The City *of*
SAN DIEGO

Operational Efficiency Analysis

City of San Diego
Environmental Services Department

San Diego, CA

HDR

October
2024

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Acronyms and Abbreviations

%	percent
4-10's	four 10-hour days per week
5-8's	five (5) 8-hour days per week
Analysis	Operational Efficiency Analysis
AR	Administrative Regulation
AR 75.12 Process	Vehicle and Industrial Incident Process
ARCS	Area Refuse Collection Supervisor
ARF	SWANA's Applied Research Foundation
ASL	Automated Side Loader
AV	Audio video
Cal/OSHA	California Occupational Safety and Health Administration
CARB	The California Air Resources Board
City	City of San Diego
CNG	Compressed Natural Gas
Collection Services	City of San Diego Environmental Services Department, Collection Services Division
DGS	City of San Diego Department of General Services
DGS Fleet	City of San Diego Department of General Services, Fleet Operations Division
DHD	Department Head Designee
Dispatch	City of San Diego Environmental Services Department, Collection Services Division Dispatch
District	District Refuse Collection Supervisor
EHS	Environmental Health and Safety
ESD	City of San Diego Environmental Services Department
FFCRA	Families First Coronavirus Response Act
FMLA	Family Medical Leave Act
FTE	Full time equivalent
FY	Fiscal Year
Greenery	Miramar Greenery, 5180 Convoy Street, San Diego, CA 92111
HDR	HDR Engineering Inc.
HHW	Household Hazardous Waste

HRC	Human Resources Coordinator
KPI	Key Performance Indicator
Landfill	Miramar Landfill, 5180 Convoy Street, San Diego, CA 92111
Local 127	Local 127, American Federation of State, County and Municipal Employees, AFL-CIO
MEA	San Diego Municipal Employees Association
MPU	Missed pickup
NEO	New Employee Orientation
NWRA	National Waste & Recycling Association
OCA	Out of Class Assignment
Office	Miramar Office Building, 8353 Miramar Place, San Diego, CA 92121
PM	Preventative Maintenance
PPE	Personal Protective Equipment
PTO	Paid Time Off
RCU	Residential Collection Unit
RL	Rear Loader
ROM	Rough Order of Magnitude
SHRM	Society for Human Resource Management
SOP	Standard Operating Procedure
STED	Safety Training and Employee Development
Supervisor	Area Refuse Collection Supervisor
SWANA	Solid Waste Association of North America
TRIR	Total Recordable Incident Rate
Yard	Miramar Yard, 8353 Miramar Place, San Diego, CA 92121
ZEV	Zero-Emission Vehicles

Glossary of Terms

4-10's: Typical schedule of an employee at Collection Services working four, 10-hour days per week with one day off that between Monday and Friday.

Area Refuse Collection Supervisor (ARCS): An ESD employee that manages a section consisting of Sanitation Drivers and reports to a District Refuse Collection Supervisor. (See also: "Section" and "District Refuse Collection Supervisor")

Automated Side Loader (ASL): Heavy duty vehicle that collects materials from containers using a gripper and arm system on the side of the vehicle. Drivers do not have to get in and out of the vehicle to service the container in most situations. ASLs are intended to be operated by one (1) driver.

Bulky Items: Furniture, appliances and mattresses and other similar items that are too large to fit into a container.

Cart: Also known as a container. A specialized type of container used by ESD customers to collect materials. The containers are equipped with wheels and a lid. The container volumes are approximately 32, 64 and 96-gallons. Trash containers are black, recycling containers are blue, and organics containers are green. (See also: "Trash", "Recycling" and "Organics")

Cleanup crew: Designated drivers who service containers on delayed routes. (See also: "delayed route")

Collection Services: A division of the Environmental Services Department primarily responsible for collection of trash, recycling and organics from City customers.

Collections: Inclusive term used to indicate all City of San Diego divisions, departments and their staff that are collectively responsible for services, vehicles and support for the removal of trash, recycling and organics from City Customers. This term specifically includes the Environmental Services Department, Department of General Services, Performance & Analytics, and Information Technology Department.

Container: Also known as a cart. A generic term used to identify the type of vessel that is used to store trash, recycling, or organics until the pickup day. Container is commonly used in public-facing information or when the specific type of vessel is unknown.

Customer: A City of San Diego resident who is provided solid waste management services by ESD. (See also "resident")

Delayed route: Route that will not be serviced on its scheduled collection day. Collection is delayed until a cleanup crew is assigned to service the route. (See also: "cleanup crew")

District Refuse Collection Supervisor (District): An ESD employee that directly manages ARCS and indirectly manages Sanitation Drivers.

Downed route: Route that is scheduled for collection that day but is not assigned to a specific driver in its assigned section. Each section has a specific downed route for each day

Glossary of Terms

of the week between Monday and Friday. The downed route is typically the easiest route for that section on that specific day. (See also: “section” and “round up”)

Fleet Repair Facility: The building located at 8353 Miramar Place where DGS Fleet repairs collection vehicles, primarily automated side load trucks and rear load trucks.

Frontline: City employees who directly impact the Collection Services operations. Includes drivers, ARCS, Districts and Fleet. (See also: “driver”, “ARCS” and “District”)

Household Hazardous Waste (HHW): Toxic products, electronic waste, paint, bulbs, batteries, motor oil, needles and syringes, propane and helium tanks and chemical cleaners that are not allowed in any of the City-collected containers due to their potential to cause harm or injury to the drivers or the environment.

Incentive: An ESD policy where drivers complete their assigned route sooner than their end time of 4:30 PM. Drivers are allowed to end their workday prior to 4:30 PM and still receive pay for a full 10-hour day. Incentive also applies to 8-hour drivers whose workday ends at 2:30. Drivers may be released by their supervisors a maximum of one (1) hour prior to the end of the shift if they have completed their assigned collection route and help on other routes is not needed to complete the days collection. Drivers will still receive pay for their entire shift.

Incident: Actual or alleged property damage, and injury or death associated with the operation or placement of any vehicle or industrial equipment.

Micro-trainings: Safety topics prepared by the Environmental Services Department, Safety Training Employee Development Division that can be presented in five minutes or less by Collection Services supervisors to Sanitation Drivers during morning sign-in.

Missed pickup (MPU): A missed pickup occurs when a cart that is scheduled to be serviced that day is not collected.

Organics: Also known as greens. Materials such as plant trimming and yard waste, food soiled paper and food scraps that are collected and processed into compost at the Miramar Greenery.

Out-of-Class Assignment (OCA): A process where an employee acts in a different class or category of position. This can be to provide additional support to other positions or as an opportunity to try out a new role. With an Out-of-Class Assignment, the employee is compensated for taking on the roles of the other position. An Out-Of-Class assignment is the temporary transfer of an employee to a vacant position or a position where the incumbent of the position is unable to perform the duties due to absence or disability. Employees receive OCA pay after working 176 hours in the OCA position.

Predictive maintenance: Maintenance strategy that uses data and analytics to optimize the performance and life cycle of equipment by assessing the equipment in real time. Failures of equipment or maintenance is provided prior to failure oftentimes preventing breakdown during service.

Glossary of Terms

Preventative maintenance (PM): Maintenance strategy where regularly scheduled maintenance activities are performed to prevent unscheduled maintenance from occurring in the future. Preventative maintenance is typically maintenance required such as fluid changes that is required as part of the normal lifecycle of the equipment.

Rear Loader (RL): Heavy duty vehicle that collects materials from carts using a semi-automated system at the rear of the vehicle. Drivers get in and out of the vehicle to service the carts. RLs must be operated by at least two (2) drivers where one (1) driver operates the vehicle while the other driver either rides in the passenger seat or at the back of the vehicle to easily access the carts once the vehicle is stopped. The second driver's responsibility is to manually position the carts so they can be dumped into the RL packer.

Recycling: Materials such as aluminum and steel cans, aluminum foil and trays, glass bottles and jars, boxes and cardboard, mixed paper and shredded paper, food and beverage paper cartons, plastic bottles, cups, containers, lids, jugs, tubs, trays, pots, buckets, toys, and Styrofoam packaging that are collected and processed at local recycling facilities to be made into new products.

Red Tag: A term for a vehicle that is deemed unfit for ESD use.

Refuse: Also known as trash.

Resident: A person who resides within the City of San Diego.

Round up: Daily activity that involves gathering the drivers of a section to collect selected portions of a downed route within that section after each driver has completed their originally assigned route. (See also: "downed route")

Route: Designated containers in a localized area of a section that is assigned to be serviced by a Driver.

Safety Stand Down: A pause in operations to focus on safety protocols, address concerns, and reinforce best practices.

Sanitation Driver (Driver): An ESD employee who operates a medium or heavy-duty vehicle as assigned by an ARCS.

Section: Designated drivers assigned to various routes who collect specified container types in a unique geographic area of the City of San Diego.

Trash: Also known as Refuse. Materials that are not considered organic waste and recycling, recycling, recycling, household hazardous waste or bulky items collected and disposed of at the Landfill. (See also: "Miramar Landfill")

Truck: Also known as a vehicle. A medium or heavy-duty vehicle that can also be designated as an automated side loader or rear loader that is operated to complete Collections.

Vehicle: Also known as a truck. An inclusive term that incorporates all types of motorized equipment needed to complete operations for the Environmental Services Department.

Glossary of Terms

Vehicle and Industrial Incident Process (AR 75.12 Process): Incident Processing Flow that begins when the employee (or ESD on behalf of the employee) involved in an incident submits the 1555 form and supporting incident paperwork to the Screener and ends when the 1555 form is completely routed, signed and submitted to the Compliance Department all prior to the 125-day deadline.

Visiting Driver (Visitor): A driver who services a route in a section they are not typically assigned.

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ES1 Executive Summary

ES1.1 Introduction

ES1.1.1 Overview

City of San Diego (City) voters approved Measure B on November 8, 2022, amending the San Diego Municipal Code Chapter 6, Article 6, Division 1, Section 66.0127 (People's Ordinance), to allow the City to charge a cost-recovery fee for City-provided solid waste management. The solid waste management services included in Measure B are intended to provide City solid waste management customers reliable refuse and recycling services, and potentially additional services such as weekly recycling, bulky item pickup and curbside container replacement and delivery. The cost-recovery fee will not be charged to customers until Measure B is implemented in 2025.

The cost-recovery fee will be determined through a Cost of Service Study of which this Operational Efficiency Analysis (Analysis) is one component. The purpose of this Analysis is to review the current state of Collection Services Division (Collections) within the City of San Diego Environmental Services Department (ESD) and recommend operational and organizational improvements based on qualitative and quantitative evaluation. Understanding the current state and the recommendations herein will allow Collections to be set up for success when Measure B is implemented in 2025.

ES1.1.2 Background

ESD's vision is

"To be a leader in the waste management industry and provide first in class service to all San Diegans."

The overall mission of ESD is to

"Manage solid waste in a way that champions sustainability emphasizing resource conservation and protection of the environment."

ESD is the primary department responsible for solid waste management in the City. ESD consists of five divisions: Clean SD, Disposal & Environmental Protection, Support Services, Collection Services, and Waste Reduction. Figure 1-2Figure ES1-1 shows ESD's organizational structure.[1]

[1] Environmental Service Department, Draft Organization Chart, April 2024, City of San Diego

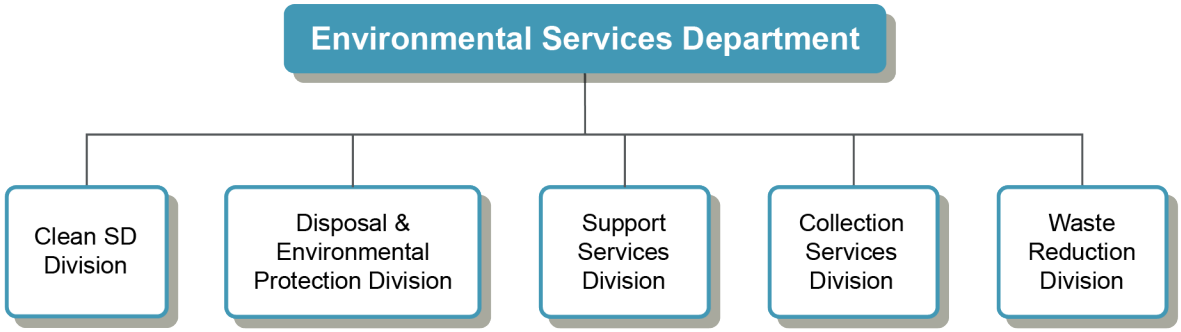

Figure ES1-1 ESD Org Chart

ES1.1.3 Methodology

The Analysis approach consisted of two components: organization review and operations review. HDR performed an assessment of Collections overall structure, function, and staffing levels along with processes, labor, fleet, facility, safety culture, training, technology and routing. HDR also studied the relationships between the divisions in ESD and relationships between City of San Diego Department of General Services, Fleet Operations Division (DGS Fleet) as it pertains to providing the services under Measure B.

It's important to note that many of the opportunities for ESD are applicable to different aspects of the operation and/or organization as whole. The frequency of one recommendation appearing in this Analysis may correlate with how pervasive a specific opportunity is throughout ESD.

HDR's methodology included the following:

- **Document review:** HDR reviewed more than 150 documents and data sets for information and evaluation.
- **Data analysis:** The HDR team analyzed millions of lines of data to determine current performance of Collections and its accompanying support services. HDR correlated this data with qualitative information when possible.
- **Interviews:** Over seven consecutive weeks, HDR conducted over 87 interviews with ESD leadership, supervisors, drivers, utility workers, fleet technicians, and Landfill and Greenery staff. In addition to the formal interview process, candid conversations and information sharing occurred during on-site evaluations. Individual responses are anonymous, but identified trends are key to this Analysis.
- **Field observations:** HDR completed over 500 hours of on-site observation, including employee meetings, workflows, and other interactions including vehicle and deskside observations.
- **Benchmarking:** Benchmarking with other public and private Collections programs are incorporated into this Analysis. It is important to note that benchmarking (while important) is not always indicative of the services provided in the City of San Diego. In

addition to benchmarking, HDR calls out exemplary programs as opportunities for Collections to provide the services expected under Measure B.

- **Workshops:** A series of three separate 4-hour workshops were held over the course of one week. These workshops were used to gain input and agreement on what will be necessary to provide collection once Measure B is implemented.

ES1.2 Measuring Performance

Performance metrics are critical to understanding the current state of an organization as well as understanding the general direction over time of the organization. The ESD budget for fiscal year 2025 includes current ESD Key Performance Indicators (KPIs), as shown in Table ES1-1. As demonstrated below, ESD are making progress but have not yet met the goals.

Table ES1-1 ESD Key Performance Indicators[2]

Key Performance Indicator	Definition	Baseline	FY2024 Performance	Goal	Was Goal Met?
Employee Vacancy Rate †	Average daily vacancy rate for budgeted Full Time Equivalent	N/A	13.9%	<13%	No
Missed Collection Resolution Rate †	Average of resident survey response score to missed collection reports generated in Get It Done (responses are based on a score of 0 to 10)	N/A	6.1	8.00	No
Curbside Recycling Contamination Percentage †	Percentage of contamination contained in City forces collected recyclable materials	N/A	23%	<18%	No

[2] Fiscal Year 2025 Adopted Budget, Environmental Services, City of San Diego, https://www.sandiego.gov/sites/default/files/2024-08/fy25ab_full.pdf

Illegal dumping Get-It-Done reports resolved within three calendar days	Average days to close illegal dumping reports generated in Get It Done	N/A	5.2	3.00	No
Perform sidewalk sanitation services on at least 9,600 City blocks each fiscal year	Number of City sidewalks sanitized to reduce the potential presence of pathogens, bacteria, and communicable diseases	N/A	9,296.00	9,600.00	No
Landfill Regulatory Compliance	Number of instances of regulatory compliance issues (Areas of Concern, Notices of Violation, and related regulatory actions from various agencies)	N/A	6	-	No

† Responsibility of Collection Services

The KPIs in the 2025 budget are just one set of KPIs that ESD tracks. For example, a separate set of KPIs is tracked by leadership through a dashboard on Salesforce software. The consolidation of data tracking efforts into a single platform could support ESD in becoming a data driven organization, ensuring KPIs are communicated throughout the organization at every level.

ES1.2.1 Industry Standards for KPIs

Figure ES1-2 presents key areas for industry standard KPIs for local governments specific to operations, capital costs, labor, customer service, and efficiency. Specific recommendations for tracking each type of KPI and additional operational metrics are included in the Analysis.

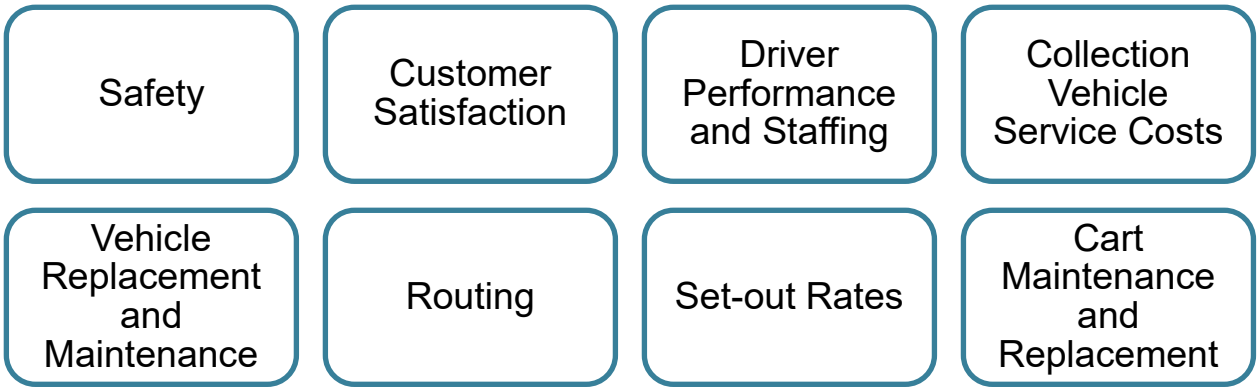

Figure ES1-2 Industry Standard KPI Key Areas

ES1.3 Safety

Safety is critical for Collection Services, as jobs in the solid waste industry have historically ranked as one of the most dangerous occupations in the US. Understanding the current ESD culture around safety and identification of opportunities for improvement related to safety in operations can not only help create safer working conditions but maintain higher morale among employees.

This Analysis found that the expectation to get all routes completed and all trucks emptied with sufficient time return to the Marimar Yard by 4:30 PM creates an environment where safety can be compromised. HDR observed unsafe practices such as speeding, collecting carts inappropriately, and skipping lunches and breaks in order to meet aggressive deadlines.

Safety practices must go beyond basic standards and become an ingrained culture within ESD. All employees of ESD, from leadership to managers, to frontline drivers are critical to creating an environment where employees feel safe and feel empowered to call out unsafe behaviors.

ES1.3.1 Incident Tracking and Reporting

There is a step-by-step protocol in place for reporting and processing incidents, though the process is bottlenecked by required signatures throughout the process, resulting in delays. Digitizing the incident reporting process could streamline the process and record more clear, consistent data.

According to records, ESD has an average of two vehicle or industrial incidents per week, logging 960 incidents between January 2016 and July 2024. According to the incident log, 43% of incidents were found to be preventable, and at least two-thirds of incidents occurred within Collection Services, as demonstrated in Figure ES1-3.

