



City of Rochester, NY
Lovely A. Warren, Mayor
Rochester City Council

City of Rochester Recycling Cart Action Plan

May 2016

FINAL DRAFT



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1.0 Background

The City of Rochester's Department of Environmental Services, Bureau of Operations and Parks, Solid Waste Management Division (SWMD) has operated a curbside collection program for recyclables since 1988. The Refuse Division provides refuse and recycling collection to approximately 69,000 household units each week. Collection fees for residential customers are charged on their tax bill. Commercial customers pay a user fee based on volume.

Since 1992, when Monroe County's (County) mandatory Solid Waste Reuse and Recycling Law took effect, recyclable material collection services have been required to be included with solid waste collection. The law states, in general, that residents must source separate their recyclables from solid waste. The City also adopted their own mandatory ordinance for the collection of recyclables. The regulations require the following food, drink and household product containers to be recycled: steel, aluminum, glass bottles, jugs and jars, plastics (#s 1 and 2). According to the regulations, residents must also recycle newspapers, magazines and corrugated cardboard.



The City delivers collected curbside recyclables to the Monroe County Recycling Center (MCRC) in accordance with the terms of an Inter-Municipal Agreement with Monroe County. The City has been committed to providing its residents with curbside recycling collection services since the program's inception.

The City's recycling message to its residents has historically been consistent with the County's mandatory law. This also holds true when items have been added to the list of acceptable materials.

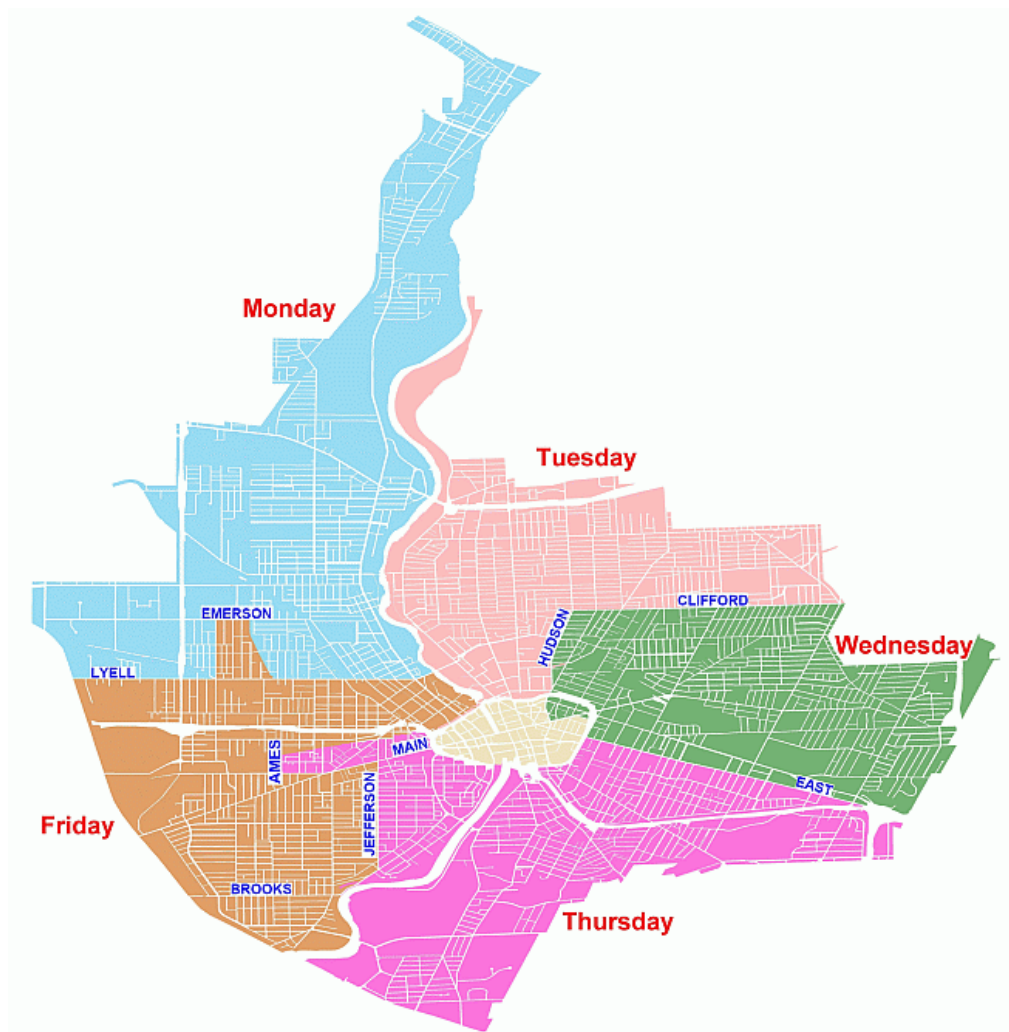
Additionally the City's collection method has depended on the processing equipment at the MCRC, where recyclables are sorted, processed and baled for transport to end market users.

The County, with the City's support, has remained diligent in assessing potential recycling streams that could be added to the County program to increase recycling rates and revenues. Over the 20-year period, the County has added many materials to its recycling program including paper containers (gable-top cartons/drink boxes), empty steel aerosol cans (no pesticides or spray paint), plastics (#s 3-7), defaced license plates and pots/pans/foil ware, mixed paper, telephone directories and all books, aseptic containers, and pizza boxes (all clean paper). The ability to consult with the MCRC operator has helped the County to do this responsibly, by using their expertise in the field to determine when economical, reliable and sustainable outlets for these materials are available.

2.0 Current Recycling Services Overview

The City is divided into five (5) separate sections, one for each day of the work week (Monday, Tuesday, Wednesday, Thursday and Friday) as shown in Figure 1 below. Each section is then sub-divided into four (4) separate collection areas: District A, B, C and D. One Assistant Operations Superintendent (AOS) supervises each district. Each district is equipped with residential refuse trucks, residential recycling trucks and boom trucks. Commercial collection is a separate activity, supervised by the Superintendent, and is equipped with rear load trucks, recycle trucks, roll-off trucks and a litter basket truck. Table 1 below summarizes the current residential services.

Figure 1 Recycling Services by Day in Rochester



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Table 1 Current Residential Information and Services in Rochester

Population, 2012 estimate	210,532
Housing Units, 2010	97,158
Single Family Housing	80,445
Homeownership rate, 2007-2011	40.6%
Housing units in multi-unit structures, percent, 2007-2011	51%
Persons per household, 2007-2011	2.34
Land area in square miles, 2010	35.78
Recycling Service Frequency	Once-Weekly
Recycling Collection Method	Dual-Stream (thru 2013)/ Single-Stream (since 2014)
Container Type	12-gallon bin
Vehicle Type	31 yd. Labrie Top Select SL
Recycling Average Routes per Day	12.2
Recycling Crew Size	1.0
Recycling Average Hours per route per day	5.02
Recycling Average tons collected per day (total)	~20 Tons

The City provides education for residents and businesses regarding all aspects of its solid waste, recycling, yard waste, HHW, ancillary programs and services. The City publishes and mails the "At Your Service" Environmental Services Guide annually, which provides an overview of all services, proper setout practices, and schedules. Contact information for special requests and service updates can also be found in the Guide. The City provides separate brochures that specify what materials are included in its recycling programs. Seasonal events, including leaf collection and spring cleanups, are publicized in local media.



3.0 Conversion of MCRC to Single Stream Recycling

In 2011, the City began conversations with the County to explore options for enhancing the City's recycling program. The single-stream philosophy of recycling had firmly taken hold in many areas of the country where weather conditions and port access eased operational concerns. In a single-stream recycling system, all materials are mixed together in one (1) blue box or toter. Residents no longer separate paper and containers at the curb. Collection vehicles have one compartment rather than the multiple compartments necessary for separate paper and container recycling streams. Both the collection and the processing systems must be designed and upgraded to handle this fully commingled mixture of recyclables.

The advantages of a single-stream system are associated with slightly higher recycling rates, reduced collection costs and greater customer convenience. The disadvantages of the system are associated with initial capital costs for upgrading of the materials recovery facilities, higher sorting and processing costs, higher residual rates (i.e., non-processable material sent to the landfill), and higher contamination of recyclable paper, making the recovered material less marketable. However, hundreds of North American and European cities annually shift to single stream recycling. A 2005 R.W. Beck survey stated that 11% of the U.S. population served by curbside recycling service was single-stream. According to the American Forest and Paper Association, by 2007 that number had increased to 50%.

