



Memorandum

TO: TRANSPORTATION AND
ENVIRONMENT COMMITTEE

FROM: Kerrie Romanow

**SUBJECT: RESIDENTIAL GARBAGE CART
PILOT STATUS REPORT**

DATE: March 13, 2023

Approved

Date

3/23/23

RECOMMENDATION

Accept this status report on the status of the Residential Garbage Cart Pilot.

SUMMARY AND OUTCOME

This report provides a summary of the Residential Garbage Cart Pilot conducted by the Environmental Services Department (ESD). Acceptance of this report will inform the Transportation and Environment Committee on the effects of the pilot on reducing recycling contamination, as well as a planned expansion of the pilot and other efforts designed to reduce residential recycling contamination.

Recycling cart contamination can have negative effects on waste diversion from landfill, as well as increased City costs due to a contractual dynamic pricing structure, whereby recycling contractors are compensated more as contamination increases. A 2020 third-party study revealed that single-family recycling contamination averaged 51 percent, much higher than expected. To determine if having a larger garbage cart might help with reducing recycling cart contamination, staff developed the Residential Garbage Cart Pilot.

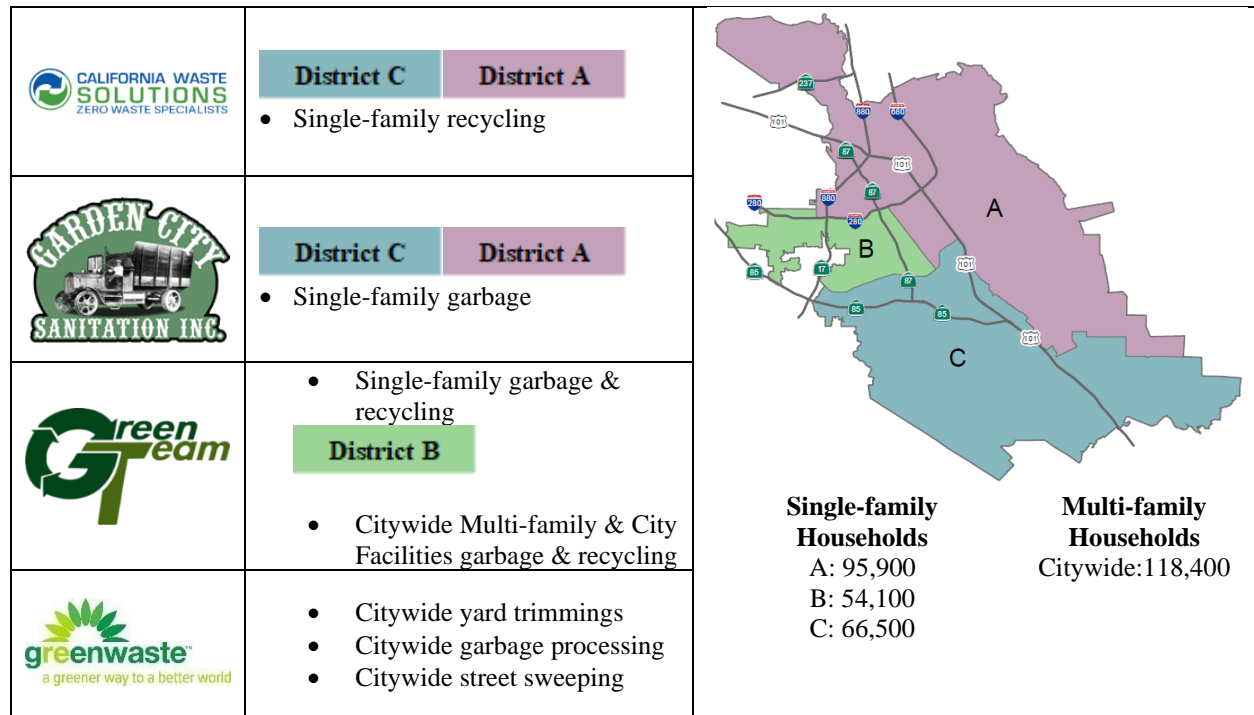
In July 2022, approximately 4,200 single-family households along five recycling routes were offered a 96-gallon garbage cart at no additional charge. The results of the pilot, while generally positive, were somewhat inconclusive. A Fall 2022 third-party study revealed that while contamination on pilot routes was reduced, those routes still averaged well above 50 percent contamination. Staff also performed an analysis of collected tons which supported that on average residents in the pilot areas changed their behavior by appropriately shifting contaminants (garbage) from their recycling cart to the garbage cart. Staff conducted before and after visual assessments of cart material, which also provided inconclusive data. Lastly, staff surveyed residents and learned most residents found the extra garbage capacity useful but doubted they would continue using the larger cart if they had to pay for the additional capacity.