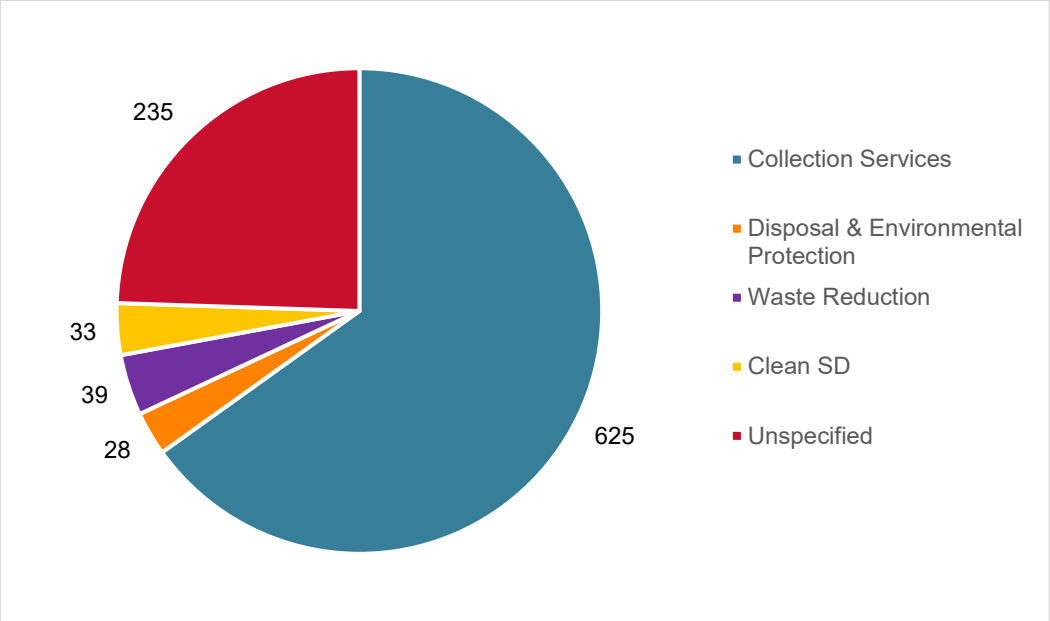

Figure ES1-3 Number of Incidents by Environmental Services Department Division

ES1.4 Communication

Communication is vital at every level within ESD – from daily communications about truck availability to regularly scheduled staff meetings and communication with Dispatch. Communication also extends externally through customer service interactions and cart tagging by drivers.

Effective communication fosters greater productivity, enhances employee satisfaction, and improves staff retention. Based on interviews conducted on site and observations during this Analysis, communication can be improved at all levels within ESD. Poor communication can lead to low morale, a sense of disconnect from leadership, a lack of transparency, and even conflict.

ES1.5 Missed Pickups, Delayed Collections, and Illegal Dumping

City residents can report a missed pickup (MPU) by calling or emailing customer service, or by using the Get It Done app. Limited availability of vehicles was identified as a leading cause of MPUs during this Analysis, along with routing inefficiencies, impacts of overtime restrictions, and miscommunication. Customer satisfaction following reports tends to fall on extreme ends of the scale, either applauding ESD for a quick response time and great customer service or feeling dissatisfied with a lack of resolution, as demonstrated in Figure ES1-4.

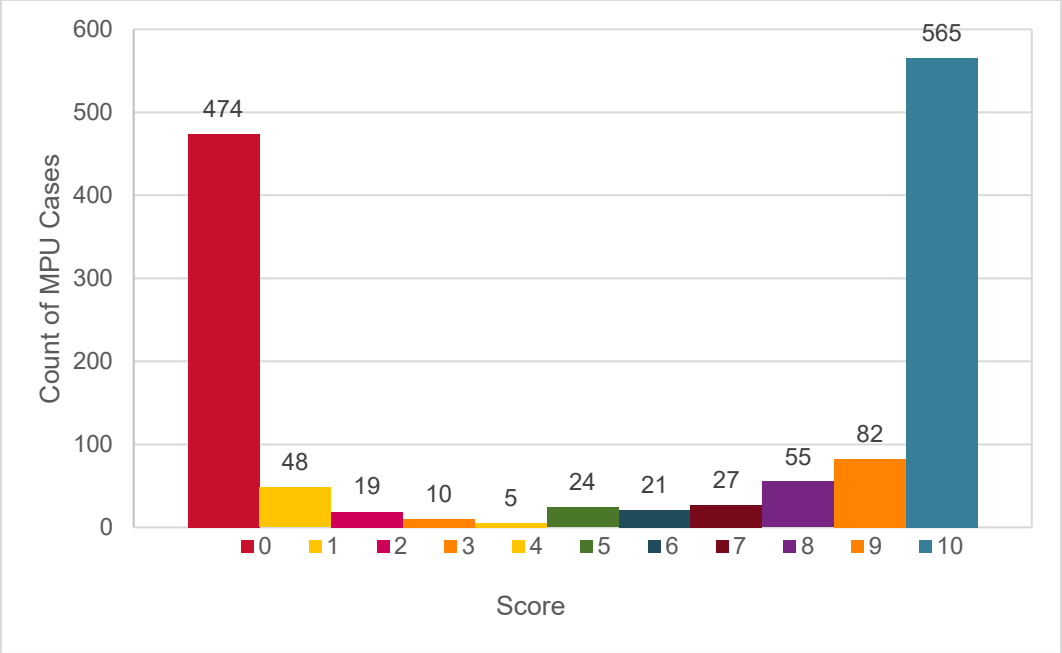

Figure ES1-4 Customer Satisfaction Survey Score Distribution

ESD tracked nearly 65,000 reports of illegal dumping in a single year, for an average of 179 reports per day. These incidents are generally resolved the same day or the next day. Residents can also report illegal dumping through the Get It Done app, which provides Clean SD staff details about the location of the report. The heat map in Figure ES1-5 below illustrates regions within the City that had the most frequent illegal dumping reports last year (August 2023 – August 2024).

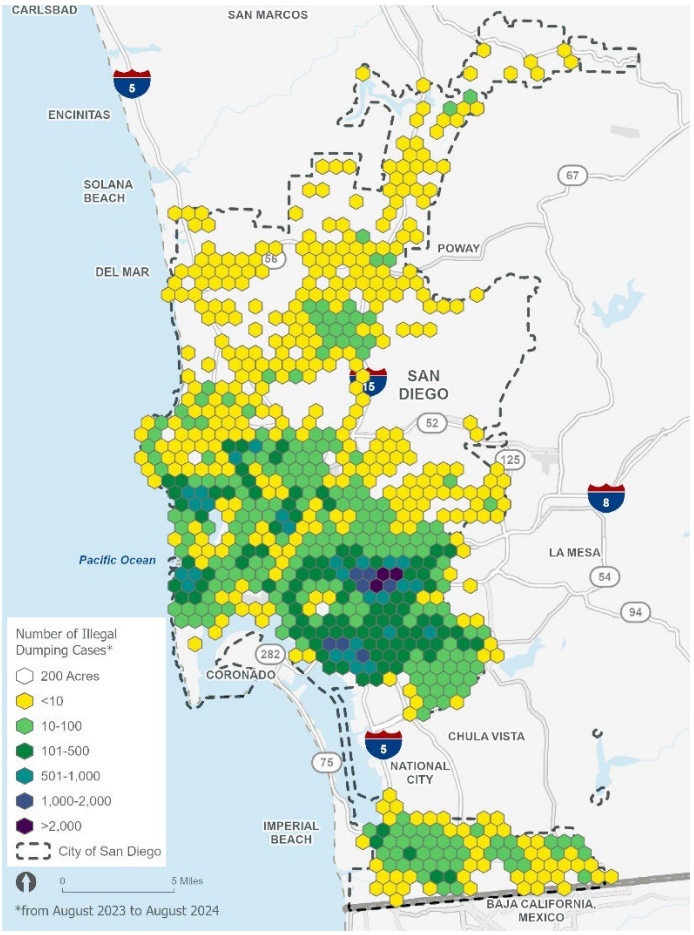

Figure ES1-5 Reports of Illegal Dumping Locations Heat Map 2023-2024

Clean SD provides curbside bulky waste collection via 99 community cleanup events each year, distributed equally between City's nine districts. These events service 20,000 – 30,000 homes each year. These community cleanup events have historically been well utilized, but additional services such as curbside collection could be considered by ESD. Curbside service is considered the most equitable, as some customers may not have access to transportation of bulky items or the means to pay additional costs for collection of bulky items.

ES1.6 People

People are the cornerstone of ESD, playing a crucial role at every level for successful programs. Investing in personnel fosters a high functioning team capable of effectively fulfilling their roles and responsibilities within the organization. Clearly defined roles help not only enhance individual understanding of specific duties but also promote accountability and collaboration across the department.

Succession planning and the establishment of standard operating procedures are equally critical. Succession planning is instrumental in preparing the organization for future leadership transitions, ensuring that talent is nurtured and able to assume greater responsibilities when necessary. Current, up-to-date protocols provide consistency among staff and support efficient, predictable workflows.

ES1.7 Facilities and Equipment

The Miramar Yard provides a central location for Collections and operations. On-site observation and interviews during this Analysis suggested that updates to the Miramar Yard could provide more adequate office, storage, maintenance, and even staff training opportunities. Upgrades to the Fleet Repair Facility could lead to more efficient and effective vehicle repairs.

Collection Services and DGS Fleet work symbiotically to deliver collection services to customers. Collection Services manages on-the-ground operations, ensuring safe practices and effective operation of equipment while DGS Fleet is responsible for the repair and maintenance of those vehicles. Vehicles are not currently replaced on a regular schedule and are up to 13 years old. Currently 31% of vehicles are operating past the City-defined planned retirement date for each vehicle. In general, older vehicles have higher repair costs compared to newer vehicles and will not meet emerging emissions requirements. This Analysis recommends a series of actions to improve management of the vehicle fleet.

In addition to collecting the material contained within the carts, Collection Services is responsible for the delivery of new carts, replacement of damaged carts and removal of carts no longer needed by customers. In the last two years, Collection Services provided cart delivery, replacement, or removal services to over 38,000 carts and averaged over 1,600 cart services per month, which equates to a significant amount of time and resources.

ES1.8 Routes

Collection Services routes are organized by sections. Sections are made up of designated drivers assigned to various routes who collect specified container types in a unique geographic area of the City. Figure ES1-6 shows a map of the service areas by refuse section.

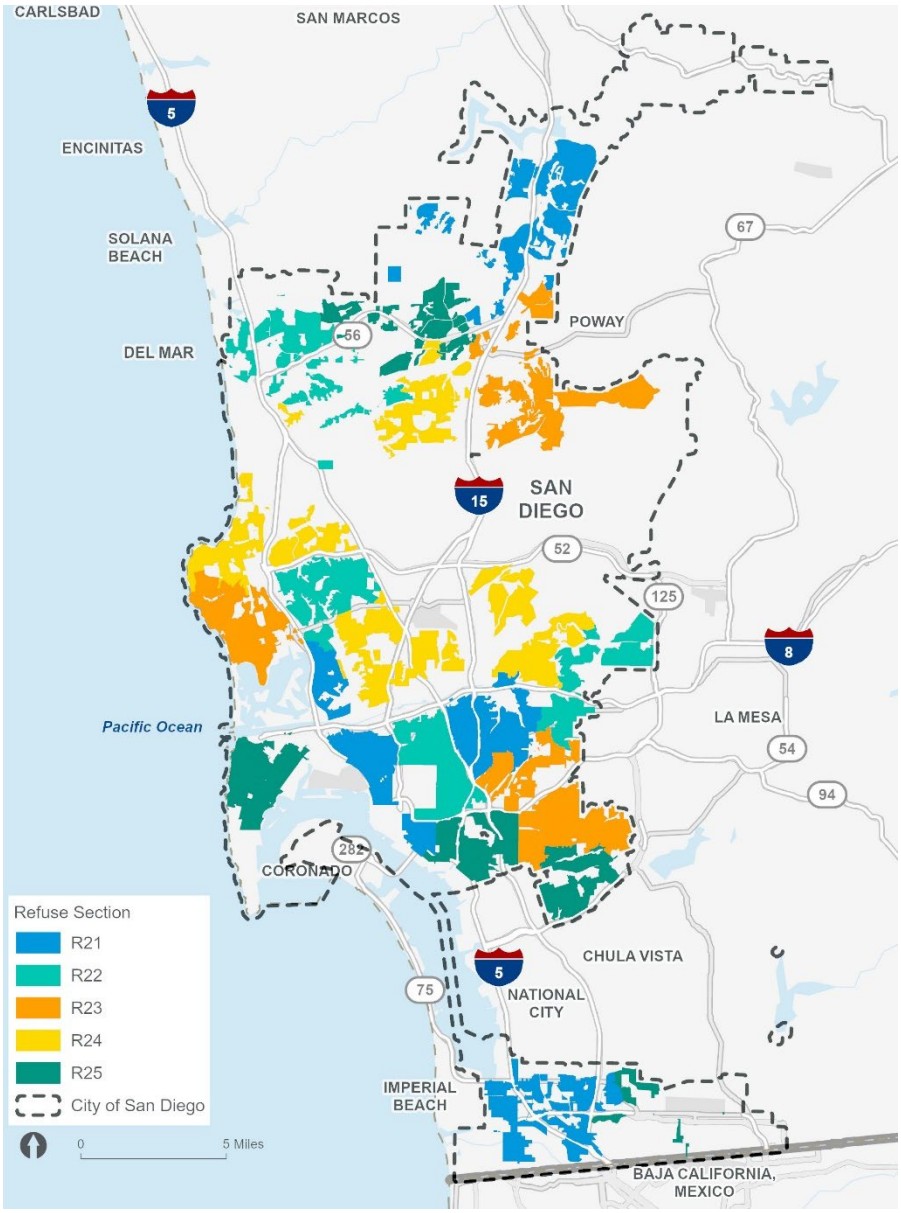

Figure ES1-6 City of San Diego ESD Service Areas by Refuse Sections

Routes are integrated into many functions of ESD and are key to operations. Rebalancing the sections (number of drivers and number of routes) and routes (number of customers) could reduce the number of MPUs per section by ensuring each section has the resources required to service all assigned routes.

ES1.9 Technology

Technology serves as a vital asset for increasing efficiency and capabilities within ESD, supporting everything from route planning and operating vehicles to tracking materials and training staff. With the implementation of Routeware for route management, ESD has the opportunity to explore additional tools, such as tablets and electronic data tracking platforms.

ESD can consider various technology upgrades to improve communications channels and data collection, automate systems and keep up with industry best practices.

ES1.10 Recommendations

Table ES1-2 includes the complete list of recommendations developed by HDR from the Analysis.

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Table ES1-2 Summary of Recommendations

Line Item	Section Number	Category	Subcategory	Recommendation	Cost Impacting (Y/N)	Cost ($)	Timeline for Implementation	Priority	Level of Effort
1	2	Become a Data Driven Organization	Safety	Prioritize safety in performance metrics (e.g., TRIR or number of incidents).	N	N/A	Ongoing	H	L
2	2	Become a Data Driven Organization	Customer Satisfaction	Track the number of complaints received per 1,000 RCU, number of complaints per route or number of complaints per driver.	N	N/A	Ongoing	H	L
3	2	Become a Data Driven Organization	Missed Pickups	Continue to track missed pickups.	N	N/A	Ongoing	H	L
4	2	Become a Data Driven Organization	Driver Performance & Staffing	Track number of available drivers compared to drivers needed.	N	N/A	Ongoing	L	L
5	2	Become a Data Driven Organization	Turnover Ratio	Track the employee turnover rate and benchmark to an initial target of 10%.	N	N/A	Ongoing	L	L
6	2	Become a Data Driven Organization	Truck Availability	Track the number of trucks available daily compared to number of routes to be completed.	N	N/A	Ongoing	L	L
7	3	Prioritize Safety as a Culture	Trainings	Prioritize and develop in-person trainings over virtual trainings for drivers. These trainings need to be interactive and applicable to what a driver experiences on a daily basis.	N	N/A	Medium	M	M
8	3	Prioritize Safety as a Culture	Trainings	Utilize NWRA and SWANA “Safety Stand Down” and other available tools to gain additional awareness around solid waste collection worker safety.	N	N/A	Short	L	L
9	3	Prioritize Safety as a Culture	Trainings	Expand the training room to include additional seating and modern audio-visual (AV) equipment.	Y	>144,000	Short	L	L
10	3	Prioritize Safety as a Culture	AR 75.12 Process	Digitize the AR 75.12 Process. A portal can be developed using ESD’s internal website.	Y	>300 a month	Long	M	M
11	3	Prioritize Safety as a Culture	AR 75.12 Process	Implement an EHS software to track reported safety incidents to streamline the process from incident recording to disciplinary action.	N	N/A	Long	H	M
12	3	Prioritize Safety as a Culture	AR 75.12 Process	Remove redundant or unnecessary signatures from the AR 75.12 Process to minimize bottlenecks and increase the AR 75.12 Process completion rate.	N	N/A	Short	H	L
13	3	Prioritize Safety as a Culture	AR 75.12 Process	Provide adequate training to ARCS on properly reporting incidents using the AR 75.12 Process during Out of Class Assignment (OCA) and job shadowing period when drivers are learning how to take on the role of ARCS.	N	N/A	Ongoing	M	M
14	3	Prioritize Safety as a Culture	AR 75.12 Process	Re-evaluate the Cal/OSHA reporting process within ESD and add this responsibility to the job description of certain roles so ESD staff are knowledgeable on who to contact for reporting.	N	N/A	Short	M	L
15	3	Prioritize Safety as a Culture	Performance Metrics	Develop safety performance measures to track incidents at ESD.	N	N/A	Medium	H	M
16	3	Prioritize Safety as a Culture	Performance Metrics	Create a safety board for drivers that will be displayed in the safety training room that displays pertinent information like Cal/OSHA reporting timelines, steps to report injuries, incidents and near misses internally, broad regulatory and compliance facts and rights of workers regarding safety (Cal/OSHA has many resources online ready for employers to display).	Y	< 100	Short	M	L
17	4	Maintain Effective Communication	Communications Role	Consider a communications role to handle both internal and external communications regarding Measure B. Schedule regular meetings between the Deputy Director and the Districts to ensure that the communications reach frontline employees.	N	N/A	Medium	H	M

Line Item	Section Number	Category	Subcategory	Recommendation	Cost Impacting (Y/N)	Cost ($)	Timeline for Implementation	Priority	Level of Effort
18	4	Maintain Effective Communication	Internal Communications	Develop a dashboard with information like vehicle availability and status, and other information relevant to the status of the vehicle would benefit staff in Collections and DGS Fleet, to eliminate daily emails.	Y	150,000	Short	M	M
19	4	Maintain Effective Communication	Cart Tagging	Develop standard operating procedures for tagging of containers and follow-up with residents by supervisors and train drivers on proper use of tags.	N	N/A	Ongoing	H	M
20	4	Maintain Effective Communication and Prioritize Safety	Safety and Communication	Add one additional dispatcher.	Y	$126,167	Short	H	M
21	4	Maintain Effective Communication	Communication	Annual training on Dispatch communication.	N	N/A	Short	H	L
22	5	Missed Pickups	Data Tracking	Standardize how and what data is collected and tracked for each MPU case.	N	N/A	Short	H	L
23	5	Missed Pickups	Maximize Use of Fleet	Adjust DGS Fleet Procurement Plan and maintenance procedures to increase the number of trucks available daily.	N	N/A	Short	M	L
24	5	Missed Pickups	Route Management	Rebalance sections and routes.	N	N/A	Short	M	M
25	6	Illegal Dumping	Data Management	Improve efficiency and routing for collection of illegal dumping, including categorization of reports.	N	N/A	Medium	H	M
26	6	Illegal Dumping	Programs	Consider adding additional cleanup events to collect additional items and service more areas of the city, with a particular focus in areas where more frequent requests are made.	Y	Estimated cost $11,000 per "major" clean up event	Medium	M	H
27	6	Illegal Dumping	Programs	Consider pickup of bulky waste to reduce illegal dumping and reduce the cost of collections and burden of scheduling special pickups.	Y	Unknown	Medium	M	H
28	7	People	Staffing resourcing	Add the following positions in ESD: - Human Resources Coordinator (Program Manager) - Automotive Engineer - Communications Coordinator (Program Manager) - Performance Management (Program Manager) - Organization Effectiveness Specialist 3 - Performance Management Program Coordinator - Safety Officer and Employee Development - Additional Road Mechanic (second shift) - Code Compliance Officer - Two Geographic Information Systems Analysts - Supervisor - Add 25 more drivers to Sanitation Driver 3 position	Y	6,970,652	Short	H	H
29	7	People	Employee Support	Ensure a Payroll Specialist is available on-site during the week for drivers.	N	N/A	Short	L	L
30	7	People	Employee Support	Maintain clear documentation of the following: - Job Descriptions - Succession Plans - Standard Operating Procedures	N	N/A	Short	H	H
31	7	People	Employee Support	Reinvigorate employee recognition and annual employee surveys.	Y	Insignificant	Short	H	L
32	8	Facility	Trainings	Develop dedicated computer lab and training room for Miramar facilities and collections employees.	Y	Unknown	Medium	H	H

