

Final Report

Town of Branford, CT – Review and Analysis of Recycling System

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Prepared for
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1 EXECUTIVE SUMMARY

1.1 Introduction

The Town of Branford (Town) manages a comprehensive, integrated waste management system for the direct benefit of its citizens. As part of its commitment to provide fiscally responsible waste management services and environmental protection, the Town retained RRT to conduct a review of its programs and to identify a course of action for accomplishing its goals. RRT's review identified several opportunities for operational improvement which, when implemented, should amount to considerable Town financial benefit and program stability.

The initial review and analysis were based on both primary observations and review of available data, with consideration of industry norms and best practices. A project kickoff was held in a series of meetings October 4 – 6, 2021, with a follow-up visit on October 12, 2021, to make additional observations of curbside materials. RRT met both virtually and in-person with about a dozen stakeholders about their concerns, strengths, and desires. These conversations also discussed the operational details of the collection and processing of recyclables, such as how materials are set-out by residents, how they are delivered to the transfer station, which parties and individuals perform which tasks, etc. RRT also visited and observed the Town's Transfer Station, including its features and operations. Throughout the kickoff visit, RRT conducted observations of the recyclables collector on the routes and conducted spot-inspections of customer set-outs of recyclables at the curb.

An in-depth review was conducted of the data available regarding the recyclable material the Town has delivered for processing and the charges assessed. Invoices from July 2019 to June 2021—two fiscal years—were individually reviewed and the information used to create a dataset which could then be used both for evaluating the past and preparing for the future. The data review also included scrutiny of the contracts with the solid waste vendors.

The details of the analysis, which was originally issued in an interim report on December 20, 2021, can be found in Section 2 of this report. The opportunities identified by RRT were reviewed with the Town's project team. With this input, the opportunities were developed into a Recommended Course of Action, detailed in Section 3 of this report. The Recommended Course of Action and sample timelines are designed to build on the strengths of the current Solid Waste program and lay out a path to improved operations, efficiencies, and customer experiences.

1.2 Summary information

Generally, the program review found that residents of Branford do a good to excellent job at preparing their recyclables. Participation is robust and of good quality. Some improvement to supporting the dual stream system could be accomplished with education and improved separation of the two material types. This is a strength of the program which should be bolstered, not renovated.

The contractual relationship between the curbside garbage and recyclables collector and the Town is poor. The contract vehicle has been deviated from to such a degree, and the contract is of a weak quality, that the Town should not expect satisfactory performance under the current contract. RRT originally recommended that the Town should allow it to expire and pursue a new procurement. In the intervening months, the Town decided to exercise the final 1-year extension in order to have sufficient time to conduct a proper procurement as recommended.

The contractual relationship between the recyclables processor and the Town is also poor. As with the collection contracts, the terms have been deviated from almost beyond recognition. The contract lacks crucial details for performance of the service and has unrealistic parameters. RRT originally recommended that the Town should allow it to expire and pursue a new procurement. In the intervening months, the Town decided to exercise the final 1-year extension in order to have sufficient time to conduct a proper procurement as recommended.

Observations of the Transfer Station generated concerns about both the efficiency and safety of operations. Segregation of residents from heavy truck traffic is imperative, and fortuitously there is existing infrastructure which can facilitate such a change. In the meantime, the breadth and convenience of services provided to residents is excellent and should be continued—perhaps, expanded.

Several of the services the Solid Waste program provides—acceptance of bulky items from residents such as furniture and renovations debris, garbage and recyclables collection from the Thimble Islands, and the diversion of materials such as electronics and mattresses at the Transfer Station—are well-provided and the contracts function satisfactorily. The Recommended Course of Action is to continue and buttress these efforts to perpetuate their success.

There are excellent opportunities for the Town to address the concerns described herein and to build upon the strong features of the solid waste program. These opportunities identified by RRT were reviewed with the Town's project team after the interim report. Upon reflection of the report and Project Team discussions, RRT issued a memorandum underscoring the recommended actions and emphasizing the criticality of time. This memorandum can be found in Attachment A to this report. In preparation for issuance of this final report and at the request of the Town's project team, a Technical Memorandum was issued to encapsulate several communications of data, research, and technical information which had been compiled to support the project. That memorandum can be found in Attachment B to this report. Finally, with feedback and updating from the team, a Recommended Course of Action for the next 10 years was created.

The Recommended Course of Action lays out four Goals for the solid waste program:

Goal 1. Provide safe, convenient, and valuable curbside collection of MSW to residents of single-family homes

Goal 2. Provide a comprehensive and convenient program for diverting recoverable and toxic materials from disposal as garbage

Goal 3. Provide safe and environmentally-sound discard and disposal capacity for the Town's residents and small businesses

Goal 4. Programmatically support the Town sustainability goals and the State recycling goals

The Objectives and Actions to fulfill these goals include re-procurement of expiring service contracts, including initial details for procuring the collection and processing services. It lays out a framework for the outreach and education program. There are several ideas of varying intensity to improve operations and efficiency at the Transfer Station. Finally, there are programmatic actions to support and comply with the Towns and the State of Connecticut's waste management ambitions.

1.3 Next Steps

To maintain the Town's current level of service, Branford needs to take immediate action to issue one or more RFPs to replace the services which are expiring. The Town is recommended to engage the assistance of a firm experienced with writing, issuing, and evaluating solid waste procurements of this type and complexity and able to draw on past work and professional knowledge in order to accomplish the task quickly and accurately.

Other of the Actions will also benefit from outside professional services, such as support writing the technical and commercial RFP specifications, a safety and structural inspection of the Transfer Station, and the creation of a detailed outreach plan by a communications specialist. Internally, the Town will need an interagency team to determine how the Downtown litter bins should be serviced and to install a Manager at the Transfer Station. The sample timelines in the Recommended Course of Action include dates for several of those Actions; however, they can be adjusted to suit the Town's needs.

There is also room for growth in the Recommended Course of Action for Actions to be added. New innovations, programs, accepted materials, events, or partners can be added readily within the existing Goal-Objective-Action structure. They might take the form of new Objectives for the existing goals or additional Actions for an existing Objective. The month-by-month timelines also allow for adjustments to real-world developments without losing the relationship between the Actions. In the years to come, the Town can adapt details while keeping its overall outlook and intentions.

2 REVIEW AND ANALYSIS OF CURRENT SYSTEM

2.1 Residential Collection

2.1.1 Garbage and Recycling Collection and Set-out Methods

The Town contracts with one collector for residential trash and recyclables collection on-shore. Garbage is collected once-weekly. Material is set-out in customer-supplied containers or bags. This is appropriate and most of the customers RRT spot-checked were using a 23- or 32-gallon barrel or similar (such as the "Roughneck" brand). Residents may set out unlimited amounts of material, with no restrictions on the number of bags or cans allowed at a time. This means that the once-weekly collection provides a sufficient level of service. The use of customer-supplied containers also avoids the costs and operations associated with the Town owning and maintaining a fleet of rolling carts (either directly or through vendor payments). Residents sometimes do not like having a cart because of the size. Carts can be more difficult to store when not in use, and some individuals, with mobility issues, can struggle with using a cart. However, the use of rolling carts and emptying them using a lift on the collection truck is safer for collection workers than is manual collection (free-lifting bags and emptying cans by hand). For this reason, if in the future the Town were open to consideration of a cart-based collection system for garbage and recycling, waste management companies would possibly be more receptive to proposing.

Recyclables are also collected once-weekly, on the same day as garbage. This is a best practice and should be continued in the future. The Town's program was originally designed for recyclables to be collected in three streams: bundled cardboard, mixed paper (in a customer-provided bag or bundle), and containers (loose in a Town-provided bin). Although no longer technologically necessary with the advent of single-stream processing capacity in the region, the Town wanted to maintain its three-stream program in order to maximize purity and commodity value.

As designed and procured, the collector was to utilize a three-compartment collection vehicle, so that only one pass[1] would be required. In the interim, the contractor made its case to the Town that three-compartment vehicles were exceptionally expensive to maintain, repair, and replace. RRT does not know the particulars of the vendor's fleet; however, industry knowledge holds that three-compartment trucks are uncommon today and can be more mechanically complicated than rear-loading trucks with fewer compartments. During the course of the current contract term, verbal agreements between the Town and the collector have resulted in all fibers being collected as one stream (as opposed to separately), and the collector currently uses a dual-compartment collection vehicle to complete the collection work.

RRT recommends that the dual stream method can be successful and, with appropriate processing contracts, the impact of no longer having a cardboard-only stream from the curb would be acceptable. Mixed paper in one bin and mixed containers in another is intuitive to residents and a common practice in dual stream systems. Based on spot-checking, Branford residents appear to do an above-average job at putting only program materials in their recycling bins. Very little incidence of bagged materials or non-recyclable items was observed. More often, residents commingled paper and containers, which does not necessarily contaminate their recyclability but is improper preparation. Oftentimes, residents make this mistake because they are unaware of the dual stream program or mistakenly believe it will be sorted back out at some point. Some may have previously lived in other communities where there was single stream recycling, and they continued that habit. Regardless of the

Based on spot-checking, Branford residents appear to do an above-average job at putting only program materials in their recycling bins.

[1] A "pass" indicates the collection truck passing in front of a collection point. Without multi-compartment vehicles, recycling programs of two or more streams require multiple passes to collect each material type.

reason, the dedication that Branford residents show to recycling supports the assertion that with education and information, they can comply with a dual stream program.

There is a method of collecting in a dual-stream program wherein the mixed paper and the bottles and cans are collected on alternating weeks—i.e., each material type is collected every-other-week. As a result, residents need to store slightly more material at a time than the current method, but it nearly eliminates mixing of the two streams and facilitates the use of single-compartment trucks. While this might broaden a future procurement response for the next operating contract, it would require a major change in the customer experience for residents, however, and as described above, they generally participate in the program very well. If the alternate week method were adopted, the Town might want to offer for sale optional rolling carts to residents who want or need the storage capacity for their recyclables. It would be a one-time purchase, and the carts and their care would be the responsibility of the residents.

2.1.2 Customer Service Issues

The current collector was the only respondent to the Town's most recent procurement. Town staff report experiencing many challenges, including mixing (both of trash with recyclables and of the two recycling streams with each other), missed collections of entire streets, poor communication with the Town, motor vehicle accidents, and staffing shortages. These are contract management / contractor performance evaluation issues that are unnecessary and unacceptable. Changes in future procurement, selection, and contract management can improve the experience for all involved. The issues are described in greater detail in the following passage and in Attachment A.

During the Town's current collection contract, residents have observed and recorded video of the collector mixing recyclables and trash into the same vehicle. Town staff noted that twenty or thirty calls come in each day about mixing. There are also "misses" called in each day, and they are often for entire streets. This is an important distinction, as industry knowledge generally holds that while many single-house "misses" are actually late set-outs by the customer, a set of customers being missed is an indication of poor contractor performance. The deduction sheets, showing financial penalties the Town assesses for unacceptable contractor performance, show frequent "whole street" misses, material that never got collected until the next week, and other chronic problems.

While mixing calls and other complaints come in during the day when customers observe collection operations, calls about misses more typically come into the Town when a resident arrives home at the end of their workday and finds their set-out has not been collected. These calls generally take place after 3:30 p.m., when the Town's Customer Service Representative (CSR) has already left for the day. When the CSR reports for work at 6:45 a.m. the following day., the Town complaint call response process begins with returning the calls received in the interim to verify the issue(s); however, Town internal processes cannot complete the relay of information about misses, or any other needs, to the contractor until several hours later because the workday for the collector's CSR does not begin until 9:30 or 10:00 a.m. This poor communication link between the residents, the Town, and the contractor results in frustration for all and unsatisfactory customer service.

During the course of the project, RRT directly observed workers on the recycling truck sorting materials at the curb—for example, if a resident put a paper bag of fiber in their bin of containers, the collection staff would separate those into the two compartments of the truck. Collection staff were observed performing their tasks, consistent with the service contract, but RRT's observations must be tempered by the fact that the collection staff knew in advance they were being observed and RRT was in plain sight during the observations. For this reason, RRT did not observe any mixing behavior. Nonetheless, RRT's field observations are valuable as a "what if" exercise—i.e., what if the contractor were doing exactly what it is expected to do? One result is that the routes were running very slowly; stops at each household were routinely more than one minute each, even with two laborers. When stops are excessively long, the routes take more time than necessary and fewer stops can be completed in a given time frame. If set-outs were improved, collection staff could work more quickly and stops could be shorter. Commingling would also be reduced. Additionally, workers reaching into bins to sort material is a risk to their personal safety. It would be preferable if they rarely, if ever, performed this activity.

The responsibility for slow routes does not lie solely with the customer, however. The pace of work RRT observed was much slower than we typically see. How an employee feels about and performs their tasks is a complex situation which should not be oversimplified; however, it was our observation that urgency of purpose of absent.

Although RRT was in the field to observe recycling collections, we also observed garbage cans returned to the curb in an unacceptable manner on most routes. Cans were left in the street, thrown into yards, and lying on their sides, as shown in Figure 1. On the days of observation, there was no environmental effect requiring or causing this (e.g., high winds). Town staff confirmed that this is typical performance. In RRT's professional opinion, this is unnecessary and unacceptable, and proper return should be stipulated in future contracts.

Figure 1: Emptied garbage cans in the street and upside down

Our understanding is that routing of the contractor's collection efforts is unclear, and the methodology is not shared with the Town. The Town provides the collector with a streets list and tells them which houses to collect on which day. As reported to RRT by the Town, updating and re-sending this list consumes a considerable amount of the CSR's time. The CSR also spends a lot of time learning from the collector which drivers are working and how they are doing so that she can update customers. This work should not be performed by the Town and should be the responsibility of the collector as part of their contract obligations. It should be the responsibility of the collector to comply with the contract and update the Town, not the reverse, and this should be properly articulated in the Town's next collection RFP and contract. While most collection routes can usually benefit from computerized efficiency and regular review, RRT believes that the inability of the contractor to complete routes in a satisfactory manner and length of time is as much a factor of the lengthy stops and chronic labor issues as may be inefficient routing or unproductive off-route driving.

Overall, it is RRT's finding that the Town's current collection contractor's performance for onshore customers is below acceptable. As a result, the Town submits thousands of dollars each month as penalties for failing to perform.

Customers located on the Thimble Islands are served by a separate contract with a ferry company. Their set-out requirements are not dissimilar from the curbside customers. RRT did not have the opportunity to make observations on the Thimble Islands; however, during our review, the Town expressed no issues with that service, the vendor, or its performance.

2.1.3 Mixing and Contaminated Loads

The RRT team followed contractor's collection staff on the recycling collection routes over two days. The following observations were made:

- RRT spot-checked approximately 70 set-outs and observed moderate to minor contamination. There was very little incidence of plastic film, dirty/full containers, or other non-program materials. The bin shown in Figure 2 shows what was, subjectively, the "worst" set-out observed because it has a salad container with food still in it and film overwrap from bottled water. This level of contamination can be managed by a modern MRF; however, the material is improperly prepared, because it has paper commingled with containers.

