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From:	Garth Schultz, *Principal* William Schoen, *Sr. Director* Maryann Hulsman, *Consultant*
Date:	May 7, 2024
Subject:	**Smaller Trash Bin Cost, Revenue, and Tonnage Change Estimates**

Background

There are approximately 64,300 residential solid waste service accounts in the City of Riverside (City). City crews service approximately 42,300 of those accounts, while Athens Services (Athens), a private contractor, provides service to the other approximately 22,000 accounts. All residential accounts in the City currently have 96-gallon bins for their solid waste collection service. The City is considering offering a 64-gallon service option at a reduced rate as an option for low waste generating residents including seniors.

R3 Consulting Group, Inc. (R3) was engaged by the City of Riverside (City) to provide solid waste consulting and peer review services in support of the City's evaluation and analysis for potentially implementing smaller residential bins in its solid waste collection system. This memorandum presents the findings from our analysis.

Objectives

- Estimate the potential costs associated with implementation of a 64-gallon service option that can be made available to low waste generating residents, including seniors.
- Estimate the potential revenue impacts associated with setting rates for the 64-gallon service option, which would be lower than the rates for the current 96-gallon service option.
- Estimate the potential trash waste reduction impacts associated with offering a 64-gallon service option.
- Suggest pilot programs or alternatives for City consideration.

Assumptions

- Low waste generating residents, including seniors, would be eligible for subscription to the new 64-gallon service option.
- New expenses would be paid for out of the City's solid waste fund, and revenue reductions would impact the solid waste fund.
- No adjustments to existing rates would be made to pay for new expenses or back-fill revenue reductions.
- No modification to solid waste collection vehicles would be needed to service 64-gallon bins, which has been confirmed by the City. Consideration of bin sizes less than 64 gallons would require vehicle modification of $20,000 each.
- There would be no collection service cost savings associated with 64-gallon bins compared to 96-gallon bins because the fixed costs of collection would remain the same and it takes the same amount of time to service both bin sizes.

Analysis & Findings

Estimated Costs

The primary costs associated with implementation of a 64-gallon service option are the capital costs for new bins. We estimate these to cost $75 each (per bin), though pricing may vary depending on the then-current pricing for the plastic resin from which the bins are made and freight costs. This pricing assumes that the City has space for storage of inventory at no additional cost, and that the City will do its own assembly and delivery of the bins with existing staffing and thus at no additional cost.

Costs for new bins would be one-time for the purchase of the new bins, and for the purposes of this analysis we assume that the one-time costs occur all at once. Therefore, estimating the total one-time costs to the City for implementation of a 64-gallon option is a function of a) estimating how many residential customers elect to subscribe to the 64-gallon service option, and b) whether the 64-gallon service option includes all three solid waste streams (i.e., trash, recycling, and organics) or only the trash stream.

Table 1, below, shows the estimated costs for new bins for all three solid waste streams, with estimated costs for 5%, 10%, and 15% of residential solid waste customers electing to subscribe to the 64-gallon service option. Costs estimated in the table are rounded to the nearest $1,000, and estimates are shown for both City and Athens customer totals. Actual customer subscription to a 64-gallon service option will of course vary and will be dependent on the amount of rate savings offered for the smaller service level. For the purpose of this analysis, the 5%, 10% and 15% of customers subscribing to the 64-gallon service option assume that the City offers modest cost-of-service rate savings to customers, not a linearly graduated (i.e., number of gallons proportionate or 33%) lower rate for the 64-gallon service option.

Table 1: Estimated New Bin Expenses for 64-gallon Service for Trash, Recycling and Organics

	# of Accounts	# of Bins	Est. Cost Per Bin	New Bin Expenses		
				5% Subscription	10% Subscription	15% Subscription
City	42,300	126,900	$75	$ 474,000	$ 949,000	$ 1,423,000
Athens	22,000	66,000		$ 247,000	$ 493,000	$ 740,000

As shown in the table, at an estimated cost of $75 per bin, one-time purchase costs for the City's customers are estimated to range from $474,000 (if 5% of customers elect to subscribe to the 64-gallon service option) to $1,423,000 (if 15% of customers elect to subscribe to the 64-gallon service option). Corresponding estimates for Athens' customers are also shown. Note that these estimates do not include additional bin inventory for replacement due to damage or loss.