Line Item	Section Number	Category	Subcategory	Recommendation	Cost Impacting (Y/N)	Cost ($)	Timeline for Implementation	Priority	Level of Effort
33	8	Facility	Safety	Improve fuel lanes to reduce pedestrian and vehicle conflicts at the Miramar facility including additional protection of fueling stations and signage.	N	N/A	Short	H	M
34	8	Facility	Building	Relocate carts from the Miramar facility to an off-site, covered storage area including a cart repair shop to repair carts and replace parts as needed.	Y	14 million to 17 million	Long	H	H
35	8	Facility	Equipment	Add two hot water pressure washers with dual nozzle to clean vehicles for PM and repairs. Provide an enclosed room for high pressure washers and tanks and soap drums. Size tanks to support wash of at least four refuse trucks per hour.	Y	290,000	Short	H	M
36	8	Facility	Equipment	Provide eye wash station for use in the event of an emergency.	Y	Insignificant	Short	H	H
37	8	Facility	Equipment	Provide lubrication stations at locations in sufficient quantity to provide expedited lubrication of required components on vehicles, utilizing the frequency recommended by manufacturers.	N	N/A	Medium	M	H
38	8	Facility	Building	Expanding the parts storeroom to accommodate the additional storage of parts and materials that are frequently used or experience delay in availability, to improve speed of repairs.	Y	3.4 million	Long	L	H
39	8	Facility	Building & Equipment	Expanding the welding and fabrication shop, to be located adjacent to the welding bay. Update with welding table, arc welder, MIG and TIG welders, plasma cutter, vertical and horizontal band saws, drill press, buffer/grinder with pedestal, storage areas for welding materials with cabinets, steel storage racks, bins and a bridge crane coverage over both shop area and welding bays.	Y	3 million to 4 million	Short	H	H
40	8	Facility	Building	Expand and relocate the existing fluids and compressor room separate from other areas to prevent noise migration, dirt and fumes. Add double door exterior access for deliveries and adequate operational clearance for the access and maintenance of tanks, compressors, and dryers.	Y	300,000	Long	L	H
41	8	Facility	Building	Make improvements to the welding bay and fabrication shop.	Y	720,000	Short	H	H
42	8	Facility	Building	Construct previously proposed mezzanine.	Y	500,000	Short	H	H
43	8	Facility	Equipment	Repair 3 non-operational bays, with a fully functioning vehicle lift.	Y	900,000	Short	H	H
44	8	Facility	Staffing resourcing	One additional Fleet Technician (as a road mechanic) and one additional welder are recommended to increase the amount and timeliness of work orders including PM and repairs. The recommended additional staff will also assist with covering PTO and training time that City employees receive.	Y	252,864	Short	H	H
45	9	Equipment	Vehicles	Replace vehicles on a regular schedule (every 7 years) to improve fleet safety and efficiency and reduce out of service days.	N	N/A	Short	L	M
46	9	Equipment	Vehicles	Maintain at least 140 frontline vehicles that are available daily that are less than 7 years old.	N	N/A	Medium	H	H
47	9	Equipment	Vehicles	Establish a set of spare collection vehicles that are greater than 7 years of age as “Holdover” vehicles. SWANA recommends that municipalities maintain a backup pool of approximately 20% of the total number trucks needed to service their routes.	N	N/A	Medium	H	H

Line Item	Section Number	Category	Subcategory	Recommendation	Cost Impacting (Y/N)	Cost ($)	Timeline for Implementation	Priority	Level of Effort
48	9	Equipment	Vehicles	Maintain adequate number of vehicles to service the daily route needs plus an additional 20% of the trucks be retained as spares.	N	N/A	Medium	H	H
49	9	Equipment	Vehicles	Set a truck replacement schedule, along with planned procurement dates based on the lead time for new vehicles. Appropriate future budgeting is necessary to purchase a set number of new trucks every year and order new vehicles such that they are ready to be in service when the vehicles they replace are set to be retired.	Y	430,000 per truck	Medium	H	H
50	9	Equipment	Vehicles	Conduct preventative maintenance on existing fleet in accordance with each vehicle's operating manual.	Y	290,000	Medium	H	H
51	9	Equipment	Vehicles	Set standards for data tracking and performance management of vehicles and then educate ESD and DGS Fleet on these metrics and why they are critical.	N	N/A	Short	H	M
52	9	Equipment	Vehicles	Plan for future regulation changes in vehicle and fleet fuel type mixes in particular to comply with known CARB regulations and the City's Climate Action plan (CAP).	N	N/A	Short	M	M
53	9	Equipment	Carts	Review replacement of at least trash carts and potentially recycling carts to provide appropriate service to customers.	N	N/A	Long	H	H
54	10	Routes	Route Management	Reassign the geographic area of each section. All routes within one section should be in proximity to each other, not spread out across the City.	N	N/A	Short	H	H
55	10	Routes	Route Management	Track set out rates and tonnage collected per route daily.	N	N/A	Ongoing	H	M
56	10	Routes	Route Management	Rebalance sections so there is one route per driver per day and there is adequate time for off route activities such as the drivers' lunch and break times, pre- and post-trip inspections and travel time to and from route and disposal locations.	N	N/A	Short	H	M
57	11	Technology	Software	Designate one employee in ESD to be responsible for Routeware and its implementation which should include management of the Routeware contract and its Scope of Work.	Y	Cost of one full time employee	Short	M	L
58	11	Technology	Software	Explore additional functionalities within Routeware.	Y	Cost of one full time employee	Short	L	L
59	11	Technology	Equipment	Provide tablets in every vehicle that are operating and create policies to enforce use of and leaving tablets on when vehicles are in use.	Y	~500 each tablet	Short	M	L
60	11	Technology	Software	Replace ARTS with Routeware or another suitable driver, vehicle, and tonnage tracking system. The new system needs to allow for electronic upload of information rather than manual data entry processes.	Y	Dependent on selected replacement	Medium	H	H
61	11	Technology	Software	Convert pre- and post- trip forms to an electronic platform. Collection and Fleet should collaboratively develop a solution that works for both Departments.	Y	Cost based on specific services needed	Short	H	L
62	11	Technology	Equipment	Include the option of additional safety cameras and sensors to the vehicles that are being ordered as a part of the fleet upgrade.	Y	Based on manufacturer availability	Ongoing	H	L
63	11	Technology	Staff	Create role for an on-site HR liaison to oversee the rewriting of job descriptions to ensure that the technology tools are included. Develop a training curriculum based on needs.	Y	Cost of two full time employees	Medium	M	M

Line Item	Section Number	Category	Subcategory	Recommendation	Cost Impacting (Y/N)	Cost ($)	Timeline for Implementation	Priority	Level of Effort
64	11	Technology	Software	Explore software and system improvements for improved communication and efficiency	Y	Dependent on selected tools and programs	Medium	M	M

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1 Introduction and Background

The City of San Diego (City) Environmental Services Department (ESD) is the primary department responsible for solid waste management in the City. ESD has over 500 employees and through its Collection Services Division provides collection services to over 247,000 customers each week. This system will soon be impacted by a local regulatory change called Measure B associated with the cost-recovery fee for City-provided solid waste management.

1.1 Program Overview

ESD's vision is "To be a leader in the waste management industry and provide first in class service to all San Diegans." The overall mission of ESD, is to "Manage solid waste in a way that champions sustainability emphasizing resource conservation and protection of the environment."[3] In furtherance of the department's vision and mission, ESD has established four goals that guide its operations: maintain a safe and innovative workforce, ensure excellence in service delivery, protect and enhance environmental quality, and recognize our employees are the key resource to achieving our mission. Goals are shown in **Figure 1-1.**[4]

Figure 1-1 ESD Goals

[3] Fiscal Year 2025 Adopted Budget, Environmental Services, City of San Diego, https://www.sandiego.gov/sites/default/files/2024-08/fy25ab_full.pdf

[4] Fiscal Year 2025 Proposed Budget, Environmental Services, City of San Diego, https://www.sandiego.gov/sites/default/files/pb_v2esd.pdf

ESD consists of five divisions: Clean SD, Disposal & Environmental Protection, Support Services, Collection Services, and Waste Reduction. **Figure 1-2** shows ESD's organizational structure.[5]

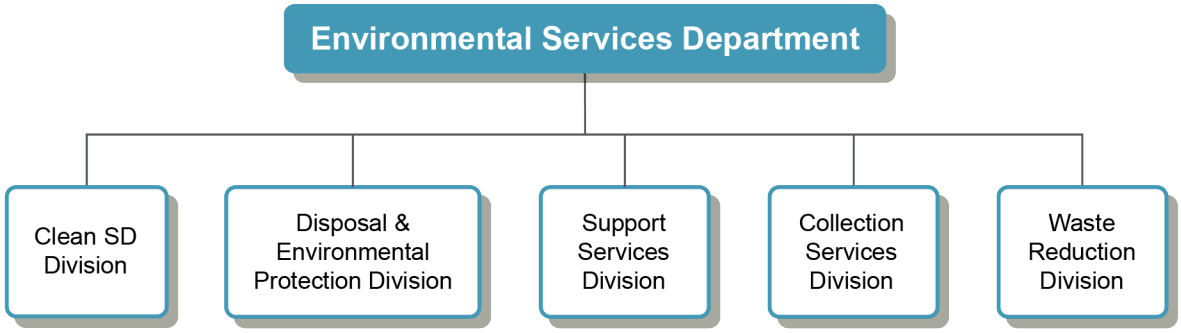

Figure 1-2 ESD Org Chart

Each division in ESD has a key role in solid waste management. The following is a description of the responsibilities of each ESD division. [6]

- **Clean SD Division** (78 FTE staff) manages waste abatement including abatement of homeless encampments, removal of illegal dumping, organizing planned curbside cleanups in neighborhoods, removing dead animals from public rights-of-way, and conducting sidewalk sanitization. In addition, the Clean SD Division is responsible for enforcement of City solid waste codes.
- **Disposal & Environmental Protection Division** (117 FTE staff) operates the City-owned Miramar Landfill and Greenery. In addition, the Disposal & Environmental Protection Division maintains eight closed landfills and eight inactive burn sites. The Disposal & Environmental Protection Division also provides management for household hazardous waste.
- **Support Services Division** (77 FTE staff) provides administrative and regulatory support, contracting and fiscal management, information systems management, customer service. In addition, the Support Services Division manages safety, training, and employee development programs.
- **Collection Services Division (Collection Services)** (251 FTE staff) provides weekly collection of trash and organics and every-other-week collection of recyclables for approximately 247,585 customers.[7] In addition, Collection Services provides collection of litter from street litter containers in business districts.
- **Waste Reduction Division** (43 FTE staff) manages the commercial collection program, a non-exclusive franchise system. In addition, the Waste Reduction Division manages waste diversion programs, education and outreach, and zero waste planning. The Waste Reduction and Division leads the enforcement and compliance of City solid waste codes.

5 Environmental Service Department, Draft Organization Chart, April 2024, City of San Diego
6 Fiscal Year 2025 Proposed Budget, Environmental Services, City of San Diego, https://www.sandiego.gov/sites/default/files/pb_v2esd.pdf
7 Customer Site, City of San Diego

In addition to ESD, three other City departments, Department of General Services, Performance & Analytics, and Information Technology Department, have a role in solid waste management in the City. This analysis inclusively calls these four City Departments Collections. The Department of General Services, Fleet Operations Division (DGS Fleet) procures the vehicles and equipment in conjunction with ESD and repairs the equipment and provides the needed daily number of vehicles for ESD to complete their responsibilities including collection. DGS Fleet also supports the City's telematics system Geotab. The Department of Information Technology supports computer and technology needs of ESD including actual equipment such as desktops and tables and provides consultation on GIS, Routeware, and other specialty equipment provided for ESD. The Performance & Analytics Department provides support for Salesforce and mobile worker applications used by ESD employees to manage Get it Done cases.

1.2 Project Purpose

ESD has historically been funded through the general fund of the City of San Diego government. The general fund operates such that sources and uses of resources are at the discretion of the City Council and Mayor to provide core services within the general fund to the community. Through an annual joint decision process, the Mayor creates the budget, and the City Council reviews and approves. Together they determine how to deploy General Fund monies. Revenue sources for the general fund include property taxes, sales taxes, transient occupancy taxes, and franchise fees. Operating under the general fund has resulted in ESD being subject to City wide cost saving initiatives that has included cancelling projects and reducing service.

On November 8, 2022, City voters approved Measure B, amending the San Diego Municipal Code Chapter 6, Article 6, Division 1, Section 66.0127 (People's Ordinance), allowing the City to charge a cost-recovery fee for City-provided solid waste management. The solid waste management services included in Measure B is intended to provide ESD customers reliable trash and recycling services, and potentially additional services such as weekly recycling, bulky item pickup and complimentary curbside container replacement and delivery. Services under Measure B will be provided to eligible single-family and multi-family residential properties with up to four residences in a single lot. The cost-recovery fee will go into effect, July 1, 2025 and may be comprised of a smaller fee for year one and progressively larger fees through year five as costs of services increase and potentially additional new services are added. The cost-recovery fee is to be determined through a Cost of Service Study of which this Operational Efficiency Analysis (Analysis) is one component.

1.3 Project Approach

The approach to the Operational Efficiency Analysis consisted of two components: organization review and operations review. Operational efficiency is primarily focused on safety and service. Organizational efficiency is focused on the structure and how ESD is organized plus processes and procedures.

For the organization review, the Collection Services' overall structure, function, and staffing levels were reviewed. Staffing levels including vacancies were evaluated along with the health

of the organization and how Collection Services is functioning as a team. The organization review specifically evaluated relationships between the divisions in ESD and relationships between DGS Fleet as it pertains to providing the services under Measure B.

For the operations review, the following items were evaluated: processes, labor, fleet, facility, and routing with a focus on safety and training and equipment. Service levels included missed pickups (MPUs), and the use of technology to provide service.

The HDR team recognizes that the City team that provides trash, recycling and organics collection services including ESD and DGS Fleet are “frontline” and responsible for keeping the City of San Diego clean. HDR’s team of experts embedded with the City of San Diego and over the course of seven weeks completed the following to evaluate Collection Services:

- More than 500 hours of on-site observations and reviews with the City of San Diego team.
- Review of 150 plus documents and data sets (some including 700,000 plus lines of data).
- Interviewed 87 City of San Diego employees including ESD leadership, Collection Services management and supervisors, DGS Fleet management and supervisors, Sanitation Drivers, DGS Fleet technicians, Utility Workers, CleanSD staff, and Landfill and Greenery staff.
- Conducted 18 in vehicle observations with Sanitation Drivers and Area Refuse Collection Supervisors.
- Observed three safety trainings.
- Observed 28 beginning of day driver briefings.
- Observed 22 end of day driver check ins.
- Observed three days of container operations including cart purchasing, loading and unloading of carts and dismantling and management of carts.
- Conducted 17 Fleet technician observations.
- Observed 26 pre and post trip inspections.
- Toured greenery and landfill and conducted three onsite landfill reviews.
- Conducted 75 Miramar Place yard walks.
- Multiple equipment and building tours and evaluation.

At the end of the onsite evaluations, representatives of ESD and DGS Fleet were brought together for three separate 4-hour workshops to collaborate, review the current state of providing collection services, and build a strong base for Measure B. (See **Appendix A** for results and notes from the workshops.)

1.3.1 Introduction to the Structure of the Analysis

The purpose of this Analysis is to provide a review of the current state of City-provided collections. Understanding the current state and the recommendations herein will allow collections to plan for success when Measure B is begun in July, 2025. HDR's review was both quantitative and qualitative in nature using a series of employee interactions and observations in addition to data review.

People, processes, facilities and equipment, and technology are at the core of this Analysis. Successes and challenges are specified in each of the sections. Foundational items such as safety, performance measures, teamwork, and communication are called out as their own sections, but it is important to note these specific items should underly the services Collections provides.

HDR's methodology included the following:

- **Document review:** HDR initially identified and requested 52 documents and data sets with varying complexity that were needed for this Analysis. Ultimately, HDR was provided with more than 150 documents and data sets for information and evaluation.
- **Data analysis:** The HDR team analyzed millions of lines of data to determine current performance of Collection Services and its accompanying support services. As part of the data analysis, HDR reviewed the data with the provider of the data and other staff as necessary. HDR has provided quantitative analysis to correlate with qualitative information in this Analysis if data was available. Data integrity and availability is discussed when available and when data validity is questioned.
- **Interviews:** In-person and virtual interviews both individually and in groups focused on successes and challenges with respect to Collections. In addition to the formal interview process, candid conversations and information sharing occurred throughout the seven weeks of on-site evaluations. Commitments were made to the participants that the information would be maintained confidential and the sources would not be identified in the Analysis.
- **Field observations**: On-site observations including of employee meetings, workflows, and other interactions are key to many of the findings in this Analysis. Employees of the City potentially impacting Measure B were encouraged to reach out to HDR staff to participate in this Cost of Service Study. HDR in-vehicle and deskside observations added value to this Cost of Service Study as the conditions for providing service, equipment, and interactions were key to many of the findings in this Analysis.
- **Benchmarking:** Benchmarking with other similar programs both public and private are incorporated into this Analysis. It is important to note that benchmarking while important is not always indicative of the services provided in the City of San Diego. Collections is unique in that routes, equipment, and geography all impact the "local" services provided. In addition to benchmarking, HDR also evaluated "Best in Class" programs as opportunities for Collections to provide the services to be implemented under Measure B.

- **Workshops**: A series of three separate 4-hour workshops held over the course of one week were utilized at the end of the on-site work by HDR to ensure collaboration of individuals that will be collectively responsible for providing Collections under Measure B. These workshops were used to gain input and agreement on what will be necessary to provide collection once Measure B is implemented.

It's important to note that many of the opportunities for ESD are applicable to different aspects of the operation and/or organization as whole. Similar or even redundant recommendations may be listed in multiple sections. For instance, a recommendation related to training may be included in the Processes and Technology sections of this Analysis.

2 Measuring Performance

Performance metrics are key to understanding the current state of an organization as well as understanding the general direction over time of the organization. Without measuring performance in key areas, organizations cannot identify challenges or opportunities to improving performance or celebrate successes. The first step in measuring performance is collecting reliable and consistent data. The second step is setting a goal using a baseline. The third step is measuring performance by comparing data at determined intervals to the established goals. These steps are outlined below in **Figure 2-1**.