Figure 2: A curbside set-out with non-program materials

- Many customers—subjectively observed as half—set out fiber commingled with containers, which is improper preparation. Figure 3 shows another example of such a set-out. Commonly, customers have fiber in a paper bag which they then set in a recycling bin with loose containers. This results in two possibilities at the time of collection: these materials are collected as single-stream, which is inherently "contamination" at the Town's contracted recycling processor OR the collector's staff sorts the material into the two compartments of the collection vehicle. Both of these possibilities cost time and money and are a detriment to the Town's recycling efforts.

Figure 3: A curbside set out with fiber and containers commingled

The loads of recyclables delivered by the Town to its recycling processor have frequently been identified as "contaminated." (This issue is discussed at greater length in Section 2.3, as it is also a function of the processing contract.) The processing contracts require a paper stream and a containers stream, and allow for no more than 5% of contamination, or improper materials, in either. Because these loads combine the material collected at the curb, on the Thimble Islands, from Town dumpsters, and material that customers drop off at the transfer station, the source of the contamination could be occurring at multiple locations. For example:

- Improper preparation by residents;
- Mixing at the curb by the collector; or,
- Mixing at the Transfer Station by the collector and/or by customers.

RRT made observations at all three of these points. As described previously, the spot-checking at the curb revealed mild to moderate occurrence of improperly prepared or non-program materials. As mentioned, the behavior of the Town's contractor could not be properly observed, so we take at face value statements by Town staff and residents that there is some mixing of the recyclables streams occurring during collection.[2]

The issue of loads being labeled "contaminated" by the Town's recycling processor lies primarily with the processing contract language and not with the behavior of the generators or the collection contractor

At the transfer station, RRT observed that the material in the pits did not look exceptionally contaminated by our estimation. There does not appear to be any major motivation for the contractor to tip materials improperly except for a minimal time savings if a driver tipped both compartments into one pit. If that were occurring, we would have expected that staff would mention it (and correct the issue), or to have seen large-scale contamination in the pits. Similarly, our expectation that residents, or small businesses, would put paper in the containers pit or vice versa is low. These are individuals who went out of their way to recycle when there almost certainly was an easier way to be rid of the material—i.e., the act of being there demonstrates their investment in recycling correctly. There are times, certainly, when an individual or the collector mistakenly tips incorrectly; however, this is simple human error.

Overall, RRT finds, based on our visual observations, that mild to moderate contamination occurs all along the discard chain, which is typical of any community, and that the loads that leave the Transfer Station to be processed do not appear excessively contaminated. This should not be interpreted as conveying that

[2] The term "mixing" is also used throughout this document to refer to improperly mixing source-separated recyclables and garbage. That type of mixing is mostly a customer service issue, with the secondary issue of negating environmental protection efforts. In this passage, the discussion is about mixing fiber and containers, which is both a customer service issue and, moreover, an economic problem for the success of the recycling program. No assertion of mixing trash into recycling was made during our observations.

the materials met the specifications of the contracts to be less than 5% contamination. It means only that compared to other communities where we observe a high prevalence of bagged material, non-program materials, and other issues, the material we observed in Branford was of above-average quality and could be readily processed by a modern MRF with acceptable results. Therefore, the issue of loads being labeled "contaminated" by the Town's recycling processor lies primarily with the processing contract language and not with the behavior of the generators or the collection contractor. These contracts and the need to administrate them are discussed more in Section 2.3.

2.1.4 Opportunities for improvement

RRT finds the following opportunities for improvement which can translate into actions for the Town:

- The Town can expect better service and better value for the expenditures by re-procuring the residential curbside collection service. In doing so, the following changes to the procurement document, and subsequent Town contract management efforts, can help improve the outcome:
    - Procure dual-stream collection of recyclables.
    - Remove service of downtown litter bins from the curbside collection contract. This service is more appropriately performed by Town employees or via a janitorial contract and could dissuade potential bidders from pursuing the curbside collection contract.
    - Remove seasonal leaf collection from the curbside collection contract. This service can be procured separately; if either/both bagged or vacuum collection are allowed, a wider variety of firms (such as landscapers) can respond. Alternatively, the Town could perform this work with staff and/or temporary labor using vacuum trucks and other landscaping equipment.
    - Allow proposals that provide a different format for collection than the present, such as using rolling carts for garbage, collecting recyclables as single stream, or using a cart for recyclables. This will let the Town better evaluate these as options. While any of these changes represents a culture change for customers, many solid waste collectors shy away from manual collection, which can limit the proposals the Town receives.
- Procure the collection of the front-end loading (FEL) garbage and recycling containers ("dumpsters") separately. The requirement of the current curbside contract limits respondents to firms which have three types of trucks (single-compartment for garbage, dual-compartment for recycling, and an FEL truck). The fewer barriers to bidding on the Town's curbside procurement that are in place, the better the results should be.
- Going forward, in a dual stream system the use of recycling bins in two colors—one color for fiber (paper) and another color for containers—will reinforce to customers the need to keep them separate. The Town might poll residents about how they like and use the bins. Depending on the results, the Town might choose to buy bins in a different size or style than the current bins (or consider rolling carts).
- Renewed and ongoing education is important to prevent residents from commingling containers and fiber to the greatest extent possible. The Earth Matters flyer is attractive, succinct, and informative; however, once-yearly communications are insufficient and not best practice. Better use could also be made of the Town web site. A per-household expenditure of $4.00 per year or more is appropriate.
- The Town has a program to sticker and leave behind improper set-outs; however, the implementation and efficacy of this program should be evaluated and then integrated into the procurement for collection in order to make it inherent to the service and to empower the collector to utilize it.

2.1.5 A note about Self-performance of Curbside Collection

RRT was asked to examine the feasibility and possible costs of the Town building a new waste collection business, rather than continuing to procure the service from the private sector. In summary, we do not expect that the Town could realize significant savings, and the associated operational challenges are likely to be burdensome.

By the Town's own estimation, the curbside collection aspect of the current contract costs approximately $108.85 per unit, or about $931,000 annually. This is the amount that was rebated to condominium residents for FY 21-22. If the Town would have performed curbside collection itself, RRT estimates that in the FY2021, the Town's cost would be approximately $200 per unit, or about $1.76 million annually.[3]

Our projection, however, did not include the Town performing collection of the garbage and recycling dumpsters. There are not enough locations within the Town to fully utilize an FEL truck, and the capital costs of buying dumpsters would be exorbitant. If the Town were to pursue self-performance, the dumpsters and their service should still be contracted to a private company.

We do not expect that the Town could realize significant savings [with self-performance], and the associated operational challenges are likely to be burdensome.

RRT finds that the Town would face external factors making the execution of curbside collection much more difficult than it would be for a private collector—namely, labor supply issues and organizational challenges. Public agencies often need to "overstaff" as compared to private sector companies. This is a function of employment conditions such as leave policies, union agreements, etc. In addition, unlike private companies, public agencies cannot pay signing and retention bonuses. Furthermore, driver shortages which existed before the COVID-19 pandemic have been further exacerbated in all sectors. Unskilled laborers have demonstrated resistance to working around vectors such as waste and recyclables, and the labor pool from which waste work typically draws has been disproportionately affected by the pandemic. We would expect staffing the collection operation to be exceedingly—if not prohibitively—difficult.

It bears noting that the Town currently enjoys pricing for curbside collection that is well below the current market rates. RRT would expect that the next procurement will see a marked increase. This lends additional support to making the changes described herein to make the forthcoming procurement more attractive to bidders and therefore more competitive.

2.2 Customer Facilities

2.2.1 Review of Current System

The Town owns and operates a Transfer Station that is open to residents, businesses (contractors), and the Town's curbside collector. Few, if any, other collectors ever deliver material to the Town's facility—they probably go straight to their own facilities or to Covanta. The Town's Transfer Station is popular with residents, many of whom come several times per week even though they all have collection at their homes. Small businesses and contractors tip regularly. Heavy vehicle traffic primarily consists of Sweitzer (the Town's collector), contractors, and condominium services, in addition to the Town's loader operating.

The main building has six bays, numbered left to right, as shown and noted below.

[3] These figures were slightly revised since the interim report in December 2021 to reflect new information.

Bay 1	Bay 2	Bay 3	Bay 4	Bay 5 & Bay 6
Cardboard Compactor	Containers open-top	Mixed Paper open-top	CDD-type material	MSW
				
Open-mouth compactor; tip-bin next to it for Styrofoam and plastic wrap which customers often bring along with large cardboard	No fall bar / safety retaining barrier; customers with tipping trucks walk on the wall to open their gates.	No fall bar / safety retaining barrier; customers with tipping trucks walk on the wall to open their gates. This material is almost always labeled contaminated or trash at MRF.	No fall bar / safety retaining barrier; mostly wood and windows; supposed to be only for residents but suspected abuse by contractors	No fall bar / safety retaining barrier; floor is very dirty and slippery, observed no application of water to control dust and clean the floor; floor is damaged down to rebar; lip of the pit is damaged; residents, heavy trucks, and loader all in the bay together

Contractors and collectors pay per ton and practically all have tare weights, so they almost never weigh out. Residents use the transfer station without paying any fees. They are required to display their “Town sticker” which costs $5 for 2 years (essentially an administrative fee) and doubles as their “Beach sticker” to access the Town beaches. For this reason, nearly every resident has this sticker. The staff on the window is supposed to verify the sticker but RRT observed many residents entering with just a wave or, on occasion, the window was unmonitored and the resident paused, looked, and then went on in.

The Transfer Station is staffed by Town employees, and staffing is problematic at the facility. There are three employees and there are three assignments (positions); however, but because it is a 6-day facility, they are not all there at the same time. (Put another way, there are 18 shifts per week to fill but only 15 shifts per week available from the 3 employees.) Staffing has to be supplemented by “sending over” employees from the Department of Public Works (DPW), usually from Highways. Sometimes these individuals are operators, sometimes they float around the Transfer Station doing whatever is at hand. These individuals expressed clearly that they do not like when they get rotated over to the Transfer Station.

There is no manager, foreperson, or superintendent on site. The 3 full-time Transfer Station employees rotate as “team leader” on a weekly basis. There is a pay bump for them during those weeks, but the assignment to Team Leader obligates that person to be “on the window” (scale operator), which is not a favored position as it was expressed to RRT during our program review.

Although an assessment of the building is not in the scope of this project, RRT noted that the building is in poor condition. In 2019, the Town’s building engineer thoroughly inspected and commented on the building, noting which cost centers should pay for each item. At that time, the estimated cost to remediate the building was in excess of $350,000.

It is incumbent upon RRT to note safety concerns that were observed. Commercial and residential customer traffic is intermingled, which is a detriment of overall safety. There were many points in time when no Town

employee was observed on the floor, and when they were, they did not appear to be engaged in monitoring safety, spotting for the loader, or directing traffic effectively. Residents were often observed stopping to tip MSW and/or recyclables and then crossing the active lane of traffic on foot to put items in the scrap metal pile, motor oil hut, or electronics hut. Multiple incidents of customer cars and the loader backing toward each other were observed. It was reported that "picking," or scavenging, in the waste is a chronic problem.

Fall protection could be greatly improved as all the dump pits are at floor level. Signage is lacking, and most of what is present is either soiled or obscured. There is almost no direction of traffic on the site.

2.2.2 Opportunities for improvement

There are four primary, impactful things the Town could do to improve operations, customer experience, and safety at the Transfer Station.

1. Immediately remediate safety issues such as signage, fall protection, spotting, and directing traffic;
2. Immediately begin drafting plans to segregate residential traffic from truck traffic as soon as it can be safely accomplished;
3. As soon as possible, install a manager at the facility to provide leadership, stability, planning, and accountability; and,
4. Begin the capital improvement process to initialize the improvements and repairs the Town building engineer noted in FY2023.

Creation of a residential convenience center separate from commercial operations could address several of these while providing greater safety, convenience, and operational improvement. For more details about ways this could be accomplished, see Page 29 in this document.

For the commercial traffic, automation of the scale could free up human resources to focus on other matters. Because most of the scale customers having stored tare weights, there is an opportunity to automate the scale process. There would be a capital cost associated with this improvement; however, it would allow the staff resources currently facing the window to be stationed on the operational side of the office building and performing duties such as spotting, cleaning, customer service, and/or administrative responsibilities, even under the Team Leader rotation system.

If a permanent manager were installed/identified at the Transfer Station, the Town could experience more stability and improved operations at the facility. With a clear voice of authority, some of the dissatisfaction that employees shared could be addressed consistently and beneficially. Furthermore, an invested manager could address operational inefficiencies, safety issues, and future planning needs. For example, the loader pushes with a frequency that is generally excessive in relation to the amount of material it moves with each push. This has likely become the practice at the Transfer Station due to the presence of residents on the tipping floor: the loader pushes as often as practical to keep waste away from residents. The result, however, is excessive wear on the floor and increased maintenance requirements for the loader. Each push costs money because it consumes fuel, wears the tires, puts hours on the machine, etc. Segregating residential traffic will reduce the perceived need to clear the floor constantly; however, leadership from a facility manager is also needed, to coach the operators on how often to push waste, and why.

2.3 Recyclables Markets

2.3.1 Review of Current System

Currently, the Town collects recyclable materials from the curb, from the Thimble Islands, from Town dumpsters, and from drop off customers at

the Transfer Station. The material is delivered in three streams of recyclables to three different Material Recovery Facilities (MRFs). Each stream is delivered via its own contract, but all are held and operated by All American Waste (although some are under other d/b/a names). The materials and their MRFs are:

- Bottles and cans go to the location in Berlin. This is a single stream MRF, and the material is supposed to be 95% pure or better.
- Mixed paper goes to the location in Bridgeport. This is a MRF for clean commercial material, and it is supposed to be 95% pure or better.
- Cardboard goes to the location in New Haven. This is a MRF for very clean commercial material, and it is supposed to be 95% pure or better.