Though we understand the City's original intent to be consideration of a 64-gallon service option inclusive of all three solid waste streams, the City may also consider offering the 64-gallon service option for trash only, and at one third of the cost. **Table 2**, below, shows the estimated costs for new bins for trash only, again with estimated costs for 5%, 10%, and 15% of residential solid waste customers electing to subscribe to the 64-gallon service option.

Table 2: Estimated New Bin Expenses for 64-gallon Service for Trash Only

	# of Accounts	# of Bins	Est. Cost Per Bin	New Bin Expenses		
				5% Subscription	10% Subscription	15% Subscription
City	42,300	42,300	$75	$ 158,000	$ 316,000	$ 474,000
Athens	22,000	22,000		$ 82,000	$ 164,000	$ 247,000

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It is important to note that bulk purchase of new bins would be considered a capital expense and therefore depreciable in the City's solid waste fund accounting. However, because the purchase itself would require a one-time cash transaction (this analysis does not contemplate financing of the new bin purchase) this analysis considers the impact of new bin purchase on the City's solid waste fund[1]. Put directly, without new revenues, the City's solid waste fund cannot afford to implement a City-wide 64-gallon service option at this time (for all three solid waste streams or just for trash). Therefore, to the extent that the City does not wish to increase existing rates to fund the 64-gallon service option but does wish to continue to explore a 64-gallon service option, a pilot program for up to 5% of the City's residential solid waste service customers may be considered and is described in a latter section of this memorandum.

Estimated Revenue Impacts

Offering reduced rates for the 64-gallon service option compared to the 96-gallon service option without otherwise increasing the 96-gallon service option will result in revenue decreases of vary amounts depending on a) the amount of rate reduction offered and b) the number of residential customers that elect to subscribe to the 64-gallon service option.

Regarding the first point, R3 analyzed the amount of rate reduction between the 96-gallon service and 64-gallon service offered for a set of comparative communities selected by the City. **Table 3**, below, summarizes the results of that comparison.

Table 3: 64-gallon Rate Compared to 96-gallon Rate for Comparison Communities

	64-gallon Rate	96-gallon Rate	64-gallon Rate Compared to 96-gallon Rate
Anaheim	$ 26.61	$ 27.78	-4%
Ontario *(Municipally Operated)*	$ 35.60	$ 39.78	-11%
Chula Vista	$ 29.73	$ 35.02	-15%
Long Beach *(Municipally Operated)*	$ 36.03	$ 42.66	-16%
Stockton	$ 45.78	$ 55.46	-17%
Oakland	$ 103.67	$ 155.79	-33%

As shown in the table, the amount of rate reduction offered in comparison communities ranges from a 4% cost-of-service rate reduction to a 33% volumetric rate reduction for the 64-gallon service, with the mid-point being approximately 15%. R3 has evaluated rate structures in many other California communities for over two decades and based on that experience we do not recommend that the City consider the 33% volumetric rate reduction for two primary reasons.

First, though the volumetric rate reduction approach provides an incentive for solid waste customers to subscribe to the smaller service option, rate reductions that are proportionate to service volume are not proportionate to the cost of providing service. This is because the fixed costs of collection service (i.e., trucks, bins, labor, fuel, maintenance, distributed programs and overhead, etc.) comprise most of the collection costs, and are the same irrespective of the amount of waste that is disposed. The second reason is that there is mounting evidence throughout California that such volumetric rates, in addition to providing a strong financial incentive to subscribe to the smaller service option, also incentivize customers to place excess trash waste in their recycling or organics bins. When customers place excess trash in the

[1] The City may wish to consider passing along the $75 per bin charges directly to the customers who are switching to 64-gallon service and using the new bins, as a start-up cost for switching service, though of course this would financially disincentivize residents from migrating to 64-gallon service.

recycling or organics bins, those waste streams become contaminated, which increases the costs for post-collection processing (i.e., recycling and composting).