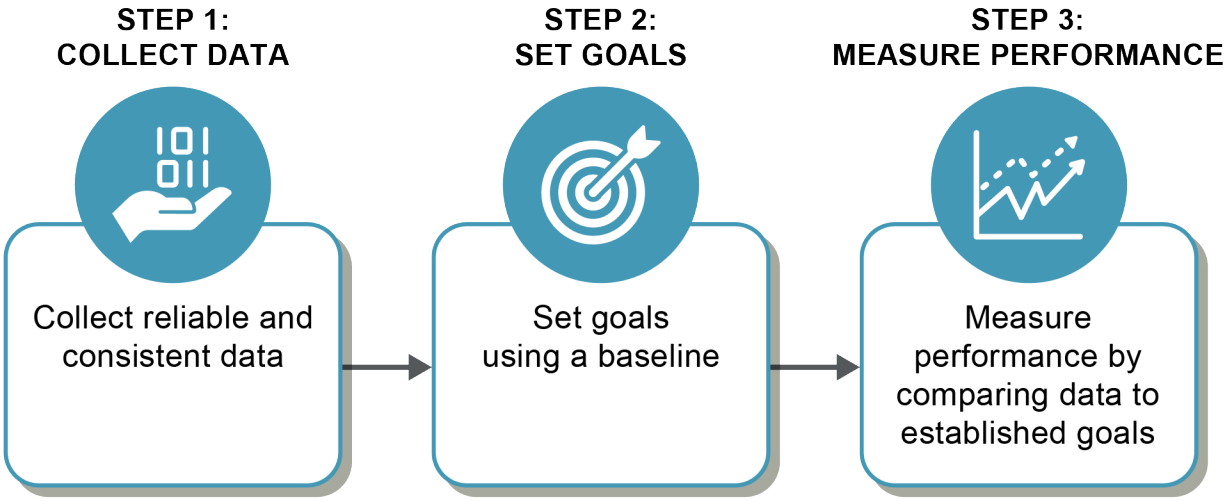

Figure 2-1 Performance Measuring Steps

This section discusses Key Performance Indicators (KPIs) currently tracked by ESD and proposes additional metrics for consideration based on industry standards from benchmarking of other solid waste collection operations. Available data identified is included as well as opportunities for additional performance metrics for implementation.

2.1 Current Performance Metrics

A KPI is a quantifiable value that organizations track progress against goals. KPIs have the following characteristics:

- **Relevant:** KPIs should be related to the organization's objectives.
- **Measurable:** KPIs need to be quantifiable so that can be measured and reported on.
- **Achievable:** They should be realistic goals and attainable in a measured timeframe.
- **Timebound:** KPIs are associated with a specific timeframe (days, months, years, etc.).
- **Clarity**: For a KPI to be useful, it needs to be understood by a wide audience.

Metrics are standardized measures that organizations track to assess the day-to-day operations in their organization. KPIs are tied directly to goals while metrics are points of data that are used

for analysis but not necessarily tied to goals. Every KPI can be a metric, but not every metric is a KPI. ESD has defined KPIs and metrics, the below section presents both ESD, KPIs, and metrics but the focus of improvement in this report is on KPIs.

2.1.1 FY2025 Budget Key Performance Indicators

The fiscal year (FY) 2025 adopted budget includes ESD KPIs shown in **Table 2-1.** The baselines for ESD KPIs will be established using Fiscal Year 2024 and Fiscal Year 2025 performance.[8] Each KPI includes a definition, FY24 performance and a goal. Three of the six KPIs are the responsibility of Collection Services within ESD. As indicated in **Table 2-1,** ESD are making progress towards the goals but have not yet met the goals.

Table 2-1 ESD Key Performance Indicators[9]

Key Performance Indicator	Definition	Baseline	FY2024 Performance	Goal	Was Goal Met?
Employee Vacancy Rate †	Average daily vacancy rate for budgeted Full Time Equivalent	N/A	13.9%	<13%	No
Missed Collection Resolution Rate †	Average of resident survey response score to missed collection reports generated in Get It Done (responses are based on a score of 0 to 10)	N/A	6.1	8.00	No
Curbside Recycling Contamination Percentage †	Percentage of contamination contained in City forces collected recyclable materials	N/A	23%	<18%	No
Illegal dumping Get-It-Done reports resolved within three calendar days	Average days to close illegal dumping reports generated in Get It Done	N/A	5.2	3.00	No
Perform sidewalk sanitation services on at least 9,600 City blocks each fiscal year	Number of City sidewalks sanitized to reduce the potential presence of pathogens, bacteria, and communicable diseases	N/A	9,296.00	9,600.00	No
Landfill Regulatory Compliance	Number of instances of regulatory compliance issues (Areas of Concern, Notices of Violation, and related regulatory actions from various agencies)	N/A	6	-	No

† Responsibility of Collection Services

[8] Fiscal Year 2025 Adopted Budget, Environmental Services, City of San Diego, https://www.sandiego.gov/sites/default/files/2024-08/fy25ab_full.pdf

[9] Fiscal Year 2025 Adopted Budget, Environmental Services, City of San Diego, https://www.sandiego.gov/sites/default/files/2024-08/fy25ab_full.pdf

2.1.2 ESD Leadership KPIs

Salesforce is the tool ESD leadership uses to track activities around Collection Services. A dashboard is produced that shows the KPIs ESD leadership tracks via Salesforce.

- Count of Open Compliant/Reports
- Average Age of Open Cases
- ESD Cases by Type (Last Week)
- All Active Missed Collection Cases
- Carts not yet delivered
- 90 Day Average Age of Closed Cases
- Missed Collections Last 120 Days

The acknowledgement and understanding of progress towards these metrics were not observed in interviews with ARCS, Districts or frontline staff.

2.1.3 Collection Services Division

Collection Services tracks operational metrics in a spreadsheet as shown in **Table 2-2**.[10] The Collection Services Metrics Template indicates there are 56 metrics tracked for Collection Services focused on operations. Of the 56 metrics, 47 had data available daily between July 4, 2022, and June 14, 2024. **Table 2-2** organizes the metrics provided as "Start of Shift" or "End of Shift" metrics and indicates if data was available daily for each metric.

Table 2-2 Collection Services Metrics Data Availability

Metric	Data Available Daily?[11]
Start of Shift Metrics	
Drivers Calling Out Sick	Yes
Drivers Calling Out for Family Medical Leave Act	Yes
Total Drivers Out (Sick + Family Medical Leave Act)	No
Automated Trained Drivers Calling Out	No
Non-Automated Drivers Calling Out	No
Drivers on pre-scheduled Families First Coronavirus Response Act	Yes
Drivers on unscheduled Families First Coronavirus Response Act	Yes
Drivers on Scheduled Vacation	Yes
Automated Trained Drivers on Vacation	No
Non-Automated Drivers on Vacation	No

[10] Collections Metrics Template, Provide by Luis Nunez, City of San Diego. June 17, 2024.
[11] Between July 4, 2022, and June 14, 2024.

Metric	Data Available Daily?[11]
Rear loader Drivers Moved to Auto	No
Drivers Serving as Out of Class Assignment Supervisor	No
Drivers Called In on Overtime	Yes
Driver Reserve	Yes
Automated Trained Drivers Driver Reserve	No
Non-Automated Drivers Reserve	No
Total Automated Trained Drivers Not Available	No
Total Non-Automated Trained Drivers Not Available	No
Total Downed Routes	Yes
Total Automated Downed Routes	No
Downed Auto Refuse	No
Downed Auto Recycling	No
Downed Auto Organics	No
Downed Rear loader	No
Automated Trucks Available[12]	Yes
Automated Trucks Required[14]	Yes
Automated Routes Required	Yes
Clean Up Routes Required	No
Forecasted Delayed Routes (Automated)	Yes
Automated Truck Reserve	Yes
Rear Loader Trucks Available[14]	Yes
Rear Loader Trucks Required[14]	Yes
Rear Loader Routes Required	Yes
Forecasted Delayed Routes (Rear Loader)	Yes
Rear Loader Truck Reserve	Yes
Help Trucks	Yes
Cleanup Trucks (753)	Yes
Litter Routes	Yes
Container Delivery Routes	Yes
Container Delivery Backlog	Yes
Drivers on Light Duty	Yes
Light Duty Calling Out Sick	Yes
Light Duty Calling Out Family Medical Leave Act	Yes

[12] Includes a spare ratio of ~10% as of 6 AM daily.

Metric	Data Available Daily?[11]
Light Duty on pre-scheduled Families First Coronavirus Response Act	Yes
Light Duty on unscheduled Families First Coronavirus Response Act	Yes
Drivers on Industrial Leave	Yes
End of Shift Metrics	
Vehicle Breakdowns	Yes[13]
Refuse Routes Not Completed	Yes[11]
Recycling Routes Not Completed	Yes[11]
Greenery Routes Not Completed	Yes[11]
Loaded Refuse Trucks	Yes[11]
Loaded Recycling Trucks	Yes[11]
Loaded Greenery Trucks	Yes[11]
Compressed Natural Gas Trucks not fueled	Yes[11]
Last Driver Signed Out	Yes[11]
Accidents/Incidents	Yes[14]
Injuries	Yes[15]

Understanding trends and tracking this data accurately can assist Collection Services to plan routes more effectively and better predict when driver shortages may impact the ability to complete routes. Drivers are trained on specific types of equipment (ASL and/or RL). Accurate information on availability of Sanitation Drivers and availability of Sanitation Drivers trained on specific equipment would assist with forecasting and planning. Timely tracking of such data could help the department better plan and allocate resources to meet routing and collection needs.

End of shift metrics can provide important context about issues experienced during collections, particularly related to how complete collections were for a specific day and for a specific material type. Additional analysis and monitoring should be done around which routes are frequently or most often not completed along with root cause analysis. Number of vehicle breakdowns and reason should be documented and then practices developed to share this information with DGS Fleet. This information can help with planning to anticipate extra vehicles needed to complete routes or replace vehicles.

2.1.4 Review of Current Practice

The basic service provision of ESD is collection of trash, recycling, and organics on the scheduled dates for each route. The KPIs in the 2025 budget are one set of KPIs that ESD

13 No data available on last date in data set.

14 Tracked separately through Dispatch end of shift process.

15 Tracked separately when reported through Safety team Incident and Injury process.

tracks while another set is tracked by leadership through a dashboard on Salesforce software. A recommendation is to consolidate these KPIs so that there is one set for tracking. Salesforce is a capable tool and can continue to be used to track and report KPIs.

It is also recommended that these KPIs be communicated throughout the organization so that all employees are aware of the KPIs themselves and also for the progress against them. During onsite interviews, meeting attendance, and facilities walk through it was not evident that the KPIs and the progress against them were clearly communicated to supervisors and frontline staff such that it was part of ESD culture. A weekly verbal update to supervisors and frontline staff at the regularly scheduled meetings is recommended. Posting the year-to-date progress on KPIs either through television monitors, emails, and/or paper signage based postings would provide visibility to employees. Communicating progress to all staff is as important as tracking them.

2.2 Become a Data Driven Organization

Modern organizations have data embedded in nearly every decision and process. ESD has several software tools that provide data for analysis. The amount of data is likely only to increase and availability of data to nearly all employees will become a reality soon. Not only will there be more data and available to most employees, but also it is becoming more real time in nature including things such as MPUs, route completion time, wait times at the landfill, etc. A data driven organization treats data like a product – meaning there is care in creating, maintaining, and reporting on data. The importance of keeping data secure and private must be prioritized as well (Assur, 2022). There are many examples of bad actors accessing municipal data sets and the security is of utmost importance. While the basic services of solid waste management may not seem on the surface to be data intensive and digital, the management of the services is increasingly moving in that direction.

ESD can move toward becoming a data driven organization.

- **Step One**: ESD should start at the strategy level by documenting the overall goals of ESD.
- **Step Two**: Tie the overall goals to performance measures and metrics.
- **Step Three:** Create a granular list of KPIs and establish the targets for each. (Metrics are proposed by HDR in **Section 2.3** Industry Standards for Key Performance Metrics, with discussion for consideration).
- **Step Four**: ESD should review available data and prepare a data collection plan.
- **Step Five**: A data strategy should be put in place to ensure all data points, sources, and owners of the data are identified and mapped to produce a dashboard. Any missing or incomplete data points should be identified with a plan to start collection.
- **Step Six:** A dashboard and reporting format should be developed to inform decision making and to communicate to ESD on a recurring basis.

During this Analysis it was not clear that there is an overall data plan and systems architecture that allows for data collection and reporting at ESD. This is an essential step in strategically planning out what data is needed, where it comes from, the source, who the owner of that data is, the format required, and how often it is reported.

2.3 Industry Standards for Key Performance Metrics

Local government operations of solid waste collections have numerous KPIs specific to operations, capital costs, labor, customer service, and efficiency. Industry KPIs were reviewed and are presented below in this subsection.

The proposed performance metrics identified are based on two reports completed by the Solid Waste Association of North America (SWANA) Applied Research Foundation: The Benchmarking of Residential Solid Waste Collection Services: FY2008 Report[16] and Efficient Management of Waste and Recycling Collection Resources: March 2022,[17] and one report completed by the School of Government North Carolina Benchmarking Project: Final Report on City Services for Fiscal Year 2016-2017.[18]

2.3.1 Safety

Safety performance metrics are critical to understanding performance of Collection Services. Solid waste and recycling collection is the seventh deadliest job in the US with 22.6 fatal work injuries per 100,000 workers or 31 deaths of solid waste and recycling workers in 2022.[19] Incidents of work-related injuries in the solid waste and recycling industry increased in 2022 to an injury rate of 4.7 total cases per 100 full-time equivalent workers. The Total Recordable Incident Rate (TRIR) for solid waste and recycling workers was 5.8 per 100 FTE in 2022.[20] Increased safety can result in fewer injuries and accidents and benefits to ESD through cost savings from reduced lost work time and fewer workers' compensation claims. Creating a culture of safety and valuing a safe work environment can include safety programs and safety equipment for staff. Since safety incidents are currently manually tracked in a spreadsheet today at ESD, it is recommended an industry acceptable software be implemented to track total recordable incidents (See **Section 3.3** Incident Tracking and Reporting, for more detail).

2.3.2 Customer Satisfaction

Performance metrics related to customer satisfaction are tracked differently between municipalities depending on available programs, such as Salesforce or Routeware, and internal

16 The Benchmarking of Residential Solid Waste Collection Services: FY2008 Report, Solid Waste Association of North America (SWANA)'s Applied Research Foundation, www.swana.org

17 Efficient Management of Waste and Recycling Collection Resources: March 2022, Solid Waste Association of North America (SWANA)'s Applied Research Foundation, www.swana.org

18 School of Government North Carolina Benchmarking Project: Final Report on City Services for Fiscal Year 2016-2017, March 2018

19 Waste worker fatality rate decreased in 2022, but waste remains seventh deadliest job: BLS | Waste Dive https://www.wastedive.com/news/bls-waste-worker-fatality-rate-2022-decreased-seventh-deadliest-job/703074/

20 Injury rates for waste industry workers rose in 2022 | Waste Dive https://www.wastedive.com/news/bls-injury-illness-waste-collection-landfill-workers-2022/699289/

processes for how complaints are managed. Data from eight sources in a 2008 SWANA report found an average of 69 residential complaints per 1,000 Residential Collection Units (RCUs). Data from North Carolina municipalities found the average number of complaints was 25.4 complaints per 1,000 collection points.[21]

Once an MPU case is closed on Get It Done, customers have the option to score ESD's level of service and provide feedback. ESD currently tracks the customer satisfaction score associated with each MPU case, with a current customer satisfaction score of 6.1 out of 10.[22] The number of MPUs is also tracked, indicating the level of service provided to customers. The current average number of MPUs per week is 1,028 based on data from January to June 2024. Reducing the number of MPUs per route per week can improve customer satisfaction and route efficiency and should be considered as a performance metric. More details can be found in **Section 5** Missed Pickups and Delayed Collections.

Additional performance metrics could include the number of complaints received per 1,000 RCU, number of complaints per route or number of complaints per driver. Understanding where complaints are most frequently occurring can help lead to identifying issues and resolutions. Cart tags are also an effective way to provide direct feedback to customers to educate and notify them of issues such as contaminated recycling carts or improper setout methods. Tracking repeat cart tags can help identify customers are problematic or may result in additional complaints.

2.3.3 Driver Performance and Staffing

Off-route time includes time collection crews spend on tasks other than the collection of solid waste, including walking from sign-in/sign-out area to equipment/vehicles, traveling to a disposal facility, unloading, breaks, refueling, pre and post trip inspections and other tasks. SWANA estimates the average off-route time for an eight-hour shift is 3.5 hours.[23] Minimizing off-route time can lead to increased efficiency and can be achieved by lengthening typical workdays to ten hours, which ESD has previously done. Performance metrics may include tracking off-route time and implementing practices to reduce off-route time such as more efficiently organizing the yard with assigned parking, assigning trucks to drivers, and reducing required maintenance tasks for drivers.

Appropriate staffing is also key, particularly to be sure backup personnel are available to allow paid time off (PTO) for staff. Estimating backup personnel should be based on PTO accrual rates of FTEs. SWANA's *Managing Municipal Solid Waste Collection Systems* recommends a

[21] School of Government North Carolina Benchmarking Project: Final Report on City Services for Fiscal Year 2016-2017, March 2018

[22] Table 2-1 ESD Key Performance Indicators

[23] Efficient Management of Waste and Recycling Collection Resources: March 2022, Solid Waste Association of North America (SWANA)'s Applied Research Foundation, www.swana.org

collection personnel backup ratio of 20 percent (%) (i.e., one backup FTE for every five FTEs) based on industry averages.[24]

Employee retention is also an important performance metric to understand employee satisfaction and program efficiency with experienced staff. Employee satisfaction can be measured through the turnover rate calculated as a percentage of the average number of employees divided by the number of employees leaving. The Society for Human Resource Management (SHRM) 2022 Human Capital Report for government identifies 10% as the median for the annual turnover rate. A report from the City of San Diego[25] identified the City's turnover rate in 2016 to be 10%. Therefore, the Citywide turnover of 10% is consistent with other government standards. Collection Services, like many municipalities across the nation experienced a high turnover rate during the pandemic. The recommendations in this report pertaining to people and staffing will collectively help address the high turnover rate.

2.3.4 Collection Vehicle Service Costs

A common key performance metric is the total service costs for collection vehicles. SWANA's 2022 report details the service costs for automated side loader (ASL) collection vehicles including capital, maintenance and repair, fuel, labor and container costs. The cost estimates in **Table 2-3** assume a seven-year service life and do not include disposal or processing costs. Although this data is from 2021, it provides a data point for comparison and metrics to monitor the cost of service.

Table 2-3 Service Cost Summary: SWANA 2022 Report[26]

Cost Category	Totals	Annual Cost	Cost/Mile	Cost/Household/Month	% of Costs
Annual Capital Costs (Depreciation)	$226,752	$32,393	$2.16	$0.67	19
Annual Maintenance and Repair Costs	$204,144	$29,163	$1.94	$0.6	17
Annual Fuel Costs	$147,000	$21,000	$1.40	$0.44	12
Total Annual Vehicle Costs	**$577,897**	**$82,556**	**$5.50**	**$1.72**	**48**
Labor Costs	$471,744	$67,392	$4.49	$1.40	39
Container Costs	$154,000	$22,000	$1.47	$0.46	13
Total Service Costs	**$1,203,641**	**$171,948**	**$11.46**	**$3.58**	**100**

[24] Efficient Management of Waste and Recycling Collection Resources: March 2022, Solid Waste Association of North America (SWANA)'s Applied Research Foundation, www.swana.org

[25] Citywide Human Capital Fact Book: July 2018, Page 18, The City of San Diego, https://www.sandiego.gov/sites/default/files/19-001_citywide_human_capital_fact_book.pdf

[26] Efficient Management of Waste and Recycling Collection Resources: March 2022, Solid Waste Association of North America (SWANA)'s Applied Research Foundation, www.swana.org

Fleet costs are further detailed in **Section 9** Equipment, including purchase cost, lifetime repair costs, lifetime preventative maintenance costs and work order costs. As would be expected, the average cost for maintenance and repair of newer vehicles is significantly lower.

2.3.5 Vehicle Replacement and Maintenance

Vehicle replacement cycles help ensure vehicles run efficiently and allow operations to plan for the capital costs of new vehicles. Based on the SWANA 2022 report, the average optimal service life of an ASL is 7 to 10 years, and the average optimal service life of a RL is 8 to 12 years.[27] The optimal life of a vehicle depends on the average annual miles driven, hours of operation, duty cycle of onboard systems, local conditions, maintenance practices, and vehicle make/manufacturer. Data collected data for this Analysis suggests that ESD vehicles are running more hours per day, more days per week, and in more challenging road and geographic conditions than the average collection vehicle. Data review for this Analysis indicated that the average ESD vehicle has been in service for five years. However, approximately one third of the fleet was purchased in 2023, which lowers the overall average age of the fleet vehicles. Approximately 22% of the active packer vehicles in the Collection Services fleet are operating past their planned retirement date based on City procurement timelines. The City's current vehicle replacement schedule for ASLs and RLs is every six years, however HDR recommends a change to replacement every five years. The average annual repair and Preventative Maintenance (PM) costs for the Collection Services fleet are approximately 15% of the vehicles' original costs over the lifetime of a vehicle.

