under \$2 million for a three-year pilot that will provide service for 1,500, 3,000, and 5,000 households in respective years. The phased approach will allow time for fiscal analysis of the program and planning of next steps.

Cost to City per household: at least \$400, exact figure undetermined

Pros: No out-of-pocket cost to residents, convenient for residents, low administrative burden

Cons: High cost, difficult to plan for scaling up as costs fluctuate

Feasibility: Low feasibility to launch pilot within 3 years due to significant cost

2. Enhance incentives for residents to generate less trash.

In 2010, Newton established its first incentive to reduce trash generation through an ordinance change and by issuing one 64-gallon trash cart to each eligible household. This policy change leveled the playing field among households by setting an equitable trash volume limit. Trash generated over this limit requires the purchase of overflow bags or the purchase of an annual permit for an additional trash cart. Before the establishment of a limit, one household could set out four full trash cans while another household could set out one half-full can and both households were paying the same amount for curbside services through property taxes.

Volume limits create fairness, but they can also act as a ceiling that disincentivizes further reduction of trash. For example, in Newton's cart system, 35-gallon carts have been offered since the start of the program. However, since there is no incentive to move to a smaller cart, they have not been widely adopted.

Various options and timelines for trash reduction were analyzed. Of these options, more details will be needed to make a decision. Should the City pursue an RFP, additional details such as cost will be provided in proposals from haulers that will further inform a decision.

A. Reduce the standard issue trash cart size to 35-gallons with weekly curbside collection.

As of May 2022, 16 municipalities in Massachusetts have switched to 35-gallon carts and have experienced an average trash tonnage reduction of 3.7% the first year. For Newton, a 3.7% trash tonnage reduction would save approximately \$50,000 annually based on FY23 pricing and tonnage data. Data collected at the curb in summer 2022 from 1,180 households indicated 68% of households set out carts that are less than 80% full. Further, data from MassDEP demonstrates that Newton's current trash disposal rate of 0.61 tons per household per year is already lower than 11 of the 16 municipalities that have made the switch to 35-gallon carts. From this data it can be inferred that most residents could adjust to a cart volume decrease, similar to the adjustment that was made when the original cart limit of 64 gallons was established.

In this model, overflow bags would be available for purchase at local retailers with the bags being appropriately priced to cover all disposal, collection, and administrative costs. Annual permits for additional carts would also be available for an appropriately priced fee. Both services are currently administered in Newton's program.

This approach is best implemented with robust food waste collection options. By removing food waste from the trash, residents can remove approximately 30% of the weight of their trash. Additionally, education and outreach about waste reduction strategies would be increased to assist residents in adapting to the change in the volume limit.

Refer to recommendation #3 below regarding cost implications of a new cart fleet.

B. Transition from a tax-based funding model to a utility-based funding model using a phased-in approach between 2025 and 2028.

In a utility-based program residents pay a per-unit fee for disposal of household trash. Most programs utilize pre-printed trash bags in which the price of the bag reflects the cost to dispose of the waste contained within the bag. The bag serves as an equitable volume limit. Alternative programs include annual tags purchased and placed on carts. Residents typically are not charged a direct fee for recycling in a utility-based system, or recycling may have a significantly lower charge than trash. As residents pay directly for trash they dispose, they have a financial incentive to reduce their waste through recycling, composting, and waste reduction. This collection model enables municipalities to simultaneously reduce waste tonnage disposed and more equitably distribute the cost of disposal among residents.

The advantages of a utility-based payment model include:

- **Fairness.** Residents pay for only the amount of trash that they generate. Households generating less trash pay less than households that generate more.
- **Decrease in Trash Tons Disposed & Associated Cost Savings.** Utility pricing has been shown to decrease a community's residential trash tonnage disposed by 25 to 50 percent, significantly reducing solid waste disposal costs. In Newton, a 25-50% trash tonnage decrease would save between \$316,000 and \$631,000 annually based on FY23 pricing.

- **Increased Recycling, Composting, & Waste Reduction.** Utility-based programs encourage recycling, composting, and waste reduction through increased diversion to reuse, repair, and donation.
- **Improved Environmental Quality.** By diverting more trash from disposal, utility-based programs extend the life of landfills, decrease air pollution from trash incinerators, and reduce the need for new disposal facilities. As communities increase reuse, recycling, and composting, natural resources such as land, air, and water, are protected and preserved and greenhouse gas emissions are reduced.