Due to the inconclusive results of the pilot and continued problems with recycling contamination, staff will continue to gather data and research best practices to better understand how potential program changes could help to reduce contamination. This includes a plan to expand the pilot, which will provide a larger sample size to more confidently estimate the anticipated effects if larger garbage carts were deployed citywide. Staff has submitted a 2023-24 budget proposal to provide direct recycling cart feedback, utilizing a team of field staff to conduct visual assessments and provide feedback to residents on recycling cart contents through an attached tag. Additionally, ESD will increase efforts to educate residents to keep food and liquids out of the recycling cart, so they don't soil clean recyclables, including expanding the installation of new recycling cart lids with proven-effective, trilingual (English, Spanish and Vietnamese) labels showing what is and what is not recyclable. With these expanded efforts, staff will better understand how to combat the problem of recycling contamination throughout the City.

BACKGROUND

The ESD, Integrated Waste Management Division, Residential Garbage and Recycling Program provides curbside garbage, recycling, junk pickup, and yard trimmings collection services to approximately 216,500 single-family dwelling (SFD) and 118,400 multi-family dwelling households. These services are provided through four contracted service providers: California Waste Solutions (CWS), Garden City Sanitation Inc., GreenTeam of San Jose, and GreenWaste Recovery Inc. As shown in Figure 1, the City is divided into three solid waste collection Service Districts: District A (Downtown, East, and North San José), District B (West San José), and District C (South San José). Since 2007, CWS and Garden City Sanitation have served Districts A and C, representing 75 percent (162,400) of SFDs. GreenTeam of San Jose has served District B, representing 25 percent (54,100) of SFDs since 2002, and all multi-family dwellings (118,400 units) since 1993. GreenWaste Recovery, Inc. has served Districts A, B, and C since 2000. Combined, this system is one of largest privatized solid waste systems in the nation with an annual budget of approximately \$183 million. Additionally, Residential Program staff develop public outreach and education, engage with Santa Clara County and statewide peers, and conduct pilots for programmatic improvements benefitting both residents and the environment.

Figure 1: Residential Service Providers, Services and Service Districts



The Residential Program provides SFDs with weekly collection of garbage and recycling carts (available in three sizes), on-street yard trimmings collection, and an optional yard trimmings cart. Multi-family dwellings are provided multiple size and collection frequency options for garbage and recycling bins (dumpsters), as well as optional recycling carts if properties have limited space for the larger bins. San José has a unique and highly successful yard trimmings collection system, where most of the material is collected in loose piles set out on the street, rather than in a cart. Garbage is collected and processed to recover organics (food scraps, compostable paper items and food-soiled items), which are sent to a compost facility in south Santa Clara County. Recyclables are collected and processed at the CWS and GreenWaste Recovery Inc. facilities, and separated material commodities are sold on the recycling market. Yard trimmings are also collected, processed, and sent to a composting facility and is turned into high-quality organic compost. Unlike many other jurisdictions, all City residential waste is processed, composted, and disposed of locally, in Santa Clara County. Lastly, the Residential Program includes an unlimited Junk Pickup program at no extra cost, which provides residents with a convenient, curbside service. Residents can schedule free appointments year-round to have large items (such as mattresses, sofas, refrigerators, and tires) picked up by their recycling service provider.

In fiscal year 2021-22, 153,417 tons of solid waste were landfilled and 355,088 tons were diverted from landfill through recycling and composting. This equates to a recycling rate of 70 percent across the Residential Program’s services. The Residential Program represents 54

percent of the total waste collected through all City of San José solid waste programs and significantly contributes to the overall citywide diversion rate.

Program History and Timeline

San José has been on the leading edge of recycling in the nation since the 1990s. As shown in Figure 2 below, the Residential Program adopted a multi-container (4-sort) recycling system in 1993. At the same time, the City initiated a “Pay-As-You-Throw” rate structure, which was designed to encourage recycling. With this rate structure, the monthly customer rate is based solely on the size of the garbage cart, so residents are encouraged to recycle more so they can subscribe to a smaller, less expensive, garbage cart.