The County and the City supported the transition to single stream recycling because of the potential benefits including convenience to residents, an increase in incoming recyclables, and the potential for greenhouse gas reductions and fuel savings through the reduction in the number of truck trips needed for curbside collection. Consequently, the County decided to evaluate an upgrade to the MCRC system to process single-stream recyclables. The County issued a draft Request for Proposals for the operation and maintenance of the MCRC on December 20, 2011, pursuant to the provisions of New York General Municipal Law (NY GML) Part 120-w. Waste Management of New York, LLC (WMNY) ultimately was awarded the contract to operate and maintain the MCRC. Under the new agreement, WMNY and the County added new processing equipment to accommodate single stream recycling processing by January 1, 2015. The MCRC's "single stream" retrofit was completed April 4, 2014.

4.0 Curbside Recycling Study

Following the commitment of the County and WMNY to transition the MCRC to single stream and Mayor Lovely Warren's leadership and commitment to creating a cleaner, greener City, the City realized the need to analyze alternative methods for collecting recyclable material as part of the transition of the residential and commercial program from dual stream to single stream. In 2013, Gershman, Brickner & Bratton, Inc. (GBB) was hired by the City to provide an independent review of the City's current recycling system. At the direction of, and with cooperation of, SWMD, GBB identified opportunities for improved efficiency and effectiveness in SWMD operations, and prioritized the top efficiency improvement and cost savings opportunities for SWMD's consideration. New collection containers and vehicles were reviewed with a focus on improving operational efficiency, cost effectiveness, and customer service.

Overall, in order to improve operations, increase recycling, protect workers, and optimize costs, GBB's Curbside Recycling Study (December 2013) recommended that the City adopt rolling carts with RFID tags for recyclables, institute automated collection for all routes, change to every other week collection, and utilize routing software to efficiently implement both. The GBB study also recommended that new cart lids should have in-laid molding and labeling as opposed to sticker labels. In-laid molding is more durable and weather-resistant than sticker labeling. In-laid molding also provides a vibrant graphic reminder to users about acceptable recycling materials and proper set out procedures. This reduces contamination and improves collection operations.

Based on the analysis completed and summarized in the Curbside Recycling Study, SWMD opted to undertake a pilot single stream curbside collection study program. Ninety six-gallon wheeled carts with lids were issued to those residents who demonstrated they recycled during the 3-week survey period. These were serviced weekly until October 2015. The next section describes the Pilot Program completed by the SWMD.

5.0 Pilot Program Implementation

5.1 Participation Surveys

Prior to implementing the pilot program, SWMD completed surveys of three (3) of the twelve (12) recycling routes to identify active recyclers that currently participated in the City's curbside recycling program. Between September and December 2014, SWMD staff compiled recycling participation data from residents along Recycle Routes 2, 3, and 5 for a three (3) week period. SWMD staff identified the households within the route that participated in the current recycling system by observing a "blue bin" curbside on their designated collection day. Table 2 summarizes the recycling participation for each route studied during this survey. This data was utilized to identify optimal routes for the pilot project. Route 5 had one of the highest participation rates at 56% and Route 2 had one of the lower participation rates at 28%. Because of the wide gap in their participation rates, Routes 2 and 5 were selected for the pilot program. The disparity in their participation rates offered the opportunity for a fair and defensible analysis of the impact of the pilot single stream curbside collection program that covered different socioeconomic neighborhoods.

Given that all routes were not surveyed during the initial survey event, a second round of surveys was conducted between June and July 2015 encompassing Recycle Routes 1, 4, 6, 8, 9, 10, 11 and 12. This information will fill the data gap should the program be rolled out city-wide in the future. Table 3 continues to summarize the recycling participation for each route studied during the second survey. Recycle Routes 07, S01 (spare 1 on Thursday) and S02 (spare 1 on Thursday) were not surveyed; therefore, their data is estimated.

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Table 2 Recycling Participation Set Out Data

Curbside Collection Day of Week	Recycle Route Number													
	01		02		03		04		05		06		07 ⁽¹⁾	
	6/29/15 - 7/3/15		9/8/14 - 9/22/14		10/13/14 - 10/27/14		6/29/15 - 7/3/15		12/8/14 - 12/22/14		Week of 9/24/15		Not Applicable	
	Potential Customers	Recycling Participants	Potential Customers	Recycling Participants	Potential Customers	Recycling Participants	Potential Customers	Recycling Participants	Potential Customers	Recycling Participants	Potential Customers	Recycling Participants	Potential Customers	Recycling Participants
Monday	913	566	706	361	712	440	939	574	967	418	958	328	1,287	474
Tuesday	877	174	1,305	195	1,034	194	683	328	699	329	933	242	1,149	423
Wednesday	1,569	248	1,647	392	937	686	693	532	711	573	933	378	1,330	490
Thursday	1,162	554	695	346	761	427	688	441	871	539	979	429	2,074	750
Friday	1,250	426	1,530	347	1,625	520	721	382	734	382	970	281	946	348
Grand Total	5,771	1,968	5,883	1,641	5,069	2,267	3,724	2,257	3,982	2,241	4,773	1,658	6,786	2,486
Percent participation (average)	34%		28%		45%		61%		56%		35%		37%	

Table 3 Recycling Participation Set Out Data, Continued

Curbside Collection Day of Week	Recycle Route Number													
	08		09		10		11		12		S01 ⁽¹⁾		S02 ⁽¹⁾	
	Week of 9/24/15		8/24/15 - 9/12/15		8/24/15 - 9/12/15		7/20/15 - 8/14/15		7/20/15 - 8/14/15		Not Applicable		Not Applicable	
	Potential Customers	Recycling Participants	Potential Customers	Recycling Participants	Potential Customers	Recycling Participants	Potential Customers	Recycling Participants	Potential Customers	Recycling Participants	Potential Customers	Recycling Participants	Potential Customers	Recycling Participants
Monday	1,435	391	1,445	502	1,623	272	1,804	337	414	44		NA		NA
Tuesday	951	285	1,086	216	1,616	365	1,539	260	340	66		NA		NA
Wednesday	955	333	1,358	510	933	560	846	353	435	104		NA		NA
Thursday	1,043	438	748	486	1,077	543	762	522	482	234	1,112	639	843	514
Friday	1,178	319	1,128	432	1,342	307	1,112	291	461	38		NA		NA
Grand Total	5,562	1,766	5,765	2,146	6,591	2,047	6,063	1,763	2,132	486	1,112	639	843	514
Percent participation (average)	32%		37%		31%		29%		23%		57%		61%	

(1) Routes 07, S01 and S02 were not formally surveyed; therefore, the reported participation is estimated.

5.2 Pilot Program Roll-Out

Once SWMD made the decision to embark on the pilot project on Recycle Routes 2 and 5, key roll out tasks were commenced. In January 2015, SWMD retained an intern to assist with the project implementation and management of the pilot program. Based on the participation surveys, Route 2 required delivery of 1,641 carts to residents and Route 5 required delivery of 2,241 carts for a total of 3,882 carts initially delivered for the pilot program. The City has agreement purchase contract with Cascade Carts. Through this contract, 4,698 carts were ordered in October 2014 and subsequently delivered to the City's Operations Building in November 2014 where they were stockpiled until delivery to customers could be completed.

Concurrent with ordering carts, the City's communications department and SWMD developed educational information, which included a Welcome Letter and an informational flyer with a new slogan and logo. As with many recycling programs, education and communication is the key to success. Residents would need to be well informed of the changes and expectations. The letter addressed to "Recycling Role Models" introduced the new pilot single stream recycling program. A copy of the Welcome Letter and the educational flyer is provided on the following page.



One (1) week prior to the delivery of carts the Welcome Letter was sent directly to the participating residents via U.S. Mail (February 11, 2015). The following week, February 16-21, 2015, 3,882 carts were delivered by SWMD or a private contractor to the participating residents in Recycle Routes 2 and 5. The carts included an information packet with educational material to ensure that residents were fully aware of the pilot program and its purpose and goals. Residents were advised to place their carts at the curb only if the cart was full or almost full. Tables 4 and 5 provide a summary of the number of households within the pilot Recycle Routes 2 and 5, and the initial number of participants that were provided carts, as well as the current number of carts in use (1/11/2016).