RRT spent a great deal of time reviewing these contracts and the available data associated with their performance over the eight quarters in FY2020 and FY2021. Our findings are as follows:

- The term “5% contamination” in the contracts is not identified as being by volume or by weight, and the actual quality of the material being delivered is never verified with auditing (either by the Town or by the processing facility).
- The contracts regarding the mixed paper and the commingled containers are impractically restrictive. Expecting 95% purity from residential material that is double-handled (through the Transfer Station) and combined with drop-off material is inconsistent with industry experience.
- The contract for cardboard also requires 95% purity. Again, expecting this from residential material that is double-handled and combined with drop-off is inconsistent with industry practice. Since January 2021, the curbside cardboard is now being commingled with mixed paper in residential collections, as discussed in Section 2.1. This means that the cardboard being delivered to New Haven is from the compactor at the Transfer Station and a few dedicated Town cardboard dumpsters.
- The contracts lack essential features that protect both parties. There is no specificity in how loads will be evaluated for contamination; there is no contractual mechanism for the Town to contest the identification of a particular load as contaminated; and, there is no ability to conduct spot-auditing of the delivered material.
- The contracts have not been administrated properly by the Town, at least not for the past two years. The inconsistency in charges, the revision of invoices, and the use of verbal agreements are not best practice.
- During the time period RRT examined (July 2019 through June 2021), the processor changed the commodity codes used for the curbside material (and thereby, the rates it used in its invoicing to the Town) after complaints from the Town. This is not appropriate.
    - Prior to January 2021, bottles and cans were being invoiced as either “contaminated” at $95 per ton or “single stream recycling” at $75 per ton. Even loads identified as having 0% contamination—which were very few—were charged $75 per ton and not the $30 rate described in the contract. Beginning in January 2021, the code used to invoice bottles and cans was changed to “commingled,” which carried the $30 rate in the contract, and there was an increased incidence of “100%” perfect loads.
    - Prior to April 2020, every load of paper was coded as 100% contaminated and charged at the penalty rate of $95. Suddenly, in April 2020 and continuing for about eight months, nearly every load of paper was 100% pure and invoiced using the code “single stream recycling,” which is $75 per ton. Beginning in January 2021, however, nearly zero loads were acceptable and were charged at the penalty rate.
- In early 2021, during the same time as the above changes, the processor of the cardboard began flagging many more loads than previously as “contaminated” and charging the penalty rate. When the Town complained, the processor said they had to be more stringent due to rising commodity values for cardboard related to increased demand in the marketplace. It is true that commodity prices for cardboard were exceptionally high in 2021 (see Section 2.3.2); however, industry practice shows that rising demand is usually associated with somewhat relaxed standards, not stricter. The Town began protesting the invoices and a verbal

agreement was reached that the Town would pay the single stream rate of $75 per ton on loads that were deemed 95% pure or less. This extra-contractual negotiation is inappropriate.

Besides the processing contracts for curbside and drop-off recyclables, the Town provides the opportunity for residents to divert a variety of materials from disposal. These include mattresses, scrap metal, electronics, automotive fluids and batteries, and food scraps. Combined with the services at HazCentral, this is a comprehensive set of services that is easy to access and understand. The only issue that was discussed with regard to these materials was the mattresses. Over time, the mattresses have not been packed as densely into the container in which they are collected as in previous years. This results in less efficient operations for the collector. The leadership an onsite manager could provide, as discussed in Section 2.2, could help address this matter.

2.3.2 Recycling Markets in the Northeastern United States – 2021

Over the second half of 2021, the prices of commodities skyrocketed to levels that are practically unknown in the industry. Pricing for waste paper was at five-year highs, and for cardboard it was at ten-year highs. This has been documented in industry trade reports and has been monitored closely by RRT.

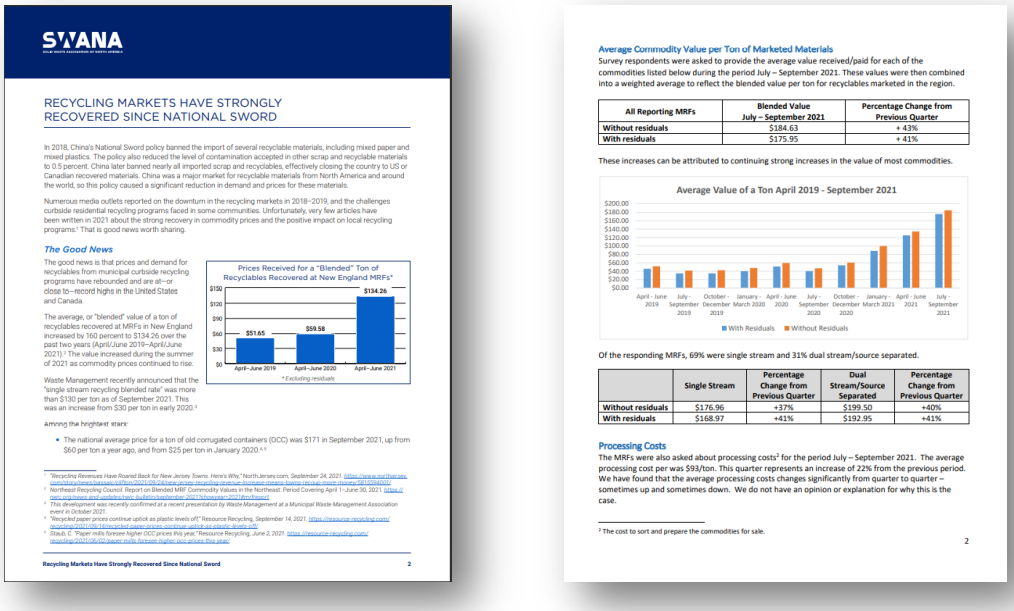


Figure 4: Recent Publications from the Solid Waste Association of North America and the Northeast Recycling Council

Supply chain shortages during the COVID-19 pandemic have driven demand for recovered materials. There is strong demand for fiber in order to make packaging. Mills are operating at full capacities. Because China's National Sword policy bans the import of waste paper from the U.S., the paper is increasingly sorted and pulped domestically and then the pulp is exported. This creates more demand for waste paper to be pulped. Cardboard is similarly affected, but much of it is also exported.

This pricing, of course, is not stable and should not be considered a "new normal." The complex interactions of supply and demand are not stable. While "supply" of waste paper from MRFs to mills can react somewhat to demand, ultimately the source of waste paper is generators, and the amount of paper being separated for recycling generally does not flex to meet increased demand.

Aluminum, the value of which plummeted in recent years, is rebounding strongly. This is fueled by decreased production of primary aluminum, direct outcomes of policy and political issues in two of the globe's largest players: bauxite producers in Guinea, and finished aluminum producers in China. Imports

are also bottlenecking at points of entry, driving up domestic demand for recovered aluminum. Steel demand and production are in a mutually beneficial balance.

Pricing and demand for recovered plastics are both seasonal and consumer-driven: think of beverage containers and household textiles like carpet. Plastic is more variable than the other commodities but currently strong.

2.3.3 Influence of Waste-to-Energy

Because the entire state of Connecticut is facing an imminent Municipal Solid Waste (MSW) disposal crisis, it is important for the Town of Branford—indeed, all of the municipalities in Connecticut—to do two things:

- Divert as much material as possible from disposal, and do so as cost-efficiently as possible.
- Support the Covanta Bristol consortium by diverting particular materials which negatively impact the operations of the waste-to-energy plants.

These activities will help both Branford and the entire consortium (along with the current MIRA customers). If a time should come when capacity at the Bristol and Preston plants are limited and Branford needs to seek other options, it will be an asset to already have a robust program of disposal diversion in place.

Beyond recycling, Covanta is currently directing Branford to its Preston plant, which is farther away than Bristol. Covanta is offering a reduced tipping fee in exchange for the inconvenience.

2.3.4 Opportunities for improvement

In solid waste management, the incidence of loads of delivered recyclables being flagged as “contaminated” is often used as a proxy for the quality of the recyclables and the participation in the program. Although RRT had access to many data records, the inconsistency of the contract administration, describe above, makes it improper to use the data to evaluate recycling participation.

Instead, we performed a what-if estimation of the financial impact of these contracts on the Town. The question we asked was, “What if loads deemed 95% of the target commodity had been charged at the rates in the contracts?” The analysis looked at each load of material. If it was listed on the invoices as being 95% of the target commodity and 5% contamination, regardless of the commodity code assigned to it during invoicing, we keyed those tons as “acceptable” and priced them at the tipping fee provided for in the contract. For bottles and cans, that was $30, and for mixed paper that was $0. If a load was deemed less than 95% acceptable (most common was 90% of the target commodity and 10% contaminated) those tons were keyed at the penalty rate of $95 per ton. The finding is that over the past 2 years, the Town paid about $114 per ton to recycle bottles and cans and about $111 per ton to recycle mixed paper. Due to contract administration regularities, that is overpayment of about $50 per ton for processing bottles and cans and about $60 more per ton for paper processing. Table 1 and Table 2 illustrate this information on a quarterly basis for the time period examined.

Table 1: Quarterly Costs for Processing Bottles and Cans at Berlin, As invoiced and As projected
"As projected" means if loads identified as "5% Contamination" had been charged at the contract rate

Quarter	Tons identified as ≥95% purity	Tons identified as <95% purity	Processing Costs as Invoiced	Processing costs as projected	Difference between As invoiced and As projected	**Average** Cost per ton[4] **As Invoiced**	**Average Cost Per Ton**[2] as projected	Difference between As invoiced and As projected
Q3-2019	52.67	148.11	$18,272.30	$6,626.45	$11,645.85	$129.06	$70.65	$58.41
Q4-2019	125.66	76.73	$18,059.45	$6,441.30	$11,618.15	$128.48	$70.96	$57.52
Q1-2020	134.64	50.58	$16,892.71	$5,688.35	$11,204.36	$134.31	$73.76	$60.54
Q2-2020	146.95	89.77	$22,115.00	$7,438.90	$14,676.10	$135.50	$73.68	$61.82
Q3-2020	202.06	21.09	$20,452.45	$6,460.90	$13,991.55	$132.69	$70.11	$62.58
Q4-2020	217.35	27.49	$22,782.30	$7,147.35	$15,634.95	$130.19	$66.20	$63.99
Q1-2021	197.47	10.49	$12,917.05	$6,100.80	$6,816.25	$102.20	$70.76	$31.44
Q2-2021	165.13	18.93	$8,095.50	$5,611.80	$2,483.70	$86.78	$72.40	$14.38

Table 2: Quarterly Costs for Processing Newspaper (mixed paper) at Bridgeport, As invoiced and As projected
"As projected" means if loads identified as "5% Contamination" had been charged at the contract rate

Quarter	Tons identified as ≥95% purity	Tons identified as <95% purity	Processing Costs as Invoiced	Processing costs as projected	Difference between As invoiced and As projected	**Average** Cost per ton[5] **As Invoiced**	**Average Cost Per Ton**[3] as projected	Difference between As invoiced and As projected
Q3-2019	0	217.56	$21,454.80	$2,145.48	$19,309.32	$118.54	$33.04	$85.50
Q4-2019	0	242.46	$23,033.70	$2,303.37	$20,730.33	$116.34	$30.84	$85.50
Q1-2020	0	198.47	$18,854.65	$1,885.47	$16,969.19	$118.12	$32.62	$85.50
Q2-2020	205.61	6.68	$16,492.15	$1,187.31	$15,304.84	$104.02	$32.23	$71.78
Q3-2020	188.35	0	$14,126.25	$1,789.33	$12,336.93	$100.15	$34.65	$65.50
Q4-2020	183.63	0	$13,772.25	$1,744.49	$12,027.77	$99.30	$33.80	$65.50
Q1-2021	60.72	113.44	$15,330.80	$10,776.80	$4,554.00	$116.55	$95.24	$21.31
Q2-2021	6.38	184.41	$17,997.45	$17,518.95	$478.50	$122.17	$119.67	$2.50

The imprecise language in the Town's current contracts makes it debatable whether a load identified as being "95%" of the target commodity is acceptable, since the stipulation is "less than 5% contaminated materials/residual waste." This means in addition to the excessive costs shown above, the Town was not able to receive the rebate on the loads of mixed paper identified as "5% contaminated."

The shortcomings of the Town's current contracts, as described in Section 2.3.1, combined with the strong demand for commodities in Section 2.3.2, make the present an excellent opportunity for the Town to re-

[4] This value has had the cost of hauling figured in.

[5] This value has had the cost of hauling figured in.

procure processing and collection services. Sometimes, a relatively small amount of material such as the Town generates might have trouble demanding pricing that rewards its efforts. The current market forces should help with that, along with better terms and conditions. The following is a list of contract features RRT recommends adding to future contracts. These are all common practice in the industry.

- Greater specification and definition of terms such as contaminants, residue, etc. This would include consideration that contamination with non-program materials (i.e., paper in a load of commingled containers and vice versa) is different than contamination with non-recyclable and non-processible materials.
- A prescribed function for the Town to observe any loads flagged as “contaminated” before they are processed.
- Detailed description of how communication is to flow between the Town and the processor.
- More realistic expectations for allowed contamination levels—10% to 15% would be appropriate.
- Provision for at least one annual audit to verify the results of how the Town’s material is processed by the MRF.
- Procurement of the fiber material as PS 54 Mixed Paper and the bottles and cans as either commingled containers or single stream (which will provide an allowance for the inevitable paper and cardboard cross-contamination).
- The Town has two options for the cardboard. The first is procurement of processing of the compacted and loose cardboard as PS 11 Corrugated Containers, as it does now. The second is the bale cardboard and market those bales directly to fiber brokers as do grocery stores, retailers, etc. This would require an investment by the Town in a baler and the operation thereof at the Transfer Station.

When procuring processing services, the Town should seek a shared-risk contract, also known as a blended value model. In this model, the following takes place:

1. The composition of the Town’s recyclables is established via an audit or other verifiable process.
2. Publicly-available market indices are used to calculate the blended value of any given ton of the recyclables. For example, if the recyclables collected consist of 24% PET, then 24% of the value of any random ton of the recyclables delivered to the MRF comes from the price for the PET. Contamination is calculated at a negative value, and although glass can have some recoverable value, it is also generally calculated at the same negative value as trash.
3. The blended value of the ton is set for a given period, usually each month when new pricing is published.
4. With the blended value for the ton of recyclables calculated, the Town is allocated a revenue share. Common revenue share amounts in the U.S. range from 60% to 80%. This means, that if the blended value for a ton of recyclables was calculated to be $100, in a 60% revenue share the Town would earn $60 per ton for acceptable loads of recyclables. In some contracts, there is a “ceiling” on how much the revenue dollar amount can be, regardless of commodity pricing, and in some there is a “floor” that it cannot go below.
5. Applied against the revenue sharing, the Town pays a set per ton processing fee. This value is intended to fund the fixed costs. This is what the proposers “bid.” The processing fee is usually adjusted on an annual basis using a consumer price index, but it is always the same for every ton.
6. When the Town’s established revenue share amount equals or exceeds the per-ton processing fee, the Town will receive a payment or rebate for each ton it delivers which meets the quality specifications in the contract. This will be influenced by both markets and how many contaminated loads the Town delivers. Contaminated loads that can be processed might be charged at the regular price, but no revenue share paid; loads that cannot be processed due to prohibitive amounts of contamination are usually charged at a “disposal” rate which includes transportation to a landfill or WTE facility. What this means is robust contract management is, and will be, required by the Town.

RRT did a "what-if" analysis to evaluate how the Town's recycling costs might have fared using a properly administrated, shared-risk/shared-reward contract. We used the following parameters:

- Recyclables composition data collected in December 2020 by RRT in Rockland County, NY. Rockland County collects curbside recyclables dual-stream.
- Commodity pricing data from Q3 2020, Q4 2020, Q1 2021, and Q2 2021. We excluded the pricing from Q3 2021 due to the exceptionally high prices described in Section 2.3.2.
- Per-ton disposal pricing of $95 per ton and per-ton trucking prices of $40. These values are based on the average per-ton prices in the Town's current processing and hauling contracts.
- Per-ton processing charges based on our experience in the New England, Northeast, and Mid-Atlantic regions.
- Because the blended value formula "allows" for contamination of a certain level, penalty rates are rarely charged and considered negligible—especially for the quality of material RRT observed in Branford.