Utility-based payment models are most effective when they cover the full municipal costs for the collection services that the municipality offers. An enterprise fund is used by some communities to manage utility-based waste collection system funding.

Utility-based payment collection programs have four pricing structure options which include proportional/linear (a flat rate per container), variable container (different rates for different sized containers), two-tiered (a flat fee typically charged on a quarterly or annual basis and a unit-based fee), and multi-tiered (a flat fee typically charged on a quarterly or annual basis and different rates for different sized containers).

With any new program, concerns arise that need to be considered before implementation, including:

- Some residents may perceive the unit-based pricing program as a new tax. To avoid this perception, many communities make their programs revenue-neutral by reducing the flat fee by the amount that unit-based fees are expected to generate. Many residents wind up paying less for trash disposal after a PAYT program is implemented since they can control their costs by throwing less away.
- Because unit-based pricing fees for trash service represent a higher percentage of a low-income family's income, steps may be taken to minimize the impact on these households. Just as electric, gas, and water utilities provide special rates for low-income users, a unit-based pricing program may also include lowered rates for residents who demonstrate hardship.
- While some officials have expressed a fear that residents may resort to illegal dumping in commercial or public waste bins in a unit-based system, studies of unit-based programs in Massachusetts and around the nation indicate that increased illegal dumping is not a problem in most communities.
- With any new program, additional staff time may be needed for planning and implementation. However, these costs are generally recovered through savings associated with reduced waste disposal.

A timeline for a phased-in approach, based on steps Natick took in 2003, to a utility-based model could be adapted by the proposed timeline below:

- 2025 – Educate public on the utility nature of waste collection services by communicating current program costs per household and holding public forums.
- 2026 – Implement a visible fee on water/sewer bills showing what each household currently pays for services (through funds that are allocated from the general fund).

Include a supplemental educational flyer explaining the line item, detailing the current waste collection system costs and advantages of a utility-based system. Send out educational letters to all residents informing them of the new program start date.

- c. 2027 – Begin quarterly or annual billing for trash and recycling services at a flat rate. Potential to add organics collection at a utility rate.
- d. 2028 – An option could be added to have a variable cart size and/or collection frequency. This provides residents with more choice and control over how much they want to pay for collection services. The challenge with this model is that it can be administratively burdensome, however, software exists to track and operationally manage all aspects of this model from billing to tracking cart serial numbers.
 - i. Goal would be to fund 75% of waste and recycling collection services and reduce trash by 5% each year for 5 years.
 - ii. Ex. Basic suite of services available for \$300/year includes one 35-gal trash cart with weekly service and a 64-gal recycling cart with weekly service. One resident could choose a 64-gal trash cart with weekly service for \$500*/year while another resident could opt to pay less for a 35-gal cart with alternate week service at a rate of \$175*/year.

*Actual rates would be determined per hauling contract and administrative costs.

C. Introduce variable cart sizing with an annual fee in 2025 to offset cost increases.

As previously mentioned, the City expects to incur significant cost increases in 2025 with the next hauling contract and again in 2028 with the disposal contract. A fee model and variable cart sizing could be considered as these new costs are incurred to offset these increases to the City's operating budget. Annual fees would include whole cost accounting of program cost increases, including administration of the program. From the outset this model prevents additional allocation of funds being needed to balance the operating budget. This model provides residents with choice over how much they pay for collection services.

A timeline to implement this approach could be adapted by the proposed timeline below:

- a. 2024 – Proposed pricing for curbside collection services is received and reviewed by the City. City officials award the contract to one or more service providers and the contract price is planned for the in the FY26 budget. Cost increases to residential collection services between FY25 and the subsequent 3 years would be determined. A fee would then be set for residential service to make up the cost differential. Two or more cart sizes could be offered at variable rates with the goal of the fees to cover the cost increase to the City. Larger cart sizes would have higher fees due to cover the costs of the increased trash generated.
- b. 2025 – As the new contract starts, the variable cart sizes would be distributed and a billing system established.
- c. 2027 – The City plans for the next trash disposal contract (current contract expires June 30, 2028). As new costs are determined with a vendor, the cost increase from the current contract will become known. Fees on variable cart sizes would be increased to account for the increase in trash tonnage disposal from the new contract.