***NO sorting
required!***

Dear Recycling Role Model,

Rochester's residential recycling program is a quarter of a century old and is now even easier and more convenient with the introduction of **Single Stream Recycling**. You and your neighbors are among Rochester's top recyclers so you have been selected to participate in the new pilot single stream recycling program.

- Single stream means no more need to sort recyclable items!
- A new, 96-gallon wheeled container that holds eight times the volume of the old 12-gallon boxes has been provided to you. The larger size means you only need to set your container out for collection when it's almost full or full, allowing you to skip collection days during heavy snowfalls, severe weather or until the container is full.
- Now, you can recycle a wider variety of items - such as larger cardboard boxes that wouldn't fit in the old recycle boxes. Simply flatten boxes and place them into your cart.
- Keep your old recycling box to store recyclables in your house/garage and transfer the items to your cart later.
- Your new cart will be serviced by an automated truck which will compact the load, thereby providing a more efficient use of space.

Thank you for being a recycling role model and for helping us reinforce our commitment to green practices. We can't do it without you! Your recycling pick up will occur at its regularly scheduled time.



A handwritten signature in black ink that reads "Lovely A. Warren".

Lovely A. Warren, Mayor of Rochester

For more information Call **311** or visit
www.cityofrochester.gov/residentialrecycling

See reverse side for new recycling guidelines chart.

BACK



Single Stream Recycling

NO sorting required!



Place the following
CLEAN and EMPTY items
in the recycling cart:

Coloque los siguientes
LIMPIO y VACÍO en
el recipiente de reciclaje:

NO

- **GARBAGE** • styrofoam • electronics
- ceramics, dishes or glassware
- food waste • plastic bags
- hazardous waste containers
- light bulbs, window glass or mirrors
- electrical cords, hoses or ropes
- syringes/sharps • yard waste

NO

- **BASURA** • espuma de poliestireno
- electrónicos • cerámicas o cristalería
- desperdicios de comida • bolsas de plástico
- envases de químicos o contaminantes
- focos, ventanas de vidrio o espejos
- cables eléctricos, mangueras o cuerdas
- jeringas/objetos afilados
- desperdicios de jardín

PAPER/PAPEL: Bulk mailings, books, phone books, newspapers, inserts, magazines, catalogues, office paper, file folders, paper bags • Correspondencia publicitaria, libros, directorios telefónicos, periódicos, propaganda, revistas, catálogos, papel de oficina, carpetas de archivos, bolsas de papel

BOXES/CAJAS: Food/drink/soup/shipping boxes, gable-top cartons, paper towel rolls, etc...
• Cajas de alimentos/bebidas/sopa/envío, envases de cartón con tapa estilo hastial, rollos de toallas de papel, etc...

CARDBOARD/CARTON: Flatten all boxes • Aplaste todas las cajas

PLASTIC/ PLÁSTICO: Plastic bottles and containers • Botellas y envases de plástico

GLASS/ VIDRIO: Glass jars and bottles (lids attached) • Botellas y envases de vidrio

METAL: Metal pots and pans, foil, pie tins, license plates • Aluminum, tin, steel, or aerosol cans
• Ollas y sartenes, papel de aluminio, moldes de tarta, placas de matrícula
• Latas de aluminio, acero, hojalata o aerosol

Carts must be placed 3 feet apart • Do not block carts
Los carritos deben colocarse a 3 pies de distancia. • No bloquee los carritos

For more information Call 311 or
visit www.cityofrochester.gov/residentialrecycling

Table 4 Recycle Route 2 Participation

Curbside Collection Day of Week	Total Potential Customers	Initial Recycling Participants (%) (Feb. 2015)	Initial Cart Delivery (Feb. 2015)	Current Cart Distribution (Jan. 2016)	Current Recycling Participants (%) (Jan. 2016)
Monday	706	51%	361	451	64%
Tuesday	1,305	15%	195	277	21%
Wednesday	1,647	24%	392	464	28%
Thursday	695	50%	346	411	59%
Friday	1,530	23%	347	409	27%
Total	5,883	28%	1,641	2,012	34%

Table 5 Recycle Route 5 Participation

Curbside Collection Day of Week	Total Potential Customers	Initial Recycling Participants (%) (Feb. 2015)	Initial Cart Delivery (Feb. 2015)	Current Cart Distribution (Jan. 2016)	Current Recycling Participants (%) (Jan. 2016)
Monday	967	43%	418	524	54%
Tuesday	699	47%	329	437	63%
Wednesday	711	81%	573	629	88%
Thursday	871	62%	539	599	69%
Friday	734	52%	382	475	65%
Total	3,982	56%	2,241	2,664	67%

Between March and October 2015, SWMD collected information associated with the pilot program using a software program with cart readers on the trucks. Data included tonnage collected by Recycle Route and day of the week, as well as the percentage of carts that were set out each week given that residents had the option of setting out at their leisure, but dependent on the amount of recycling in their cart. Historic tonnages associated with the traditional (March 2010 – February 2015) “blue bin” recycling program were compared to the average tonnage collected between February 2015 and October 2015 during the pilot program (96-gallon carts). Tables 6 and 7 show the increase in tonnages realized by day for Recycle Routes 2 and 5.

Table 6 Tonnage Estimates for Recycle Route 2

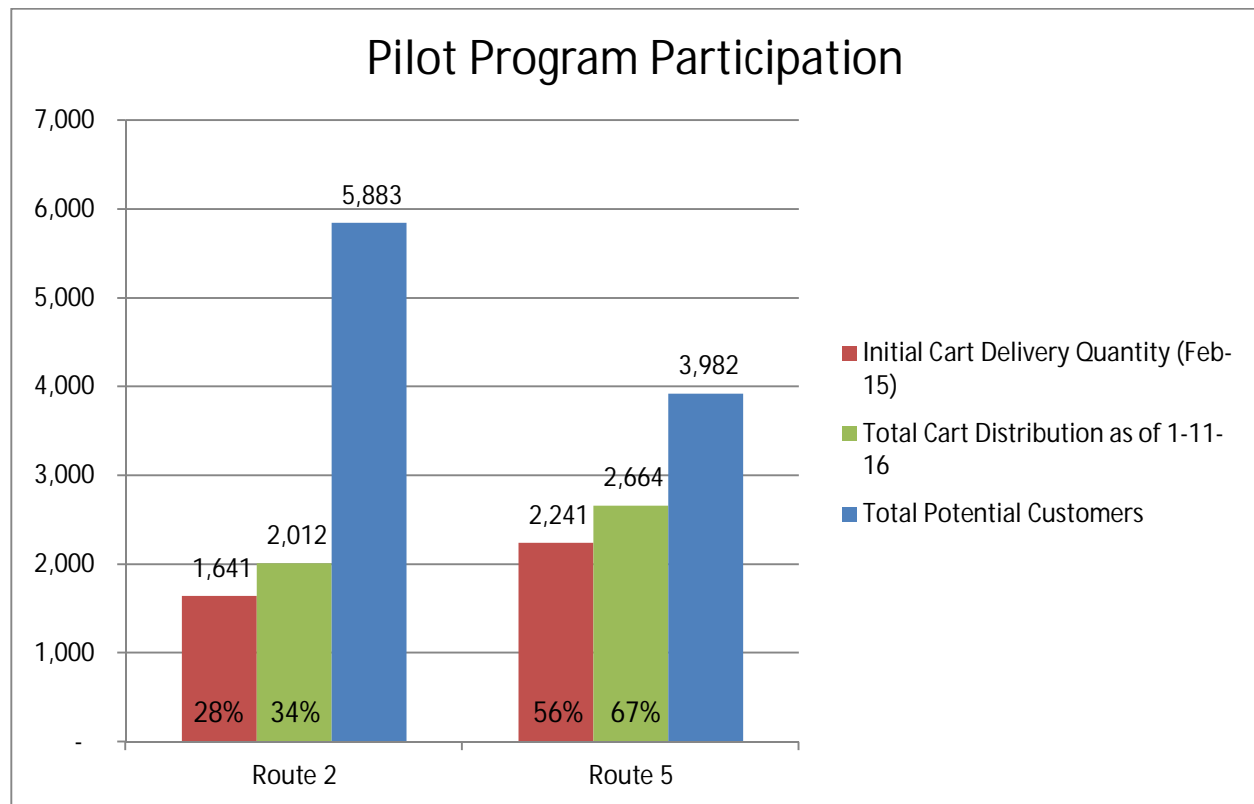
Curbside Collection Day of Week	Traditional Blue Bin Average Tonnage (Mar. 2010 – Feb. 2015)	Wheeled Cart Weekly Average Tonnage (Feb. – Oct. 2015)	Tonnage Increase (%) Blue Bin to Cart
Monday	1.68	2.39	30%
Tuesday	0.73	1.47	50%
Wednesday	1.25	2.35	47%
Thursday	2.18	3.00	27%
Friday	1.15	1.87	39%
Total	6.99	11.09	39%