Given the above, for the purposes of this analysis we have considered 64-gallon rate reductions of 5%, 10%, and 15% compared to the 96-gallon service option. Each of these rate reduction scenarios were then applied to the estimated percentage of customers that might subscribe to the 64-gallon service option (also 5%, 10%, and 15%) to calculate estimates of annual revenue reductions that the City could anticipate via City-wide implementation of a 64-gallon service option. **Tables 4, 5, and 6** (corresponding to the 5%, 10% and 15% rate reduction scenarios) show the results of this analysis. Annual revenue reduction figures are rounded to the nearest $1,000, and the reductions in revenue would be the same irrespective of whether the 64-gallon service option is for all three solid waste streams or for trash bin only.

Table 4: Estimated Annual Revenue Reduction @ 5% Rate Reduction for 64-gallon Service

	# of Accounts	96-gallon Rate	64-gallon Rate	Revenue Reduction		
				5% Subscription	10% Subscription	15% Subscription
City	42,300	$ 34.72	$ 32.98	$ 44,000	$ 88,000	$ 132,000
Athens	22,000			$ 23,000	$ 46,000	$ 69,000

Table 5: Estimated Annual Revenue Reduction @ 10% Rate Reduction for 64-gallon Service

	# of Accounts	96-gallon Rate	64-gallon Rate	Revenue Reduction		
				5% Subscription	10% Subscription	15% Subscription
City	42,300	$ 34.72	$ 31.25	$ 88,000	$ 176,000	$ 264,000
Athens	22,000			$ 46,000	$ 92,000	$ 137,000

Table 6: Estimated Annual Revenue Reduction @ 15% Rate Reduction for 64-gallon Service

	# of Accounts	96-gallon Rate	64-gallon Rate	Revenue Reduction		
				5% Subscription	10% Subscription	15% Subscription
City	42,300	$ 34.72	$ 29.51	$ 132,000	$ 264,000	$ 397,000
Athens	22,000			$ 69,000	$ 138,000	$ 206,000

On the low end, as shown in Table 4, if the City were to implement a 64-gallon service option at a rate of 5% below the 96-gallon service, then it could anticipate revenue reductions on the order of $44,000 per year (if 5% of residential customers subscribe) up to $132,000 per year (if 15% of residential customers subscribe). On the high end, as shown in Table 6, the City could anticipate revenue reductions of $132,000 per year (if 5% of residential customers subscribe to 64-gallon service) up to $397,000 (if 15% of residential customers subscribe).