The result of the what-if analysis projected that at the times during which the Town was paying about $114 per ton to recycle bottles and cans and about $111 per ton to recycle mixed paper, as described in Section 2.3.1, it might have been paying less than $10 per ton to recycle bottles and cans and about $108 to recycle mixed paper under a well-administrated shared-risk contract. Table 3 and Table 4, below, show how the blended value of one ton of recyclables is determined, revenue sharing is calculated, processing fees are applied, net costs/revenues for the Town are realized.

Table 3: Sample Pricing Model for Bottles and Cans in a Shared-Risk Recyclables Processing Contract[6]

Material	FY 2021 Value (high)	Price per ton	Percentage of Stream	Value in the Ton	Result
Aluminum Cans ($ per pound, sorted and baled)	$0.59	$1,186.67	4.1%	$48.65	
Steel cans ($ per ton, sorted and baled)	$161.67	$161.67	6.4%	$10.35	
PET ($ per pound, baled)	$0.12	$242.22	20.8%	$50.38	
Natural HDPE ($ per pound, baled)	$0.79	$1,582.22	8.0%	$126.58	
Color HDPE ($ per pound, baled)	$0.28	$568.89	7.1%	$40.39	
Polypropylene ($ per pound, baled)	$0.22	$442.22	0.7%	$ 3.10	
Mixed Plastic #3 - #7 ($ per pound, baled)	$0.01	$ 20.00	9.2%	$ 1.84	
Glass (all colors)	$(95.00)	$(95.00)	27.8%	$(26.41)	
Trash (per ton, includes non-recyclables and improperly prepared material)	$(95.00)	$(95.00)	17.2%	$(16.34)	
Blended Value per Ton				$238.54	Value
Revenue Share of 60%				$143.12	Revenue Share
Processing				$(110.00)	Processing
Estimated Hauling				$(40.00)	Hauling
Net Value of Commingled Containers Ton				**$(6.88)**	**Town Pays**

[6] This table has been updated since it was originally transmitted in December 2021 to reflect changes in market pricing.

Table 4: Sample Pricing for Mixed Paper in a Shared-Risk Recyclables Processing Contract[7]

Material	Q3 2021 Value (high)	Price per ton	Percentage of Stream	Value in the Ton	Result
PS56 Mixed Paper ($ per ton, allows browns)	$35.00	$35.00	88%	$30.80	
Trash (per ton, includes non-recyclables and improperly prepared material)	$(95.00)	$(95.00)	12%	$(11.40)	
Blended Value per Ton				$19.40	Value
Revenue Share of 60%				$11.64	Revenue Share
Processing				$(80.00)	Processing
Estimated Hauling				$(40.00)	Hauling
Net Value of Mixed Paper Ton				**$(108.36)**	**Town Pays**

Under the existing contract for cardboard processing, if every load had been "pure," the rebate would have been $60 per ton with a cost of about $40 per ton for trucking, leaving an approximate per-ton revenue to the Town of $20 per ton. In a shared-risk contract, negotiated as described above with a $0 per ton processing fee for straight cardboard, the Town would have effectively paid about $20 per ton to recycle cardboard. The calculations are shown in Table 5. This supports the idea of continuing to procure processing of cardboard from compactors as its commodity own rather than adding it to mixed paper processing contracts.

Table 5: Sample Pricing for Cardboard in a Shared-Risk Recyclables Processing Contract

Material	Q3 2021 Value (high)	Price per ton	Percentage of Stream	Value in the Ton	Result
PS11 Corrugated Containers	$83.33	$83.33	90%	$75.00	
Trash (per ton, includes non-recyclables and improperly prepared material)	$(95.00)	$(95.00)	10%	$(9.50)	
Blended Value per Ton				$65.50	Value
Revenue Share of 30%				$19.65	Revenue Share
Processing				$ -	Processing
Estimated Hauling				$(40.00)	Hauling
Net Value of OCC Ton				**$(20.35)**	**Town Pays**

As a long-term trend, RRT has observed processing prices for commingled containers and mixed paper in the Northeast in the range of $90 to $125 per ton, depending on a variety of factors, including (but not only) both quality and volume of the incoming material and appetite for material at the facility. When comparing this to what the Town has been effectively paying to recycle, as described in Section 2.3.4, it is important to remember that those values were inclusive of the transportation costs to transfer the recyclables from the Transfer Station to the processor.

[7] This table has been updated since it was originally transmitted in December 2021 to reflect changes in market pricing.

2.3.5 Procuring Recyclables Processing Service

Typically, the feasible hauling radius for solid waste and recyclables is considered to be 100 miles. In urban areas, there are many reasons why that distance might be reduced, or regions within the radius would be impractical. For example, Figure 5 shows that a 100-mile radius reaches to parts of New York, New Jersey, Massachusetts, and Rhode Island. There are several facilities within the radius which are not economically reachable due to travel time exceeding one hour, one-way. An exception would be if the processor had a transfer station closer than the MRF. That firm might propose to accept recyclables at the transfer station and then transfer them in bulk to a MRF.

Figure 5: Map showing 100-mile radius of Branford

New York, New Jersey, Massachusetts, and Rhode Island

There are several MRFs on Long Island, but they are prohibitively far by road miles. There are nine other MRFS in New York within the shown area and fourteen in New Jersey. Due to traffic, bridges, tolls, and other transportation logistics, these MRFs are likely not economical for Branford's recyclables to reach. There are a few MRFs in Massachusetts within the 100-mile radius; however, they take more than an hour (one-way) to reach, making them prohibitively far without a transfer point. There is only one MRF in Rhode Island and as a policy it does not accept out of state material.

There are thirteen MRFs operated by four companies within reach of Branford. They all routinely sign shared-risk contracts.

Connecticut MRFs

Building off information published by the State of Connecticut, RRT has established are fifteen MRFs in Connecticut accepting recyclables from curbside programs like the one in Branford. Two of them are within the 100-mile radius, but as with the facilities in Massachusetts they take too long to reach economically without a transfer point. This leaves thirteen potential facilities operated by four firms. When the processing service is next bid-out, the Town should send reach out directly and personally to these facilities to discuss the procurement with them before finalizing the details. RRT has confirmed that all four of these firms routinely sign shared-risk contracts with municipal customers.

All the Connecticut MRF owners also operate collection businesses, and RRT's discussions with such firms shows that they would be interested in proposing on one or more scopes for Branford, including bundled collection and processing. This is another reason to include this option in the RFP as detailed on Page 23.

Part of RRT's recommendation for procuring processing is a shared-risk contract format. RRT spoke with managers at CT-DEEP, who said the agency highly recommends and encourages municipalities to pursue shared-risk contracts. CT-DEEP added that their staff is available to review draft contracts and advise municipalities at any time.

Based on this research, RRT would expect that an RFP prepared as discussed on Page 5 and promoted directly to these and other firms will likely attract multiple responses should have beneficial results for the Town.

3 RECOMMENDED COURSE OF ACTION

RRT has identified short- and medium-term Goals for the Town of Branford. The Goals are the major intentions and ambitions of the program, and they are how the organization will fulfill its purpose. For each Goal, there are Objectives and Actions. Objectives identify how each goal can be fulfilled, and Actions state specifically how that objective is to be accomplished. Actions include a time frame, or "milestones," for their initialization or completion, as appropriate.

Working towards these four goals will advance Branford in its mission of providing fiscally-responsible waste management services and environmental protection:

Goal 1. Provide safe, convenient, and valuable curbside collection of MSW to residents of single-family homes

Goal 2. Provide a comprehensive and convenient program for diverting recoverable and toxic materials from disposal as garbage

Goal 3. Provide safe and environmentally-sound discard and disposal capacity for the Town's residents and small businesses

Goal 4. Programmatically support the Town sustainability goals and the State recycling goals

As mentioned, for each Goal there are two to four Objectives, and each Objective has several Actions associated with achieving it. In this section of this report, each Goal is a headline in the page header, and each Objective is a subsection. Each subsection has a graphic at its beginning showing the Objective and its Actions. Generally, the analysis driving the Actions is discussed above in Section 2. As appropriate, additional or expanded detail regarding an objective or action is provided in accompanying narrative.

Following the Objectives and Actions are sample "timeline" representations of the Actions as they might proceed over the next ten years. Some are milestones for specific short-term planning; others of them repeat each year; and, several are ongoing at any time. Each timeline is for one fiscal year, July 1 – June 30, with the exception of the first one which begins in January 2022, halfway through FY22.

Goal 1, Objective 1: Provide once-weekly curbside collection of garbage with no limit on properly-prepared bags or bundles

Action 1. Ongoing: Pay for collection service using the Town's General Funds, charging no user fee or monthly rate, including for any rolling carts or bins

Action 2. Ongoing: Rebate condominium residents property taxes to provide own garbage and recycling service

Action 3. September 2022: Conduct RFP procurement[8] to solicit vendor(s) to collect garbage (see detail in narrative), including for Thimble Islands

Action 4. November 2022: Award contract for curbside collection, 5 +1 +1 terms

Action 5. July 1, 2023: Start new contact for curbside collection of garbage

Goal 1, Objective 2: Provide once-weekly curbside collection of collection of recyclables with no limit on properly-prepared containers or bundles

Action 1. Ongoing: Pay for collection service using the Town's General Funds, charging no user fee or monthly rate, including for any rolling carts or bins

Action 2. September 2022: Conduct RFP procurement[1] to solicit vendor(s) to collect recycling (see detail in narrative), including for Thimble Islands

Action 3. November 2022: Award contract for curbside collection

Action 4. July 1, 2023: Start new contact for curbside collection of recyclables

[8] For more detail, please see Page 24, below.

Goal 1, Objective 3: Provide seasonal curbside collection of leaves

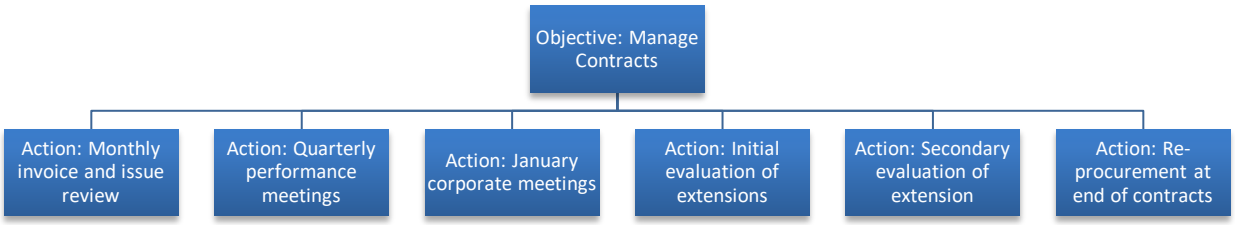
Action 1. Ongoing: Pay for collection service using the Town's General Funds, charging no user fee or monthly rate

Action 2. September 2022: Conduct RFP procurement[9] to solicit vendor(s) to provide seasonal curbside collection of leaves (see detail in narrative)

Action 3. November 2022: Award contract for curbside collection

Action 4. July 2023: Start new contact for seasonal curbside collection of leaves

Goal 1, Objective 4: Routinely evaluate contractor performances and the health of all contracts



Action 1. Review monthly invoices for accuracy and address issues immediately

Action 2. Conduct quarterly performance meetings (April, July, October) with contractors' representative/manager to discuss collaboratively achievements and opportunities for improvement

Action 3. Beginning January 2024 and continuing each January, meet with contractor leadership to review performance and make plans to maintain or improve service and relationship

Action 4. In the fifth January of the contract (e.g., January 2028), evaluate if contract will be extended

Action 5. If the first one-year extension is exercised, in the sixth January of the contract (e.g., January 2029) evaluate if the second one-year extension will be exercised

Action 6. In January of the final year of the contract, initiate RFP procurements. In April of the final year of contract, award contracts. In July of final/first year of contracts, start new contracts.

[9] For more detail, please see Page 24, below

Details about 2022 Procurements

RRT recommends that the Town of Branford release a multi-faceted, multi-scope RFP for the contracts related to collection of garbage, collection of recyclables, seasonal collection of leaves, and processing of recyclables. This is a process which has proven successful at allowing flexibility for proposers to make and price options, while being clear what the expected level of service is. Below is a recommendation for the scopes to procure in one RFP process, along with suggestions of instructions for proposers.

SCOPES OF WORK: Propose business and operations plan and pricing on one or more scopes. Pricing for one scope may not be dependent on award of any other scope.

1. Weekly curbside collection of garbage, not including yard waste, leaves, or bulky items.
2. Weekly curbside collection of dual stream recyclables.
3. Processing of curbside program recyclables.
4. Bundled service of curbside collection of recyclables WITH processing.
5. Seasonal collection of leaves from residential customers. Respondents may propose to collect the leaves in paper bags or loose via vacuum.
6. Collection of garbage from Town's FEL containers.
7. Collection of recyclables and cardboard from Town's FEL containers.
8. Bundled service to collect and process recyclables and cardboard from the Town's FEL containers.

REQUIREMENTS FOR PROPOSALS

- Proposers may respond to one, some, or all of the scopes of work.
- Proposers must meet the requirement to provide a business and operations plan for EACH scope of work proposed.
- Any respondents proposing to collect residential garbage or recyclables MUST provide a base price for use of customer-provided cans or Town-provided bins; alternate proposals using carts or other set-out methodology ARE ALLOWED.
- Proposals for collection of garbage must be for once-weekly service, exactly. Proposals for more- or less-frequent collection of garbage will not be considered.
- All collection pricing must be provided in a per-customer (or per-unit) format. Respondents should consider the pricing as per "front-door," meaning for example that one "stop" at a duplex would include two "front doors." Proposals for bundled service of curbside collection and processing of recyclables must use the per-customer price format.
- When proposed as a singular service, pricing for recyclables processing must be provided in a per-ton format.
- Any rebates related to recyclables commodity values should be itemized and described separately from per-ton or per-unit pricing—i.e., they must not be "netted" into the per-ton processing or per-unit bundled service pricing. The values and units (e.g., $ per ton, blended value, percentage, etc.) should be spelled out clearly. A sample illustrating any rebates is required.
- No bundling of scopes of work other than as described in the RFP is implied or allowed.
- In the interest of fairness and stability, pricing stipulations that depend on multiple awards will not be considered. For example, a proposal of a discounted price for recyclables collection if the proposer is awarded both garbage and recycling will not be considered when scoring the proposals.

