ATTACHMENT A

Recycle Plus Pilot Program Evaluation Report

BACKGROUND

The City's Green Vision goal related to waste reduction (Goal #5) is to divert 75% of the City's waste from landfills by 2013 and 100% by 2022. In order to identify the composition and quantity of materials in the residential garbage stream, the City commissioned a waste characterization study in 2008 whereby the City's residential garbage was sorted and weighed. The study indicated a large percentage (over 60% by weight) of waste disposed at landfills consists of material that could be recovered as recyclable or compostable resources. Subsequently, the Zero Waste Strategic Plan (ZWSP), approved by City Council in November 2008, identified important next steps to capture and divert those resources as a key strategy to meeting Green Vision Goal #5. These next steps included conducting pilot programs to evaluate the following:

1. Collection of food scraps and other organic material in yard trimmings carts
2. Effectiveness of yard trimmings cart collection on reducing debris accumulation in storm drains
3. Effectiveness and acceptance of a yard trimmings cart service
4. Effectiveness of periodic/seasonal loose-in-the-street (LIS) yard trimmings collection
5. Processing of garbage to recover recyclables and compostables (food scraps, soiled paper, and other organic material)

Pilot Program Design

In September 2009, Council approved funding the Recycle Plus Pilots in selected neighborhoods throughout the City, each for a maximum period of 18 months. The three pilots were implemented in three phases spanning October 2009 through August 2011. In order to provide data representative of the entire City, pilot areas were selected based upon the collection day, collection route, proximity to storm water catch basins (catch basins), and inclusion of all Council Districts. The overall program consisted of three pilots further described in Table 1 and below:

Table 1: Pilot Objectives

I. Food Scraps Pilot	• Collect food scraps in yard trimmings carts • Determine the landfill diversion potential of food scraps • Determine the types and quantities of compostable materials collected • Determine if yard trimmings cart service reduces debris accumulation in storm water catch basins as compared to LIS collection in nearby neighborhoods

II. Yard Trimmings Cart Pilot (Control Pilot)	• Determine the effectiveness and acceptance of yard trimmings carts in place of weekly LIS collection • Determine the effectiveness of seasonal LIS yard trimmings collection • Determine if cart collection results in lower tonnage collected versus LIS collection
III. Municipal Solid Waste Processing Pilot	• Process and compost single-family garbage to determine the potential landfill diversion of recyclables and compostables

Food Scraps Pilot - This pilot involved 5,120 households Citywide, including neighborhoods located in Council Districts 1, 2, 4, 5, 6, and 8. The purpose of this pilot was to assess the effectiveness of a food scraps collection program in diverting organic waste from landfills. All households in the pilot areas received a cart for the collection of yard trimmings, food waste, and other organic materials such as soiled paper. Kitchen collection pails and liners were also provided to assist residents. Residents were asked to place bagged food waste and other organics in the yard trimmings cart along with yard trimmings. Additional carts were provided upon request at no cost to residents who routinely had more yard trimmings than would fit into one cart. To study the effectiveness of periodic/seasonal loose yard trimmings collection, weekly loose collection of yard trimmings was reduced to once per month, and twice per month during the leaf-season months of November through January. After collection, the material was separated at GreenWaste Recovery's Materials Recovery Facility (MRF) before being transported to the Z-Best composting facility in Gilroy. The yard trimmings and bagged food waste were processed separately to produce different compost products and then marketed to local landscapers. A secondary study was included to quantify debris levels in the storm water catch basins associated with cart collection, as compared to debris levels with loose collection.

Yard Trimmings Cart Pilot (Control Pilot) - To understand the affect of mandatory cart collection of yard trimmings, a separate control group of 4,734 households in select neighborhoods located in Council Districts 3, 6, 7, 9 and 10 were provided with yard trimmings cart collection without food scraps collection. This provided the benefit of understanding operational issues and the potential consequences on waste diversion as compared to LIS collection exclusively. This control group provided comparison data against the Food Scraps pilot as well as a better understanding of customer acceptance of cart collection without food scraps recycling.

Municipal Solid Waste (MSW) Processing Pilot - This pilot involved processing of garbage to recover recyclable and compostable materials from curbside garbage, and included 7,167 households in Council Districts 1, 2, 4, 5, and 8. The design of this pilot targeted the recovery of compostables and valuable recyclables that residents place in their garbage carts. Recyclables, which are typically 20% to 30% of the garbage by weight, represent a significant portion of the waste stream that can only be captured by processing. Processing of the garbage occurred behind the scenes at the GreenWaste Recovery MRF, and therefore no behavioral change was required for customers and no outreach costs were incurred. GreenTeam of San José and Garden City Sanitation delivered all garbage collected on the pilot routes to the MRF, where recyclables and compostables were manually separated from the garbage, and compostables were transported to the Z-Best composting facility. The purpose of this pilot was to

measure diversion rates, identify the quantity of recyclables and compostables, and estimate the costs to reach the diversion rates.

PILOT FINDINGS

Food Scraps Pilot

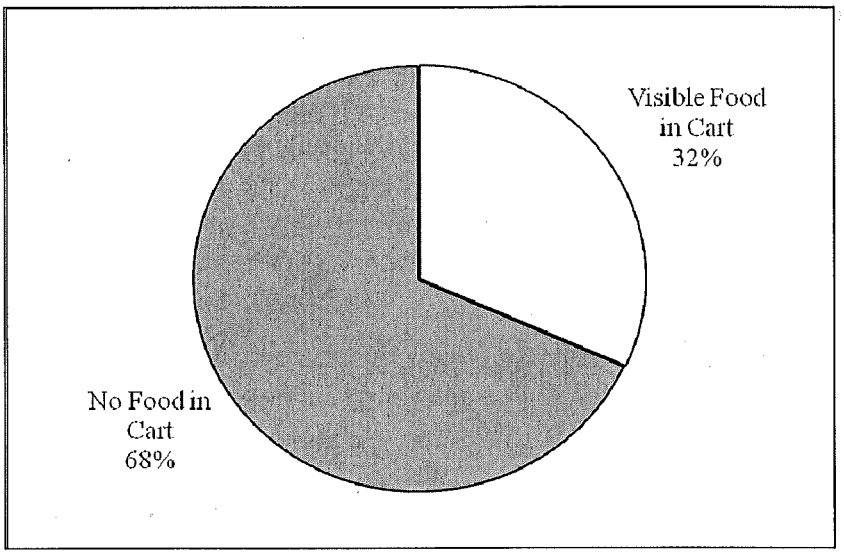
The Food Scraps pilot yielded important findings regarding the quantity of food scraps and other compostables collected, the composition of the compostables, and resident participation. It also provided data regarding whether cart collection had an affect on catch basin debris accumulation.