Table 7 Tonnage Estimates for Recycle Route 5

Curbside Collection Day of Week	Traditional Blue Bin Average Tonnage (Mar. 2010 – Feb. 2015)	Wheeled Cart Weekly Average Tonnage (Feb. – Oct. 2015)	Tonnage Increase (%) Blue Bin to Cart
Monday	1.65	2.39	31%
Tuesday	1.05	1.66	37%
Wednesday	2.75	3.82	28%
Thursday	2.93	3.62	19%
Friday	1.31	2.09	37%
Total	9.69	13.58	30%

Recycle Route 2 saw an average tonnage increase of 39% and Recycle Route 5 saw an average tonnage increase of 30%. This could be attributable to an increase in the amount of materials participants are recycling as a result of the wheeled cart program as well as “peer pressure” to participate in the recycling program. Recycle Route 2 traditionally had a low tonnage/participation, so it had more room for improvement than Recycle Route 5 that was fairly well established. Wheeled carts were initially distributed to only those households that were established recycling participants (3,882). However between February 2015 and January 2016, an additional 794 wheeled carts were delivered to households that showed an interest in participating in and learning more about the City’s recycling program. The resulting number of carts distributed to households is shown in Tables 4 and 5 above. Residents were heavily influenced to obtain wheeled carts as the result of neighbor participation in the recycling program. This “peer pressure” was enough to increase participation among households by approximately 6% and 11% within Recycle Routes 2 and 5, respectively. Residents typically requested a wheeled cart by contacting 311 or direct communication with SWMD staff in the field. This participation increase is depicted in Figure 2 below.

Figure 2 – Pilot Program Increase in Participation, February 2015 – January 2016



Based on a combination of the introduction of wheeled carts and an increase in participation, tonnages of recyclables collected observed an overall increase within these two (2) Recycle Routes.

As stated in the communication provided to the residents, if the wheeled carts were not full, the residents were advised to defer setting their cart out until it was full or almost full. With the assistance of the RFID tags placed in each cart, the City could monitor the number of carts that were set out each collection day with the use of the ELEMOS software. The gathering of this data was extremely helpful at analyzing the success of the program. As shown in Tables 8 and 9, on average less than half of the wheeled carts were set out curbside for collection on their service day. Consequently, households were not filling their carts to capacity on a weekly basis; and therefore, did not need to place their wheeled cart at the curb every week.

Table 8 Weekly Cart Service Route 2, February 2015 – October 2015

Curbside Collection Day of Week	Total Number of Carts on Route (Jan. 2016)	Average Number of Carts Serviced Each Week (Feb. – Oct. 2015)	Percentage of Carts Serviced Each Week
Monday	451	168	37%
Tuesday	277	90	32%
Wednesday	464	153	33%
Thursday	411	182	44%
Friday	409	130	32%
Total	2,012	732	36%

Table 9 Weekly Cart Service Route 5, February 2015 – October 2015

Curbside Collection Day of Week	Total Number of Carts on Route (Jan. 2016)	Average Number of Carts Serviced Each Week (Feb. – Oct. 2015)	Percentage of Carts Serviced Each Week
Monday	524	198	38%
Tuesday	437	143	33%
Wednesday	629	290	46%
Thursday	599	279	47%
Friday	475	168	35%
Total	2,664	1,078	40%

As detailed in GBB's Curbside Recycling Study (December 2014), a benchmarking study was completed of four (4) cities that resembled Rochester in one or more criteria that were reviewed. Three (3) of the four (4) benchmarked cities were providing every-other-week (EOW) collection of their recyclables as part of their existing programs. GBB suggested that in the future the City could follow the model of the three (3) cities and reduce their collection schedule frequency of recyclables to EOW, potentially leading to further efficiency and cost improvements. Based on this suggestion, SWMD opted to implement EOW as part of their pilot program to gauge its success or challenges prior to rolling out a wheeled cart program city-wide. In August 2015, SWMD proposed the pilot program switch to an EOW collection on Recycle Routes 2 and 5. SWMD understood that communication would be critical when changing the weekly collection frequency that most residents had received for the last two (2) decades and with the most recent change from boxes to carts. The City SWMD developed a new letter for each Recycle Route explaining the change and providing a calendar to assist residents in identifying their collection week. The collection days would remain the same. The letter and calendar are provided on the following pages. The letters were sent out September 23, 2015 and each letter specified when the new EOW collection would start. Recycle Route 5 would start first followed by Recycle Route 2.



**Every other
WEEK, take it
to the STREET!**

FRONT – RECYCLE ROUTE 5

Your Recycling Cart Pilot Program is changing to *Every-Other-Week* Collection Service



Dear Recycling Program Participant,

As of October 12, 2015, the City will provide recycling collection service for your blue recycling cart on an every-other-week basis.

In order to better facilitate this change, we have provided you with a calendar outlining the new pick up schedule for your recyclables. A refrigerator magnet will be delivered to your residence soon.

Please take a look at the new schedule to see which weeks we will collect your recyclable material. It's important that you adhere to the every-other-week schedule. Flattening cardboard and containers will help allow for enough room in your cart to go two weeks between collection services.

To date, the average tonnage of recycled material collected has increased 34% as a result of your efforts. Your continued support will be crucial in creating a recycling model that can be expanded throughout our entire city. You are essential to the success of the recycling program.

If you have any questions or concerns in regard to this change, please call 311 to initiate your inquiry. Staff from the pilot program project team will follow up with you.

We greatly appreciate your efforts and value your partnership with us. Together, we can continue to divert an increasing amount of recyclable material from the landfill. Thank you for joining us to help make our city greener!

Norman H. Jones

Norman H. Jones, Commissioner
Department of Environmental Services

For more information **Call 311** or visit
www.cityofrochester.gov/residentialrecycling
See reverse side for new recycling pick up schedule chart.





Every other WEEK, take it to the STREET!

Your single-stream recycling cart will now be picked up EVERY OTHER WEEK on your normally scheduled day. For more information, call 311 or visit www.cityofrochester.gov/residentialrecycling

OCTOBER						
S	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

NOVEMBER						
S	M	T	W	Th	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

DECEMBER						
S	M	T	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

JANUARY						
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 = Service day

Recycle 5



**Every other
WEEK, take it
to the STREET!**

Dear Recycling Program Participant,

As of October 19, 2015, the City will provide recycling collection service for your blue recycling cart on an every-other-week basis.

In order to better facilitate this change, we have provided you with a calendar outlining the new pick up schedule for your recyclables. A refrigerator magnet will be delivered to your residence soon.

Please take a look at the new schedule to see which weeks we will collect your recyclable material. It's important that you adhere to the every-other-week schedule. Flattening cardboard and containers will help allow for enough room in your cart to go two weeks between collection services.

To date, the average tonnage of recycled material collected has increased 34% as a result of your efforts. Your continued support will be crucial in creating a recycling model that can be expanded throughout our entire city. You are essential to the success of the recycling program.

If you have any questions or concerns in regard to this change, please call 311 to initiate your inquiry. Staff from the pilot program project team will follow up with you.

We greatly appreciate your efforts and value your partnership with us. Together, we can continue to divert an increasing amount of recyclable material from the landfill. Thank you for joining us to help make our city greener!

Norman H. Jones

Norman H. Jones, Commissioner
Department of Environmental Services



For more information Call 311 or visit
www.cityofrochester.gov/residentialrecycling
See reverse side for new recycling pick up schedule chart.

Believe.

 City of Rochester, NY
Lovely A. Warren, Mayor
Rochester City Council



Every other WEEK, take it to the STREET!