Goal 2, Objective 1: Provide convenient, no-cost collection of toxic & household hazardous waste

Action 1. Ongoing: Participate in HAZWASTE CENTRAL operated by Regional Water Authority in New Haven

Action 2. Ongoing: Provide convenient collection of frequently-generated toxic materials at the Transfer Station (i.e., automotive fluids, fluorescent lamps, rechargeable batteries, and electronics)

Goal 2, Objective 2: Utilize Town resources to operate a comprehensive program for recovery of materials

Action1. Ongoing: continue to collect program recyclables (bottles, cans, paper, and cardboard) at Town buildings and combine them with curbside materials for processing

Action 2. Ongoing: continue to partner with nonprofit organizations to accept textiles at the Transfer Station for donation or recycling

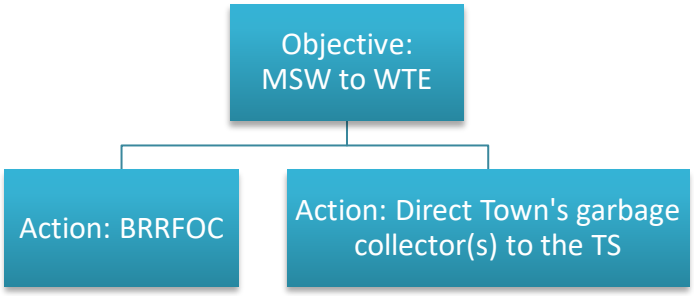
Action 3. Ongoing: continue to partner with the Mattress Recycling Council to accept mattresses at the Transfer Station for recycling

Action 4. 2022: continue working with vendors and partners to divert food scraps to composting programs

Action 5. April 2022: procure new contract with vendors to accept bulky waste and construction/ renovation debris at the Transfer Station for processing, volume reduction, recycling, and proper disposal.

Action 6. January 2023: procure new contract with vendor to accept and recycle Scrap Metal and White Goods at the Transfer Station

Goal 3, Objective 1. Deliver MSW to a waste-to-energy facility



Action 1. Ongoing: Maintain participation in Bristol Resource Recovery Facility Operating Committee

Action 2. 2022 and subsequent contracts: Designate that garbage collectors deliver material to the Transfer Station to be sent to the Bristol Consortium facility

Goal 3, Objective 2. Procure processing of recyclables

Action 1. September 2022: Conduct RFP procurement[10] to solicit vendor(s) to process recyclables collected through Town curbside program and from Town FEL containers

Action 2. November 2022: Award contract for processing, 5 +1 +1 terms

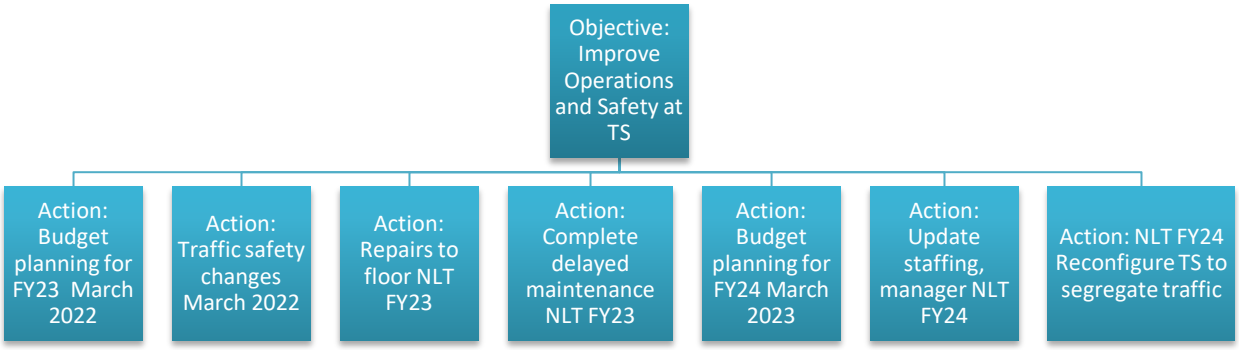
Action 3. July 1, 2023: Start new contact for processing of recyclables

[10] For more detail, please see Page 24, above

Details about Program Recyclables

RRT recommends that the variety and combination of materials accepted in the recycling program is good and not in need of any immediate changes. Any modern MRF should be able to process this assortment of material types. Outreach and education should focus on leaving out contaminants as instructed by the processor. In the future, depending on the awards in the 2022 procurement, there might be small changes dependent on the capabilities of the processor. For example, the MRF might accept aseptic cartons as paper, as a container, or not at all. The MRF might advise the Town that it would be better to tell customers not to recycle black colored plastics and non-bottle PET, depending on their equipment and markets. Some MRFs accept cookware or pouches, while others do not. These details can be finalized when the contract is awarded.

Goal 3, Objective 3. Improve operational performance and safety at the Transfer Station



Action 1. March 2022: Budget planning for capital repairs at transfer station in FY2022-2023

Action 2. March 2022: Implement changes to traffic safety protocols at the transfer station[11]

Action 3. NLT FY2022-2023: Make repairs to floor in Bays 5 and 6 of the transfer station

Action 4. NLT FY2022-2023: Conduct delayed maintenance of transfer station as advised by Town Engineer

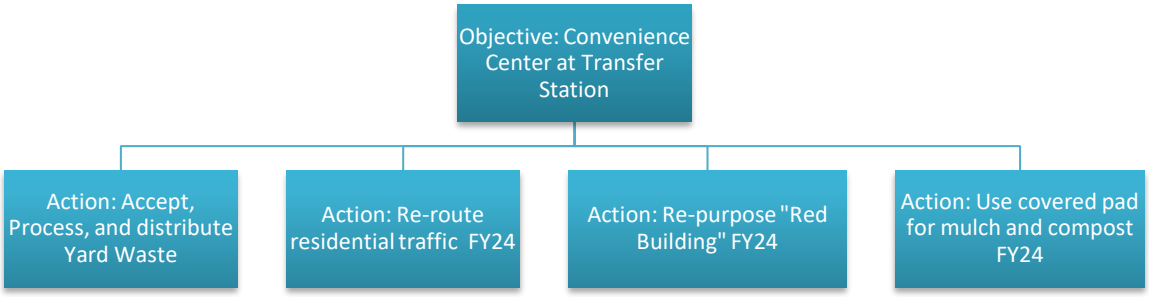
Action 5. March 2023: Budget planning for creation of Manager position at TS and reconfiguration of facility in FY2023-2024

Action 5. NLT FY 2023-2024: Review and reassign staff to create a full-time, on-site manager who can provide leadership and stability

Action 6. NLT FY 2023-2024: Reconfigure facility footprint to fully separate commercial and heavy equipment traffic from passenger vehicles and residents

[11] For more detail, please see Page 29, below

Goal 3, Objective 4. Operate a safe and comprehensive convenience center at the Transfer Station



Action 1. Ongoing: Accept, shred, and compost yard waste at the Transfer Station and provide finished product to residents at no cost.

Action 2. FY2023-2024: Segregate residential passenger vehicle traffic from heavy truck traffic[12]

Action 3. FY2023-2024: Repurpose existing buildings[12] to provide drop off collection of the materials described in Goal 2, Objective 1, Action 2, and Goal 2, Objective 2, Actions 1 – 6.

Action 4. FY2023-2024: Utilize the existing covered pad near the animal shelter for distribution of mulch and compost[12]

[12] For more detail, please see Page 29, below

Details about Transfer Station Improvements

RRT recommends that the Town of Branford continue to operate its Transfer Station. The facility is popular with residents, and serves an important function of providing affordable and convenient access to appropriate disposal of bulky and construction materials along with the opportunity to divert many items to reuse or recycling. The Transfer Station also serves to consolidate residential garbage loads for transport to the designated Bristol Resource Recovery Facility Operating Committee WTE facility, making best use of that relationship. There are several issues at the Transfer Station which need addressing as soon as possible, however, in the interest of safety and operational efficiency.

Goal 3, Objectives 3 and 4, provide the actions to accomplish four primary, impactful things the Town could do to improve operations, customer experience, and safety at the Transfer Station.

1. **Immediately remediate traffic and safety issues** such as signage, fall protection, spotting, and directing traffic. A specialized inspection and consultant on these matters can immediately improve safety and operations. This is a non-construction action that should not be delayed.
2. **The floors of Bay 5 and Bay 6 should be repaired as soon as possible, along with other delayed maintenance items** as identified by the Town Engineer. The longer the repair to the floor is delayed, the greater the cost will be to the Town. Exposed rebar is a safety risk and can damage equipment and vehicles. Severely damaged floors can have structural ramifications. For more information on the importance of maintaining and repairing floors, please see **Attachment C** to this document.
3. **The facility can benefit greatly from having a full-time manager** to provide leadership, stability, planning, and accountability. With a clear voice of authority, some of the dissatisfaction that employees shared could be addressed consistently and beneficially. Furthermore, an invested manager could address operational inefficiencies, safety issues, and future planning needs.

Recognizing that capital changes require time and planning, **RRT advises that the condition of the floor in Bays 5 and 6 and the safety issues throughout the facility should be considered urgent and addressed as soon as possible**.

RRT suggests that the Town might create a convenience center using the existing roadways and the “red building” behind the “blue building.” As nearly every resident of Branford has a Town sticker, residential customers could bypass the scalehouse window entirely, perhaps using a dedicated lane and regulated with an automated arm. Existing structures could be reassigned from their current usages (mostly storage) to collect various materials, including MSW, bottles and cans, mixed paper, and all the special recyclables such as oil, electronics, batteries, mattresses, scrap metal, food scraps, etc. Residents could proceed along the building depositing their materials, arriving at the yard waste drop off at or near its current position as their final stop.

Creation of a residential convenience center could permanently and completely segregate residential traffic from truck traffic. It would improve safety incalculably while providing a high-quality, efficient customer experience for residents.

RRT also suggests that staging the compost and mulch for distribution at the covered concrete pad at the end of the site, near the animal shelter, could further improve the customer experience. This would provide protection from the weather and steady footing when customers are loading product.

Goal 4, Objective 1. Procure collection of Town's garbage and recycling FEL containers

Action 1. March 2022: Conduct RFP procurement[13] to solicit vendor(s) to collect garbage and dual recyclables from Town's FEL containers, terms flexible.

Action 2. April 2022: Award contract for FEL containers, 2 +1 +1 terms

Action 3. July 1, 2022: Start new contact for collection of garbage and recyclables from Town's FEL containers

Goal 4, Objective 2. Reassign service of downtown litter bins

Action 1. April 2022: Determine through interagency collaboration if service will be procured or assigned to a Town agency

Action 2. May 2022: Initialize procurement of service OR planning process to incorporate into Town agency activity

Action 3. NLT July 2022: Begin new service of downtown litter bins

[13] For more detail, please see Page 24, above.

Goal 4, Objective 3. Conduct robust and meaningful solid waste outreach program

Action 1. Twice-annually in June and November/December, distribute *Earth Matters* to all Town collection customers; send collection instructions to Thimble Islands customers annually in April

Action 2. July 2022 and ongoing: Partner with local organizations such as realtors, moving companies, property owners or rental companies, and utilities to provide information to customers of both how to participate properly and why it is important to the success of the program

Action 3. August 2022: Reaffirm support for recycling and food scraps diversion at Branford schools and provide programmatic support as requested and appropriate

Action 4. October 2022 and ongoing: When bins are in use, provide two distinct colors to reinforce to customers the importance of separating materials into dual stream.

Action 5. November 2022 and ongoing: America Recycles Day, promote to individuals at Town facilities information of both how to participate properly and why it is important to the success of the program, including recycling and toxics reduction.

Action 6. January 2023 and ongoing: Partner to provide recycling services and information at four community events per year (see sidebar for more detail).

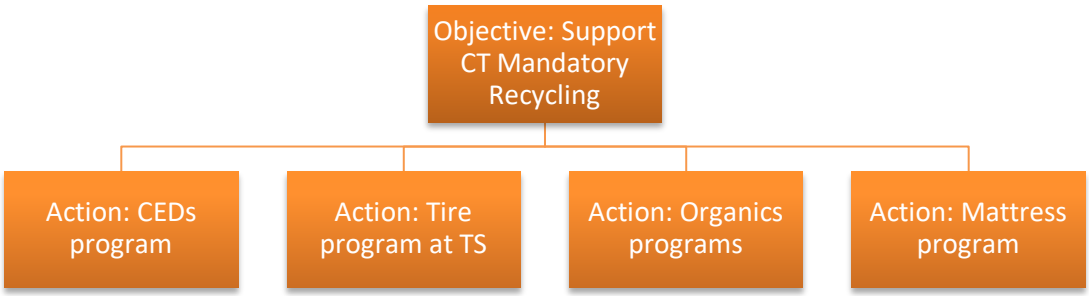
Details about Event Recycling

An event recycling program for Branford has two facets: Outreach and Education, and recycling of bottles and cans at the event. They are interrelated but can be pursued independently—in particular, the outreach program will likely be simpler to implement than event recycling, but they are both worthwhile.

The Town sustainability program can provide information and outreach content to the many community events in Branford. This could take the form of an exhibit table, signage, a temporary visual installation, sponsorship of materials, and more. A complete outreach plan will include many resources to adapt to the needs and interests of the host organization. Examples of events to consider include: Branford Festival & Fireworks in June; Branford Jazz on the Green in summer; Book Sale on the Green in fall; Branford Garden Club events; Branford Historical Society events; School activities; and, tours at the new Transfer Station Convenience Center.

Provision of educational content at these events can help build the rapport between the solid waste agency and the host organization, paving the way for implementing recycling of bottles and cans for attendees and volunteers at these events. Events with vendors, such as food or beverage, can also likely make good use of cardboard recycling. During 2022, the Town should undertake planning to launch a renewed event recycling program in winter 2023 in preparation for the event season.

Goal 4, Objective 4. Support State of Connecticut Mandatory Recycling measures



Action 1. Ongoing: Operate program to divert covered electronic devices (see also Goal 2, Objective 1, Actions 1 and 2)

Action 2. Ongoing: Operate program to accept and recover tires at the Transfer Station

Action 3. Ongoing: Collect and accept organics separately from MSW (see also Goal 1, Objective 3; Goal 2, Objective 2, Action 4; and Goal 3, Objective 4, Actions 1 and 4)

Action 4. Ongoing: continue to partner with the Mattress Recycling Council to accept mattresses at the Transfer Station for recycling (see also Goal 2, Objective 2, Action 3)

These and other related actions are ongoing at all times:

- ✓ Fund programs with the General Fund with no user fees or rates charged, and condominium residents not receiving curbside collection will be rebated
- ✓ Participate in HAZWASTE CENTRAL
- ✓ Provide drop-off collection for certain HHWs, program recyclables, textiles, mattresses, remodeling debris, bulky waste, scrap metal, tires, food scraps & yard waste
- ✓ Review monthly invoices for accuracy and address issues immediately
- ✓ Participate in the BRRFOC and use WTE for disposal

Fiscal Year is listed here

Month and Calendar Year are here

Abbreviated versions of the Action(s) for the month are here

Numbering in () refers to the complete Goal, Objective, and Action

For example, (1.1.3) indicates Goal 3, Objective 1, Action 3.