HDR reviewed fleet availability numbers from other areas. SWANA's 2022 report found that the ratio of spare to primary collection vehicles ranged from 1:5 (20%) to 1:10 (10%), meaning that one fully functioning spare vehicle is available for every five to ten primary vehicles in use.[28] Data from a North Carolina report found that on average the percentage of rolling stock maintained as available per day for use was 94%, based on data from numerous cities in North Carolina included in the report.[29] Other factors that should be considered in average spare ratios to be maintained by the City include amount of scheduled maintenance needed for vehicles based on miles traveled, age of fleet, and/or hours in use.

Vehicle maintenance performance metrics may include number of preventative maintenance work orders completed, cost per work order, preventative maintenance as percentage of all work orders, percent of work order needing repair or completed within 24 hours and others specific to ESD.[30] DGS Fleet does track the start and end time of PMs or repairs, labor, parts, and outsourced work costs associated with each work order and thus each vehicle.

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27 Efficient Management of Waste and Recycling Collection Resources: March 2022, Solid Waste Association of North America (SWANA)'s Applied Research Foundation, www.swana.org

28 Efficient Management of Waste and Recycling Collection Resources: March 2022, Solid Waste Association of North America (SWANA)'s Applied Research Foundation, www.swana.org

29 School of Government North Carolina Benchmarking Project: Final Report on City Services for Fiscal Year 2016-2017, March 2018

30 School of Government North Carolina Benchmarking Project: Final Report on City Services for Fiscal Year 2016-2017, March 2018

2.3.6 Routing

Performance metrics regarding route density and pickups per day can assist operations in running as efficiently as possible. ASLs can service 1,200 to 1,500 homes per day while RLs can service 800 to 900 homes per day.[31] Other factors impacting route efficiency include housing density in rural, suburban or urban settings, street characteristics, capacity of collection trucks, arm lifts and compaction cycles.[32] SWANA's 2022 report refers to urban service areas as routes with at least 700 RCUs per square mile as a standard for on-route productivity. As a comparison, ESD's routes service approximately 1,200 RCUs/households per day.

Each ASL truck has an average time that it should take for the arm to cycle. Arm lift cycles is the time needed to grab and empty a cart and place it back down. The average arm cycle time is 6-12 seconds from body manufacturers and vary depending on vehicle and conditions.[33] This arm cycle time can be verified with functional sensors and automated reporting systems to be sure the data collected is reliable. Information on actual arm cycle time per cart lift can assist with proper size routes that account for the arm cycle time.

2.3.7 Set Out Rates

Municipalities often measure program participation through set out rates, indicating how often customers set out their carts for collection of recycling and organics materials as these programs are sometimes considered voluntary or nonessential (as compared to trash). Set out rates may be tracked via route software or pickups to determine participation in collection programs. ESD does not currently track set out rates for trash, recycling, or organics. The Cost of Service Study which this Analysis is a part of will assist with determining total participants and quantities of containers. **Figure 2-2** shows multiple trash and recycling carts at the curb that are serviced by Collection Services or private haulers.

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31 Renewed interest in automated side loaders driven by pandemic concerns, persistent safety issues, Waste Dive, July 23, 2020, https://www.wastedive.com/news/automated-side-loader-waste-collection-safetyandemic/582025/#:~:text=Where%20a%20manual%20truck%20and,every%20day%2C%E2%80%9D%20Ross%20said.

32 Efficient Management of Waste and Recycling Collection Resources: March 2022, Solid Waste Association of North America (SWANA)'s Applied Research Foundation, www.swana.org

33 Efficient Management of Waste and Recycling Collection Resources: March 2022, Solid Waste Association of North America (SWANA)'s Applied Research Foundation, www.swana.org

Figure 2-2 Trash and Recycling Carts at Curb

2.3.8 Cart Maintenance and Replacement

ESD manages over 1.3 million carts including warranty claims, deliveries, replacement and needed repairs. ESD serviced an average of over 1,600 carts per month between July 2022 and June 2024. In total ESD delivered over 11,000 carts and replaced over 27,000 carts during this time period. There are no set standards for number of containers managed per month, but factors including condition of carts, weather conditions impacting carts, and age of carts all drive actual container maintenance services needed. Performance metrics may include the number of claims and repairs per 1,000 RCU or similar to monitor issues with carts and time spent addressing concerns. Decisions made in the Cost of Service Study can directly impact the number of container services needed on average.

2.4 Recommendations

In addition to the recommendations above about becoming a data driven organization, there are recommended KPIs based on industry research. Based on the review of KPIs currently tracked and metrics tracked in the solid waste industry, the following are recommended:

- **Safety**: Include a focus on safety as a priority in performance metrics as ESD daily responsibilities include operating large complex vehicles on City streets. A number such as TRIR or number of incidents will assist ESD with including safety as a critical metric and elevate its importance within the organization See **Section 3** Safety, of this Analysis for an in-depth discussion of Safety.
- **Customer Satisfaction:** Track the number of complaints received per 1,000 RCU number of complaints per route or number of complaints per driver.
- **Missed Pickups:** Continue to track missed pickups. See **Section 5** Missed Pickups and Delayed Collections**,** of this Analysis for an in-depth discussion of missed pickups.

- **Driver Performance and Staffing**: Provide a metric of number of available drivers compared to drivers needed.
- **Turnover Ratio:** Track the employee turnover rate and benchmark to an initial target of 10%.
- **Truck Availability:** Track the number of trucks available daily compared to number of routes to be completed.

While not a KPI, the following operational metrics are recommended to track:

- **Truck Arm Movements:** Begin tracking the arm lift frequency per truck per route daily to provide appropriately sized routes and provide additional information to DGS Fleet for predictive maintenance.
- **Off-Route Tracking:** Develop tracking data through Geotab or Routeware to track non-productive off-route time including pre and post trip and lunch and break times. Set Out Rates: Begin tracking set out rates for trash, recycling, and organics as a performance metric to drive appropriately sized routes.
- **Cart Warranty Claims:** Begin tracking the number of cart warranty claims and cart repairs per 1,000 RCUs to track the performance of carts.

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3 Safety

Safety is critical for Collection Services, particularly in an industry with high safety risks. (See **Section 2.3.1,** Safety). Understanding the current ESD culture around safety and identification of opportunities for improvement related to safety in operations can help create safer working conditions and increase employee satisfaction. **Figure 3-1** shows staff arriving at the Yard with some wearing the necessary uniform.

Figure 3-1 Staff Arriving in Uniform

The Safety Clothing and Equipment Policy for ESD states that employees shall wear the appropriate uniform and safety apparel. As shown in Figure 3-1, most employees are wearing an orange long sleeve, which meets the current uniform requirements, but not the California Occupational Safety and Health Administration (Cal/OSHA) requirements. To comply with both the uniform and Cal/OSHA requirements, employees must wear a Class 2 or Class 3 high visibility safety vest over the orange long sleeve while on route. ESD employees may obtain the high visibility vest through Citywide Central Stores.

ESD is in the process of developing new uniforms that will comply with both the uniform and Cal/OSHA requirements. Until those uniforms are distributed to all divisions, employees must wear both the uniform and required PPE.

3.1 ESD Culture

Jobs in the solid waste industry have historically ranked as one of the most dangerous occupations in the US. The 2022 National Census of Fatal Occupational Injuries stated that “refuse and recyclable materials collectors” was the 7th deadliest job in 2022 in the US.[34] Although the fatality rate in the solid waste industry has decreased in the last several years,

[34] National Census of Fatal Occupational Injuries in 2022, Bureau of Labor Statistics, US Department of Labor, December 19, 2023, https://www.bls.gov/news.release/pdf/cfoi.pdf

additional efforts need to be done to reduce the current fatality rate of 22.6 per 100,000 FTE solid waste workers and ensure every solid waste worker is kept safe.[35] Nationally SWANA, an advocacy group focused on solid waste in the public sector has a "Safety First in the Solid Waste Industry" campaign and is focusing on getting the solid waste industry off the federal government's list of top ten most dangerous jobs.[36]

3.1.1 Culture of Route Completion First

While ESD provides safety trainings and creates policies such as required breaks for the safety and well-being of their staff, these assumed priorities from leadership were not observed by the HDR team in practice. Safety must be more than messaging, and it must be effectively integrated ESD's work culture and daily practices. During interviews with Sanitation Drivers, HDR was repeatedly told that "Clean City" or completing trash and recycling routes over everything else including safety was how work is completed on a daily basis. In addition to interviews, HDR witnessed this behavior in observing drivers in vehicles on route. Solid waste industry expectations are to take the additional time needed for safe operation of equipment and completion of the drivers' job tasks. The following items were identified that are critical to safety, but are often overlooked due to the requirement to complete routes:

- Renewed focus on pre and post trip activities which are critical to safe vehicle operations.
- Continued focus on overtime minimization. HDR learned that overtime privileges were minimized for Collection Services in February 2024. With the use of overtime limited, drivers must return to the Miramar Yard (Yard) by 4:30 PM each day to be sure minimal overtime is expended while still completing routes in a shorter amount of time.
- Taking Lunch breaks and two 15-minute breaks are required. HDR observed drivers not taking lunches in order to complete their routes in the amount of time provided, despite clear instructions that these breaks are required, and staff are expected to take them.
- Wearing of proper uniforms and safety PPE both in the Miramar Yard and while on route.
- Reinforce safety as a shared responsibility of all employees and reinforce its importance at every level of ESD from leadership to Districts to ARCS to Sanitation Drivers and other frontline employees.

[35] SWANA Statement on US BLS 2022 National Census of Fatal Occupational Injuries, Solid Waste Association of North America, January 10, 2024 https://swana.org/news/swana-news-archive/article/2024/01/10/national-census-of-fatal-injuries-2022

[36] SWANA Safety - Safety Matters! https://swana.org/initiatives/safety

Figure 3-2 All Staff Meeting held at the Miramar Yard

The expectation to get all routes completed and all trucks emptied with sufficient time return to the Yard by 4:30 PM creates an environment where safety is compromised. Routes have not undergone a comprehensive rebalancing in over ten years creating many routes that have increased in cart and stop counts and cannot be completed safely in a ten-hour day.

HDR observed practices, such as drivers speeding, collecting carts inappropriately by not setting the cart down prior to moving onto the next step and lunches and breaks being skipped, that compromised safety as to allow drivers to get their assigned routes done on time. Safety issues are exacerbated when unsafe behaviors are passed down through mentoring and training between experienced and new employees. For example, HDR observed conflict around safety when newer employees take lunch breaks and other employees do not. HDR recommends the leadership continue to reinforce the priority of safety to Sanitation Drivers and other frontline staff.

Proper mentoring and training is not an expectation of more tenured Sanitation Drivers at ESD. See **Section 7.7** for recommendations on updating the job descriptions of experienced drivers to take responsibility for training and mentoring new employees.

3.1.2 Consequences for Unsafe Behaviors

Interviews with Collection Services' staff indicated that there has been an ongoing lack of consequences for unsafe behaviors. While on-site, HDR observed a renewed focus on safety including discussions around unsafe behaviors and enforcement of safety policies from the Interim Deputy Director through the entire organization. HDR recommends continued follow-up on training and enforcement. In addition, it is critical that root causes be reviewed for unsafe behaviors such as a potential focus on completion of routes rather than safety.

A culture of safety is not a one-time activity. All employees of ESD, from leadership to managers, to frontline drivers are critical to creating an environment where employees feel safe and feel that they can call out unsafe behaviors.

During multiple interviews both in groups and one on one, drivers in Collection Services communicated that they feel they are not supported by other staff, or Collection Services' leadership when it comes to safety. Sanitation Drivers in Collection Services feel they have to look out for themselves because the equipment is not safe (See **Section 9** Equipment). Sanitation Drivers are also aware that there are inherent hazards in their job environment.

3.1.3 Communicating the "Why" of Safety

HDR organized opportunities for Districts, ARCS, and STED members to better understand how safety can be integrated into Collection Services, ARCS stated that the "why" behind safety trainings is critical to communicate to Sanitation Drivers. Simply telling drivers to act a certain way without explaining the consequences is not effective in changing drivers' behaviors.

3.1.4 Safety Training and Employee Development (STED) Integration with Frontline Staff Safety

HDR observed successful trainings with drivers around speed reduction and fire safety while on-site. The speed reduction topic occurred early in HDR's onsite observations and was a make-up session for those that had missed the prior scheduled training. The PowerPoint video and discussion around speed reduction was facilitated by one of the ARCS and there was apparent understanding of the topic. The speed training was followed up with ongoing discussions between Districts, ARCS and drivers around speed during the morning huddle and throughout the day. Enforcement and tracking through Geotab was implemented toward the end of HDR's onsite observations and drivers were held accountable for speed including write-ups and direct conversations with the drivers when speeding behavior happened. This collaboration between STED and Collection Services was successful as it included training, reinforcement and behavior correction.

HDR observed a disconnect between STED and Collection Services around safe operations of vehicles and completing collections and operations activities. A primary focus of STED is on developing, delivering, and tracking regulatory and compliance training. Other safety topics which are specific to Collection Services require support from Districts and ARCS. This left an impression that safe operations and safety around employee activities is not the same as other mandated required trainings. Continued integration of STED staff on site with Collection Services employees will be integral to a shared understanding of incorporation of safety into the culture.

HDR observed a lack of awareness from the City's Human Resources Department when assigning lengthy trainings and the competing priority of time available in particular with overtime restrictions to complete longer trainings. Prior to HDR coming on site there was an on-line only training mandatory for all employees including drivers that was two hours in length. With 239 drivers required to undergo this mandatory training, time for this mandated training as

well as technology was not available to allow these trainings to be easily completed. Safety training is often rushed when provided in the morning and impacts the drivers' ability to complete their routes. Most drivers have routes that last the full ten hours that makes up their shift. Because there is no overtime available and there are not enough drivers to complete the routes, safety training is particularly challenging to complete. The culture of completing routes as staff's highest priority needs to come second to safe operations and training in safe operations. Dedicated time needs to be allowed for drivers to complete safety trainings. As discussed earlier, collaboration and awareness of root causes of lack of "time" for safety trainings need to be addressed to change the current safety culture.

STED allows drivers to make up training by attending the same session when it's presented in the New Employee Orientation (NEO). STED developed NEO so all new employees receive the regulatory and compliance training required before they start their jobs. NEO is offered every six weeks. Due to the frequency of NEO trainings, it is feasible for one to two drivers, less than 1%, to complete missed safety training when it is presented as part of NEO, without greatly impacting Collection Services' operations.

3.1.5 Accommodation of Training Time Constraints (Micro-Trainings)

STED, through time at the Miramar Yard and interactions with drivers and supervisors, is aware of the limited time that Sanitation Drivers have during their shifts for training. STED has proposed to augment longer compliance and regulatory trainings to micro-trainings that can be presented in five minutes or less during morning sign-in. These micro-trainings would be presented by the ARCS to their section every morning as a tailgate. STED proposed the creation of a catalogue of the five-minute briefings to give ARCS a variety of topics to present and select relevant topics. STED began the practice of developing tailgate trainings which are delivered by ARCS and/or Districts on pertinent topics identified by management. A key difference between the practice of tailgate trainings and the idea of micro-training is in the recording of training completion in employee's learning histories in success factors SF; where every individual tailgate training is always recorded, micro-training completion would be entered under different parameters.

Another option to incorporate safety into Collections are "Safety Stand Down". A Safety Stand Down is a pause in operations to focus on safety protocols, address concerns, and reinforce best practices. Similar to micro-trainings, Safety Stand Down topics could be organized by STED and conducted by the ARCS or other employees. The National Waste & Recycling Association (NWRA), whose members are primarily focused on the private sector, hosts regular Safety Stand Down events to place a nationwide emphasis on awareness of solid waste collection and how its workers can be kept safe.[37]

[37] Safety at NWRA - National Waste & Recycling Association (wasterecycling.org) https://wasterecycling.org/safety-at-nwra/

3.1.6 Existing Conditions and the Potential Impacts to Safety

The City noted several recent factors that could be impacting a safety culture at ESD, especially for newer employees. These factors are described below but it's critical to understand that these conditions could repeat themselves over time. It's essential that ESD is resilient to changes and prepared to maintain a strong culture of safety even when faced with conditions that could impact safety within the department. Clear, consistent training from day one, mentorship from long time employees, and prioritization of safety in every decision is critical to overcoming these challenges.

- **Department expansion** – The Collection Services Division has experienced substantial growth in recent years. SB1383 led to a rapid expansion of the Collection Services Division and the addition of numerous new positions. This leads to a larger proportion of newer staff that require additional training.
- **Staffing and turnover** – Covid not only slowed the hiring process, leading to a pandemic-induced freeze and approval delays, but lead to the highest turnover rate in recent years. Increased retirements, accelerated recruitments, and the challenge of attracting qualified Sanitation Drivers have further exacerbated staffing shortages.
- **Internal conditions** – Programs and policies such as new union agreements and the use of bonuses may also distract from a culture of safety.

3.2 Safety Training Technology

The City uses SuccessFactors developed by SAP as the learning management system for providing asynchronous training. According to STED, it is very time-consuming to develop interactive trainings and upload them into SuccessFactors. SuccessFactors is primarily utilized to assign, record, and track the training (safety, compliance and development) ESD staff have completed.

During ARCS observation sessions, HDR observed drivers spending time in the training room while a SuccessFactors training video was playing, but not actively paying attention. These trainings do not appear to be well suited for the learning style of an audience that does not typically spend time sitting in an office environment.

3.3 Incident Tracking and Reporting

HDR requested incident and injury tracking and reporting including Total Recordable Incident Rate (TRIR), lost time due to injuries, and "near misses" information. Near misses are unplanned events that almost cause injuries. ESD staff indicated that injury tracking and reporting are done manually on physical paper forms or in Microsoft Excel. There was no TRIR data available, and near misses are not currently tracked. The process and forms for reporting injuries has recently changed and there was still some additional guidance necessary around proper forms and processes, which was provided.

3.3.1 Incident Reporting

According to recent data tracked by STED, ESD has an average of two vehicle or industrial incidents per week. Clear protocols and effective communication in ESD and Collection Services following a vehicle or industrial incident are crucial for many reasons including timely response and resolution, accurate documentation, and safety improvements. The City has a specific administrative regulation (AR 75.12) in place for reporting incidents, called the Vehicle and Industrial Incident Review, Reporting, and Discipline Program (updated in 2023). The intent of this program is to determine the preventability of each incident and the determination of discipline. Overall, the program aims to encourage safe operating practices and ensure consistent adherence to policies and procedures.

The current ESD Incident Processing Flow (AR 75.12 Process) is in **Figure 3-3**. The program includes specific step-by-step protocol for reporting and processing incidents. Drivers must report incidents immediately and provide a statement. City-owned vehicles must be turned into the DGS Fleet for evaluation as soon as possible. Supervisors must then complete an incident investigation report and submit the report to the screener (staff appointed to review the incident documentation and make a determination of preventability and ensure incident report processing times are followed) within seven calendar days.

The screener is responsible for conducting an investigation to determine the type and the preventability of the incident. The screener determinations are reviewed by the Department Head Designee (DHD) to confirm the results of the investigation.

The Administrative Regulation has assigned 125 days as the maximum allowable time for departments to process each incident. Once the screener receives the initial report of the incident, the department has 125 days to complete the process (an extension may be granted for extenuating circumstances). If the investigation and issuance to the employee of disciplinary action has not been completed within 125 days of the screener receiving the incident report, this results in a No Incident Ruling. A No Incident Ruling ends the investigation, and no punitive action is taken towards the employee. A No Incident Ruling requires notification to the Human Resources Department and ESD Deputy Chief Operating Officer.