Resident Participation

The success of a food scraps collection program to divert organic material from landfills is predicated on behavioral changes by residents to consistently deposit food scraps into the yard trimming cart. The participation rate was established based on the number of residences that placed food scraps in the yard trimmings cart for collection. The data was gathered by auditing one route each day for a week and documenting the amount of food scraps as a percentage of the contents of the cart. Table 2 illustrates the average participation of households in June and July of 2011.

Observations over the 18-month period indicate that an average of 32% of the yard trimmings cart set out for curbside collection contained food scraps. While this figure indicates that less than half of the pilot households participated in the program, it is consistent with the participation levels observed in other Bay Area jurisdictions with established food scraps collection programs. For comparison, participation levels in cities in Alameda County, including as Oakland, Berkeley, and Fremont, which have established food scraps recycling programs, range between 20% to 40%. These cities experienced low participation in the early stages of their program, but with extensive public outreach and media campaigns participation increased over time to the thirty percent range.

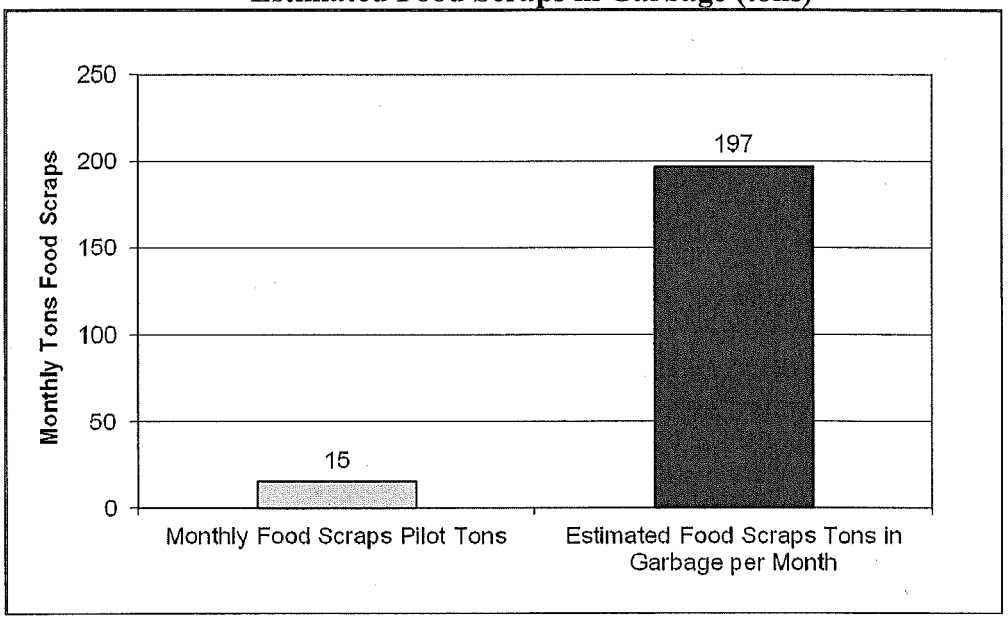
Table 2: Resident Participation – Visible Food in Carts



Quantity of Food Scraps Collected

Despite matching the participation levels witnessed in other jurisdictions, the food scraps collected in the yard trimmings carts during the pilot were only a small percentage of potentially recoverable food scraps in the garbage. Table 3 compares the average tonnage of food scraps collected monthly to the estimated food scraps in the garbage. Staff estimated that a potential of 197 tons of food scraps and other organics could be diverted from the landfills on a monthly basis if residents placed such material into the yard trimmings cart instead of the garbage bin. However, the average monthly food scraps collected were only 7.6% by weight (fifteen tons) of the estimated total food scraps (197 tons) in the garbage cart.

Table 3: Average Food Scraps Collected per Month vs. Estimated Food Scraps in Garbage (tons)



Impact on Diversion

The low recovery rate of compostables is likely due, in part, to the brevity of this pilot program, which was limited to 18-months per the City's service agreements with the Recycle Plus service providers. Since the success of the food scraps program is highly dependent on behavior change, ample time is required for residents to adopt this behavior and to develop the habit of separating compostables from other household garbage. For comparison, the average diversion rate of compostables in cities with established food scraps programs is approximately 20%. This figure represents programs with established public outreach strategies and adequate time to measure resident behavior change over time.

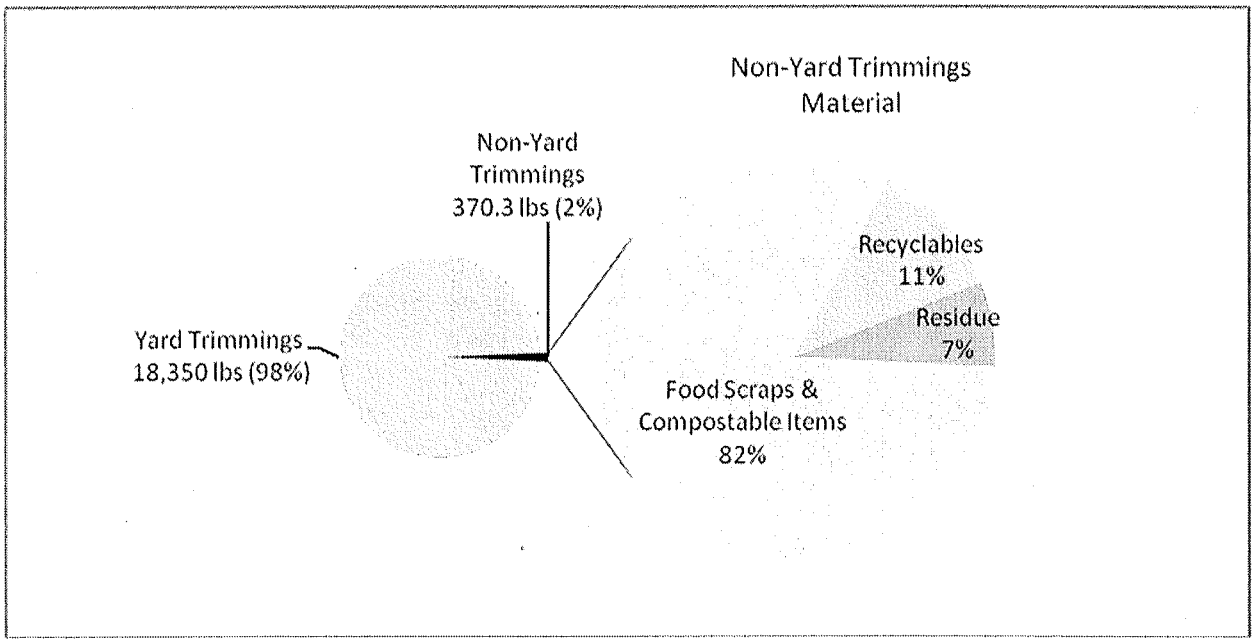
Given adequate time and investment in public education for behavior change to develop, San Jose can likely achieve recovery rates similar to other Bay Area cities. However, the impact on increasing overall diversion would be low because it is unrealistic to expect perfect participation from all residents in the City. Assuming implementation of the Food Scraps program citywide would recover 20% of recyclable and compostable material from the garbage stream, it would increase the overall residential diversion rate of 60% by 5%, for a total diversion rate of 65%. This option would not substantially help San Jose