FY 2021-2022

JAN 22	FEB 22	MAR 22	APR 22	MAY 22	JUN 22
System Review & Analysis Project		Review and revise traffic safety at TS (3.3.2) - Budget planning for capital repairs at TS in FY23 (3.3.1)	Planning for new downtown litter bin service (4.2.1) - Procure bulky waste contract (2.2.5) - Mailing to Thimble Islands Customers	Continuation of food scraps programs (2.2.4) - Procure or plan for new litter bins service (4.2.2)	*Earth Matters* to customers (4.3.1)

FY 2022-2023

<table>
<tr><th>JUL 22</th><th>AUG 22</th><th>SEP 22</th><th>OCT 22</th><th>NOV 22</th><th>DEC 22</th><th>JAN 23</th><th>FEB 23</th><th>MAR 23</th><th>APR 23</th><th>MAY 23</th><th>JUN 23</th></tr>
<tr><td rowspan="2">Initial work to issue Multi-Service RFP</td><td rowspan="2">Issue Multi-Service RFP (1.1.3, 1.2.2, 1.3.2, 3.2.1, and 4.1.1)
-
Renew support for food scraps diversion and recycling at schools (2.2.4 and 4.3.3)</td><td rowspan="2"></td><td rowspan="2">-
Quarterly status meeting with collector(s) (1.4.2)</td><td rowspan="2">Award of multiple services (1.1.4, 1.2.3, 1.3.3, 3.2.2, and 4.1.2)
-
Promote recycling at Town buildings (4.3.5)</td><td rowspan="2">Negotiations for service contracts
-
Earth Matters to customers (4.3.1)</td><td rowspan="2">Finalization of service contracts
-
Launch renewed event recycling program (4.3.6)
-
Procure new contract for scrap metal service (2.2.6)
-
Annual performance review with collector(s) (1.4.3)</td><td rowspan="2">Outreach with realtors, etc. (4.3.2)</td><td>Budget planning for Manager position & reconfiguring TS (3.3.5)</td><td>Quarterly status meeting with collector(s) (1.4.2)
-
Mailing to Thimble Islands Customers</td><td></td><td rowspan="2">Earth Matters to customers (4.3.1)</td></tr>
<tr><td colspan="3">Repair TS floor, conduct delayed maintenance (3.3.4)</td></tr>
</table>

FY 2023-2024

JUL 23	AUG 23	SEP 23	OCT 23	NOV 23	DEC 23	JAN 24	FEB 24	MAR 24	APR 24	MAY 24	JUN 24
New service contracts begin 5+1+1 terms (1.1.5, 1.2.4, 1.3.4, 2.2.6, 3.2.3, 4.1.3) - New litter bin service (4.2.3) -	Support food scraps diversion and recycling at schools (2.2.4 and 4.3.3)		Launch program of two distinct colors of recycling bins (4.3.4) - Quarterly status meeting with collector(s) (1.4.2)	Promote recycling at Town buildings (4.3.5)	*Earth Matters* to customers (4.3.1)	Plan for year's event recycling program (4.3.6) - Annual performance review with collector(s) (1.4.3)	Outreach with realtors, etc. (4.3.2)	Promote event recycling program (4.3.6)	Quarterly status meeting with collector(s) (1.4.2) - Mailing to Thimble Islands Customers		*Earth Matters* to customers (4.3.1)
Install full-time on-site manager for TS, reconfiguration of TS for convenience center, reassignment of covered concrete pad for mulch and compost distribution (3.3.5, 3.3.6, 3.4.2, 3.4.3, and 3.4.4)											

FY 2024-2025

JUL 24	AUG 24	SEP 24	OCT 24	NOV 24	DEC 24	JAN 25	FEB 25	MAR 25	APR 25	MAY 25	JUN 25
Quarterly status meeting with collector(s) (1.4.2) - Annual instructions update to customers (4.3.1)	Support food scraps diversion and recycling at schools (2.2.4 and 4.3.3)		Quarterly status meeting with collector(s) (1.4.2) - Promote dual stream system (4.3.4)	Promote recycling at Town buildings (4.3.5)	*Earth Matters* to customers (4.3.1)	Plan for year's event recycling program (4.3.6) - Annual performance review with collector(s) (1.4.3)	Outreach with realtors, etc. (4.3.2)	Promote event recycling program (4.3.6)	Quarterly status meeting with collector(s) (1.4.2) - Mailing to Thimble Islands Customers		*Earth Matters* to customers (4.3.1)

FY 2025-2026

JUL 25	AUG 25	SEP 25	OCT 25	NOV 25	DEC 25	JAN 26	FEB 26	MAR 26	APR 26	MAY 26	JUN 26
Quarterly status meeting with collector(s) (1.4.2) - Annual instructions update to customers (4.3.1)	Support food scraps diversion and recycling at schools (2.2.4 and 4.3.3)		Quarterly status meeting with collector(s) (1.4.2) - Promote dual stream system (4.3.4)	Promote recycling at Town buildings (4.3.5)	*Earth Matters* to customers (4.3.1)	Plan for year's event recycling program (4.3.6) - Annual performance review with collector(s) (1.4.3)	Outreach with realtors, etc. (4.3.2)	Promote event recycling program (4.3.6)	Quarterly status meeting with collector(s) (1.4.2) - Mailing to Thimble Islands Customers		*Earth Matters* to customers (4.3.1)

FY 2026-2027

JUL 26	AUG 26	SEP 26	OCT 26	NOV 26	DEC 26	JAN 27	FEB 27	MAR 27	APR 27	MAY 27	JUN 27
Quarterly status meeting with collector(s) (1.4.2) - Annual instructions update to customers (4.3.1)	Support food scraps diversion and recycling at schools (2.2.4 and 4.3.3)		Quarterly status meeting with collector(s) (1.4.2) - Promote dual stream system (4.3.4)	Promote recycling at Town buildings (4.3.5)	*Earth Matters* to customers (4.3.1)	Plan for year's event recycling program (4.3.6) - Annual performance review with collector(s) (1.4.3)	Outreach with realtors, etc. (4.3.2)	Promote event recycling program (4.3.6)	Quarterly status meeting with collector(s) (1.4.2) - Mailing to Thimble Islands Customers		*Earth Matters* to customers (4.3.1)

FY 2027-2028

JUL 27	AUG 27	SEP 27	OCT 27	NOV 27	DEC 27	JAN 28	FEB 28	MAR 28	APR 28	MAY 28	JUN 28
Quarterly status meeting with collector(s) (1.4.2) - Annual instructions update to customers (4.3.1)	Support food scraps diversion and recycling at schools (2.2.4 and 4.3.3)		Quarterly status meeting with collector(s) (1.4.2) - Promote dual stream system (4.3.4)	Promote recycling at Town buildings (4.3.5)	*Earth Matters* to customers (4.3.1)	Plan for year's event recycling program (4.3.6) - Annual performance review with collector(s) (1.4.3) - Extend contract(s) OR begin procurement (1.4.4)	Outreach with realtors, etc. (4.3.2)	Promote event recycling program (4.3.6)	Quarterly status meeting with collector(s) (1.4.2) - Mailing to Thimble Islands Customers		*Earth Matters* to customers (4.3.1)

FY 2028-2029

JUL 28	AUG 28	SEP 28	OCT 28	NOV 28	DEC 28	JAN 29	FEB 29	MAR 29	APR 29	MAY 29	JUN 29
Quarterly status meeting with collector(s) (1.4.2) - Annual instructions update to customers (4.3.1)	Support food scraps diversion and recycling at schools (2.2.4 and 4.3.3)		Quarterly status meeting with collector(s) (1.4.2) - Promote dual stream system (4.3.4)	Promote recycling at Town buildings (4.3.5)	*Earth Matters* to customers (4.3.1)	Plan for year's event recycling program (4.3.6) - Annual performance review with collector(s) (1.4.3) - Extend contract(s) OR begin procurement (1.4.5)	Outreach with realtors, etc. (4.3.2)	Promote event recycling program (4.3.6)	Quarterly status meeting with collector(s) (1.4.2) - Mailing to Thimble Islands Customers		*Earth Matters* to customers (4.3.1)

FY 2029-2030

JUL 29	AUG 29	SEP 29	OCT 29	NOV 29	DEC 29	JAN 30	FEB 30	MAR 30	APR 30	MAY 30	JUN 30
Quarterly status meeting with collector(s) (1.4.2) - Annual instructions update to customers (4.3.1)	Support food scraps diversion and recycling at schools (2.2.4 and 4.3.3)		Quarterly status meeting with collector(s) (1.4.2) - Promote dual stream system (4.3.4)	Promote recycling at Town buildings (4.3.5)	*Earth Matters* to customers (4.3.1)	Plan for year's event recycling program (4.3.6) - Re-procure expiring contracts (1.4.6)	Outreach with realtors, etc. (4.3.2)	Promote event recycling program (4.3.6)	Quarterly status meeting with collector(s) (1.4.2) - Mailing to Thimble Islands Customers		*Earth Matters* to customers (4.3.1)

FY 2030-2031

JUL 30	AUG 30	SEP 30	OCT 30	NOV 30	DEC 30	JAN 31	FEB 31	MAR 31	APR 31	MAY 31	JUN 31
Quarterly status meeting with collector(s) (1.4.2) - Annual instructions update to customers (4.3.1)	Support food scraps diversion and recycling at schools (2.2.4 and 4.3.3)		Quarterly status meeting with collector(s) (1.4.2) - Promote dual stream system (4.3.4)	Promote recycling at Town buildings (4.3.5)	*Earth Matters* to customers (4.3.1)	Plan for year's event recycling program (4.3.6) - Annual performance review with collector(s) (1.4.3)	Outreach with realtors, etc. (4.3.2)	Promote event recycling program (4.3.6)	Quarterly status meeting with collector(s) (1.4.2) - Mailing to Thimble Islands Customers		

FY 2031-2032

JUL 31	AUG 31	SEP 31	OCT 31	NOV 31	DEC 31	JAN 32	FEB 32	MAR 32	APR 32	MAY 32	JUN 32
Quarterly status meeting with collector(s) (1.4.2) - Annual instructions update to customers (4.3.1)	Support food scraps diversion and recycling at schools (2.2.4 and 4.3.3)		Quarterly status meeting with collector(s) (1.4.2) - Promote dual stream system (4.3.4)	Promote recycling at Town buildings (4.3.5)	*Earth Matters* to customers (4.3.1)	Plan for year's event recycling program (4.3.6) - Annual performance review with collector(s) (1.4.3)	Outreach with realtors, etc. (4.3.2)	Promote event recycling program (4.3.6)	Quarterly status meeting with collector(s) (1.4.2) - Mailing to Thimble Islands Customers		

4 ATTACHMENT A SUMMARY MEMORANDUM

RRT Design & Construction
A Service of Enviro-Services & Constructors, Inc.

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M E M O R A N D U M

TO: Diana McCarthy-Bercury, Sustainability and Compliance Manager, Town of Branford, CT

DATE: February 16, 2022

FROM: Kate Vasquez, Director of Planning & Advisory Services – Solid Waste, RRT Design & Construction

SUBJECT: Executive Summary of Solid Waste Planning Project

During the fall and winter of 2021-2022, RRT Design & Construction has reviewed the solid waste management program operated by the Town of Branford for its residents and businesses. The details of our findings, financial analysis, and initial recommendations were described in the December 2021 report, and the draft Plan of program actions over the next ten years were laid out in the February 2022 plan document. **As part of providing a holistic approach to the project and to support the Town in providing its desired level of service in a fiscally-responsible manner, this memorandum serves to summarize the challenges to the program mission and how the Town can meet them.**

The immediate challenge the Town is currently facing is Time. Most of the service contracts are expiring in June 2022. The services that are currently in the most dire need of change—curbside collection and recyclables processing—will require a great deal of staff time and effort to re-procure. (MSW Hauling is also expiring and a critical component.) RRT has advised the Town that the curbside and processing contracts should be re-procured and not renewed for the final year. This optimism needs to be tempered with the caution that if the RFP cannot be issued in mid-March 2022 and awarded in April 2022, as in the Action Plan, the Town will not realize the full benefits of re-procuring. There is an impractically brief period of time between now, mid-February, to when the RFP would need to be issued. To obtain the needed benefit from the proposed procurement process, vendors require time to evaluate their responses and time is needed once contracts are let to start dates. Otherwise, qualified vendors may be dissuaded from responding. We suggest that it **will not be possible for the RFP to be fully vetted and released by March 15. We therefore recommend that the Town negotiate emergency contracts with the current vendors and then proceed with the procurement to start new contracts on or about September 1, 2022, or extend the existing agreements for one year.**

Compounding the challenge of Time is the organizational capacity of the solid waste program. It is important to realize that these findings are not intended to be a commentary on any individual or their performance. As noted in the December 2021 report, the Transfer Station cannot be

appropriately supervised by a partial FTE who is not physically located at the site. The facility needs a person who is solely focused on its success, safety, and service. The manager of the Transfer Station needs to be fully invested in that facility as an enterprise. We note that this person could be one of the current employees and does not necessarily need to be a new FTE to the Town. Similarly, the management of the contracts needs the attention of an administrator who is focused on policy, programs, planning, and—most importantly—the real time performance (both financially and physically) of the Town's contractors. These persons need to build relationships with the Town's contractors beyond responding to invoices, so that if/when issues arise, there is a rapport in place. **The administrator and the Transfer Station manager should be two people who work as peers and partners. Each position needs skills and aptitudes suited to those responsibilities, and then they can work together for the success of the program.**

Closely related to the organizational capacity are the concerns related to financial value and cost effectiveness of the solid waste program. As discussed in correspondence and conversation, the Town is not receiving value for the funds it is expending, and is spending money for services which it does not receive. When vendors do not perform as contracted and the Town does not receive the service promised, money is wasted. For example, if a load is downgraded, a Town representative should immediately respond to the vendor, inspect the material in question, negotiate a resolution, and document the issue at hand. Without proper administration, however, it is of no matter how robust the contract terms are. **If a vendor perceives that a customer cannot or will not enforce the terms of the contract, they will take advantage**. The administrator needs empowerment to be responsible for preventing such.

Another point of cost inefficiency is the infrastructure at the Transfer Station. **Unnecessarily delaying maintenance, repairs, and equipment replacement always ends up costing more, eventually**. A floor that is not repaired will have to be unnecessarily replaced. Wastefully packed transfer containers squander fuel. Poor safety culture will result in accidents which can cost substantial amounts of money, or worse. These are avoidable financial "leaks" that the facility supervisor or manager can prevent. Repeated here is the RRT recommendation that traffic patterns be altered and signage added to separate citizen drop off activities from commercial operations.

Thus far, these challenges are ones that the Town can mitigate through its actions. It is important to do so, because as with every organization there are challenges about which there is little the Town can change. For Branford, these are size and location. The Town is a very small-volume customer, and in the solid waste industry volume equates to market clout. Regarding potential vendors, RRT has identified that there are options—all private sector entities. The Town is somewhat "hemmed in" by distance and traffic. Therefore, the attraction of Branford as a municipal customer to the private sector lies in the quality of the recyclables to be processed and the ability for a collector to enhance its operational efficiency by adding the Town's collection routes to its territory. **Processors like dual-stream recyclables with low levels of contamination, and collectors always want to expand their territories. Combining these features with the ability to be engaged, positive, and professional is the best way for Branford to keep the program out of crisis mode and to let it thrive.**

The issues and challenges faced by the Town of Branford will not be "fixed" with just new or better service contracts. The financial "leak" points must be addressed proactively, and the safety culture needs to be reexamined thoroughly. These both can then be handled preemptively with proper routines and procedures. To do so, the transfer station needs dedicated leadership, and the contract administrator needs to have the proper tools and resources, so they are known by the vendors as someone to be treated respectfully. **Without these changes, the Town of Branford will continue to function at the will of its vendors and the whims of individuals**. With proactive leadership, the 10-year plan outlined by RRT is achievable.