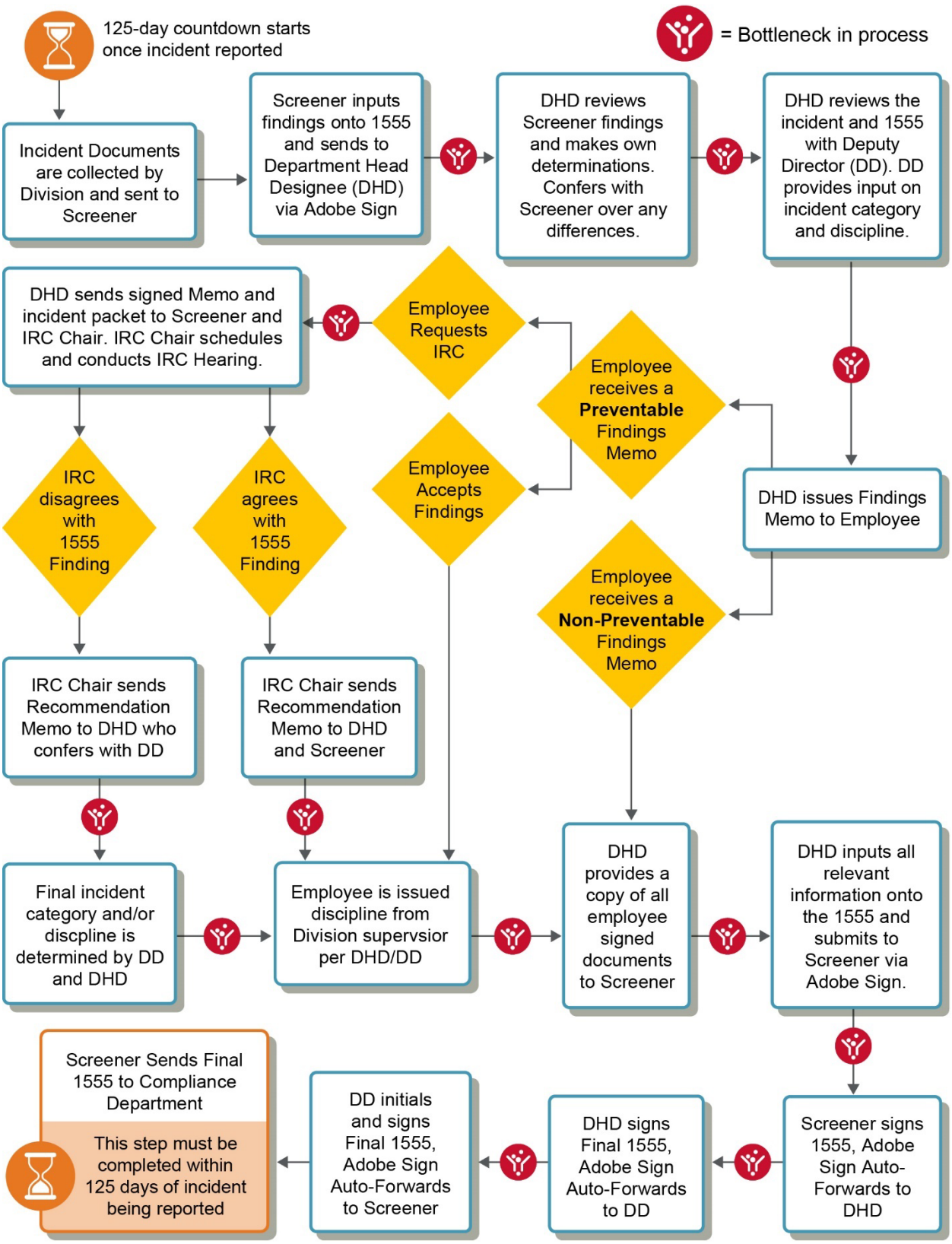

Figure 3-3 ESD Incident Processing Flow (AR 75.12 Process) with Potential Bottlenecks Shown

In **Figure 3-3**, bottlenecks in the AR.75.12 Process are identified. These bottlenecks are important to identify because they frequently cause the AR 75.12 Process to take longer than necessary. Each bottleneck indicates a need for a signature. According to interviews with STED, it can take weeks to receive a signature, even with multiple reminders and follow-up emails. ESD has been able to streamline the process by integration with Adobe Sign, which speeds up the process once the signature is obtained, but the signature is still needed to have Adobe automatically forward the document to the next reviewer.

3.3.2 Incident Tracking

Best practices for tracking of incidents are environmental safety software such as Vector EHS (Environmental Health and Safety) Management Solutions or ESD could explore options to track safety through Salesforce or other tools ESD uses. ESD currently does not have environmental safety software to track and report incidents, and there is not a centralized Citywide software for tracking EHS information. Because incident reports are completed on physical paper forms or distributed via email they are often misplaced and lost during the review and approval process as the forms are transferred in the Miramar Office Building. No performance measures were identified around safety. Without this tracking in a centralized database, it cannot be understood if Collection Services' safety ratings are improving or declining.

Keeping accurate and updated vehicle incident logs are important for accurate record-keeping, claims and insurance, safety improvements, and driver accountability. Proper documentation not only keeps a valuable record but can help prevent future occurrences. Failing to record a workplace incident immediately increases the risk of not only forgetting key details but losing track of the incident itself. The AR 75.12 Process specifically requires employees to report within 24 hours of the incident occurring.

ESD maintains a Vehicle Incident Log to track vehicle incidents that occur over time to manage risk and improve safety for both drivers and the public. This section includes key findings extracted from ESD Vehicle Incident Log.

3.3.2.1 NUMBER OF INCIDENTS LOGGED OVER TIME (2016 – 2024)

ESD logged a total of 960 vehicle incidents between January 2016 and July 2024. It's important to note that not all entry fields were filled out for each incident report, and that the key findings and themes in this section applies to only those incidents that had recorded specific information. **Figure 3-4** indicates the number of incidents per year 2016 – 2024. The fewest incidents were recorded in 2019, and the most incidents occurred in 2023. The number of incidents for 2024 only represents January through July. At the current pace of incidents, 2024 should have less incidents then 2023.

In recent years ESD leadership pushed to implement more forgiving policies for employee incidents and as a result, the AR for the Vehicle and Industrial Incident Program was re-written in 2023 to provide more leniency to drivers and the consequences of incidents on their driving records. Anecdotally, the reason for the increase of reported incidents in 2023 may be because the revised AR included messaging to drivers that it is best to report incidents regardless of how

small, as the consequences of an unreported incident are far greater than reporting, including automatic suspension. HDR suggests as a best practice continuing to promote reporting as a key to continuing to improve safety.

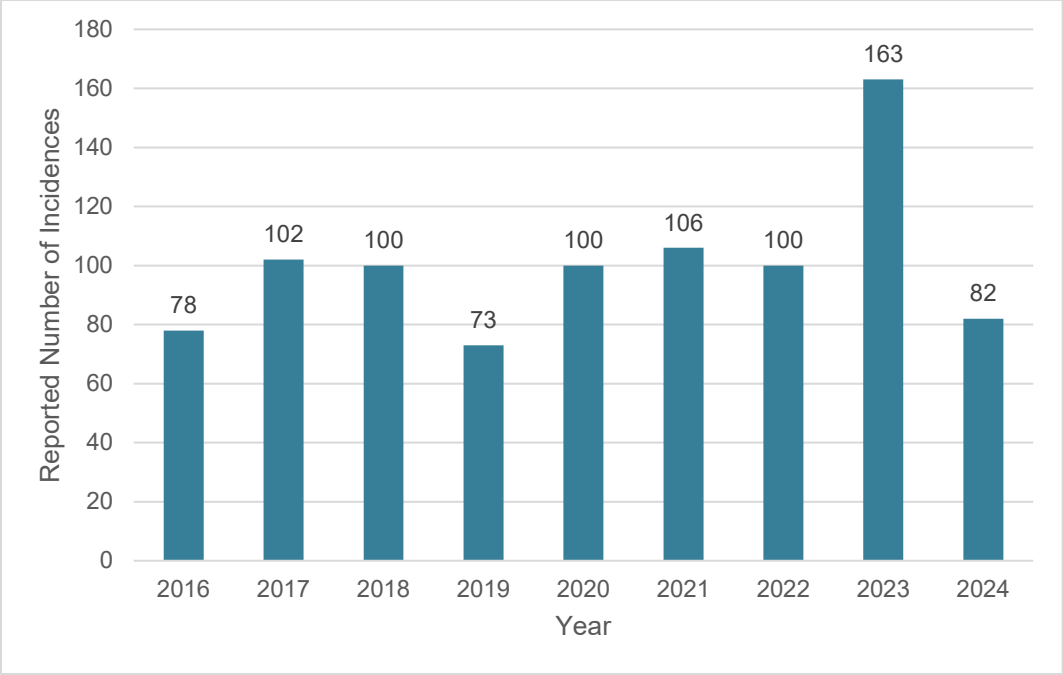

Figure 3-4 Reported Number of Incidents Per Year (January through July)

3.3.2.2 INCIDENTS BY TYPE AND DIVISION

Approximately one-quarter of incidents recorded by ESD for the timeframe 2016 to 2024 did not specify the specific division (e.g. Collection Services or DGS Fleet) responsible for the incident. The majority of incidents that did specify division, 86% of the 725 incidents, recorded the division as Collection Services. Other divisions including Disposal & Environmental Protection, Waste Reduction, and Clean SD each accounted for approximately 4-5% of the incidents. **Figure 3-5** shows incidents by reported division.

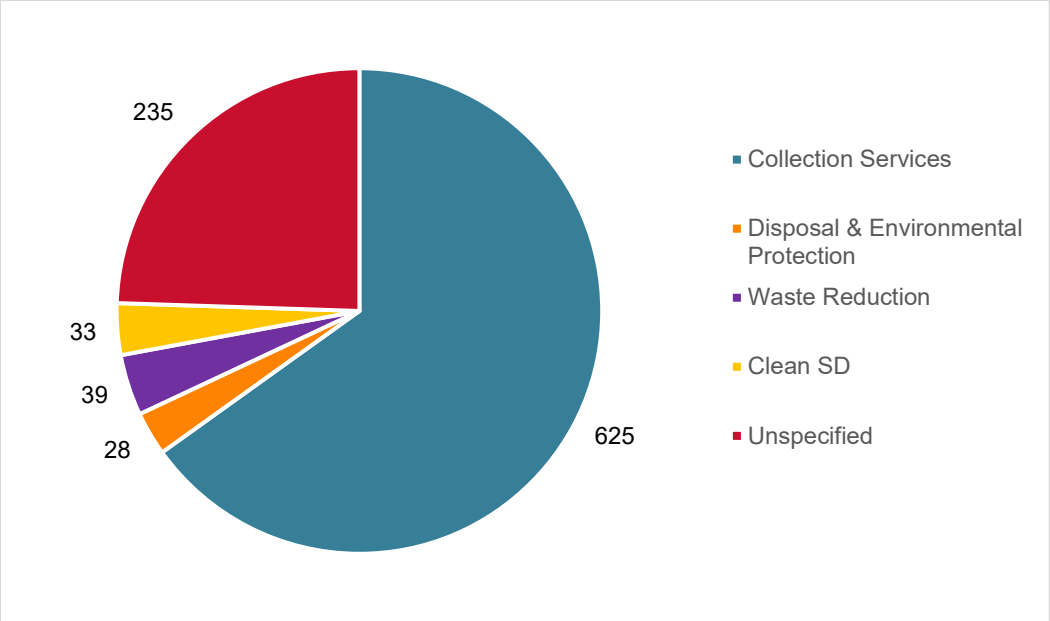

Figure 3-5 Number of Incidents by Environmental Services Department Division

Of the 960 reported incidents, 57% (433) recorded the type of incident. Overall, 64% of the incidents that specified incident type were classified as vehicle collisions (an incident involving City vehicles that collides or has contact with another vehicle or stationary object, terrain, etc.) and 30% of those recorded were industrial (an incident involving a City vehicle that strikes or collides with industrial equipment such as a forklift). **Figure 3-6** shows the number of incidents by incident type.

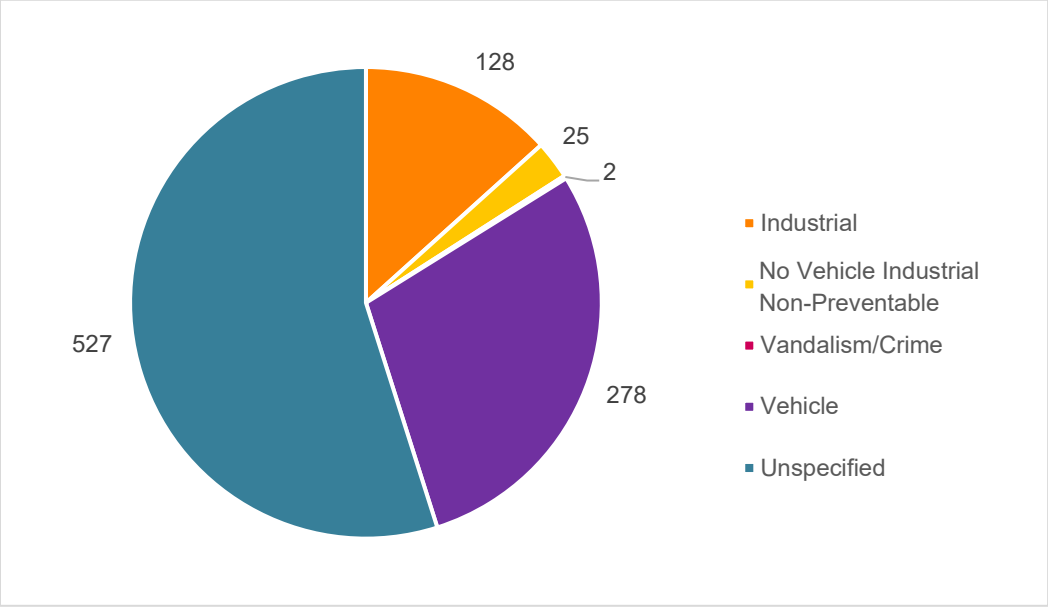

Figure 3-6 Number of Incidents by Incident Type

Figure 3-7 shows the number of incidents by division and type. Within Collection Services, 64% of incidents were related to vehicles, 33% were industrial, and 3% were no vehicle industrial which generally refer to non-preventable incidents that are generally of no fault to the driver

(e.g., damage from potholes or faulty equipment). The only incidents of vandalism/crime were reported by Clean SD.

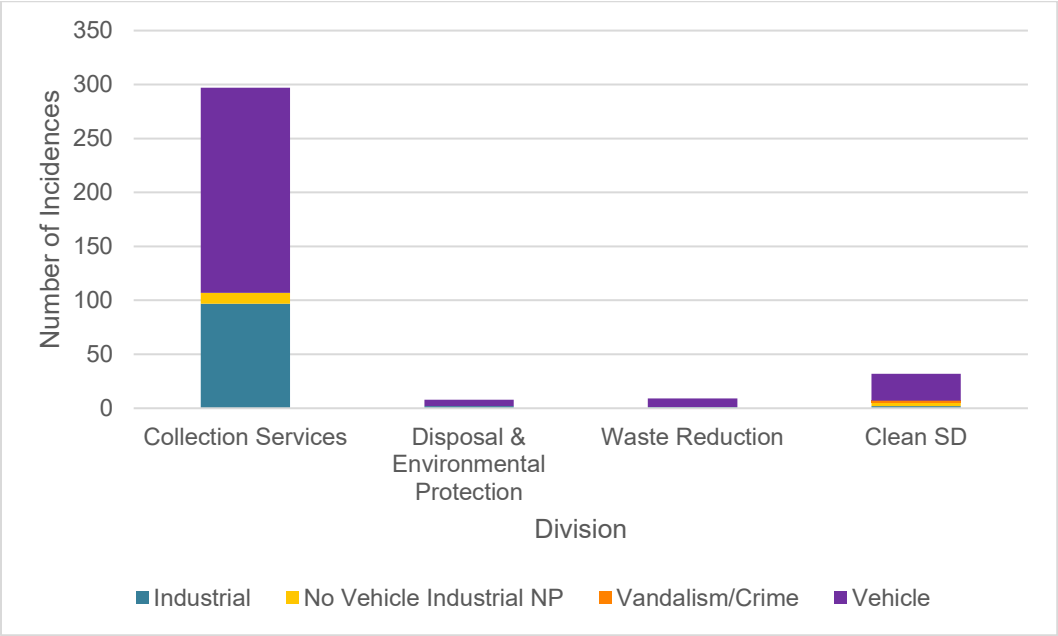

Figure 3-7 Number of Incidents by Type and Division

According to the incident log, 43% of incidents were found to be preventable, 51% were non-preventable, and 5% were not reviewed. Of the 960 incidents recorded during this period, only 190 specified the root cause of the investigation. The most frequently reported causes were misjudged clearance (29%), fleet maintenance issues (16%), unsafe backing (14%), and unsafe overtaking or passing (13%). Other notable root causes, each accounting for less than 10%, included unsafe turns, lane changes, and speeding. Fires were reported in 6% of the incidents. **Figure 3-8** shows the number of incidents per root cause.

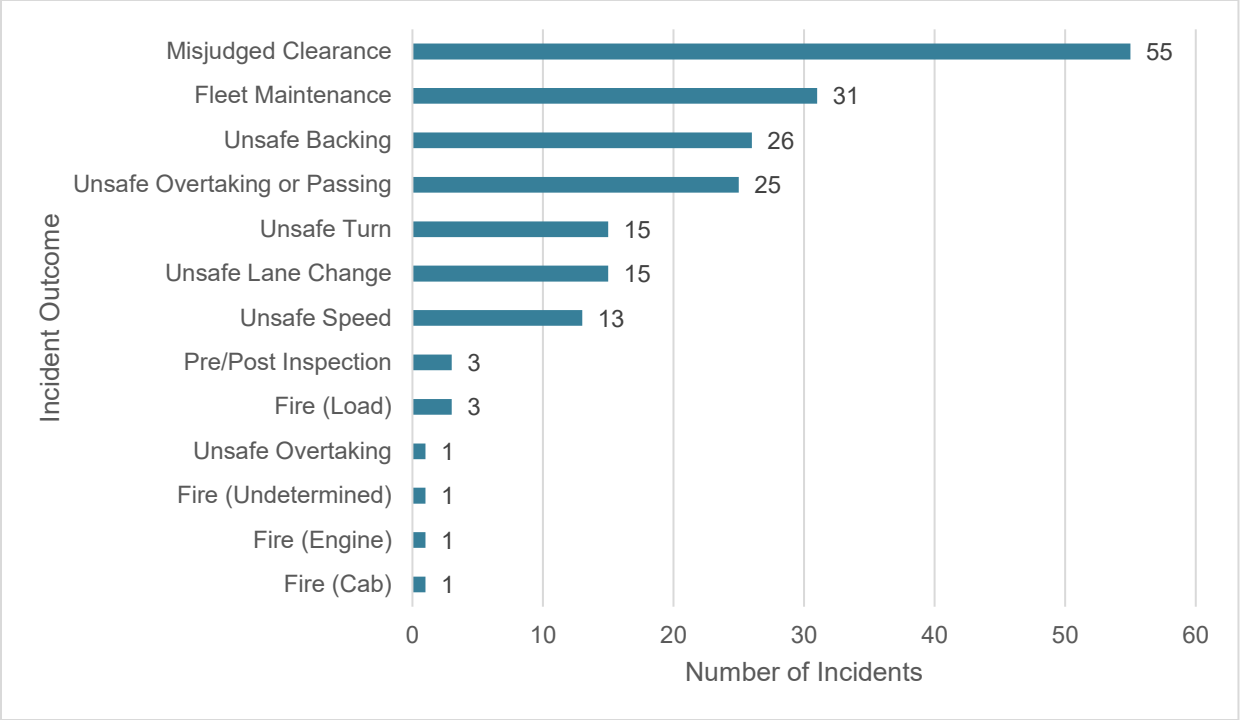

Figure 3-8 Number of Incidents by Root Cause

3.3.2.3 REPEAT INCIDENTS

Among incidents that occurred between 2016 – 2024 with an employee number included, 39% were one-time events. The highest number of incidents associated with a single employee number was 12. **Figure 3-9** shows number of incidents per employee.[38]

[38] Figure 3-9 does not include employees with 0 incidents between 2016 and 2024 because that data is not tracked by ESD, and historical staffing levels were not provided to HDR. Figure 3-10 provides a summary of incidents that occurred in 2023 including employees with 0 incidents as that data was available for this report.