achieve the Green Vision target of 100% diversion by 2022, and it would still require significant investment in public outreach and education.

Composition of Compostables Collected

In order to identify and quantify the types of recyclables and compostables in the yard trimmings carts, waste characterization audits were conducted to examine the composition of the collected material. During each audit, a single day's collection of yard trimmings with food scraps was deposited on the floor of the MRF for separation by commodity type. The results in Table 4 illustrate the composition of materials from a single day's collection. Of the non-yard trimmings material, food scraps and compostable items averaged 82%, while recyclables, such as glass, plastics and metals, made up 11%. About 7% was residue or non-recyclables, including diapers, cement and expanded polystyrene. Overall, up to 93% of the non-yard trimmings material collected during the pilot was diverted from the landfill (sum of non-yard trimmings materials minus residue). This provides insight into the composition of the types of materials expected if the pilot were to be expanded Citywide.

Table 4: Sample of Material Collected During the Food Scraps Pilot

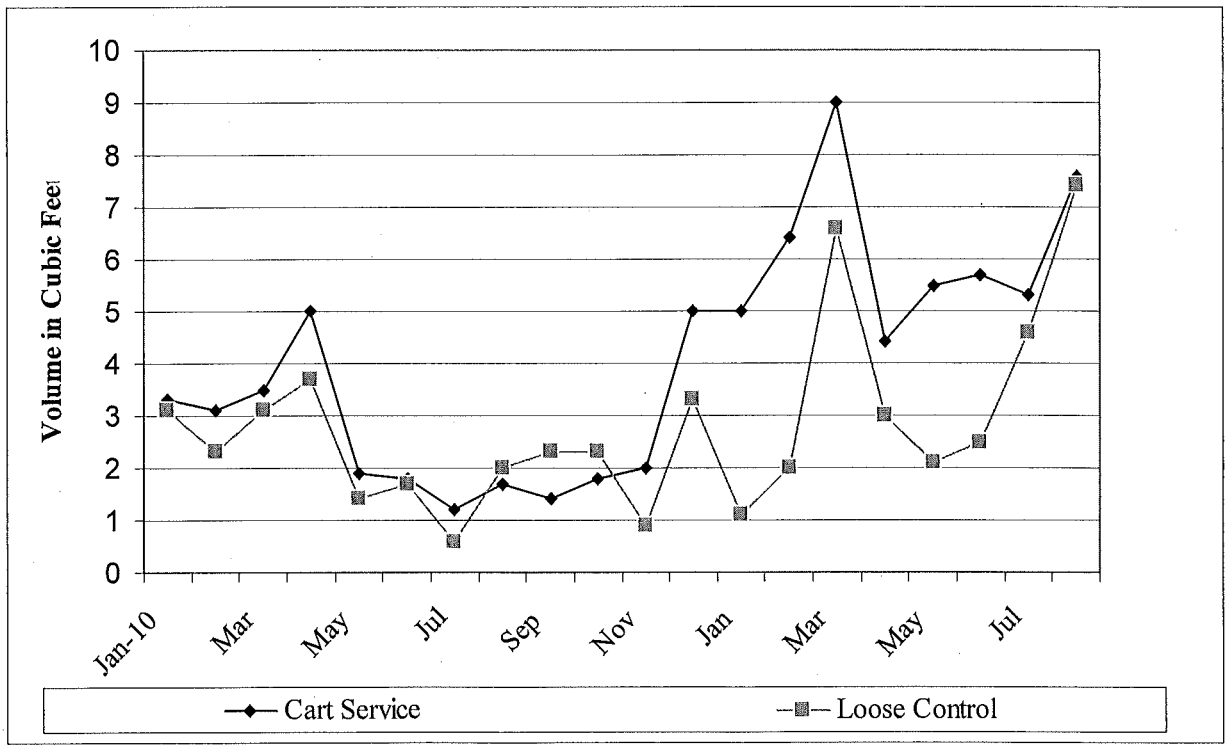


Accumulation of Debris in Storm Drains

Data was collected from debris accumulated in storm drain catch basins (catch basins) located in neighborhoods near the Food Scraps pilot. The neighborhoods included in the catch basin monitoring had weekly LIS collection, while the Food Scraps pilot neighborhoods had cart collection supplemented with LIS collection twice monthly during leaf season (November to January) and monthly during non-leaf season.

Table 5 shows that from January through November of 2010, the quantity of catch basin debris was similar for both test groups, at approximately two to four cubic feet of debris. However, from December 2010 through August 2011, the average volume of debris increased dramatically in the Food Scraps pilot. Early set outs of loose piles in the pilot areas on weeks when there was no loose collection could account for higher debris in the catch basins. Another factor that may have affected the debris in the pilot areas was that the claw tractor, which collects loose leaves from the street surfaces and gutters, operated only twice per month rather than once per week, which is the current program frequency. This is particularly apparent in areas where mature street trees can drop enough leaves to form contiguous piles of leaves on both sides of the streets. In heavy leaf fall, the claw tractor drives down each side of the street clearing one long row of accumulated leaves in the gutters, which would not fit in carts. In this instance, cart service proved to be associated with higher levels of debris in the catch basins.