Figure 2: Former Multi-Container Recycling System, 1993 to 2002



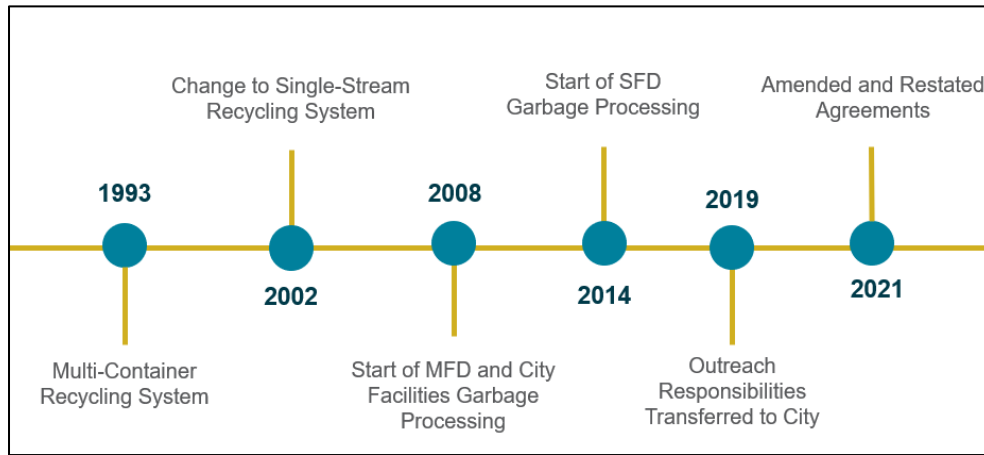
In 2002, the City moved to a one-container (commingled recycling) system as seen in Figure 3. This change to a single cart for all recyclables resulted in an increase in tons of recycling collected, however, both Residential Program service providers and other California commingled recycling programs found that recycling processing residue also increased. In 2008, garbage from multi-family dwellings and City Facilities was processed to recover additional recyclables and organics for composting. The processing of garbage expanded to SFDs beginning in 2014 to increase waste diversion by capturing organics that would otherwise go directly to landfill.

Figure 3: Commingled Recycling System, 2002 to Present



Solid waste and recycling-related outreach responsibilities transitioned from the residential service providers to the City in July 2019 to have a more uniform outreach message and to help service providers reduce costs as part of contract negotiations. Since then, ESD has increased focus and resources to conduct comprehensive solid waste and recycling outreach including deploying a major Recycle Right public education campaign in English, Spanish and Vietnamese. The primary goal of the campaign is to increase the recycling rate by reducing contamination through educating residents and changing behavior to place correct items in the recycling and garbage containers. Contamination can come in two forms; either anything outside of the residential recycling program’s acceptable materials list, or acceptable materials that are too soiled to be sold by service providers as recycling commodities. Clean recyclables can become soiled after being mixed with food and/or liquid inside the recycling cart or collection vehicle. Collecting clean, dry, high-quality recyclables help service providers meet strict contamination requirements in international recycling markets and sends fewer non-recyclables to the landfill. To support this critical objective, key campaign messages focus on which items are recyclable and eliminating food and liquids from the recycling stream.

Most recently, in 2021, the City amended and restated agreements with its service providers through June 2036. New to the CWS and GreenTeam of San Jose Agreements is a requirement for assessments of non-recyclable material found in SFD recycling carts to determine contractor compensation rates. This contract change was developed in negotiations, when staff took the suggestion by CWS to develop a dynamic pricing structure that would compensate the contractors on levels of non-recyclables found in in the recycling cart, in order to address CWS’s assertion that garbage in the recycling cart was impacting their costs. The recycling assessment is performed once every two fiscal years by a third-party consultant to determine the percentage of material not on the then-current program recyclables list, by weight, present in recyclable material collected by the service provider. Figure 4 provides a summary of the above mentioned Residential Program milestones.

Figure 4: Residential Garbage and Recycling Program Timeline

Residential Garbage Cart Pilot

The first third-party recycling study related to recycling compensation occurred in Fall 2020 and found that citywide contamination averaged 51 percent. This showed a much higher recycling contamination than a 2015 third-party study that measured 32 percent contamination. While it was thought that this high contamination rate was likely the result of COVID-19 shelter-in-place orders, staff wondered if smaller garbage carts could also be a contributing factor. There are steep price increases between garbage cart sizes under the Pay-As-You-Throw rate structure and most homes (85 percent) opt for the smallest garbage cart available (32-gallons).