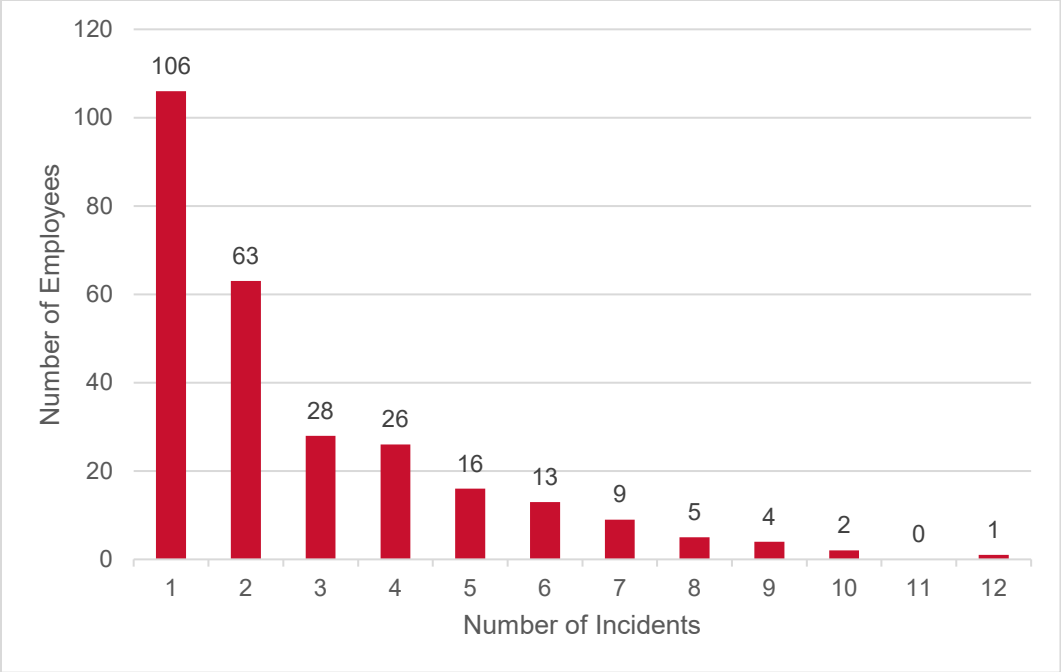

Figure 3-9 Number of Incidents per Employee (2016 – 2024)

Figure 3-10 shows number of incidents per employee recorded in 2023. More than half the employees had at least one reported incident associated with their employee number. Data shows that 117 employees had at least one incident (81 of those being single incidents).

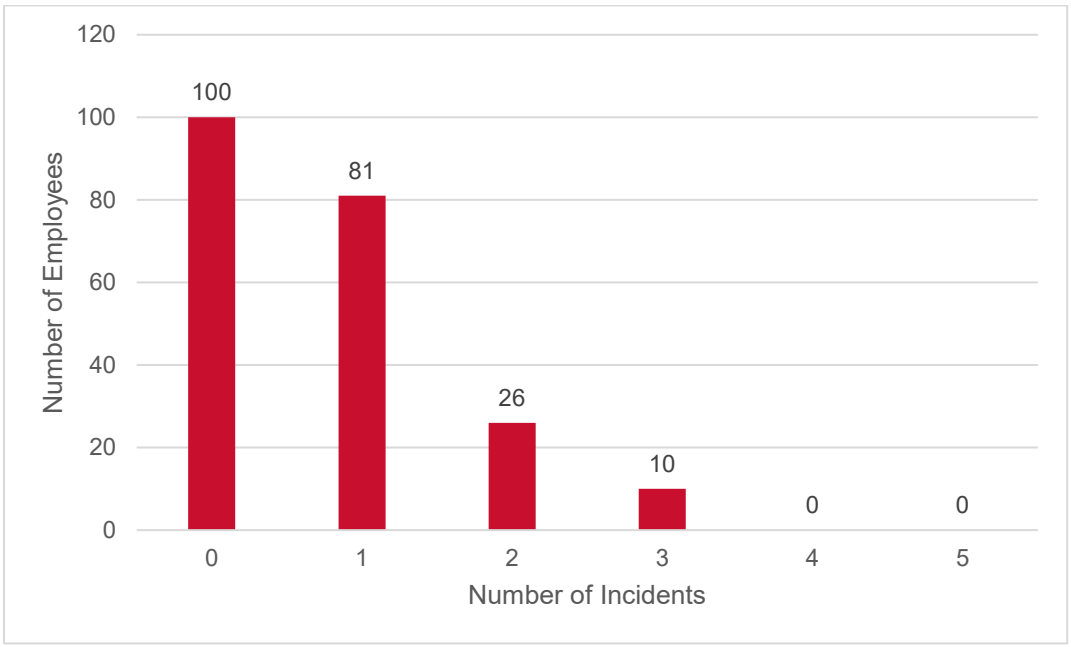

Figure 3-10 Number of Incidents per Employee (2023)

The data on vehicles involved in incidents was also reviewed. Between 2016 – 2024, over half (56%) of the individual vehicles associated with reported incidents had at least one recorded

incident. The highest number of incidents attributed to a single vehicle was eight and two vehicles had eight incidents. **Figure 3-11** shows the number of incidents per vehicle.

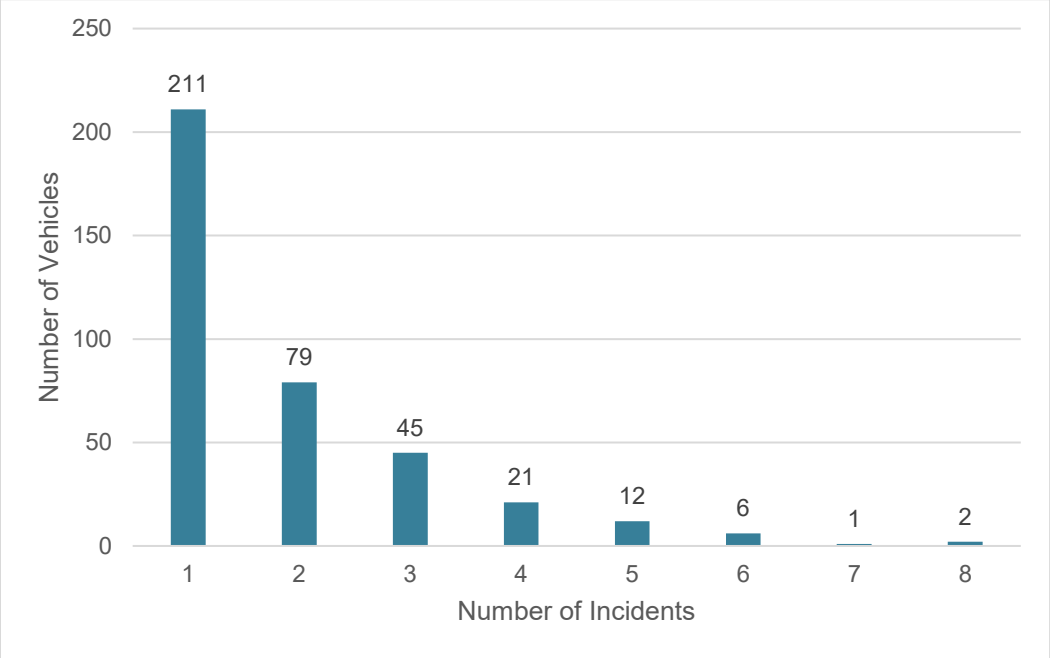

Figure 3-11 Number of Incidents per Vehicle (2016 – 2024)[39]

Figure 3-12 shows number of incidents per vehicle recorded in 2023. More than half of the total number of vehicles (108 of the 190 total refuse vehicles) were associated with at least one incident.

[39] Figure 3-11 does not show the number of vehicles associated with no incidents because historical fleet data was not provided for those years. Figure 3-12 shows the number of incidents per vehicle in 2023, including the number of vehicles with no incidents reported.

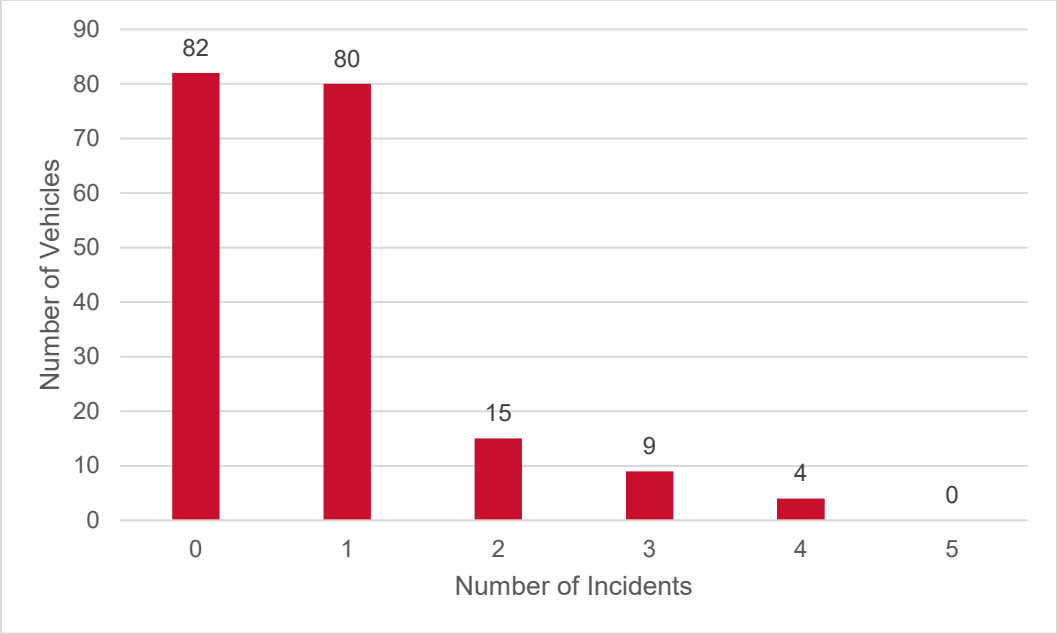

Figure 3-12 Number of Incidents per Vehicle (2023)

3.3.2.4 INCIDENT REPORTING

For incidents that included both date of the incident as well as the date recorded by the screener, the average length of time between these two events was 27 days. This is to say that it takes an average of 27 days following the incident for the screener to enter and acknowledge the incident report. For those incidents that included both the date of the incident as well as the date sent to Compliance Department, the average length of time between these two events were 117 days.

ESD is required to document the reasons for delays if an incident surpasses the 125-day deadline for punitive action. The incident logging process involves multiple ESD personnel, which can create challenges in completing the process in a timely manner and reaching a final decision on the root cause of the incident. Other recorded reasons for delayed incident reports include a delay related to a separate pending incident and waiting for a Police Department report or other relevant information.

3.4 Recommendations

Safety must be a priority. Safety needs to be top of mind and a part of everything ESD does. While ESD has increased safety staffing in the past three years to provide safety briefings and track incidents, extensive behavior change is necessary to embed safety in ESD. HDR recommends the following actions be taken to make safety a priority at ESD:

3.4.1 Trainings

- Focus on the development of in-person trainings more than virtual trainings for drivers. These trainings need to be interactive and applicable to what a driver experiences on a daily basis.

- Utilize NWRA and SWANA “Safety Stand Town” and other available tools to gain additional awareness around solid waste collection worker safety.

- Expand the training room to include additional seating and modern audio-visual (AV) equipment.

3.4.2 AR 75.12 Process

- Digitize the vehicle and industrial incident reporting process. All forms that are currently completed on physical paper should be digitized and accessible on tablets and browsers by all employees. A portal can be developed using ESD’s internal website. Within the website, an online form can be developed by STED which ARCS would fill out and once they submit it, the next reviewer/approver is notified via email with a link to access the portal where the forms can be created, edited, and submitted. This process can be done as many times as necessary to obtain the required reviews and approvals as ESD requires. This digitization process could take multiple months to develop and test.

- Implement an EHS software to track reported safety incidents. This software could streamline the process from incident recording to disciplinary action, reducing the number of staff involved and automatically sending regular reminders to complete necessary steps. If the chosen EHS software is capable, it could replace the current AR 75.12 Process. The existing protocol causes delayed reviews and response times, often missing the 125-day deadline for closing incidents. Tracking software would provide clear, consistent data to monitor progress and support program improvements, addressing the data gaps present in the current system.

- Remove redundant or unnecessary signatures from the AR 75.12 Process to minimize bottlenecks and increase the AR 75.12 Process completion rate.

- Provide adequate training to ARCS on how to properly report incidents using the AR 75.12 Process. This training could be included in the Out of Class Assignment (OCA) and job shadowing period when drivers are learning how to take on the role of ARCS. Limit training length to one hour. This action should not have an additional cost to ESD, but it should save time in the future since incident reporting will be done correctly the first time and time will not be lost trying to piece together vague reports.

- Re-evaluate the Cal/OSHA reporting process within ESD. Add this responsibility to the job description of certain roles so ESD staff are knowledgeable on who to contact for reporting. Make sure ESD staff are aware of the Cal/OSHA reporting deadlines. This should be done as soon as possible by ESD Deputy Director who will champion this process and ensure all ESD staff involved in this process are aware of their responsibilities and expectations.

3.4.3 Performance Metrics

- Develop safety performance measures to track incidents at ESD. See **Section 2.2** Become a Data Driven Organization, for additional details on proposed safety performance measures.

- Continue to maintain the current policy of promoting reporting of incidents and injuries as a key to improving safety.

- Create a safety board for drivers that will be displayed in the safety training room that displays pertinent information like Cal/OSHA reporting timelines, steps to report injuries, incidents and near misses internally, broad regulatory and compliance facts and rights of workers regarding safety (Cal/OSHA has many resources online ready for employers to display). This should be the responsibility of STED with input from Collection Services staff. The safety board should be developed as the new safety and training room is constructed so it can be displayed as soon as the room is ready for use.

Based on the recommendations specific to safety, ESD should consider the additional costs associated with improving safety measures, improving safety education, and more accurately tracking safety incidents. A high-level summary of improvements and tools for consideration are listed in **Table 3-1** where additional costs are anticipated. Further details will be needed including specific software options and associated costs if ESD implements such recommendations in the future. These recommendations to improve the safety culture, training and technology will assist ESD in achieving Goals 1, 2 and 4.

Table 3-1 Safety Recommendation Cost Considerations

Recommendation	Improvements or Tools for Consideration	Anticipated Rough Order of Magnitude Cost
Expand the safety and training room. (Training)	Provide a conference room sized for at least 12 people (20 square feet per person). Furnish with conference table, chairs, credenza, television or media screen for videoconferencing, and white board or tack panel surface. Locate near supervisor workstations.	>$144,000
Improve tracking of safety incidents through digitization of AR 75.12 Process (Process)	Purchase or subscribe to a third party EHS software or digitize the AR 75.12 Process in house.	>$300/month[40]
Physically display safety information in new conference room (Performance)	Print out pertinent safety information from ESD, the City, County, State and Cal/OSHA as necessary and display on the board for Collections staff reference.	<$100

[40] Entry level software cost estimation

4 Communication

Encouraging communication at the workplace results in a more cohesive and mission-oriented team. Communication increases productivity, employee satisfaction, and employee retention.

4.1 Communication within ESD

Based on interviews conducted on site and observations throughout this Analysis, communication can be improved at ESD at every level. Collection Services staff noted that this lack of communication contributed to the low morale amongst frontline staff. Sanitation Drivers are Collection Services employees who operate a medium or heavy-duty vehicle as assigned by a supervisor. Sanitation Drivers and other frontline employees expressed a desire for more frequent and in person communications with leadership. ESD drivers and frontline employees reported a lack of transparency on why policy changes were made, different directions were given, or priorities were adjusted. Frontline employees requested additional communications on the “why” of policy changes such as no overtime or all trucks being required to be emptied each day. Districts and ARCS expressed an interest to provide more information on policies and procedures to staff but also expressed that they did not feel they were given the appropriate information to be able to communicate with their employees. HDR witnessed several confrontational verbal disputes between managers and employees while on site that could have been managed better with appropriate communication around policies and procedures.

Employees at all levels within Collection Services identified that vacant positions and frequent changes in the Deputy Director role added to the challenges of communication. Staff believed that the policy that was being driven at any given time was based on who the Deputy Director was at the time and changed with the changing of the person in the Deputy Director role.

HDR learned of prior meetings with the Districts and Deputy Director that had occurred on a regularly scheduled cadence. The meetings between Districts and Deputy Director stopped happening for unknown reasons and left a void in communications within Collection Services. When HDR was on site these meeting began to occur again. There was an expression that the meetings between Districts and Deputy Director added value and opened lines of communication between the attendees.

Collection Services holds daily section meetings with the ARCS and Sanitation Drivers. In addition, Collection Services conducts monthly section meetings and quarterly all staff meetings. The daily meetings are where drivers receive instructions for the day. This includes notice of any changes in their truck and route assignment, delayed routes and round up areas they are expected to collect. Daily section meetings are used to also communicate hot topics or policies, updates on any needed trainings or other timely updates. Monthly meetings are typically mandatory safety or incident trainings and are covered in **Section 3,** Safety. Quarterly all staff meetings may be attended by ESD leadership. Quarterly meetings are an opportunity to announce awards for tenure with the City, any other recognition as well as Collections updates.

In regard to quarterly meetings, multiple Sections may be off on the meeting day since staff are scheduled for four 10-hour days per week (4-10’s) shifts. At the time of the evaluation, there

was no opportunity to make up for the meeting, and information was not shared with the Sections that were off during the meeting. This information is now being shared via ESD newsletter to provide all employees access to the meeting information.

The HDR team was able to participate in all of the daily, monthly, and quarterly meetings. These meetings are all valuable and appreciated by the staff. The meetings are opportunities for formal communications. Additional topics that could be covered include progress on performance metrics which encompass staffing, vehicle, and operational metrics as well as upcoming potential changes related to Measure B.

4.2 Communication with DGS Fleet

Communications between Collection Services and DGS Fleet was identified as needing improvement. HDR learned meetings between Collection Services and DGS Fleet had previously occurred on a regularly scheduled cadence. These meetings had stopped occurring and left a void in communications between Collection Services and DGS Fleet. Regular meetings between Collection Services and DGS Fleet allowed an opportunity for both parties to discuss common issues such as truck availability, red tagged equipment, and suitability of fleet. These meetings had stopped happening for unknown reasons. While HDR was on site, weekly meetings began between the Collection Services and DGS Fleet while the HDR team was on site conducting the Analysis. There was an expression that these meetings were adding value and opening lines of communication between the attendees.

Additionally, there is daily communications between DGS Fleet specific to truck availability. While the HDR team was on site at the Miramar location, the truck availability information provided from DGS Fleet to the Districts in the morning was not accurate. This discrepancy in information caused confusion amongst Collection Services staff and ultimately delayed drivers from starting their route assignments for the day. Truck availability is currently communicated between DGS Fleet and Collections via email following completion of DGS Fleet's second shift. The email that DGS Fleet sends to Collection Services in the morning is pulled from a dataset that DGS Fleet updates as vehicles are repaired. Continued improvement needs to occur around accuracy of the truck availability email between Collection Services and DGS Fleet. This will improve timing of Sanitation Drivers starting their routes and reduce the amount of time Sanitation Drivers spend requesting repairs of trucks that are listed as available in the email.