5 ATTACHMENT B TECHNICAL MEMORANDUM

M E M O R A N D U M

TO: Diana McCarthy-Bercury, Sustainability and Compliance Manager, Town of Branford, CT

DATE: March 8, 2022

CC: Jamie Cosgrove, First Selectman
Paul Muniz, Solid Waste Management Commission Chair

FROM: Kate Vasquez, Director of Planning & Advisory Services – Solid Waste, RRT Design & Construction

SUBJECT: Executive Summary of Solid Waste Planning Project

This memorandum serves to transmit to the Town of Branford the technical details used to inform our recommended course of action for providing a successful solid waste management program. The contents are:

1. The outputs of a cost estimator tool showing projected cost differences between collecting garbage and recyclables using a two-pass method (one for garbage and one for recyclables) and using a three-pass method (one for garbage and two for recyclables).
2. Information on the MRF processing services available to the Town.
3. The outputs of a cost estimator tool showing theoretical pricing for four scenarios of recyclables processing:
    a. Delivering dual-stream recyclables to a single-stream or dual-stream MRF in a fixed-price contract (no rebates paid);
    b. Delivering single-stream recyclables to a single-stream MRF in a fixed-price contract;
    c. Delivering dual-stream recyclables to a single-stream or dual-stream MRF in a shared-risk contract (fixed price for processing with rebates paid based on quality and market values); and,
    d. Delivering single-stream recyclables to a single-stream MRF in a shared-risk contract.
4. Requested technical information regarding the economics of using carts for curbside collection; a previously-provided (but unpublished) decision tree for evaluating curbside collection methodologies; a table showing and comparing the cost centers of curbside collection several collection methodologies.

5. Details related to RRT's recommendations regarding how to structure a request for proposals (RFP) procurement to get the best results.

1. Collection operations

All things being equal, and using the Town's operating costs plus Federal standards as inputs, RRT estimated the operational costs for performing collection of garbage and recyclables in two different methodologies: 2 passes, wherein recyclables are collected in a single vehicle (either single stream in a single-body truck or dual-stream in a split-body truck); and, 3 passes, wherein recyclables are collected dual stream using single-body trucks. Cost inputs included labor and benefits; operational details such as uniforms, tools, and technology; hourly operating costs associated with collection vehicles; and an appropriate outreach program. The estimator was not projected or escalated into the future—it is a "snapshot" using present-year values.

Assumptions: It is critical to note that these costs estimates are based on the Town performing the services, and not an estimate of private-sector costs or prices. Importantly, RRT believes that most collectors who would respond to an RFP to provide collection services would be able to provide the service as a marginal expansion of their current operations—i.e., they likely would not need to add and maintain a full fleet in order to collect the customers in Branford. Furthermore, labor prices remain volatile and unpredictable. By far, the largest cost element in collection is labor, and labor prices (especially for drivers) are currently at all time highs and being greatly influenced by the COVID-19 pandemic. For this and other reasons, these estimates should only be used to understand the cost ramifications of a dual stream recycling program and the magnitude of effect it might have on proposed pricing.

These values should not be used for budgeting, and they should not be used to approximate what collectors responding to an RFP might propose.

COLLECTION OPERATIONS & CAPITAL EXPENDITURES	2 passes	3 passes
Total Salaries & Wages PLUS Total Benefits	$ 1,430,316.02	$ 2,036,665.52
Travel and Training	$ 5,000.00	$ 5,000.00
Materials/Supplies General	$ 3,000.00	$ 3,000.00
Cell Phones	$ 1,000.00	$ 1,000.00
Uniforms and Boots	$ 13,650.00	$ 19,500.00
Vehicle Operations (Federal hourly cost)	$ 277,513.78	$ 435,140.20
Annual Amortization of Sanitation Trucks	$ -	$ -
Annual Interest Expenses on Sanitation Trucks Purchase	$ -	$ -
Recycling Outreach and Education	$ 34,236.00	$ 34,236.00
Operations and Capital Costs	**$ 1,764,715.79**	**$ 2,534,541.72**

Per Household Costs

Operations and Capital Costs, per unit, per Year	**$ 206.18**	**$ 296.13**
Operations and Capital Costs, per unit, per Month	**$ 17.18**	**$ 24.68**

Magnitude of differences

Dollars difference per unit, per month	$ 7.50
Percentage difference in costs (approximate)	43%

As shown in the tables, for a Town operation to add a third pass would increase costs considerably as a percentage of the cost. Although the difference for a private firm responding to an RFP may not be as significant, it illustrates why the Town should require proposers to provide pricing to collect dual stream recyclables AND allow alternative proposals. The requirement for the "base case" proposals will allow the Town to clearly compare the alternative proposals to a baseline price.

2. Availability of shared-risk recyclables processing contracts

RRT has researched and recommended that the Town should be able to obtain a shared-risk contract with a recyclables processor. RRT has been able to interview three of the four firms operating in the marketplace—including the current vendor—and confirmed that they operate in this format. The fourth has not been reached but RRT believes that as a major company and the actions of their competitors, they would also be amenable. The CT DEEP also confirmed in an interview that the agency recommends and endorses shared-risk contracts.

3. Recyclable processing cost estimates

At the request of the Solid Waste Management Commission, RRT prepared comparisons of how overall costs to the Town for processing of recyclables might vary for dual-stream and single-stream, and for the cost-saving potential of shared-risk versus fixed-price processing. Based on our familiarity with the recyclables processing marketplace, we are not confident that any processor would be willing or able to "discount" their per-ton processing prices in exchange for not sharing revenues to the Town, and therefore are using the same per-ton processing costs regardless of contract type. The per-ton costs for processing of recyclables have increased significantly in recent years. The cost increases are due in part to labor prices, the sophistication of the equipment used for processing, and the increasing complexity of the waste stream. Therefore, the four scenarios provided are primarily useful for comparing single-stream to dual-stream. The first table shows estimates reflective of commodity pricing in Q4 of 2021.

Assumptions: For the purposes of estimating composition of curbside recyclables collected dual-stream, data was used from a study conducted by RRT of the Rockland County, NY, dual stream recycling study in December 2020. For the composition of single-stream recyclables, a waste composition study performed by CT DEEP in 2015 was used. Per-ton pricing for fiber, bottles and cans, and single-stream recyclables was based on RRT's experience in the Northeast.

Commodity pricing came from recent published industry reports. These costs do NOT include trucking or transfer of recyclables from the Transfer Station to a MRF.

These values should not be used for budgeting, and they should not be used to approximate what processors responding to an RFP might propose.

Q4 2021 Pricing

	Revenue (Cost) w/ Shared Risk	Per HH		Revenue (Cost) w/Fixed Price	Per HH
Dual Stream + OCC compactor	$ 61,714.35	$ 7.21		$ (162,750.00)	$ (19.02)
Single Stream + OCC compactor	$ (171,982.50)	$ (20.09)		$ (172,500.00)	$ (20.15)
Impact of Dual Stream/HH/year		$ 27.30			$ 1.14
Impact of Dual Stream/HH/month		$ 2.28			$ 0.09

As noted in previous correspondence and conversation, the pricing for recycled commodities increased steeply in Q3 of 2021. It remained elevated in Q4 of 2021 as compared to the end of 2020 and the first half of 2021. In particular, value for HDPE is at a record high but appears it may be "bubble bursting" in the coming quarters. Therefore, by way of comparison, the same calculations were performed based on the average commodity pricing across Q4 2020, Q1 2021, and Q2 2021.

2020-21 Pricing

	Revenue (Cost) w/Shared Risk	Per Unit		Revenue (Cost) w/Fixed Price	Per Unit
Dual Stream + OCC	$ (30,857.85)	$ (3.61)		$ (162,750.00)	$ (19.02)
Single Stream + OCC	$ (132,243.41)	$ (15.45)		$ (172,500.00)	$ (20.15)
Impact of Dual Stream/HH/year		$ 11.85			$ (1.14)
Impact of Dual Stream/HH/month		$ 0.99			$ (0.09)

Comparing the two tables shows how current pricing affects the net cost and benefit to customers who receive shared-risk rebates, allowing them to reap the rewards of good recycling and good markets.

4. Additional technical information

The Commission requested information on the costs associated with utilizing rolling carts for the collection of waste. RRT prepared a cost estimate based on industry experience, regional product costs, and Town labor costs. It is important to note that recent plastic resin prices have led to volatility in the prices charged for durable plastic goods. The Town has experienced recent sharp increases in the price of the recycling bins it purchases, for example. The table below itemizes the prices associated with providing one cart per household for the purpose of setting out garbage.

Assumptions: The maintenance costs are based on industry experience and represent the labor and supplies to service, repair, remove, and replace carts at customers' locations. It typically consists of one FTE and their needed supplies and equipment. The cost estimator assumes that any purchase contract would include the stipulation that the Town could purchase additional future carts for a set period at the same price per cart as in the original purchase. If this provision could not be obtained, the Town would need to purchase and store a larger number of carts in the initial procurement to account for growth and damage in the future. A period of seven years is shown to coincide with the recommended length of a collection contract.

These values should not be used for budgeting, and they should not be used to approximate what collectors responding to an RFP might propose.

Costs to purchase and own a cart fleet		First 7 years
Number of carts needed in initial purchase	Customer count +5%	8,987
Cart purchase (total)	FOB $60 per cart	$ 539,217
Interest costs (total)	4.00%	$ 21,568.68
Annual refresh	10% of fleet	$ 53,922
Annual maintenance per cart	$7.00 per year	$ 62,909
Monthly cost to Town for refresh and maintenance	Per cart	$ 1.08
Total cost of ownership over 7 years	Total	$ 1,378,598.13
Average cost of ownership per unit first 7 years	Per month	**$ 1.83**

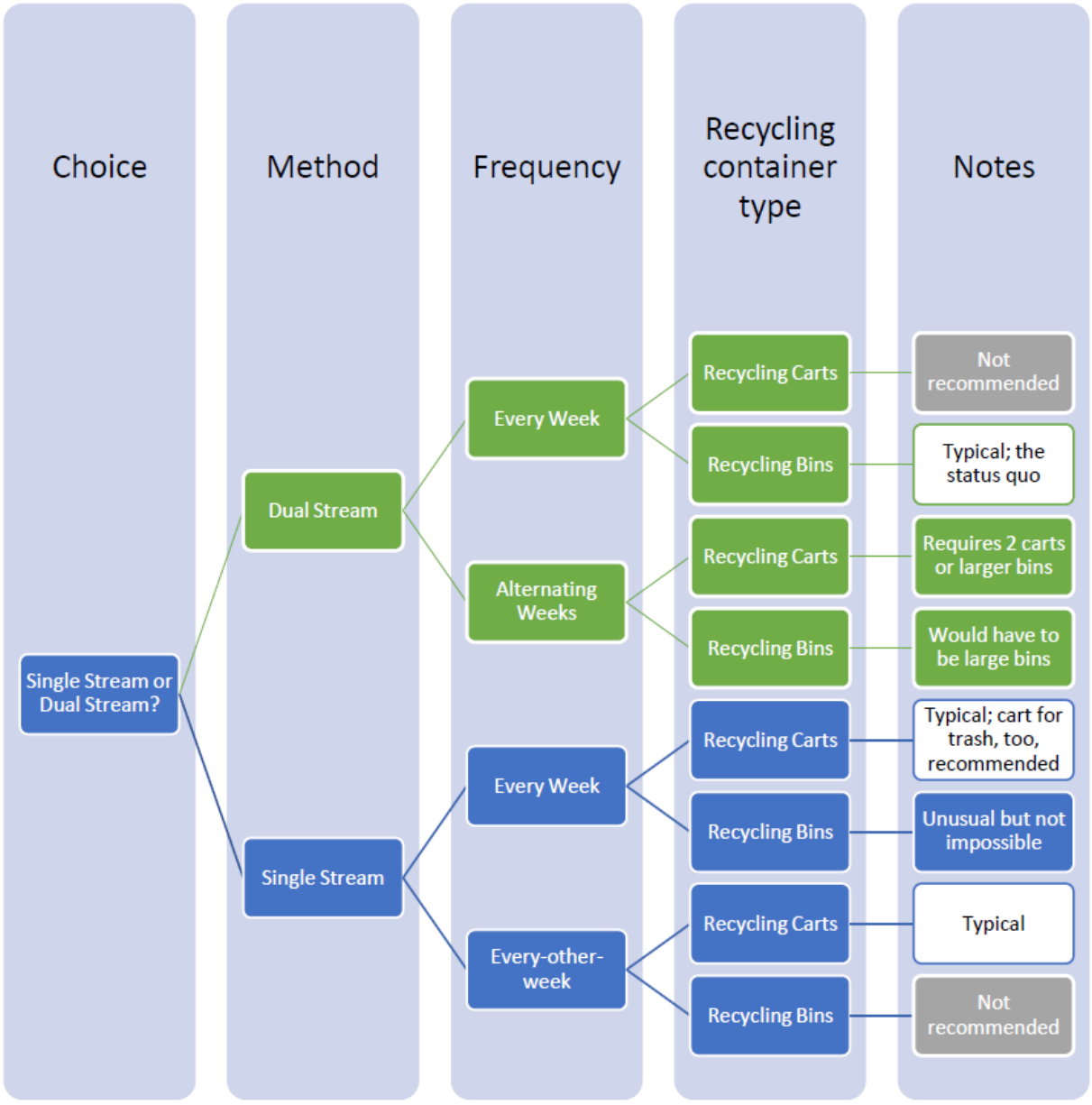
Many municipalities do prefer to purchase and manage their own carts rather than paying marginally more per customer per month essentially to rent them because the useful life of most carts will exceed the life of the collection contract—i.e., the carts are an asset that can be used long after their purchase price is depreciated. Other benefits include choosing the style, design, and color it prefers for the carts, and controlling how many carts an individual customer can have. Challenges include the initial capital outlay, which is significant, along with the operational burden and budgeting impacts of managing the cart fleet, which could exceed $100,000 per year.

There is more to consider than cost when contemplating carts—namely, programmatic impacts. As discussed previously, carts have been shown to encourage contamination. Residents feel compelled to "fill up" a recycling cart and end up including non-program materials to do so. Others become skeptical about commingling materials they previously separated, leading to mistrust and negative attitudes.

The decision tree below lays out how to consider the possible options for curbside collection methods, including set-out method, frequency, and the use of carts or bins. In the diagram, "Alternating weeks" was a methodology RRT was asked to consider in which the two components of dual-stream recyclables—fiber, and bottles and cans—would be collected on alternating weeks. For example, fiber would be collected on an "A" week and bottles and cans

would be collected on the alternating "B" weeks. Use of the word "Typical" means the method is well-established in communities across the United States but does not necessarily endorse the method for Branford. As shown, RRT recommended against considering two of the possibilities on the decision tree any further because they would be unnecessarily expensive or operationally unworkable.