Your single-stream recycling cart will now be picked up EVERY OTHER WEEK on your normally scheduled day. For more information, call 311 or visit www.cityofrochester.gov/residentialrecycling

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 = Service day

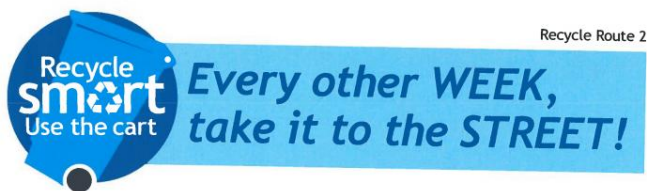
Recycle 2

City of Rochester Recycling Cart Action Plan

Not only did the letter thank residents for their participation in the pilot program to date, but it also reported on the success of the program, commending residents for their participation and support. To transition from weekly collection to EOW collection, a catchy slogan was used, “Every other WEEK, take it to the STREET”, to help residents better remember the change. For Recycle Route 2, the first EOW collection was November 2, 2015. October 26, 2015 was the first EOW collection for Recycle Route 5. Shortly after the letters were sent to residents they received a magnet inscribed with the new slogan and their collection calendar, this was delivered by hand to residents. Magnets were to be given a week before their last weekly service.



In anticipation of confusion or forgetfulness, the SWMD delivered reminders in the form of door hangers to participating recycling role models the first week of their new EOW collection schedule. The door hangers reminded residents not to put their recycling wheeled cart to the street the following week and to abide by the EOW collection schedule.



REMEMBER!

**YOUR NEXT SERVICE WILL BE WEEK
BEGINNING NOVEMBER 2, 2015**

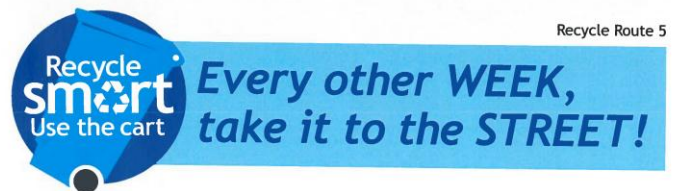
Please bring cart out on your
next every other week day

Please remember to **flatten** cardboard boxes and
plastic containers to make more space in your cart!

For more information, call 311 or visit
www.cityofrochester.gov/residentialrecycling

Believe.

City of Rochester, NY
Lovely A. Warren, Mayor
Rochester City Council



REMEMBER!

**YOUR NEXT SERVICE DAY IS
OCTOBER 26, 2015**

Please bring cart out on
your next EOW Day

Please remember to **flatten** cardboard boxes and
plastic containers to make more space in your cart!

For more information, call 311 or visit
www.cityofrochester.gov/residentialrecycling

Believe.

City of Rochester, NY
Lovely A. Warren, Mayor
Rochester City Council

Expecting that residents would continue to place their recycling carts at the curb on a weekly basis, SWMD staff visited Recycle Routes 2 and 5 between October 26, 2015 and January 2, 2016 on their non-



collection weeks. If residents placed their wheeled recycle cart at the curb on their non-collection week, staff placed “Oops” stickers on the cart to gently remind them of the EOW collection schedule. If carts were found to be more than half full, they were tagged for service and a special collection was arranged. If the cart was less than half full it was placed back by the resident’s house. Data was collected for six (6) weeks to determine how many carts were placed curbside on their off-weeks. Over time the number of carts placed curbside decreased and on average about 10% of the carts were placed curbside on their off-weeks.

Based on the six (6) weeks of data collected for Routes 2 and 5, it became clear that the majority of residents generated recycling in amounts suitable for EOW recycling curbside collection with no major backlash. This arrangement also allowed for a reduction in the number of trucks needed for the pilot program.

5.3 Successes, Challenges, and Lessons Learned

Over the course of the pilot program, many successes and challenges were identified, resulting in several lessons learned. Table 10 discusses the observations made from the switch from blue bins to 96-gallon wheeled carts on a weekly basis, and Table 11 presents the observations made when the pilot program changed from weekly service collection to EOW collection using the 96-gallon carts.

Table 10 Weekly Collection (February 2015-October 2015)

Successes	Challenges	Lessons Learned
<ul style="list-style-type: none"> • Increase in tonnage collected • Increase in participation <ul style="list-style-type: none"> ◦ Previous non-recyclers now have interest in recycling • Increased interest by non-pilot program customers • Increase in customer education • Side-loader contamination can be monitored • Contamination rates not so high • Electronic tracking of history and location 	<ul style="list-style-type: none"> • Contamination <ul style="list-style-type: none"> ◦ Driver participation (automated arm is an issue) ◦ Customer confusion (refuse cart/ misinterpret “single stream”) ◦ Lid/space allows contamination to be hidden • Residents bring cart out <50% full (in-efficiency) 	<ul style="list-style-type: none"> • Residents do not follow any particular schedule (weekly, biweekly, etc.) • Cart volume varies • Those identified as “heavy recyclers” with boxes did not follow the same pattern with carts

Table 11 EOW Collection (October 2015 – Present)

Successes	Challenges	Lessons Learned
<ul style="list-style-type: none">• High schedule adherence• More efficient service<ul style="list-style-type: none">○ Service time not changed by much○ Even more tonnage collected each service• Minimal resistance from residents	<ul style="list-style-type: none">• Education on properly preparing carts to allow two week pickup (unflat boxes)• Some schedule non-adherence• More carts needed to alleviate EOW schedule pickup (especially Multifamily/commercial)• Heavier stress on drivers<ul style="list-style-type: none">○ More stops○ More material (overflow)○ One to two loads (added time)	<ul style="list-style-type: none">• Space at residences/ business are not infinite and other options besides extra carts need to be thought of<ul style="list-style-type: none">○ Ex. Converting commercial customers to weekly schedule• Less communication with residents notifying of EOW schedule. (Letter/calendar mail and calendar drop off only)• Possible use of electronic education (schedule, reminders, updated recycling information, real-time updates)

Based on the findings, the pilot program was deemed a success. As a result, the City recommended the distribution of wheeled carts throughout the other routes or rest of the City. An important lesson learned and a key element of success is the proper, and often redundant, education of residents. Proposed education for a full city-wide roll-out will be discussed in further detail below.

6.0 Existing SWMD Budget

The SWMD is divided into four (4) separate budget activities: Administration, Residential Collection, Commercial Collection, and Recycling. Fees for collection and disposal of residential and commercial refuse, recyclables and container rental, are proposed annually by the Mayor as a part of the budget process. These budgets are ultimately approved by the City Council. The annual fees for collection of residential refuse and recyclables are shown in Table 12:

Table 12 Residential Rates

Number of Dwelling Units	Annual Fee
1	\$380
2	\$764
3	\$847

For properties consisting of one, two, or three-family residential units, where part of the premises is a non-residential use but the primary use remains residential (small businesses residing in residences), the fees are slightly higher, as shown in Table 13:

Table 13 Residential Business Rates

Number of Dwelling Units	Annual Fee
1	\$764
2	\$847

For commercial establishments, the fee for weekly multiple collections is the established fee, multiplied by the number of collections per week. The fee for non-containerized additional volumes is \$17.20 for each additional cubic yard of refuse and \$10 for each additional cubic yard of recyclable materials. For special residential, commercial, and container service within the City, the Commissioner can negotiate fees based on volume and time requirements, as deemed reasonable.

Based on discussions with the City, the residential and business rates are not anticipated to increase as a result of the implementation of the wheeled cart program for recyclables and EOW collection.

The City has a Refuse Collection Fund, which has an approved FY 2015-2016 budget allocation of \$17,600,500. For the SWMD, the budget for the past three fiscal years is shown in Table 14 and 15.

Table 14 Past Three Years Budget by Major Object

Appropriations by Major Object	2013-2014	Amended 2014-2015	Approved 2015-2016
Personnel Expenses	\$6,223,900	\$6,141,900	\$6,338,800
Materials & Supplies	\$232,700	\$237,200	\$241,400
Services	\$10,835,500	\$10,903,400	\$11,020,300
Other	\$0	\$0	\$0
Total	\$17,292,100	\$17,282,500	\$17,600,500

Table 15 Past Three Years Budget by Activity

Appropriations by Major Activity	2013-2014	Amended 2014-2015	Approved 2015-2016
Administration	\$2,774,800	\$2,801,500	\$2,962,600
Residential Refuse Collection	\$10,611,000	\$10,645,400	\$10,780,800
Commercial Refuse Collection	\$2,061,400	\$2,013,500	\$2,052,500
Recycling	\$1,844,900	\$1,822,100	\$1,804,600
Total	\$17,292,100	\$17,282,500	\$17,600,500

The SWMD has begun to replace their existing fleet of recycling trucks with automated arm/side loader vehicles. At the time this report was prepared, the City had automated arm/side loader trucks scheduled to be purchased. The delivery schedule of these trucks will need to be incorporated into proposed roll-out schedule.