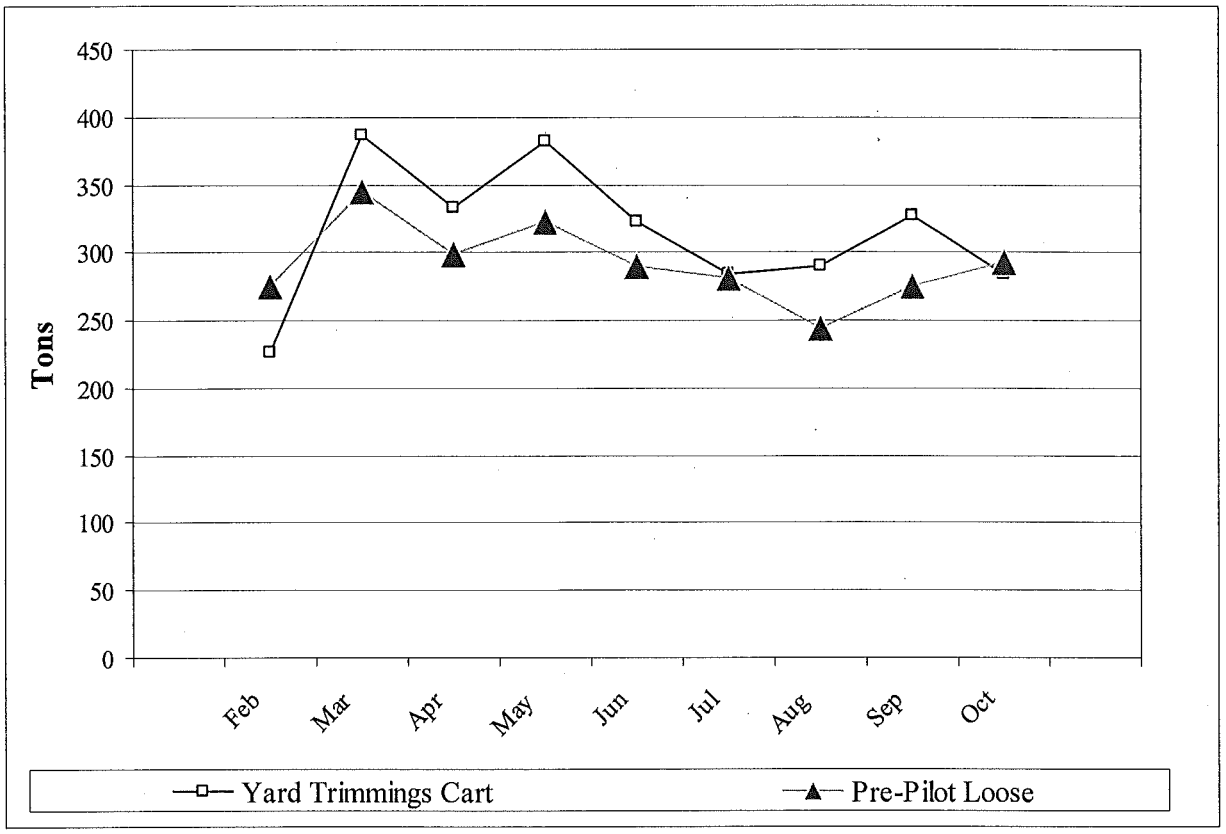
Table 5: Catch Basin Data Comparing Carts to Loose Collection



Yard Trimmings Cart Pilot (Control Pilot)
For comparison to the Food Scraps Pilot, a separate control group of 4,734 households in Council Districts 3, 6, 7, 9 and 10 were provided with a yard trimmings cart without instructions for food scraps collection. Monthly loose-in-the-street (LIS) collection was provided to collect larger prunings that could not easily fit into the carts. The control group provided comparison data against the Food Scraps Pilot as well as evaluations of customer acceptance of cart collection without the environmental justifications of food scraps collection.

The effectiveness of using yard trimmings cart collection was measured by the amount of yard trimmings material collected in the carts. Collection data for this pilot was compared to the data from loose-in-the-street (LIS) collection of the same collection routes for the prior year. Table 6 compares pilot cart route tonnage to pre-pilot LIS tonnage collected, and the results show that the pilot tonnage was slightly higher. The data shows that on average, cart collection yielded similar tonnages as LIS collection, which indicates there would not be any significant loss in yard trimmings diversion using the cart collection method. Staff examined whether external factors, such as seasonal variances in rainfall and other naturally occurring variables, could influence the weight of the yard trimmings but did not discover any significant differences in seasonal trends between 2010 and 2011 that would have skewed the results.

Table 6: Yard Trimmings Cart Service vs. Pre-Pilot LIS Collection (tons)



This pilot generated much controversy during its launch as many residents in the program resisted the use of yard trimmings carts, citing inconvenience, limited storage capacity, and extra labor as primary reasons for their opposition. Staff conducted field audits in neighborhoods with mature street trees and discovered that leaves from street trees, especially during the fall leaf season (November through January) remained in the street right-of-way due to reduced frequency of LIS collection. Most residents did not voluntarily collect leaves in the street and place them in the yard trimmings cart for collection. As a result, many complaints were generated by the sight of leaf debris accumulating in the street. In response to this problem, the pilot program was modified to increase LIS collection from once-monthly to twice-monthly as a supplemental service to weekly cart collection. Therefore, an important finding of this pilot is confirmation of the need for a seasonal collection program during the fall leaf season that addresses the collection of leaf debris in the public right-of-way in neighborhoods with significant street foliage. After considering feedback from residents, especially those in neighborhoods with mature street trees, the pilot program was modified to extend LIS collections from once-monthly to twice-monthly.

The results confirm that, should the City convert to a mandatory cart for yard waste collection, there would be added costs during leaf season (November through January) for extra LIS collections. A rough estimate of the additional cost to convert to carts Citywide with once-monthly LIS collection is approximately $5,000,000 annually. The parameters of such a program would need to be developed and evaluated for feasibility.