To measure the correlation of garbage cart size on recycling contamination, staff developed the Residential Garbage Cart Pilot program. In July 2022, approximately 4,200 single-family households along five recycling routes were offered a 96-gallon garbage cart at no additional charge. Recycling routes were selected based on the following factors: 1) above average contamination rates (61 to 87 percent) identified by the third-party Fall 2020 waste characterization study; 2) location distribution throughout city; 3) route coordination between garbage and recycling service providers; and 4) a maximum number of homes per route to allow for increased garbage volumes. The pilot also included a route from the Spring 2021 recycling lid pilot study, where households were given new recycling cart lids with trilingual (English, Spanish and Vietnamese) labels showing what is and what is not recyclable. The inclusion of this route was to see if both a larger garbage cart and a recycling cart lid would reduce contamination more than a larger garbage cart alone. Residential Garbage Cart Pilot participants who subscribed to 32- or 64-gallon garbage service were given a 96-gallon cart, and participants who subscribed to 96- and 128-gallon garbage service were offered an additional 96-gallon cart. Before the pilot, most participants had a 32-gallon garbage cart, the smallest garbage cart size available, and those who had a 96-gallon garbage cart, or shared carts, were offered a second 96-gallon garbage cart. Pilot participation has been on a voluntary basis. Currently, there are 3,728 participants out of 4,172 original participants. For the 10 percent of residents that opted out of

the pilot, the most common reasons given were because the 96-gallon cart was too big for the household’s use and the amount of garbage generated, or the cart was too large and/or heavy to set out at the curb for collection.

ANALYSIS

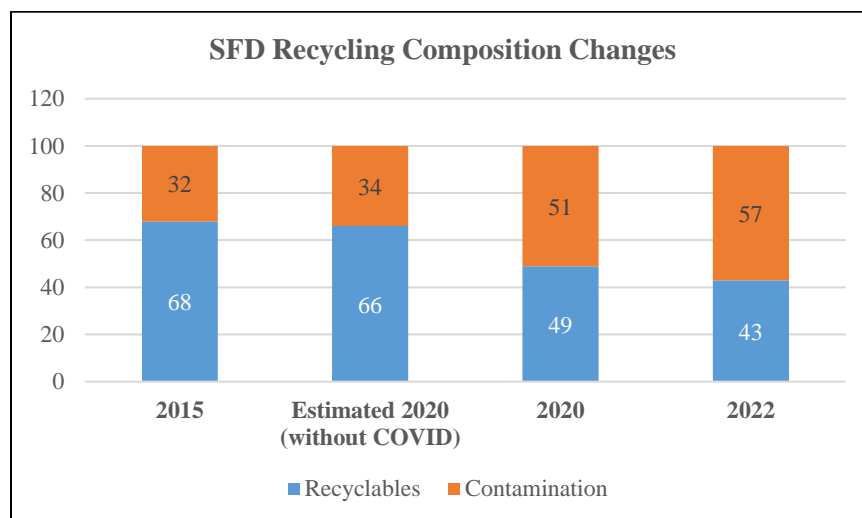
Results of Residential Garbage Cart Pilot

The Residential Garbage Cart Pilot was evaluated in multiple ways to measure its effectiveness. These include a third-party recycling contamination study, an analysis of collected tons, visual assessments of cart contents, and resident response.