The graphic that follows the decision tree was included to show what the containers used at the curb for the six methods that were considered further might look like.



How the options might look at the curb

Dual Weekly with Carts

Dual Weekly with bins

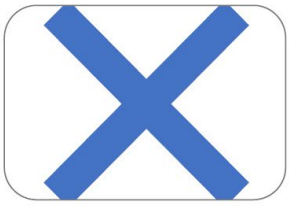
Dual Alternating weeks with Carts

Dual Alternating with Bins

SS Weekly with Carts

SS Weekly with bins

SS EOW with Carts



SS EOW with Bins

The six methods that came out of the decision tree process were expounded upon in a table which described the cost centers and program impacts of each one. In the case where dollar amounts were given, these reflect transportation costs to known MRFs in Connecticut. In other cases, words reflecting the relative magnitude of one method to another are used because exact prices cannot be projected.

Upon further consideration of the six methods, RRT does not recommend the three which reduce collection frequency. They are shown with gray shading. The two methods that involve alternating weeks by material are highly unusual and likely to create undue difficulty for residents. For example, if a resident missed their fiber collection on an "A" week, they would have to store their fiber for two more weeks in addition to storing up to two weeks' worth of bottles and cans at a time. Besides forgetfulness, common reasons for missing collection set-outs include travel, illness, and confusion about how to participate. Residents of Branford participate in recycling well; there is no compelling reason to completely overhaul and upset the current methodology in this way. For similar reasons, RRT does not recommend reducing recycling collection frequency to every-other-week. The technique is often used to drastically reduce costs or improve the economics of programs with lower participation rates—to "save" the program. This is not the case in Branford.

	Financial Considerations (Cost centers)					Programmatic Considerations		
Program consider-ations / Scenario	**Recyclables Processing fees ($/ton)**	**Potential $ of Profit sharing or rebate**	**Container costs (bins, carts, etc.)**	**Collection Costs**	**Transportation costs (from TS to MRF) at $1.50 per ton, per mile**	**Purity impacts**	**Customer Experience and behavior**	**Town Staffing Impacts**
Dual-stream Weekly with bins	Lower	Higher	Lowest	Higher	Up to $78 each way if go to a DS MRF	Best	More effort, more confidence	Requires more education, enforcement
Dual-stream Alternating weeks with Carts	Lower	Higher	Highest, $2/month or more	Lower	Up to $78 each way if go to a DS MRF	Better	New task to keep up with the weeks	Constant education, greater enforcement
Dual-stream Alternating with Bins	Lower	Higher	Medium-Low	Lower	Up to $78 each way if go to a DS MRF	Best	New task to keep up with the weeks, difficulty carrying 2 weeks' worth of material	Constant education, greater enforcement
Single-stream Weekly with Carts	Higher	Lower	Highest, $2/month or more	Lower	$35 to $70 per ton to SS MRFs	Worst	Easy to comply; carts may bring negativity	New activity to manage "back-door" customers, education is simpler
Single-stream Weekly with bins	Medium-High	Lower	Medium-Low	Lower	$35 to $70 per ton to SS MRFs	Medium-worse	Easy to comply; familiar with bins	Simple education
Single-stream EOW with Carts	Higher	Lower	Medium to Highest	Lower	$35 to $70 per ton to SS MRFs	Worse	Easy to comply; New task to keep up with the weeks; carts may bring negativity	Simple education

5. Details related to RRT's recommendations regarding how to structure a request for proposals (RFP) procurement to get the best results.

RRT recommends that the Town of Branford release a multi-faceted, multi-scope RFP for the contracts related to collection of garbage, collection of recyclables, seasonal collection of leaves, and processing of recyclables. This is a process which has proven successful at allowing flexibility for proposers to make and price options, while being clear what the expected level of service is. Below is a recommendation for the scopes to procure in one RFP process, along with suggestions of instructions for proposers.

SCOPES OF WORK: Propose plan and pricing on one or more scopes. Pricing for one scope may not be dependent on award of any other scope.

1. Processing of curbside program recyclables.
2. Curbside collection:
   - Weekly curbside collection of garbage, not including yard waste, leaves, or bulky items.
   - Weekly curbside collection of dual stream recyclables.
3. Bundled service of curbside collection of recyclables WITH processing.
4. Seasonal collection of leaves
   - Respondents may propose to collect the leaves in paper bags or loose via vacuum.
5. Service of Town's FEL containers
   - Collection of garbage from Town's FEL containers
   - Collection of recyclables and cardboard from Town's FEL containers
   - Bundled service to collect and process recyclables and cardboard from the Town's FEL containers.

REQUIREMENTS FOR PROPOSALS

- Proposers may respond to one, some, or all of the scopes of work.
- Proposers must meet the requirement to provide a business and operations plan for EACH scope of work proposed.
- Any respondents proposing to collect residential garbage or recyclables MUST provide a base price for use of customer-provided cans or Town-provided bins; alternate proposals using carts or other set-out methodology ARE ALLOWED.
- Proposals for collection of garbage must be for once-weekly service, exactly. Proposals for more- or less-frequent collection of garbage will not be considered.
- All collection pricing must be provided in a per-customer (or per-unit) format. Respondents should consider the pricing as per "front-door," meaning for example that one "stop" at a duplex would include two "front doors." Proposals for bundled service of curbside collection and processing of recyclables must use the per-customer price format.
- When proposed as a singular service, pricing for recyclables processing must be provided in a per-ton format.

- Any rebates related to recyclables commodity values should be itemized and described separately from per-ton or per-unit pricing—i.e., they must not be "netted" into the per-ton processing or per-unit bundled service pricing. The values and units (e.g., $ per ton, blended value, percentage, etc.) should be spelled out clearly. A sample illustrating any rebates is required.
- No bundling of scopes of work other than as described in the RFP is implied or allowed.
- In the interest of fairness and stability, pricing stipulations that depend on multiple awards will not be considered. For example, a proposal of a discounted price for recyclables collection if the proposer is awarded both garbage and recycling will not be considered when scoring the proposals.

RRT recommends that allowing respondents to the RFP to write their own alternative proposals, rather than giving them a list of methodologies to price, will encourage more responses overall. A list of three or more collection scenarios to price will be daunting or discouraging to some firms; however, one required base price and the opportunity to make their best offer will be more appealing.

6 ATTACHMENT C INDUSTRY REPORTING REGARDING TRANSFER STATION FLOORS

Concrete Solutions

Features - Transfer Station Design

Proactive tipping floor assessment and repair can help transfer station operators avoid unnecessary costs and related hassles.

April 1, 2021 - Adam Redling

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Analyzing tipping floor composition is likely far down the list of priorities for transfer station operators focused on the day-to-day tasks of managing and moving waste. However, ensuring proper upkeep through proactive repair and replacement is essential for protecting the integrity of these floors, avoiding unnecessary shutdowns, and helping save money.

Dealing with the issues

Between constant heavy equipment traffic and the composition of the waste itself, transfer station floors are subject to a tremendous amount of abuse.

Jim Andrews, CEO of Huntington Beach, California-based American Restore Inc., has been repairing and resurfacing floors in waste facilities for close to 40 years. According to Andrews, there are several common reasons why these floors suffer aggressive wear.

According to Andrews, the busier the facility and the greater the traffic, the greater the wear. This wear occurs when waste is dumped on the floor, excavators and material handlers—especially tracked machines—traverse the floor, and buckets create friction against the ground when moving trash.

Specific to the buckets used to move waste, Andrews says that those affixed with rubber edges can accelerate wear due to added friction placed on the floor.

Then there is the issue of the operator. Andrews says that older, more experienced operators tend to exercise more caution and care. Younger and more inexperienced operators, conversely, may be more

likely to exert force on the floor or slam attachments since they are not as skilled at maneuvering the equipment. Similarly, facilities that are able to retain their workforce tend to have more disciplined and seasoned operators compared to transfer stations with more turnover.

Beyond the equipment used, the material being dumped at these sites is a catalyst for floor damage. Glass and metal tend to gouge floors, accelerating wear. Additionally, decomposition from organic waste generates a caustic liquid that can speed up concrete wear issues.

“Waste has highly concentrated amounts of organic acid from food waste, restaurant waste—any waste that is decomposing,” Andrews says. “That creates ‘off pH’ liquids. This is particularly true in warm environments where these organics deteriorate faster. In the summer months or the warmer months, or in facilities located in warmer environments, those acidic materials accelerate and wear on the concrete more.”

Andrews says that these organics-derived liquids would formerly seep out of waste trucks during transport, but public pushback and environmental legislation resulted in waste trucks being designed to retain these liquids. The result is these waste byproducts end up on the bottom of a transfer station floor during dumping.

Another factor that can influence floor wear is how wet or dry the floor is kept, Andrews says.

“Wetter facilities wear out faster than dry facilities,” he notes. “People think that in a wet facility, there’s a lubricating factor of the water that helps protect the floor, but it’s not true. If it’s a wet facility, the floors are remaining cleaner. If the floors are cleaner, they’re more subject to exfoliation from abrasion. In dirty facilities, the dirt will stick to the floor. And now you’ve a protective membrane between the concrete and the environment above it.”

Organics processing and transfer facility designed and built by RRT in Ontario, Canada

Repair vs replacement

With all the variables that influence floor wear, it is difficult to ballpark repair or replacement intervals. That’s why relying on a trusted third party to assess floor composition can be a prudent strategy for operators.

RRT Design & Construction in Melville, New York, is an engineering and construction company that specializes in solid waste processing and recycling facilities.

According to Nat Egosi, president of RRT Design, his company routinely gets called to help operators assess what floor repair or replacement work might be needed.

“We have proactive customers that ask us to survey their tipping floors on a regular basis, as well as their push walls. This is part of how we inspect their entire facility. They’ve made a capital investment and they want to be proactive in understanding how their facility is being operated and how it should be

maintained," Egosi says. "These individuals want to plan their capital projects and repairs ahead of time and not have to face the potential of an emergency shutdown.

"We have other clients who suddenly run into a problem, and they need us to come out and do an evaluation of their floors. Usually in those cases, what we're finding is the floor itself not only has worn down, but they've lost structural integrity. In those cases, structural engineering work is usually required. You have to put together drawings; you have to put together fit packages; panels or sections need to be removed and other sections might need to be redone, so it becomes a much larger kind of project that wasn't necessarily planned."

To avoid the latter scenario, operators need to be mindful of the stages of typical floor wear.

Andrews says that operators should look for worn aggregate as the first stage of decomposition. Everyday use can wear anywhere from 1/4 to 1 inch of concrete away from the floor every year. More severe cracking and signs of rebar underneath the concrete can point to immediate need to look into repair options. When concrete integrity has been compromised, rebar has been torn out or damaged, or dirt is becoming visible, complete replacement might be necessary.

"If there's enough integrity left in the slabs, then we can overlay concrete," Andrews explains. "If there are evidentiary signs that the slabs are weak, have lost a lot of strength from cracks and erosion, and there is slab pumping where water is shooting up from the soil below the floor due to compression or there is movement in the concrete, you really have to take a closer look because you might need to consider replacement."

> *"A lot of times, people's view of the world is, 'Well, we got this far without spending money to repair our floor and nothing happened. Why don't we just go six months longer?' Inevitably, six months becomes 12 months, and 12 months becomes 24 months. Meanwhile, things are just getting worse and worse until their floor is just dirt." –Nat Egosi, president, RRT Design & Construction*

Egosi says that his teams put steel wear-bar indicators into the concrete during floor construction. Once these bars become uncovered through regular wear, it is a sign that the operator should begin to plan for repairs before the structural rebar underneath is exposed and integrity begins to get compromised.

Despite the warning signs of floor degradation, Egosi says operators often put off repair because of budgetary concerns, which can compound the problem.

"A lot of times, people's view of the world is, 'Well, we got this far without spending money to repair our floor and nothing happened. Why don't we just go six months longer?' Inevitably, six months becomes 12 months, and 12 months becomes 24 months. Meanwhile, things are just getting worse and worse until their floor is just dirt," Egosi says.

Refusing to heed the warning signs of a floor that needs repair or replacement can have significant ramifications for operators.

Egosi says that letting a floor degrade to the point it is unsound can cause structural issues beyond the floor itself.

"The concrete slab floor actually provides structural integrity to the walls in some transfer stations. In these cases, engineers are needed to come in to evaluate whether the loss of structural integrity in a floor affects just the floor or if it also affects the walls," he says. "What would've cost you maybe $100,000 to repair is now going to cost you $300,000."

Ash processing and transfer station designed and built by RRT in Florida

In addition to alleviating additional construction challenges, taking proactive measures to repair a floor before a full replacement is needed can also be instrumental in helping prevent environmental contamination that can occur when the liquid waste stream leaches into the soil. When this happens and there are remediation issues, operators can end up spending significantly more time, energy and money addressing the issue than what would have been necessary by tackling the issue early on.

“These transfer stations, particularly the older ones, have a lot of waste material that has gone through the building over the years. And these slabs, even though they’re supposed to act as primary containment to the waste stream, they have cracks, they’ve joints, stuff goes through the slab and gets into the dirt, and that can be an enormously risky scenario,” Andrews says.

Specific to negating environmental risks, Andrews says that a concrete overlay design can be a safer bet for operators as opposed to new concrete construction, which can open up a facility to environmental contamination problems due to the exposure of the soil.

In the mix

One thing that both Andrews and Egosi stress is that not all concrete is created equal. Because concrete is made from aggregates derived from quarries, the strength and integrity of this material differs based on the geography from which it is mined.

“You want to select an aggregate that has a wear index property that’s very suitable for crushing, degradation and disintegration. That really does make a difference in the longevity of the floor,” Egosi says.

For Andrews, he says that the concrete mix his company uses has evolved over time.

“We have used a lot of different mix designs over the years, but what we always come back to is a slightly altered version of a Department of Transportation bridge mix. It’s a federal standard concrete that’s used in bridges because bridges are built in the desert, they’re built in the mountains, they are built in all these different types of environments. ... What we’ve done at American Restore is we’ve started with that mix and then we’ve altered it over the years where we’ve added some silica fume and fly ash to reduce the porosity of the concrete, and maybe we add some more cement to the mixture depending on where we are in the country since not all the aggregate is the same.”

To negate the variables of using different aggregate with different qualities, Andrews says that most of the engineered overlay American Restore uses for its concrete floor restoration is made in the same plant with the same ingredients to ensure a consistent product.

“Because of our quality assurance and quality control measures, we can do a job in New York; Seattle; Texas; or Casper, Wyoming and it’s the same exact formula. It’s the same material. So, now we can tell the owner and the engineer [of a site] with certainty what their performance expectations can be.”

Because cost can be an issue, especially for municipal clients, Andrews says that the company offers two different grades of concrete that are priced accordingly.

He says that for those on a tighter budget, companies often opt to use the tougher material in high-wear areas and use the other mix where there is less traffic and potential for wear.

Regardless of the mix, transfer station floors inevitably degrade over time. Making facility assessment a routine part of the job can help transfer station managers identify problems before they lead to significant costs—and even bigger headaches.

The author is the editor of Waste Today and can be reached at aredling@gie.net.