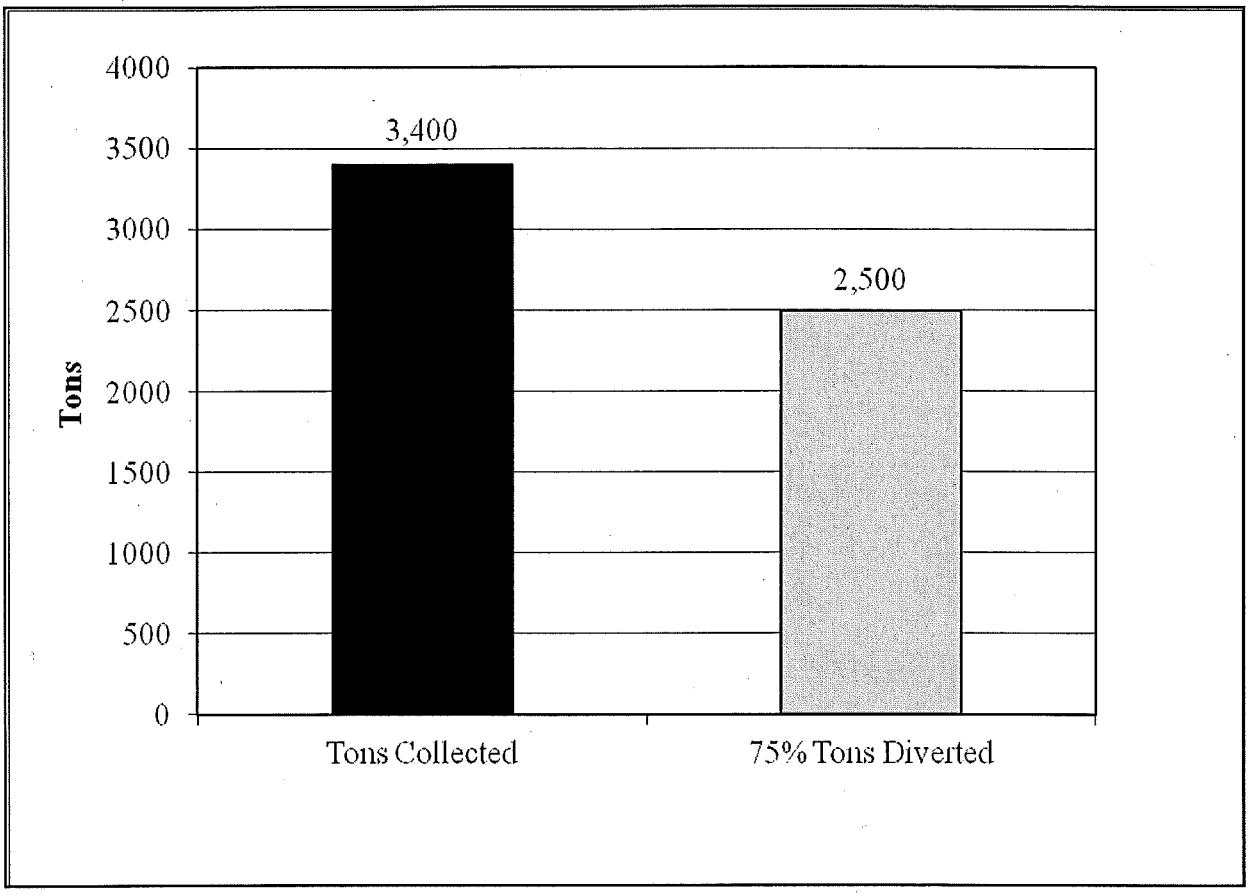
MSW Processing Pilot

The MSW Processing pilot involved processing of garbage to recover recyclable and compostable materials from curbside garbage, and it included 7,167 households in Council Districts 1, 2, 4, 5, and 8. Processing of the garbage occurred behind the scenes at the GreenWaste Recovery MRF, and therefore no behavioral change was required for customers and no specific instructions were given to residents in this pilot. GreenTeam of San José and Garden City Sanitation delivered all garbage collected on the pilot routes to the MRF, where recyclable and compostable materials were separated from the garbage. The data collected was used to quantify the amount of recyclables and compostables present in the garbage carts, and to quantify possible diversion rates.

Quantity of Compostables and Recyclables Diverted

San José's garbage was delivered to the GreenWaste MRF, where recyclables were sorted and compostable materials were transported to the Z-Best facility for composting. Results of this pilot show that processing of garbage is a highly effective method in capturing recyclable and compostable material from the garbage stream. Table 7 data shows this pilot achieved a 74% diversion rate, with 2,500 tons of recyclable and compostable materials recovered from 3,400 tons of garbage. If implemented citywide, the garbage processing option could increase diversion by 22%, bringing the diversion rate in the residential program to 82%. This option would be the most effective method to achieve the Zero Waste Goal of diverting 100% of our waste from landfills.

Table 7: Municipal Solid Waste Processing Pilot Diversion (tons)



Preliminary Cost Estimates for Citywide Implementation

Costs for implementing these programs citywide were estimated using current hauler rates in the residential Recycle Plus solid waste service agreements. Estimates for customer rate increases assume that every incremental cost of $1,000,000 is equivalent to a 1% customer rate increase. In general, the deployment of yard trimmings cart collection citywide would cost $5,000,000 annually and require a 5% rate increase to customers ($1.50/mo.). Implementation of the food scraps collection program would cost $7,000,000 annually and require a 7% customer rate increase ($2.10/mo.) MSW processing would cost $12,000,000 annually and require a 12% customer rate increase ($3.59/mo.) Table 8 below compares the preliminary costs for implementing each program citywide. The costs are estimated by extrapolating all three pilot costs and incorporating current rates for collection and processing of compostables and recyclables. In summary, the MSW processing method achieves the highest diversion but is also the costliest of the three options. The other two collection systems would also require substantial costs but are ineffective in increasing diversion.

Table 8: Preliminary Program Cost Estimates

	Yard Trimmings Carts	Food Scraps Collection	Municipal Solid Waste Processing
Estimated % Increase in Overall Residential Program Diversion	0%	5%	22%
Estimated Annual Cost	$5M	$7M	$12M
Estimated Cost per 1% Diversion	N/A	$1.4M	$545K
Estimated Annual Percent Rate Increase	5%	7%	12%
Estimated Monthly Customer Rate Increase	$1.50	$2.10	$3.59

Table 9 illustrates the cost versus effectiveness in increasing diversion for the residential program. Broadly speaking, the analysis shows that higher costs equate to higher diversion potential.