Contamination Study

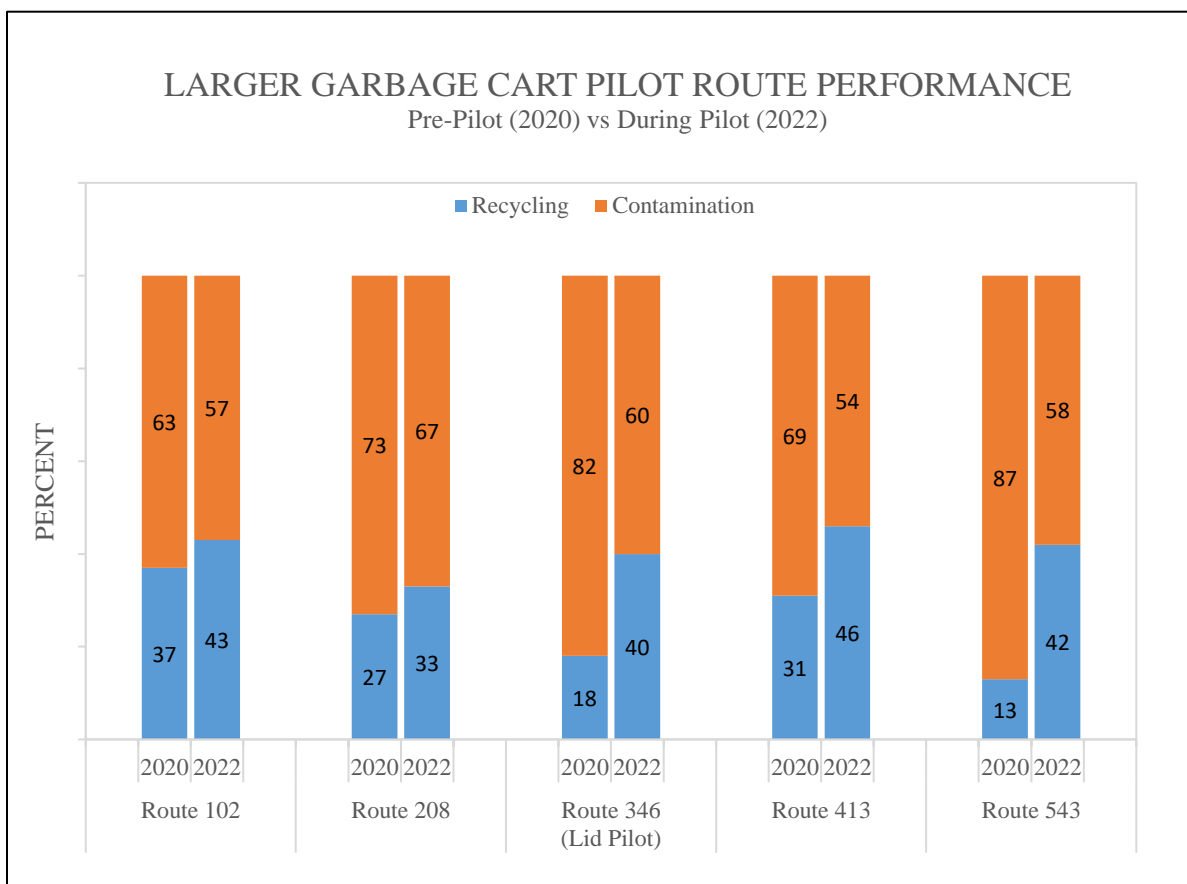
Third-party consultant studies have shown that overall citywide recycling contamination has increased in recent years, as shown in Figure 5 below. Between 2015 and 2020, contamination increased by 19 percentage points to 51 percent, which was thought to be largely attributable to resident behavior changes initially brought on by COVID-19 shelter-in-place orders. Without the impacts of COVID-19, the third-party consultant estimated that contamination would have been significantly lower, at 34 percent. Staff had anticipated that contamination would decrease between 2020 and 2022 as shelter-in-place orders were lifted and many residents returned to offices and schools however the most recent 2022 Curbside Study (see attached) showed that recycling contamination actually increased by 6 percentage points, to 57 percent. This suggests that behavior changes brought on by the COVID-19 pandemic, including increased material volume, more home deliveries generating single-use packaging, and increased waste generation from working or schooling from home, may be more permanent than expected, with higher recycling contamination potentially becoming the “new normal”.

Figure 5: Single-Family Recycling Composition, 2015 to 2022



Staff directed the third-party consultant to analyze the impact of the Residential Garbage Cart Pilot on contamination, as compared to overall citywide levels, utilizing the studies from 2020 and 2022. The consultant found that all pilot routes showed a decrease in contamination, seen in Figure 6 below. Route 543 had the most improvement with a contamination decrease of 30 percentage points, followed by Route 346 with a decrease of 23 percentage points. This route was also part of the successful Spring 2021 recycling lid pilot. While all the pilot routes showed an improvement, four out of five routes' 2022 contamination rates remained above the citywide average of 57 percent.