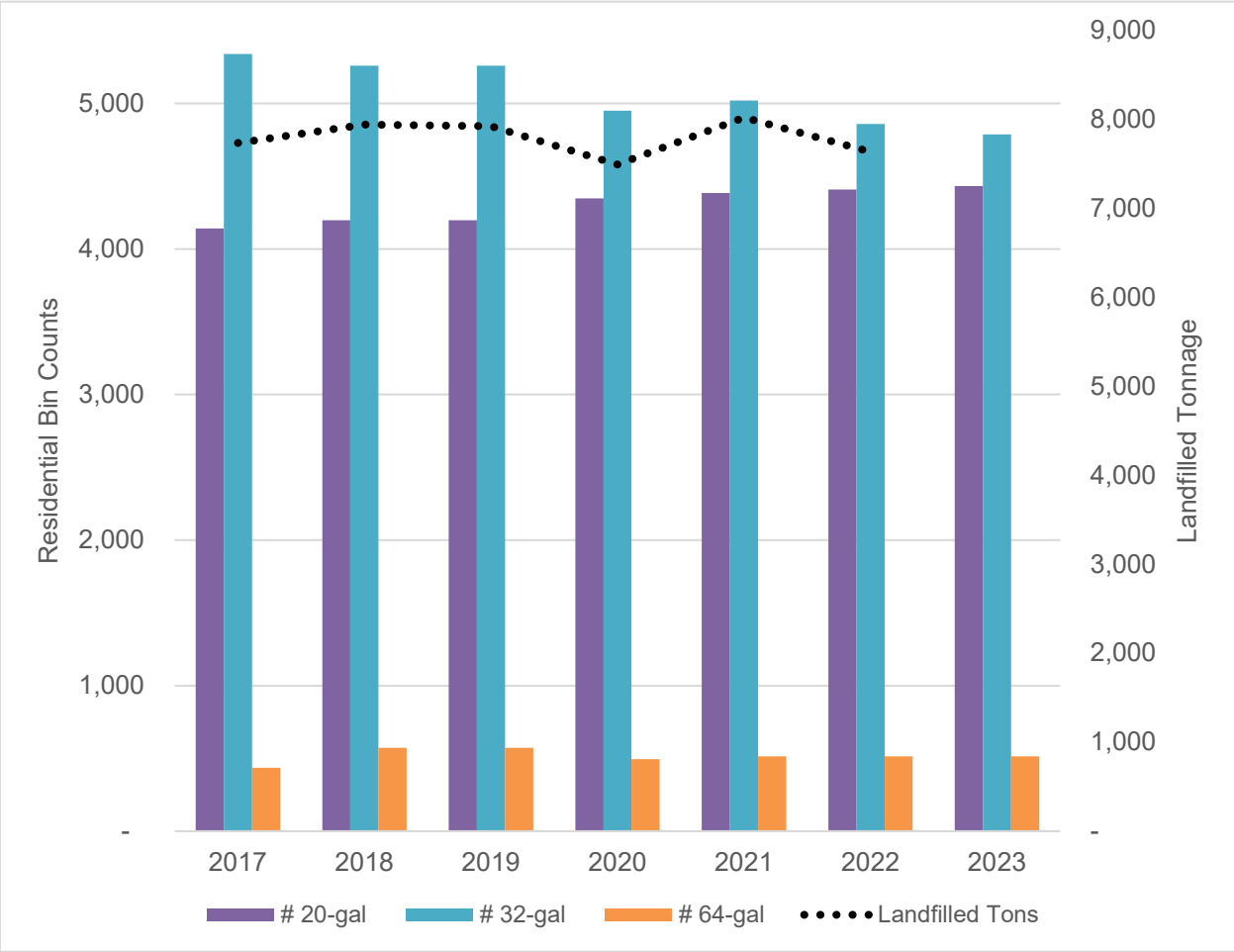
It is important to note that, given the City's available solid waste fund balance, and given the assumption that existing rates would not be adjusted to back-fill revenue reductions associated with City-wide implementation of a 64-gallon service option, we conclude that the City cannot afford to implement a City-wide 64-gallon service option at this time.

Estimated Trash Waste Reduction

R3 evaluated whether there would be a meaningful reduction in collected amounts of trash (and therefore landfill costs) associated with implementation of a 64-gallon service option. To do so, we analyzed historical data from cities for which we had available information regarding service rates, numbers of subscribers by service option, and collected trash tonnages. The communities we selected are located in west Contra Costa County, in the Bay Area of California, and were selected based on the availability of rich historical data and experience. They include the Cities of El Cerrito, Hercules, Pinole, Richmond, and San Pablo. All five of these cities have had variable solid waste service offerings for several decades, with trash service volumes ranging from 20 gallons to 96 gallons. All also have volumetrically graduated service rates, with those rates changing in rough proportion to the offered service volume.

In the case of El Cerrito, from 2017 through 2023 the City of El Cerrito has seen subscriptions to its smallest 20-gallon bin steadily increase, while subscriptions to 32-gallon and 64-gallon bins have decreased. Over that same period, landfilled waste tonnage remained relatively constant, despite steady decreases in overall service volume, as shown in **Chart 1**, below. This is evidence that there is not always a direct correlation between decreasing service volume and decreasing landfill tonnage.