Table 9: Cost Effectiveness in Achieving Diversion Goals

	Low Cost $	Moderate Cost $$	High Cost $$$	Current Residential Program Diversion	Estimated Residential Program Diversion with Program Enhancement
High Diversion			MSW Processing +22% Diversion $12M / Yr $545K per 1% Diversion	60%	60 + 22 = **82%**
Low Diversion		Food Scraps Collection +5% Diversion $7M / Yr $1.4M per 1% Diversion		60%	60 + 5 = **65%**
No Impact on Diversion	Yard Trimmings Carts $5M / Yr +0% Diversion			60%	60 + 0 = **60%**

Citywide implementation of a Yard Trimmings Carts program would have no impact on increasing diversion, but it would cost $5,000,000 annually for deployment of carts citywide and new collection equipment for GreenWaste Recovery.

A citywide food scraps program would cost $7,000,000 a year, extrapolated from costs of the pilot program. An assumption was made that such a program would recover 20% of recyclable and compostable material from the garbage stream, as witnessed in similar programs in the Bay Area given ample time and public education. This option would increase the overall residential diversion rate of 60% by 5% for a total diversion rate of 65%. This option would not substantially move San Jose toward the 2013 diversion target of 75%. Moreover, such a program would require significant public outreach and education costs with no guarantee that participation would yield a positive impact on diversion.

Investment in MSW processing is expected to increase diversion by 22%, enough to increase overall diversion in the residential sector to a respectable 82%. However, this method is also the costliest of the three program options, primarily due to hauler costs associated with processing the material.

PUBLIC OUTREACH

The Food Scraps and the Yard Trimmings Cart pilots both required an extensive public outreach campaign due to a need for significant resident behavioral change. The campaign involved heavy outreach at the outset of the pilots, with follow up outreach materials sent at the midpoints and endpoints of the 18-month period. Pilot residents were educated through mailed materials, numerous community meetings, a pilot specific website, and multiple customer service avenues. In addition, surveys were mailed to pilot residents at three different intervals to track changes in participation and satisfaction rates over the pilot duration. For the MSW Processing pilot, no public outreach was provided since the change was invisible to residents and did not require any behavioral change.

Customer Service

Residents had multiple options to contact ESD with feedback and inquiries during the pilots. The Customer Contact Center (408-535-3500) handled the majority of the calls, ranging from additional cart requests to general feedback on the program. A pilot website (www.sjrecycles.org/pilot) was set up to supplement the mailed outreach and provided another avenue to contact staff through a web request form, including an option to have ESD staff speak at community and neighborhood meetings. Residents were given a dedicated and regularly monitored email inbox at pilotinput@sanjoseca.gov, as well as the option to send a letter. Council offices were also provided with periodic updates.

Initial Outreach

At the launch of the Food Scraps and the Yard Trimmings Cart pilots, staff used mailed materials to deliver key messages regarding the switch from LIS to containerized yard trimmings and the addition of bagged food scraps in the yard trimmings cart. Letters to residents provided an explanation of why the pilots were being conducted, when supplies would be delivered, what changes were made to LIS collection, reassurance that there was no charge for the cart, and details on upcoming community meetings. Residents were given the opportunity to discuss the new pilot programs and meet directly with ESD staff at community meetings. Meetings were held at eight community centers, in order to reach as many pilot residents as possible. In addition, surveys were included in the mailings to get baseline data on participation and satisfaction rates.

Midpoint Outreach
At each pilot midpoint, reminders were mailed to pilot residents, reiterating key messages and addressing any frequently asked questions, such as where to purchase compostable bags. Midpoint surveys were included in the mailing to gauge changes in participation and satisfaction rates in the first nine months of the pilots. In addition to the midpoint mailing, a separate survey giving pilot residents the opportunity to provide input on which yard trimmings method they would prefer for the fall season (October 2010 – January 2011) was sent out. The top choice from survey respondents was "*Weekly yard trimmings cart collection with: Twice a month LIS collection.*" Based on this feedback, twice monthly LIS collection was implemented for the fall leaf season and calendars reflecting the changes were mailed in September 2010.

Endpoint Outreach
Toward the end of the pilots, a final outreach mailing included instructions on how to return the yard trimmings carts upon the resumption of standard LIS service. Additional messages asked residents to discontinue the placement of food scraps with the yard trimmings and expressed appreciation to residents for their participation in the pilots. Endpoint surveys were also included to gauge changes in participation and satisfaction rates over the course of the 18-month period.

Outreach Costs
Approximately 10% of the total amount expensed to implement and monitor the pilots ($920,430) was spent on public outreach; the remainder of the budget paid for hauler operation costs. In total for all pilot programs, $91,826 was spent on the creation and distribution of public outreach to pilot residents. The Food Scraps pilot outreach cost was $58,848; and $32,978 was spent on the Yard Trimmings Cart pilot. The Food Scraps program incurred the most cost since it required a behavioral change for most residents. Photo-based brochures, cart tags, and pail stickers were provided to ensure residents knew how to properly bag their food scraps before placing the bags in the yard trimmings cart. Staff hosted several community meetings prior to the roll out of the pilot and provided extensive outreach by mail during the 18-month period. Increased spending on outreach, different outreach tactics, and ongoing community meetings may have resulted in more participation in the pilots.