Figure 6: Residential Garbage Cart Pilot Route Performance

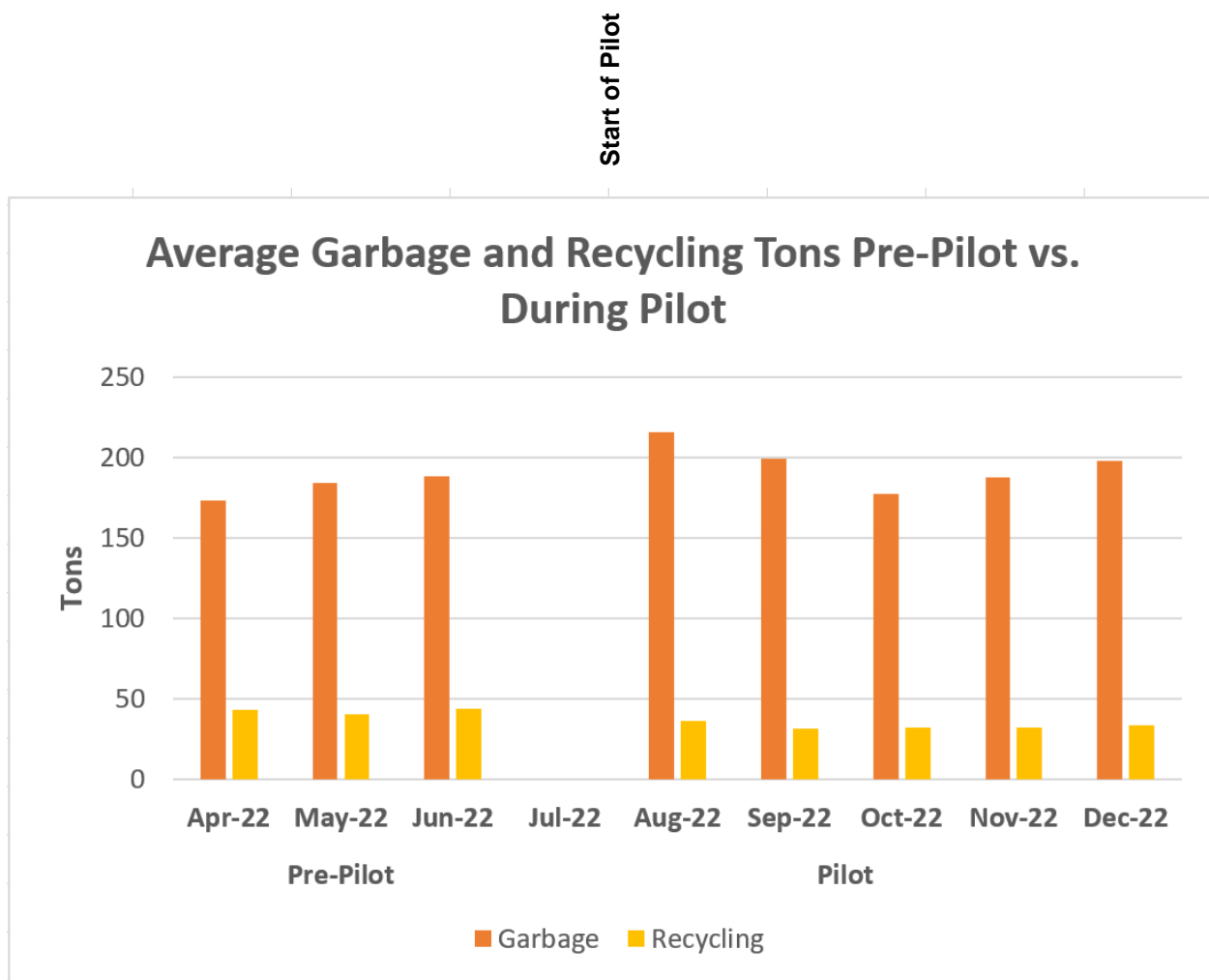


Tonnage Analysis and Visual Assessments

In addition to analyzing recycling contamination, staff analyzed collected tons and conducted visual assessments of cart contents, before and during the pilot. Staff hypothesized that small garbage carts may not provide sufficient garbage volume for some customers, who may in turn, place excess garbage in their recycling cart, thus increasing recycling contamination levels. The tonnage analysis showed that overall, collected garbage tons increased and recycling tons decreased in the pilot areas, which supports the conclusions of the recycling contamination analysis, that residents in the pilot areas changed their behavior by appropriately shifting contaminants (garbage) from their recycling cart to the garbage cart. Monday through Thursday

garbage routes had a large increase in tonnage immediately after the pilot started. While it decreased somewhat in the following months, tonnage on these routes remained higher compared to pre-pilot tonnage. Friday’s route data showed that the garbage tonnage decreased and continued to decrease during the pilot. Pre-pilot and pilot garbage tonnage can be seen in Figure 7 below. Recycling tons collected saw a corresponding decrease.