7.0 Proposed City-Wide Wheeled Cart Roll-Out

Based on the success of the pilot program, it is recommended that wheeled carts be provided to all participating recyclers within the city limits. With the potential for 26,118 additional carts (as of 2/23/16), a phased delivery approach is highly recommended. As with the pilot program, only households identified as participating recyclers from the 2014 and 2015 surveys will initially be provided carts. Based on discussions with SWMD staff, SWMD operations can store and deliver a maximum of 4,500 carts at one time. Drawing upon the lessons learned from the pilot program, it is reasonable to assume that carts for two (2) routes could be delivered in one (1) week using two (2) delivery trucks (one for each route). Those routes could be alternating EOW collection routes, with one (1) truck managing the collection of both routes. As the inventory of trucks is increased, routes will concurrently be added to the program. For clarification purposes, there will be two (2) collection weeks identified as Collection Week A and Collection Week B. Each truck will be assigned a Collection Week A route and a Collection Week B route. Ultimately there will be six (6) recycle routes that will be serviced during Collection Week A and six (6) recycle routes that will be serviced during Collection Week B. These include pilot routes 2 and 5. Charts 1-11 on the following pages provide a proposed schedule for cart ordering, resident notifications/education, cart delivery, and commencement of collection for each route.



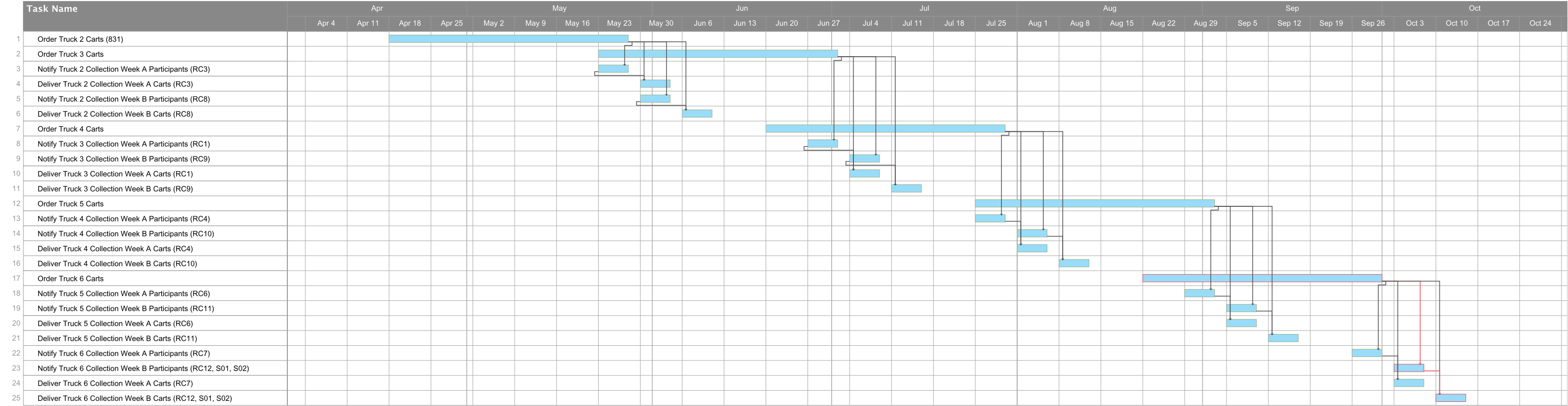
The schedules provided in Charts 1-11, are flexible and will be dependent upon the delivery schedule of new trucks and carts. A high level summary of the schedule is provided below.

Table 16 High-Level Roll-Out Schedule

Roll-Out Phase	Total Number of Carts Delivered	Collection Week A	Collection Week B	Truck Number
PILOT	3,882*	RC2	RC5	155136
1	4,033	RC3	RC8	New Truck #2 (091021)
2	4,114	RC1	RC9	New Truck #3
3	4,304	RC4	RC10	New Truck #4
4	3,421	RC6	RC11	New Truck #5
5	3,297	RC7	RC12, S01, S02	New Truck #6

*Initial cart delivery, February 2015

City of Rochester Recycling Roll-Out



Route 1 Roll-Out Schedule

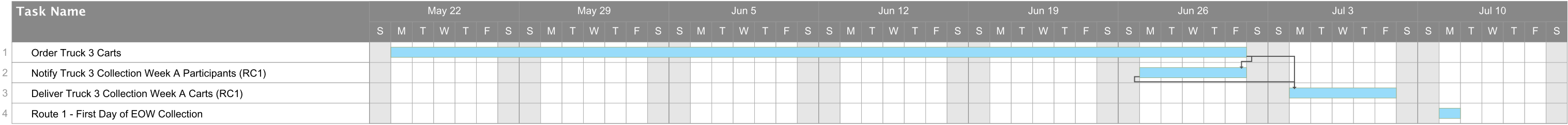
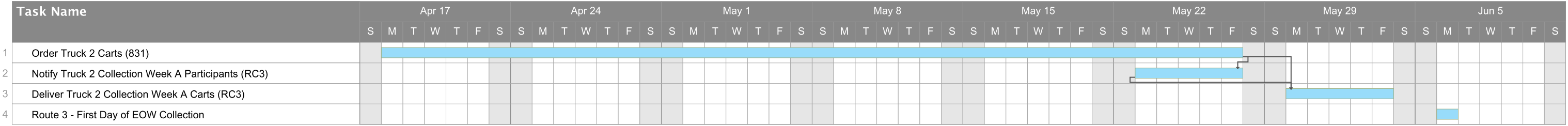


CHART 3

Route 3 Roll-Out Schedule



Route 4 Roll-Out Schedule



Task Name		Jun 19							Jun 26							Jul 3							Jul 10							Jul 17							Jul 24							Jul 31							Aug 7						
		S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S							
1	Order Truck 4 Carts																																																								
2	Notify Truck 4 Collection Week A Participants (RC4)																																																								
3	Deliver Truck 4 Collection Week A Carts (RC4)																																																								
4	Route 4 - First Day of EOW Collection																																																								

Route 6 Roll-Out Schedule

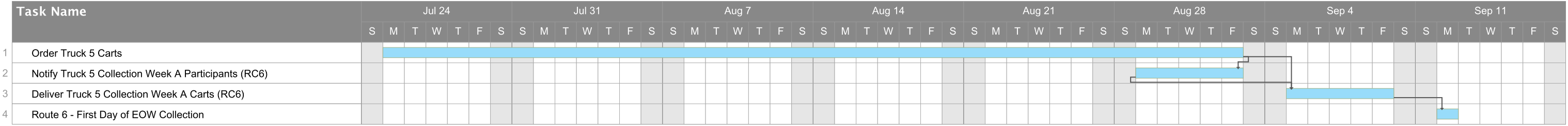


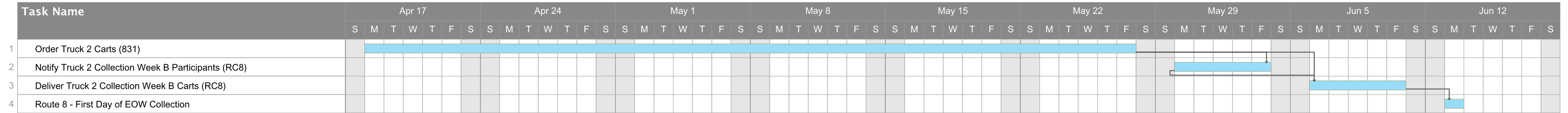
CHART 6

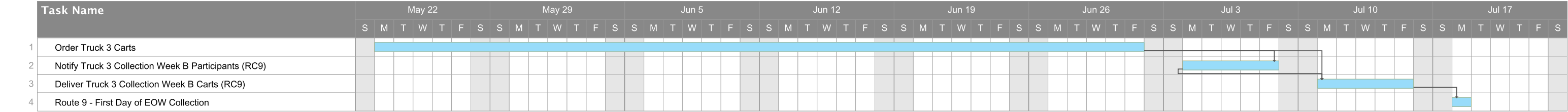
Route 7 Roll-Out Schedule



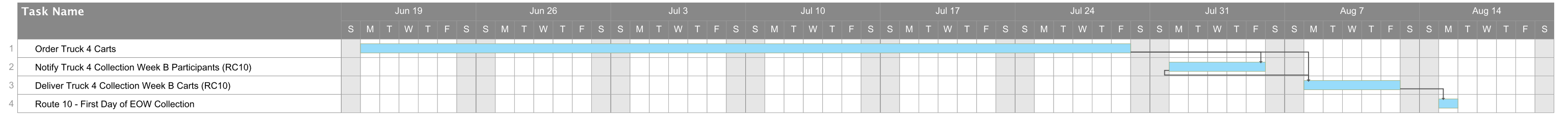
Task Name		Aug 21							Aug 28							Sep 4							Sep 11							Sep 18							Sep 25							Oct 2							Oct 9						
		S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S							
1	Order Truck 6 Carts																																																								
2	Notify Truck 6 Collection Week A Participants (RC7)																																																								
3	Deliver Truck 6 Collection Week A Carts (RC7)																																																								
4	Route 7 - First Day of EOW Collection																																																								