Chart 1: Bin Counts and Disposal Tonnages in El Cerrito

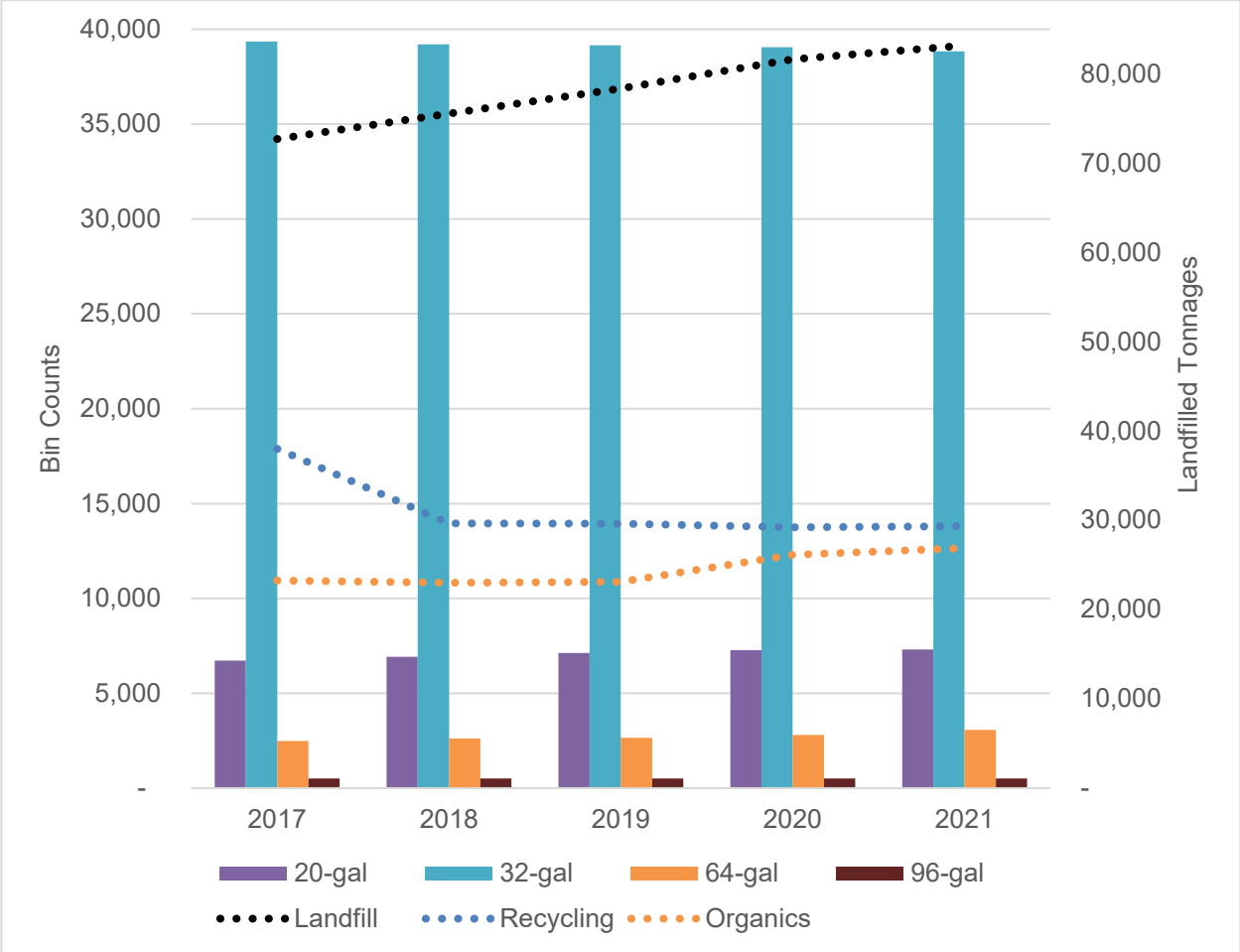


For Hercules, Pinole, Richmond, and San Pablo, the trend tells a similar story. Despite steady increases in the numbers of customers subscribing to 20-gallon bins and decreases in the number of those subscribed to 32-gallon bins, landfilled tonnages increased steadily, as shown in **Chart 2,** on the following page.