Figure 7: Garbage and Recycling Tons Collected, Per Pilot Route, Before and During Pilot.



For the visual assessments, staff hypothesized that the additional garbage cart capacity would eliminate full and overflowing garbage carts, as well as reduce contaminants (including bagged garbage) in recycling carts. To test this, staff performed visual assessments of garbage and recycling cart contents and fullness before the pilot and three to four months into the pilot at 50 randomly selected addresses per route. Pre-pilot assessments showed that 45 percent of the

garbage carts audited were “full” or “overflowing.” Almost all the addresses that were “overflowing” showed a reduction in garbage cart fullness after the start of the pilot. Overall, 71 percent of the addresses participating showed a reduction in garbage cart fullness, which would be expected with the larger garbage cart volume.

Visual assessments of the recycling carts produced less conclusive results. Pre-pilot assessments showed that approximately 55 percent of recycling carts contained bagged garbage or other contaminants. When staff reassessed these same homes after the pilot had begun, some did not have noticeable contaminants, while other homes did. Furthermore, some homes that did not have noticeable contamination pre-pilot, showed contamination during the pilot. These inconsistencies suggest that additional visual assessments would be needed to draw any useful conclusions about resident recycling behavior changes when provided with a larger garbage cart.

Resident Surveys

To obtain qualitative data from all pilot participants on their experience, postcards were mailed on January 27, 2023, encouraging them to take a short online survey available in English, Spanish and Vietnamese. ESD staff also conducted in-person canvassing to 30 percent of participants in Collection District C (Collection District C had the highest recycling contamination rate per the Fall 2022 study) by going door-to-door and guiding residents through the survey. Canvassers were comprised of three teams, including two Spanish speaking and two Vietnamese speaking staff. Canvassers spoke to residents about their pilot experience and left door hangers on doors when residents were not present. Two hundred and fifty-nine survey responses in total were collected (two hundred and twenty-seven responses were in English, twenty-five in Spanish, and seven in Vietnamese). The survey period ended on February 19, 2023.

Overall, 77 percent of survey participants felt that their experience with the larger garbage cart was “good” or “excellent.” For cart fullness, most responses selected “3/4 full” (75 percent of the cart’s volume) for their recycling and garbage carts. The majority (37 percent) of respondents indicated they “sometimes” use the extra space in the larger garbage cart, followed by 26 percent who said “always”.

While survey participants were interested in keeping their larger garbage carts after the pilot ends, cost was a challenge. Fifty-two percent of respondents were interested in keeping the larger garbage cart, and 16 percent were undecided. Of those who were interested or undecided, sixty-five percent answered “no” after they learned of the costs associated with their cart, and twenty-eight percent were undecided. Finally, size, space, mobility, and usage were listed as reasons why respondents did not want to keep the larger garbage cart(s) after the pilot.

Next Steps and Areas of Future Study

In the coming months, staff will continue to focus efforts on reducing recycling contamination. This will include ensuring that materials are placed in the appropriate cart, as well as educating residents to keep food and liquids out of the recycling cart, so they don’t soil clean recyclables.

Additionally, staff will continue to gather data and research best practices to better understand how potential program changes could help to reduce contamination. Highlights of the next steps are detailed below.

Expansion of the Residential Garbage Cart Pilot

While the current pilot routes show a reduction in contamination, more analysis is needed to measure long term impacts on recycling contamination. Specifically, the consultant analyzing the pilot contamination data recommended expanding the pilot, to have a large enough sample size to confidently estimate the anticipated effects if larger garbage carts were deployed citywide. Staff has submitted a 2023-24 budget proposal for a one-time expense of \$609,650 to expand the pilot to five new recycling routes. These routes will be selected based on the Fall 2022 recycling contamination levels, as well as geographic locations throughout the city and council districts. Analysis will be conducted through a third-party waste characterization study and/or visual cart assessments.