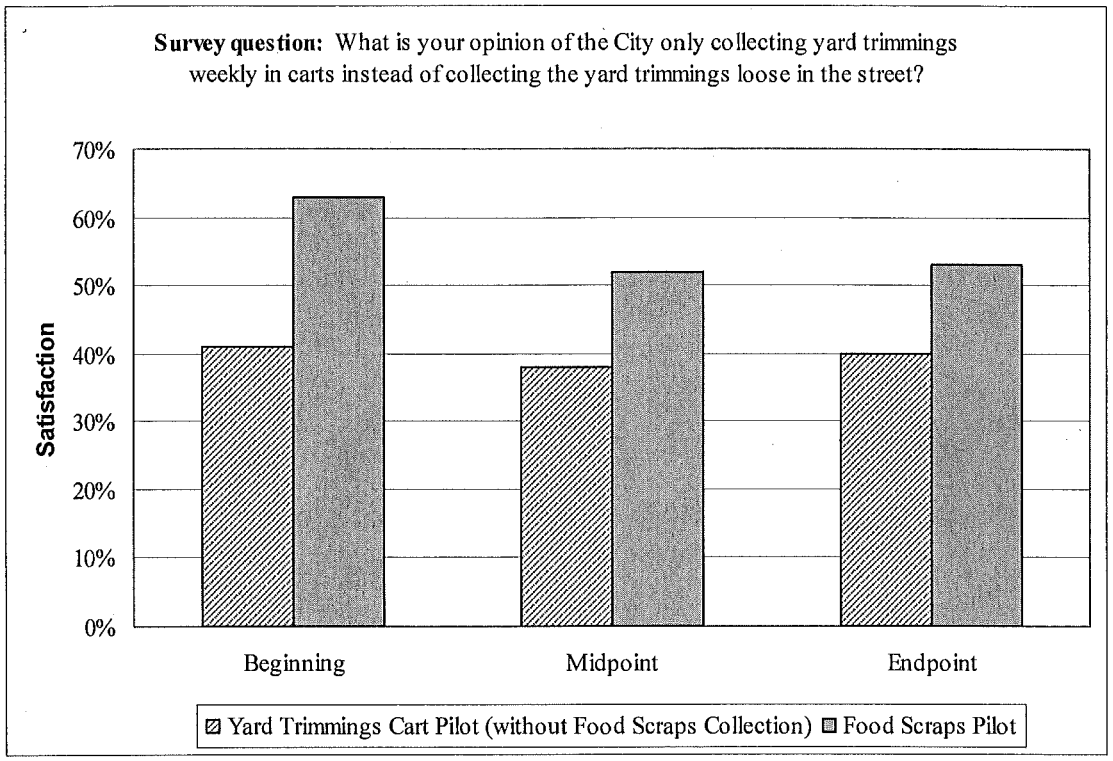
SURVEY FINDINGS

High survey return rates were realized for the Food Scraps and the Yard Trimmings Cart pilots, averaging 17%, compared to marketing industry average return rates that are typically less than 5%. High return rates can be attributed to the high level of interest many residents have in their yard trimmings collection.

Satisfaction with Yard Trimmings Carts
Residents in both pilots were surveyed and asked of their opinion on using yard trimmings carts versus the LIS collection method (see Table 10). Overall, residents in the Food Scraps pilot were more satisfied than residents in the Yard Trimmings Cart pilot. In the Yard Trimmings Cart pilot, even though residents received the yard trimmings cart without having to pay the $4.00 monthly charge, residents still perceived a loss in service due to decreased LIS collections from weekly to once a month. In the Food Scraps pilot, residents experienced the same reduction in LIS collection but gained an additional option for their organics, which freed up garbage capacity. The inclusion of bagged food scraps may have convinced residents they were not losing service. Also, the inclusion of food scraps collection likely helped residents understand the need to use the yard trimmings cart, and some residents

even commented that their ability to actively participate in bettering the environment was a reason for being satisfied with the service.

Table 10: Satisfaction with Yard Trimmings Carts (Yard Trimmings Cart Pilot vs. Food Scraps Pilot)



Satisfaction with yard trimmings cart collection also appeared to correlate with tree density in the neighborhoods. The highest satisfaction can be attributed to residents in neighborhoods with lowest tree density such as the Edenvale (CD2) and West Evergreen (CD7) neighborhoods. In contrast, opposition to yard trimmings carts was consistently high in the Willow Glen (CD6), Naglee Park (CD3), Almaden (CD10), and Hillsdale (CD9) neighborhoods. As was apparent with the customer service calls, neighborhoods with higher tree density were more opposed to a cart system. Calls and survey fill-in responses from residents included concerns about the lack of capacity for fall leaf season and the lack of room to store multiple yard trimmings carts.

Satisfaction Trends Over 18-Months

Residents were surveyed at the beginning, midpoint, and endpoint of the pilot in order to measure changes in satisfaction with the cart collection system. While it was initially hypothesized that pilot residents who disliked the yard trimmings cart at the start of the pilot would learn to like the cart system (decreasing opposition and increasing satisfaction), survey results show that this was not the case. Over the 18-month Food Scraps and Yard Trimmings Cart pilots, results show that opposition to a cart-only collection system increased by up to 11% (see Table 11). A key reason for this is likely due to residents witnessing accumulation of leaf debris in the public right-of-way that is no longer removed by the claw tractor under the weekly LIS service. This was further examined by asking residents whether they prefer a combination of weekly cart collection and periodic LIS service, as discussed below.