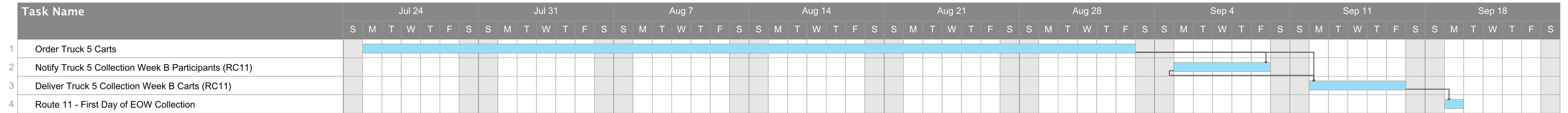
Route 8 Roll-Out Schedule

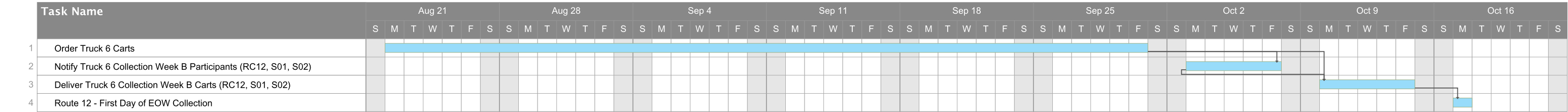




Route 10 Roll-Out Schedule







8.0 Education

Education is essential to the success of a new or modified recycling program. The following aspects of the pilot program's education agenda should be duplicated for the city-wide roll-out program:

- Issue letters to each household via direct mail alerting them of the new collection method and schedule. Include an educational flyer with a list of acceptable recyclable materials and their proper preparation;
- Provide additional educational materials at the time of the delivery of the new recycling cart;
- Distribute a calendar on a magnet with EOW collection schedules; and
- Continue and expand public outreach at community events, neighborhoods, schools, public service announcements, etc.

B&L suggests several improvements to augment the existing education program, which are discussed in the following sections.

8.1 Modifications to the Educational Flyer

The following improvements are suggested for the educational flyer:

- Change "Single Stream Recycling" to "Mixed Recycling". The term "single stream" has been known to cause confusion with some residents.
- Instead of listing materials at the bottom of the graphic, focus on "Recycling Reminders" such as what to leave out of the blue cart. Use conspicuous colors like red, along with descriptive graphics, to illustrate what does not belong. Residents tend to pay more attention to graphics than words.
- The back of the education flyer should include the EOW collection calendar. The calendar should clearly state when their collection week will occur (i.e., legend shows that shaded weeks are the collection weeks). There will be two (2) collection calendars generated for Collection Week A and Collection Week B.

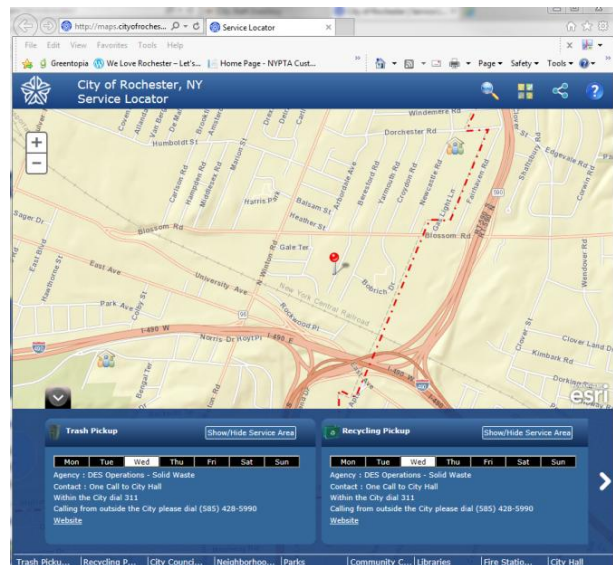


In addition, the City maintains an "At Your Service Guide" that is distributed to every household each year. This guide provides useful information like when refuse schedules will be altered, leaf pickup schedules, Clean Sweep dates, and guidelines on proper snow removal during the winter months. This guide could be expanded to include the educational recycling flyer, recycling tips, the EOW collection schedule, and information on how to become a better recycler.



8.2 Use of Online Services/Mapping

The “At Your Service Guide”, educational flyers, frequently asked questions, commercial and residential recycling information, and a new toter/blue bin request form can all be accessed via the City’s website. The City’s current web based education program is robust and should continue. The 311 customer service hotline is also available to assist in educating residents and businesses about recycling and options available. In the future should residents wish to learn more about recycling or obtain a recycling toter, 311 operators will be equipped with the

A screenshot of the City of Rochester Service Request form. The form is titled 'RECYCLE BOX REQUEST' and includes a search bar at the top. The main content area contains a 'City of Rochester Service Request' section with a description of the form's purpose. Below this is a 'Service Needed' dropdown menu set to 'Recycle Box Needed'. There is a 'Location' field with a placeholder 'Please enter the exact location for the service requested in the space below'. A 'Details' section follows, with a text area for 'Please provide the problem description or any further details you may have about the service needed to help us to identify location, cause, and exact nature of the service to be provided.' At the bottom, there are fields for 'Name', 'Phone Number', and 'E-mail', along with a checkbox for 'E-mail me when this is resolved' and a 'Submit' button.

tools to address these requests. The website currently accepts requests for blue bins. This service is recommended for recycling toters, as well.

If possible in the future, prior to delivering a recycling toter,, the City could request that residents read through recycling educational materials or watch a video showing the do’s and don’ts of recycling. Each contact with a resident interested in recycling is an opportunity for recycling education. Having a SWMD staff member personally meet with a City resident prior to providing a recycling wheeled cart was done during the pilot program. However, the level of effort for face to face interaction will likely exceed the SWMD’s staffing capacity.

The City’s online Service Locator helps the public find nearby services, including trash and recycling pickup days, City Council Districts, Neighborhood Service Center Areas, Parks, Community Centers, Libraries, Fire Stations, and the City Hall. It is recommended that the Service Locator be updated to display the EOW collection schedule. Residents could access their collection week easily from this application. If possible, this application could be made available to residents on their mobile smart devices (e.g., iPad, iPhone, tablet, etc.). The City could explore other online applications such as MyWaste or ReCollect, where residents can set reminders for waste collection days and access information about specific waste types. Some smart phone applications may also allow for SWMD staff

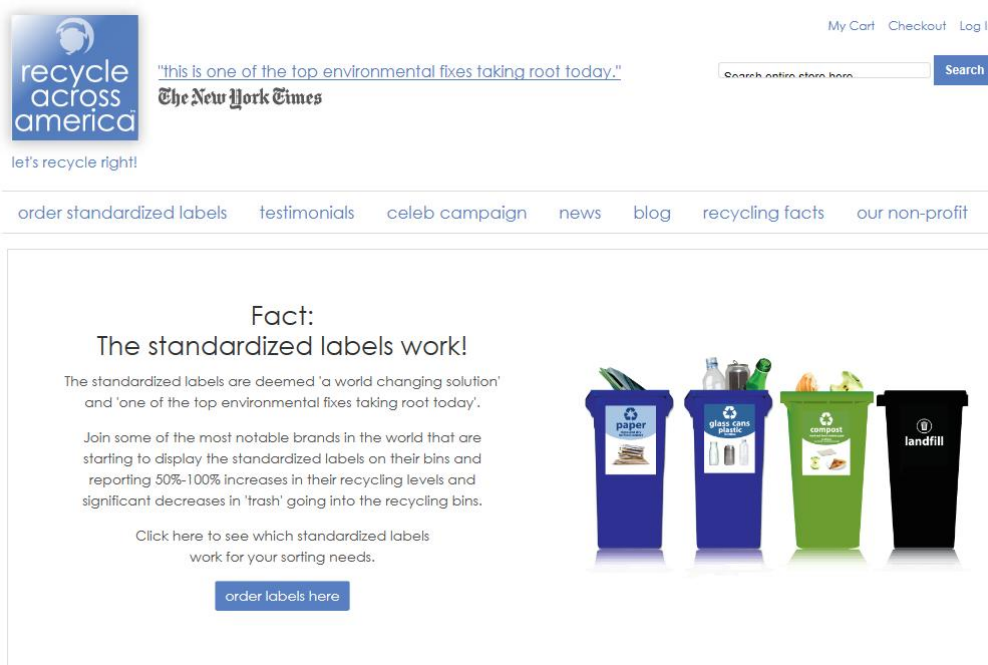


to push out important messages to customers, such as delayed service due to weather or reminders about the recycling program.