Addition of a Contamination Response Team

Staff has submitted a 2023-24 budget proposal for a one-time expense of \$475,000 to provide direct recycling cart feedback. A team of field staff will be deployed on collection days to conduct visual assessments and provide feedback on recycling cart contents through an attached tag. These routes will be selected based on the Fall 2022 recycling contamination levels, as well as geographic locations throughout the city and council districts.

Install Educational SFD Recycling Cart Lids Citywide

One strategy for reducing recycling contamination is to install more single-family recycling cart lids citywide similar to ESD's recycling cart lid pilot. In Spring 2021, ESD conducted a successful pilot program to improve residents' recycling behavior by installing recycling cart lids on single-family household routes with moderate to high contamination (more than 50 percent) with trilingual (English, Spanish and Vietnamese) labels showing what is and what is not recyclable. The program sampled recycling material from nearly 5,000 single-family homes along five collection routes in north and east San José where the graphic labels had been distributed. The contamination rates along those routes dropped by an average of 15 percentage points compared to data collected from the Fall 2020 recycling characterization study. The average contamination rate prior to the labels was 73 percent and decreased to 58 percent after the labels.

Based on the success of this effort, ESD developed an updated label that will be used for Senate Bill 1383 container labeling requirements. ESD held focus groups in Fall 2022 that included Spanish and Vietnamese community members to provide feedback and cultural relevance. Additionally, \$529,200 of Senate Bill 1383 local assistance grant funds will be used to purchase and install 19,600 lids in the most contaminated routes in all three Service Districts citywide. Installation will occur in phases beginning Summer/Fall 2023 and will be completed by Spring 2024.

Recycle Right Outreach Updates

The Recycle Right public education campaign aims to reduce contamination in residential recycling by educating people on which items are recyclable and empowering residents to take an active role in recycling. The campaign's messages are focused on how to recycle correctly and how to find out what items go where. Messages are developed based on trends and insights from ESD's studies. The campaign's eighty proven behavior change outreach tactics include:

- Direct engagement through in-person outreach
- Reaching underserved communities through Project Hope
- Ongoing partnerships with community-based organizations
- Direct mail
- Local news media
- Out-of-home advertisements
- Targeted digital outreach
- Multi-lingual outreach
- Partnerships with sports franchises

The data driven campaign leverages these tactics and draws findings from ESD's reports and outreach analytics to further craft message and delivery. To ensure messaging reach underserved residents and areas with higher rates of contamination, over thirty multi-lingual tactics are focused on Spanish- and Vietnamese speakers, neighborhood engagements through Project Hope, and partnership with community-based organizations help reinforce the Recycle Right campaign's objectives.

To meet the community where they are at, direct mail postcards, in-person outreach and presentations to the community, and out-of-home advertisements such as laundromat ads and Department of Motor Vehicle ads help address the digital divide. The campaign's digital outreach strategy involves mobile ads to target demographic profiles and geographic location. As most individuals have smart phones, mobile ads provide the campaign an opportunity to address broadband access and the digital divide, increasing accessibility to San José residents. To continue diversifying and expanding reach, the campaign leverages advertising partnerships with professional sports teams in San José. In doing so, the campaign reaches a range of demographic profiles that encompasses multi-generation, language, and culture.

EVALUATION AND FOLLOW-UP

Staff will return to City Council in June 2023 for proposed 2023-24 Residential Program customer rates. Staff will return to City Council with any future recommendations of programmatic changes.

COORDINATION

This memorandum has been coordinated with the City Attorney's Office and City Manager's Budget Office.

PUBLIC OUTREACH

This memorandum will be posted on the City's Council Agenda website for the April 3, 2023 Transportation & Environment Committee meeting.

COMMISSION RECOMMENDATION AND INPUT

No commission recommendation is associated with this action.

CEQA

Not a Project, File No. PP17-009, Staff Reports, Assessments, Annual Reports, and Informational Memos that involve no approvals of any City action.

PUBLIC SUBSIDY REPORTING

This item does not include a public subsidy as defined in section 53083 or 53083.1 of the California Government Code or the City's Open Government Resolution.

/s/
KERRIE ROMANOW
Director, Environmental Services

The principal author of this memorandum is Valerie Osmond, Deputy Director, Environmental Services Department. For questions, please contact Valerie.Osmond@sanjoseca.gov or (408) 535-8557.

ATTACHMENT

Characterization of Residential Curbside Collected Recyclables Summary of Results 2022