It should be noted, however, that the timeframes shown above correspond to changes in recycling and disposal tonnages resulting from restrictions on contamination starting in 2017, with the onset of China's National Sword Policy, which is a factor that would have limited reductions in landfilled tonnage were they

present. For the purposes of this analysis, we are unable to decouple the tonnages impacts of that policy from any changes in tonnage that may have resulted from decreases in collected service volumes.

Chart 2: Bin Counts and Disposal Tonnages in Hercules, Pinole, Richmond, and San Pablo



Given these examples, and also considering our experience working with dozens of other California communities on similar matters, we conclude that there is a very low likelihood that implementation of a 64-gallon service option would result in meaningful reductions in landfilled tonnages. Because of this, we likewise conclude that there is a very low likelihood that implementation of a 64-gallon service option in the City would result in reductions in the costs of post-collection landfill disposal, recyclables processing, and composting, for two reasons.

First, as demonstrated in this section, it is unlikely that trash waste tonnage will decrease as a result of implementing a 64-gallon service option, and therefore it is unlikely that the costs could decrease. Second, unless customers reduce the overall amount of waste they generate across all three waste streams (trash, recycling, and organics), then any changes in trash tonnages to landfill would likely result in increased tonnage to recycling processing facilities and composting facilities (as a result of customers participating better in their source-separated recycling programs). While we have not evaluated the City's specific costs of landfilling versus recycling or composting, based on our experience we know that processing of recycling and organics tons are generally at least as costly as landfilling.

Pilot Program Recommendation

R3 reviewed projections of the City's solid waste fund balance and found that the available fund balance is projected to be approximately $110,000 by the end of Fiscal Year (FY) 2025-26. The low-end estimates for capital costs for implementing a 64-gallon service option only for the trash bins (see Table 2) exceed this available fund balance projection, meaning that the City cannot afford the capital expense or revenue

reductions associated with City-wide implementation of a 64-gallon service option without new revenues from ratepayers or other sources (as stated in prior sections).

The City could, however, could afford to implement a pilot program in which it could offer a 64-gallon service option (for all three streams or trash only) for 5% of the customers serviced by the City. We have not included Athens' customers in this analysis since that would likely necessitate contract and compensation negotiations with Athens. Alternatively, the City could limit this program to low waste generating seniors only.

As conceived by R3, the City could choose to allow customers (up to approximately 2,100) on a select number of residential routes (the specific number of routes being dependent on the number of customers served per route, which was not available to R3 at the time of this writing) to elect to subscribe to 64-gallon service. At this number of customers, and assuming no more than 15% of customers elect to participate in the 64-gallon program, the City could afford to offer up to a 15% rate reduction for the 64-gallon bin service without depleting the available fund balance in the solid waste fund. This is demonstrated in **Table 7** (64-gallon option for all three solid waste streams) and **Table 8** (64-gallon option for trash only), below.

Table 7: Estimated Expenses, Revenue Reductions, and Available Fund Balance for Three-Steam 64-gallon Bin Pilot Program (5% of Residents) at 15% Rate Reduction

	FY 2024/25	FY 2025/26	FY 2026/27
Est. Starting Fund Balance	**$ 2,100,000**	**$ 504,950**	**$ 1,100**
Revenues	$ 4,461,000	$ 36,523,000	$ 38,710,000
Expenditures	$ 35,965,000	$ 37,007,000	$ 38,080,000
Pilot Program New Bin Costs	$ 71,200	$ -	$ -
Revenue Reduction	$ 19,850	$ 19,850	$ 19,850
Est. Ending Fund Balance	**$ 504,950**	**$ 1,100**	**$ 611,250**