Table 11: Opposition to Yard Trimmings Carts

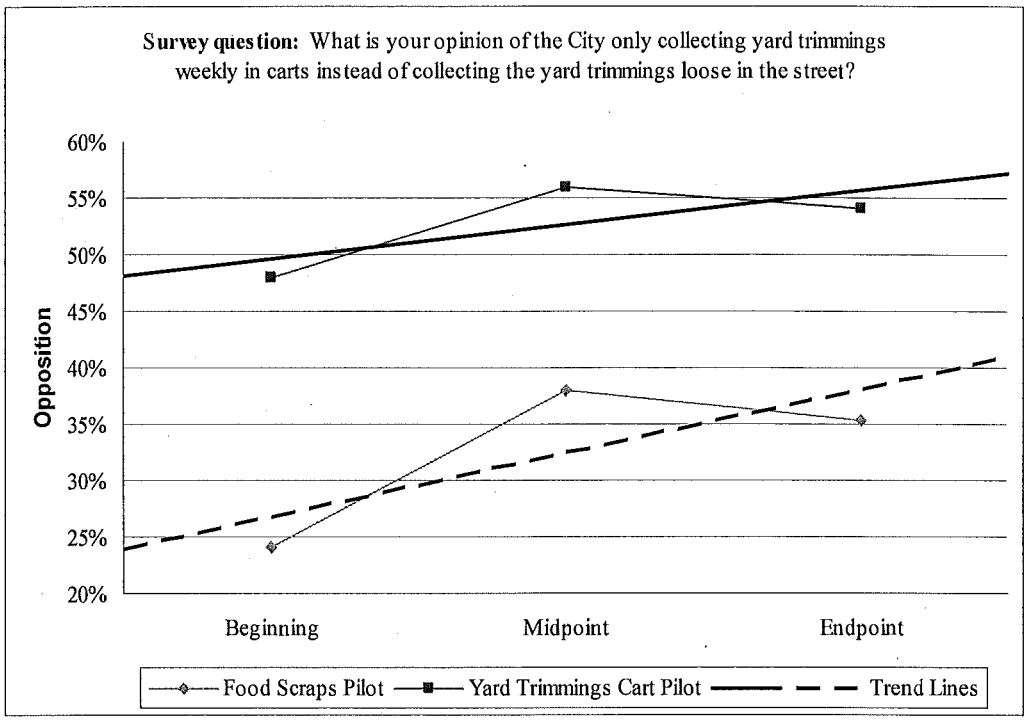
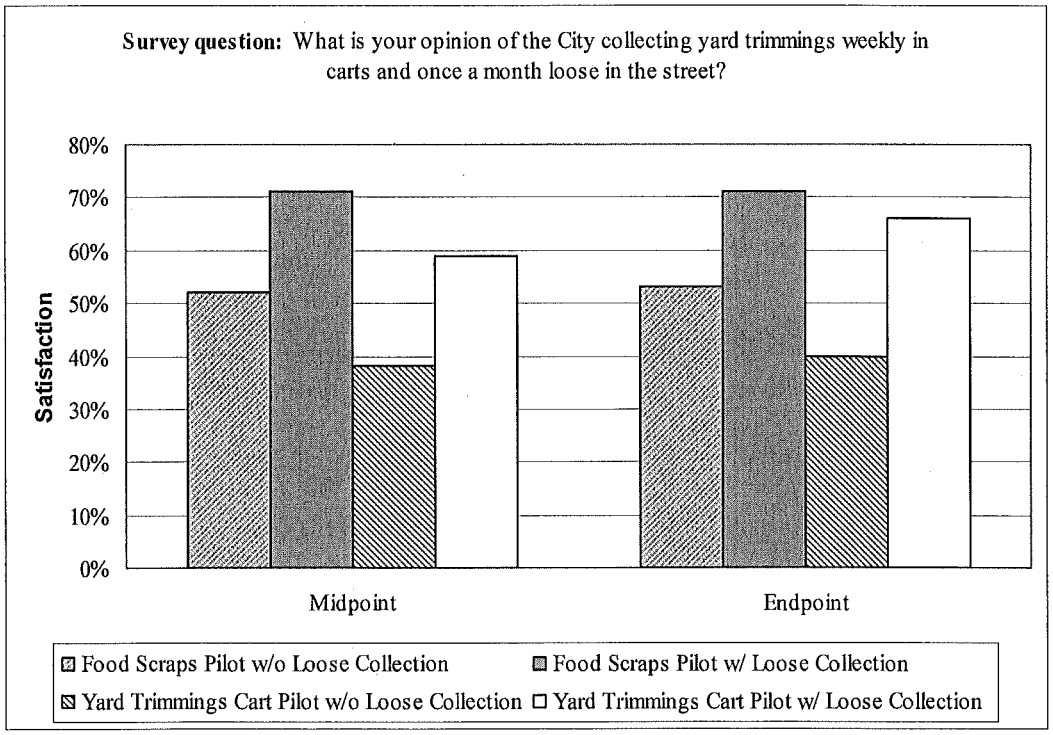


Table 12: Satisfaction with Yard Trimmings Carts (With and without Loose Collection)



When residents were asked their opinion on yard trimmings cart collection with the addition of once a month LIS collection, satisfaction rates in carts increased by up to 26% (see Table 12). This reaffirms the need and desire from residents for LIS collection in addition to weekly cart collection.

CONCLUSION

Impact on Diversion

While the Food Scraps Pilot data indicated that up to 93% of material collected can be diverted, Citywide implementation of a Food Scraps program would not significantly increase overall waste diversion due to anticipated low participation. Significant investment in public outreach would be required to generate the participation required to achieve diversion goals through a food scraps collection program. However, case studies in other jurisdictions with established food scraps collection programs and significant outreach campaigns have only yielded 20%-40% participation over time. Assuming San Jose achieves the 40% participation under a best-case scenario, at that participation level citywide diversion would only increase moderately by 5%, bringing the diversion rate to 65%, which is not enough to achieve our Zero Waste goal. A preliminary estimate is that the program would cost at least $7,000,000 year just to achieve the same results as experienced during the pilot. Additional costs would be involved to fund extensive public education to leverage proper public participation.

Data from the Yard Trimmings Cart Pilot indicated that diversion of yard trimmings during the cart pilot was comparable to the current LIS collection. However, there also likely would not be any increase in diversion by switching to a cart collection system. An important finding from this pilot is confirmation that a seasonal LIS leaf collection is necessary to remove accumulation of leaves in the public right-of-way during the fall leaf season. In areas where street foliage is dense, there may be a need to resume weekly LIS collection during the fall season. The need for seasonal LIS collection was also reaffirmed by resident feedback gathered from the pilot surveys. The seasonal collection programs would mean additional costs to the cart collection system, bringing the cost of a citywide yard trimmings cart program to $5,000,000 a year to implement citywide.

Meanwhile, results of the Municipal Solid Waste Processing pilot show that processing of garbage is a highly effective method in capturing recyclable and compostable material from the garbage stream. Overall, the pilot program achieved a diversion rate of 74%, with 2,500 tons of recyclable and compostable materials diverted from landfill. If implemented Citywide, the municipal solid waste processing option could substantially increase diversion in the residential sector. This option would be the most effective method to achieve the City's Zero Waste Goal to divert 100% waste from our landfills, but at $12,000,000 a year, this option is the costliest of the three options to increase diversion.

Impact on Reducing Stormwater Pollution

Overall, yard trimmings cart collection resulted in higher levels of debris accumulation in the catch basins than in areas with LIS collection. This result counters previously held assumptions that cart use would reduce debris in the catch basins. This may be attributed to the lack of a mechanism to collect leaf debris in the street gutter, whereas with LIS collection the claw tractor removes most leaf debris off the street surface. This is particularly problematic in areas where mature street trees can drop enough leaves to form piles of leaves on both sides of the street. During heavy leaf fall, the claw tractor can clear each side of the street of leaves accumulated in the gutters.

Next Steps

The findings in this report will be used to evaluate citywide implementation of the pilots or different variations of these program enhancements to target zero waste. Staff will continue to research other program alternatives and emerging technologies, such as anaerobic digestion of organic material, and provide regular evaluations of program enhancement options, as necessary, as part of the Green Vision reporting and update process.