3. Change the cart ownership model.

Under Newton's current program model, the City originally purchased the carts and owns the cart fleet. By ordinance, one trash cart and one recycling cart are issued to each eligible household. It is the City's expectation that the carts will be cleaned and cared for by residents. Since the City owns the carts, when there is damage to the cart through regular use, the City fixes the cart using parts it has procured, or replaces the cart at no cost.

Because the City owns the carts, the hauler does not have a financial incentive to prevent cart damage. As carts are damaged through general use or even if the carts are damaged by inappropriate handling of the carts by our hauler, which is difficult to prove, the City must pay for replacement carts if they cannot be repaired.

Newton has seen a high rate of unrepairable cart damage (i.e., cracked carts), averaging 5.6% of the cart fleet each year between 2014 and 2020. The carts from the original roll out in 2010 are now beyond the 10-year lifespan that is typical for collection carts. Although newer carts are covered under warranty, broken carts are almost never covered by the cart manufacturer. This is because the manufacturer has contested that the hauler is causing the damage. Meanwhile, the hauler states that the carts are not manufactured to specifications needed for weekly pickup. Newton has been left in the middle burdened with the costs of replacing numerous carts each year.

In the current hauling contract, language was included to attempt to remedy this situation. However, the cart damage has continued, and it is yet undetermined whether the contract language will protect the city as intended.

To create a fairer system, carts should be owned and maintained by the hauler. While the cost of the carts would be included within the collection contract, the vendor will be responsible for purchasing, repairing, and replacing carts. This model creates a financial incentive for carts to be kept in working order, thus creating less maintenance and replacement of carts overall, which should improve customer service for residents.

One example of a municipality that opted out of cart ownership is Maynard, MA. Maynard included the following contract language when they adopted recycling carts:

"The contractor shall supply to each household one (1) 96-gallon wheeled cart for use in the curbside collection of single stream recyclables. The contractor will continue to own the carts throughout the term of this contract and at the end of the contract. Throughout the term and any extension the Contractor shall, at the Contractor's sole cost and expense, maintain, repair or replace carts if necessary. Repairs that may be performed at the curbside shall be made within two weeks' notice to the Contractor. Delivery of new carts and swapping out damaged carts shall occur once a week on a day agreed upon by the City and the Contractor. The Contractor shall maintain an inventory of carts for distribution to new households and for replacement carts."

Moving Forward

Decisions must be made relatively quickly to determine the next steps with Newton's materials management system. The contract expiration dates in 2025 for hauling and recycling processing and 2028 for trash disposal may seem distant, however, planning for any of the aforementioned recommendations will take a substantial amount of time.

Decisions regarding any policy changes, such as a reduction in cart size, should include resident feedback. This can be done through surveys, community engagement sessions, and focus groups. Engaged stakeholder groups including the Sustainable Materials Management Commission, Green Newton, and others may be able to assist with education and engagement about any potential changes.

More broadly, community education sessions will offer an opportunity for residents to learn more about why it is imperative to reduce trash generation through increased waste diversion and waste reduction. At these sessions, residents can ask questions and offer feedback on recommended program changes.

References

1. [US EPA Sustainable Materials Management website: Managing and Transforming Waste Streams – A Tool for Communities](#)
2. MassDEP Solid Waste Master Plan
3. [MassDEP Best Practices for Municipalities Developing Private Hauler Regulations](#)
4. [MassDEP Pay-As-You-Throw \(PAYT\)/Save-Money-And-Reduce-Trash \(SMART\)](#)
5. [MassDEP Best Practices: A Checklist for Successful Recycling Procurements and Contracts for Curbside Recycling Services, October 2020](#)
6. [McKinsey Sustainability, “Starting at the source: Sustainability in supply chains,” 2016](#)
7. Newton Sustainable Materials Management Commission Setting the Path to Zero Waste report & presentation, November 2021
8. Center for Food Loss and Waste Solutions
9. City of Evanston, IL