Table 8: Estimated Expenses, Revenue Reductions, and Available Fund Balance for Trash Only 64-gallon Bin Pilot Program (5% of Residents) at 15% Rate Reduction

	FY 2024/25	FY 2025/26	FY 2026/27
Est. Starting Fund Balance	**$ 2,100,000**	**$ 552,450**	**$ 48,600**
Revenues	$ 34,461,000	$ 6,523,000	$ 38,710,000
Expenditures	$ 35,965,000	$ 7,007,000	$ 38,080,000
Pilot Program New Bin Costs	$ 23,700	$ -	$ -
Revenue Reduction	$ 19,850	$ 19,850	$ 19,850
Est. Ending Fund Balance	**$ 552,450**	**$ 48,600**	**$ 658,750**

Implementation of a pilot program would also require outreach and education to customers on selected routes, the costs of which are not included above, but which are estimated to be minimal and could potentially be funded by existing outreach and education resources in the solid waste fund.

Overall timeline for implementing the pilot program is expected to take 6 to 12 months, with the range primarily dependent on the timeframe for delivery of new 64-gallon bins. If the City proceeds to implement

a pilot program, its first action should be to order new bins and then establish the rest of the pilot program schedule based on the anticipated delivery date of the bins. The overall steps for implementing the pilot program, along with potential timeline for implementation given a range of potential bin delivery dates (January to June 2025), is shown in Table 9, below.

Table 9: Example Timeline for Pilot Program Implementation

Implementation Steps	Implementation Month (Early Range)	Implementation Month (Late Range)
Pilot Design Development	July 2024	
Final Pilot Design	August 2024	
Printing and Mailing of Outreach and Education	September 2024	February 2025
Customers Start Signing Up For Pilot Participation	October 2024	March 2025
Final Preparations for Pilot Implementation and Bin Delivery	November 2024	April 2025
Deliver Bins and Start Pilot Program	January 2025	June 2025

Shared Service Alternative

Based on the City's goals and the characteristics of the City's current operations, R3 recommends that the City consider whether allowing for "shared service" might be a useful interim strategy that would give residents with a small waste generation footprint (including seniors) an affordable option for service.

Municipalities that allow their residents to share service provide ratepayers the chance to opt out of collection service for trash, recycling, and/or organics service if they can document that they meet a set of criteria, such as the following example borrowed from the City of El Cerrito:

a) Proof that the customer's waste diversion is equal to or greater than what it would be with the collection services provided by the City.

b) Proof that the customer's waste diversion and disposal is completed with equal to or less environmental impact than the collection services currently provided by the City.

c) Proof that the customer's waste diversion and disposal methods do not constitute a nuisance as defined in the City's Municipal Code and are not in violation of any other Municipal Code provisions.

In practical terms, this might mean that customers fall under one or more of these scenarios:

a) They will be consensually sharing a waste bin or bins with another City customer.

b) They generate little waste material at their City address, already receive waste collection service at a second residence or business and will be hauling their waste to that second residence or business for collection with no additional greenhouse gases generated.

c) They generate little waste material and will schedule a bulky pick-up or self-haul if they accrue enough waste material to warrant off-site handling.

In the event that a customer opts out of trash collection service, they would need to either simultaneously opt out of recycling and organics service OR shift to an unbundled collection rate, paying for recycling and organics collection as stand-alone services. This means that the City would accordingly need to set up rates for stand-alone trash, recycling, and organics service to offer to these customers. (Alternately, the City could just continue to charge the full service rate if a customer only opted out of trash collection service rather than opting out of service for all three streams, but that would obviously reduce the incentive for customers to participate.) This new policy could be paired with strong promotional efforts by the City, to encourage residents to consider whether they could be reducing costs and reducing their carbon and waste footprints by sharing service with a neighbor.