8.3 Improvements to the Recycling Cart

The size and type of cart has proven successful during the pilot program with some exceptions when 64-gallon carts were needed for areas that had tight spaces (e.g., condo garages). A few improvements are offered for consideration. GBB recommended the use of in-laid molding and labeling on the lids of the carts in their report, which was not implemented for the pilot program. Given the challenges with contamination that were noted in the Successes, Challenges and Lessons Learned section, B&L further recommends the use of in-laid molding on the wheeled cart. The use of a vibrant graphic to remind users about acceptable recyclable materials and proper setout procedures will likely lessen contamination and improve collection efficiencies.

There has been confusion in the past with the meaning attributed to various recycling symbols. This has resulted in contamination of materials and/or a reduction in recyclables collected (e.g., Styrofoam #6, compostables, leaves, yard waste). In recent years recycling organizations have started to examine the concept of standardized recycling labeling as a way to mitigate confusion. The City may wish to explore the concept of standardized labeling. By developing and using a uniform label on carts, other recycling containers and for recycling graphics, the City can lessen confusion and at the same time, further increase recycling success. Recycle Across America™ has evaluated the utility of standardized labeling. Information can be found on their website at www.recycleacrossamerica.org, as well as the graphic shown below.



8.4 Possible Funding Options

The City is committed to providing each participating resident with the carts necessary for refuse and recycling collection. Table 17 provides an overview of the expected costs associated with the purchase of the new wheeled recycle carts and associated equipment used in the pilot program for the remaining recycle routes.

Table 17 City-Wide Wheeled Cart Implementation Cost Estimate

Item	Price per unit	Units to be Ordered	Subtotal
96-gallon cart w/o lid graphic	\$49.08	26,118	\$1,281,871
Lid with 8 x 12 graphic	\$1.10	26,118	\$28,730
Cart Delivery	\$3.75	26,118	\$97,943
Cart Brochure	\$0.30	26,118	\$7,835
Truck Mounted Reader	\$12,915.00	6	\$77,490
Data Fees (SIM cards + service) per truck per year	\$300.00	8	\$2,400
Hosting Fee per truck per year	\$300.00	8	\$2,400
ELE MOS license fee per truck per year	\$1,000.00	8	\$8,000
Total			\$1,506,669

The cost of printing and delivering educational flyers would be an additional cost.

There are several non-profits that are engaged in the recycling industry and committed to expanding recycling programs across the United States. These organizations are teaming with private sponsors or donors to fund programs that will result in an increase in recycling. Two (2) such programs are the Closed Loop Fund, LP (CLF) and The Recycling Partnership. The CLF invites municipalities to submit funding proposals for collection, processing, and communication projects that are intended to increase recycling access and rates. The funds provided by the CFL are provided in the form of 0% loans payable via the landfill diversion savings and/or commodity revenue. The Recycling Partnership (www.recyclingpartnership.org) has just released its latest Request for Proposals (RFP), which is geared specifically to help municipalities with 4,000 or more households upgrade to cart-based collection.

Other programs specific to New York State include the New York State Department of Environmental Conservation Municipal Waste Reduction and Recycling Program (MWR&R). This program provides 50% matching reimbursement grants for projects that enhance municipal recycling infrastructure through purchasing of equipment or construction of facilities. The purchase of the recycling carts and/or recycling vehicles would be eligible for funding from this program. The City is also eligible to apply for MWR&R funding assistance to subsidize 50% of the costs associated with Recycling Coordinator salaries and municipal public education programs. This funding can help expand local recycling and waste reduction programs and increase participation.

9.0 Summary of Recommendations

The City's initiative to undertake a transition from recycling boxes to recycling carts is commendable, but for this program to continue to be successful the following recommendations should be strongly considered.

Complete a Waste and Recycling Composition Analysis. Understanding what remains to be captured in the waste stream as well as the materials that do not belong in the recyclables stream is important when implementing a strong education program. The County's Recycling Center operator, Waste Management, conducts periodic composition studies of the recyclable materials that are collected curbside in the City. It is recommended that the City requests this information and utilizes it when developing the education program. This information will assist in identifying the materials that should be the focus of the "NO" list. In addition, the County performed a Residential Waste Composition Study in 2010 that was designed to analyze the waste types and quantities in the residential waste stream set out at the curb for disposal. This study identified the materials that were in the waste stream that should be diverted.

City-wide roll-out should be conducted in a phased approach. There is a potential for an additional 26,118 carts to be distributed city-wide at the conclusion of the roll out program. The carts should not be distributed to the remainder of the City's participating recyclers all at once due to the following factors:

- Space constraints for storage of more than 4,500 rolled carts at one time.
- Some level of one on one education will be required at the time of cart distribution and during the initial few weeks following the distribution. By phasing the distribution, this one on one education is manageable. It is likely it would not be manageable should all 26,118 carts be distributed at once.
- Using a phased approach also allows for time to make adjustments to the program and to continue gathering information or lessons learned.
- Delivery of the new collection trucks will not occur all at once, which will require a phased in approach as well.
- Although there will be a delay to full city-wide implementation, the program will still be in full swing within a year of the first phase of the roll out.

A key element of success is the proper, and often redundant, education of residents. The pilot program was successful because of the communication with the residents that included direct mailers, educational flyers and EOW collection calendars. This level of communication should continue with the roll out program, but the following improvements to the education outreach are recommended:

- Improvements to the educational flyer including avoiding the term "single stream", utilizing more graphics than words, clearly identifying what should NOT be placed in the cart, and providing tips for properly preparing the cart to allow for the EOW collection frequency.
- Incorporate the educational recycling flyer, recycling tips, the EOW collection schedule, and information on how to become a better recycler in the "At Your Service Guide".
- Ensure the 311 operators are educated about the City's recycling program and can provide residents with helpful recycling tips.

- The City's Service Locator should be updated to reflect the EOW collection schedule.
- Implementation of a mobile application that would have waste collection days and recycling information available.
- Incorporation of the educational in-laid molding on the lid of the wheeled cart. The use of vibrant graphics to remind users about acceptable materials and proper setout procedures will likely lessen contamination and improve collection efficiencies.

Implementation of EOW Collection from the beginning of the program. Based on the pilot program results, less than 50% of residents placed their carts curbside every week during the weekly collection stage and the majority of residents were amenable to placing their recycling carts curbside on an every other week schedule. Not only was this acceptable to the residents, but it also offers an opportunity to arrange the recycling routes to be more efficient in the future and potentially reduce the City's greenhouse gas emissions by reducing the number of trucks on the road. In addition, implementation of the EOW collection schedule immediately would avoid having to introduce a change to the recycling program twice to residents – once when the switch to the cart from the box occurs, and twice when the schedule changes from weekly collection to EOW collection. Conversely, follow up education efforts could focus on how to recycle right as opposed to educating residents about the changes to the program.

Lastly, the City should allow for flexibility in the program. It should be acknowledged early on that some situations will need to be considered on a case by case basis. Some residences, multi-family housing, and businesses may require alternate options if they cannot wait two (2) weeks for collection of recyclables. Depending on the situation, additional carts may need to be provided or more frequent collection may be necessary. In addition, it may be determined that more than one round of education will be necessary for certain recycling routes.