4.3 Communication with Customers

4.3.1 Tags by Drivers

Tags are the primary tool that drivers use to communicate with their customers. Tags are typically pre-populated lists of things that the customer should do to correct a problem. For example, if the cart is placed under a low hanging wire, the driver will mark that box on the tag, attach the tag to the cart, document that a tag was left with that information and then communicate with their ARCS regarding the problem. Similarly, if a cart is damaged and cannot be serviced, a tag is left notifying the customer that the cart needs to be replaced in order to be serviced.

During initial driver interviews, HDR was informed that tags had not been available for over seven months to the drivers. As of the end of HDR's observations, drivers still did not have tags available. The lack of tags resulted in challenges that caused MPUs and service concerns where the customers were not aware of why they were not able to be serviced. In several instances during Sanitation Driver observations, HDR observed customers coming up to the vehicle and asking why their cart was not being serviced. During observations with ARCS they also expressed a desire to have tags both for the drivers and for their communications with residents. In multiple cases where customer interactions occurred with ESD staff, the customers indicated a desire to be left a tag to understand how to fix the issue.

HDR's team had multiple conversations with Collection Services about access to tags and tag usage during the on-site observations. ESD leadership indicated there were concerns around tags being used appropriately by the drivers and processes for follow-up with customers after tagging. Although not addressed directly in **Section 3** Safety**,** ESD can incorporate appropriate tagging during tailgates on an ongoing basis or during the daily section meeting.

ESD did share tags used by the Waste Reduction Division Code Compliance Officers that focuses on observed contents in response to reported egregious and ongoing contamination issues from the public and Collections to the Waste Reduction Division. **Figure 4-1** is an example of these tags.

Figure 4-1 Cart Tags (English and Spanish versions)

4.3.2 Customer Service through Public Information Clerks

The Support Services-Customer Service Division Public Information Clerks of ESD is responsible for receiving direct inquiries from residents regarding all ESD issues. The Public Information Clerks receive ESD service requests and queries in several way from residents:

- Call customer service at 858-694-7000,

- Email trash@sandiego.gov, [41]
- Submit a request through the Get It Done mobile app, or
- Submit a request through the Get It Done website.[42]

With a phone call or email, a Public Information Clerk will enter the information on behalf of the customer and explain the resolution process. With Get It Done, the customer enters their own information and receive an automated message regarding resolution. Many of the City's services are available through the online tool Get It Done. Collections information is available through a dropdown for Trash Collection, Recycling and Graffiti. **Section 5.1,** Reporting Missed Pickups and Delayed Collections, addresses use of Get It Done for missed pickups.

HDR interviewed several of the Public Information Clerks as well as their Supervisor regarding customer service processes with Collections. The individuals interviewed expressed a need for two specific items to best provide information to residents. First, Public Information Clerks interviewed requested more specific information around delayed routes (i.e., routes that will not be collected on the service day) and when they will be serviced. This allows better expectations in particular around perceived MPUs from customers. Second, Public Information Clerks is more specific notes and information on follow-up from ARCS who are responsible for responding to escalated complaints or inquiries around services and MPUs in Salesforce. Additional details on communication with Customer Service is in **Section 5** Missed Pickups and Delayed Collections.

4.4 Communication with Dispatch

Collection Services has a Dispatch Team (Dispatch) within the division, which is the driver's first contact for any breakdowns or emergencies. Dispatch is currently staffed by two people, split into two shifts. The first shift is from 6:00 AM to 2:30 PM, and the second shift is from 8:00 AM to 4:30 PM. The shifts are alternated every two weeks. ARCS are responsible for coverage of Dispatch outside of these hours. There is not currently back up coverage if either staff member is unable to work. Dispatch is a key component of reliable communication for Collection Services.

Each Collection Services vehicle is equipped with a two-way radio that is used to communicate, not only with other drivers and supervisors, but also Dispatch. Each section has a separate radio channel. For emergencies, Dispatch is the liaison between emergency personnel (police and/or fire services) and the driver. Emergencies can include incidents such as an accident with the vehicle, a driver medical emergency, or a vehicle fire. In addition to coordination with the emergency personnel, additional support may be needed by the ARCS, District, and/or leadership in Collection Services and ESD. Dispatch will send an email with a brief description to the necessary personnel and call the non-emergency police department as needed. In

[41] Collection Services | City of San Diego Official Website https://www.sandiego.gov/environmental-services/collection

[42] Get It Done webpage, City of San Diego, https://www.sandiego.gov/get-it-done

addition to the initial contact with emergency personnel, Dispatch coordinates with the cleanup crew or DGS Fleet as needed for the vehicle.

For breakdowns, Dispatch is the liaison between the drivers and DGS Fleet. Since there is typically only one road mechanic on staff, Dispatch can help assist a driver in determining whether they should wait for the road mechanic or drive back to the Yard, assuming the vehicle is in drivable condition. Factors considered in whether to repair a truck in the field or at the Yard include how far away the road mechanic is and how many other trucks are already in the queue to be assisted.

Drivers communicate the following information for a truck breakdown: location, milage, and the issue they are experiencing. Then, Dispatch generates an email to the mechanics, ARCS, and Districts with the truck breakdown information, a brief description of the incident, and a subject line that includes the breakdown number for that day (ex. #8 Breakdown). Drivers will also call Dispatch for incidents that require a sandman (e.g. oils or liquid spills on the pavement), and Dispatch then relays that information to the sandman.

Dispatch utilize Geotab and Routeware to help locate drivers when they call in an emergency or breakdown. Both software have their limitations, which include the following:

- Geotab identifies who the Sanitation Driver is and where they are located. Routeware is used as a backup to confirm who is the Sanitation Driver.
- Geotab will not show a truck that is servicing a different route other than the route the tablet is set to for that day. For example, if a truck is servicing a route from the day before or a clean-up route, it will not be shown. These types of routes are common and cause issues for Dispatchers to accurately locate drivers.
- Routeware doesn’t always show the driver’s information. When the driver’s information is not available, dispatchers use a paper note sheet to find the driver’s information by section number or name.

Dispatch report to the ARCS primarily responsible for Yard operations. Dispatch stated that dispatching for Collection Services is different than other Dispatch roles within the City. Dispatch did not have any formal training available on how to handle Collection Services specific emergency situations. In addition, Dispatch did not have any Standard Operating Procedures (SOPs) in place, and it was reported that one of the staff in Dispatch was asked to develop an SOP manual themselves.

Communication can be a challenge for Dispatch. Dispatch are responsible for issuing boots and uniforms to newly hired drivers, which is an added responsibility. Dispatch took this opportunity to initiate a program to bring new hired drivers into the Dispatch room and have them listen to positive and negative examples of radio call ins. This program was to show drivers how difficult it can be for Dispatch to hear calls over the radio, and the importance of properly conveying the necessary information to them in a clear and effective manner.

Dispatch expressed safety concerns regarding the organics route drivers. Dispatch is not currently able to communicate directly with the organics drivers, and there is no means for

Dispatch to send a message to the organics sections. For example, Dispatch currently would have no means to relay information quickly to the Organics drivers if there were hazardous conditions or a threat to a City facility.

Dispatch also receive calls from drivers regarding improperly parked vehicles, lack of access to alleys, or other reasons for missed collections. Dispatch is not currently able to communicate directly with code enforcement for missed collections. The lack of access to communications between Dispatch and other departments can cause several days, or even weeks, of missed collections for the same location.

Dispatch also manages calls from drivers regarding damaged containers or containers that cannot be serviced. In these instances, Dispatch are able to create a case in Salesforce. Dispatch will sometimes send a follow-up email to the supervisor to notify them of the new case. During a ride-along with an ARCS, they expressed that they appreciate this additional communication between Dispatch and supervisors so they are immediately notified of the issue and can potentially address it that same day and prevent missed collections and dissatisfied customers.

4.5 Recommendations

- Add a communications role specific to Collection Services as Measure B begins to accommodate both internal and external communications. Collection Services appears to be split organizationally between leadership at the Deputy Director position and the Districts. A concerted effort from the Deputy Director level to meet regularly with the Districts and ensure that the communications reach down to the drivers will be needed.

- Create a Business Intelligence (BI) dashboard with information including vehicle availability and status, and other information relevant to the status of the vehicle would benefit staff in Collection Services and DGS Fleet. For example, the main area of the dashboard could display the number of vehicles available for use out of the entire Collections fleet and the average time it has taken DGS Fleet to repair a vehicle. An interactive table could be displayed underneath with vehicles listed out row by row and associated data like vehicle status, why the vehicle may not be available, who the vehicle is assigned to for repairs, when it was turned in for repair and any detailed notes provided by DGS Fleet. This table could be filtered and searched by Districts and ARCS to quickly pull necessary data to make informed decisions when assigning vehicles to drivers.

- Utilize the BI dashboard to replace the need for develop daily emails to communicate vehicle availability to Districts as the dashboard would automatically pull data from the DGS Fleet system. This would save the time and improve communication between departments.

- Develop a SOP around tagging of containers and follow-up with residents by supervisors. Upon completion of SOP, train drivers on proper use of tags. Then, provide drivers with tags to educate customers on issues that are causing their carts to not be collected or causing difficulty in providing service.

- Provide ongoing tailgates to enforce proper tagging by drivers and proper communication with customers by supervisors. ESD could also consider adding a field in

Routeware for each stop that would allow drivers to document which cart tags were issued (if any) and provide an explanation for why that could automatically upload to Salesforce. Tracking information on services provided could help ESD monitor, understand and address trending challenges for customers and drivers alike. Collected data could also be utilized by the Waste Reduction Division to develop more targeted customer education and improve participation to make collection safer, easier and more efficient.

- Develop a process for communication to occur in a timely manner between Collection Services and Customer Services Division in order to provide Customers with appropriate information on when collection of carts will be provided.
- Create a SOP for Collection Services and Customer Services Divisions in ESD to work together to develop specific protocols for entering notes and keeping Public Information Clerks up to date on the status of open issues in Salesforce. In addition to a SOP, training for both ARCS and Public Information Clerks should result in higher customer satisfaction.
- Add one additional Dispatcher to bring the total Dispatch team to three. Designate one of the three Dispatchers as a Senior Dispatcher that can assist with development of SOPs and standard training practices for Collection Services Dispatch. This Senior Dispatcher can also assist with communication facilitation with ARCS and other ESD employees.
- Implement annual training for drivers on effective communication with Dispatch to report emergencies and breakdowns. Training can be conducted by STED.

Based on the recommendations specific to communication, ESD should consider the implementation of a dashboard with accurate information about truck availability and status. Cost considerations for the development and implementation of a dashboard should be considered including the need for data entry, data management and staff training to utilize such a program. A high-level summary of improvements and tools for consideration are listed in **Table 4-1** where additional costs are anticipated.

Table 4-1 Communication Recommendation Cost Considerations

Recommendation	Improvements or Tools for Consideration	Anticipated Rough Order of Magnitude Cost
Truck availability and status dashboard	Dashboard development and implementation.	$150,000
Add one additional dispatcher	Add one additional Dispatcher to bring the total Dispatch team to three. Designate one of the three Dispatchers as a Senior Dispatcher that can assist with development of SOPs and standard training practices for Collection Services Dispatch.	$126,167
Annual training on Dispatch communication	Implement annual training for drivers on effective communication with Dispatch to report emergencies and breakdowns	N/A

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5 Missed Pickups and Delayed Collections

Solid waste collection is critical for public health, controlling vectors, and keeping the City clean. Completion of timely trash, recycling and organics pick up is the most important aspect of keeping the City clean. ESD had identified the quantity of MPU as a key area for analysis and improvement as Measure B is implemented. ESD uses “missed collection” or “MPU” and “delayed collection” or “delayed route” to define distinct reasons why a stop has not been collected. A MPU occurs when a cart(s) was not serviced on the scheduled collection day. ESD also uses the term “potentially missed collection” to categorize MPU cases that were submitted on the scheduled collection date before the end of service. A “delayed collection” or “delayed route” occurs when a route that is scheduled for collection is delayed by at least one (1) day due to lack of resources. While Collection Services differentiates between these types of situations, it is important to note the customer still believes they were missed.

5.1 Reporting Missed Pickups and Delayed Collections

Residents can report a missed pickup (MPU) using the methods discussed in **Section 5** Missed Pickups and Delayed Collections, including calling customer service at 858-694-7000, emailing trash@sandiego.gov,[43] entering a request through the Get It Done mobile app or entering a request through the Get It Done website.[44] In this Section, the focus will be specifically on use of Get It Done app and website for reporting an MPU.

Residents have access to Get It Done through the City’s Online Services.[45] Get It Done provides Customers the ability to report a MPU or receive information on delayed routes. When a customer reports a MPU on the Get It Done app, the website informs them of the estimated resolution time. As an example, while the HDR team was on site, Get It Done displayed the following: “resolution is five days based on the last six weeks of data and staff knowledge, if the missed collection is not associated with a known route delay”. For a Delayed Collection, the app indicates that *“Due to limited resources, refuse collection operations may be delayed by one day.”* and directs the user to visit ESD Collection Status Interactive GIS Map for more information.[46] **Figure 5-1** displays a image of the first page of MPU reporting form on the Get It Done webpage.

[43] Collection Services | City of San Diego Official Website https://www.sandiego.gov/environmental-services/collection

[44] Get It Done webpage, City of San Diego, https://www.sandiego.gov/get-it-done

[45] Get It Done | City of San Diego Official Website https://www.sandiego.gov/get-it-done

[46] ESD Collection Status Interactive GIS Map, City of San Diego, https://webmaps.sandiego.gov/portal/apps/webappviewer/index.html?id=2fb71a292a3840feba20fa0e89cca922

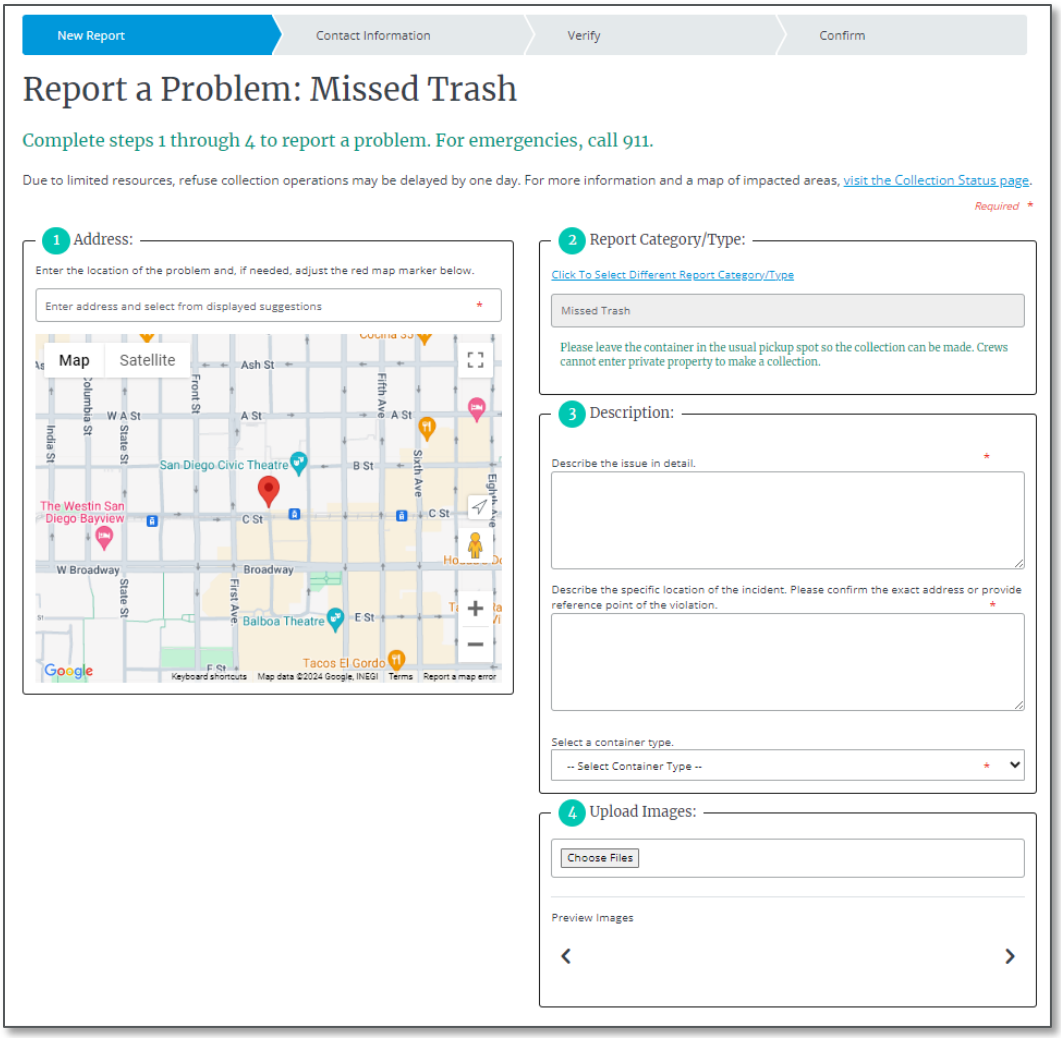

Figure 5-1 Missed Pickup Reporting Form on Get It Done

After a resident submits an MPU report, ESD receives the request via Salesforce. The MPU report is then assigned to the responsible ARCS based on the address entered into the MPU report.

When a customer submits a MPU report on Get It Done and they reside along a route that was delayed, they receive the following message:

> *"Pickup is delayed on the route indicated. Please leave your container out for another day. Check the map at https://www.sandiego.gov/collectionstatus for current status."*

That link directs customers to a page that is also linked in the Get It Done MPU form.[47]

When an MPU case is closed by an ESD employee, customers have the option to complete a customer satisfaction survey. In the survey, the customer scores the service provided by ESD

[47] Collection Status, City of San Diego, https://www.sandiego.gov/environmental-services/collection-status

on a scale of 0 to 10, with the option to submit comments. These survey responses and comments are reviewed in **Section 5.2.2** MPU Case Comments.

5.1.1 Customer Reporting

HDR found that MPU cases are open for an average of 6.3 days in Salesforce. The maximum number of days elapsed between an MPU case opening and closing was 76 days. Trash and organics carts are serviced every seven days (once per week), while recycling carts are serviced every 14 days (every other week), which means some MPUs were not addressed until several scheduled collection dates had passed.

During HDR's shadowing and observation of ARCS, it was identified that some ARCS had hundreds of open MPU cases open to address on their Salesforce pages. When asked about the open MPU cases, the ARCS indicated the following:

- The ARCS did not have the resources to review and address the root cause of all MPU cases as they were assigned to them, including onsite follow-up.
- Some MPU cases seem to not be resolved as they were "missed" by the ARCS.
- Some customers submit multiple MPU cases for the same issue through Get It Done, as there is not resolution of the problem.

Only 37% of MPU cases were opened the same day collection was scheduled. The majority of MPU cases were opened within two days of the scheduled collection day. The maximum time between the scheduled collection date and the MPU case opening was 14 days.

5.2 Root Cause Analysis Review s

The City uses many terms to define why collections are potential missed collections, MPUs, or delayed collection, but this Analysis focuses on completing a root cause analysis of potential missed collections, MPUs, and delayed collections and how the City can "miss" less stops and create a better service impression for Collection Services. In the following sections, possible root causes are identified. HDR reviewed 25,750 closed potential missed collection, MPU, and delayed collection cases submitted through Get It Done from January to June of 2024 that were downloaded from the Salesforce database. ESD categorizes cases by the following:

- Potential Missed Collection: 1,235 cases
- Missed Collection: 22,895 cases
- Delayed Collection: 2,050 cases

In addition to the data provided by ESD, HDR also reviewed the number of households per section, weekly truck availability, weekly number of vehicle breakdowns, weekly number of CNG

trucks not fueled, weekly number of routes not completed, and driver assignments per section.[48,49,50]

5.2.1 ESD Staff Interviews Comments

Frequent causes of a MPU or delayed collection were discussed during interviews with ESD staff include, but are not limited to:

- Lack of resources (i.e. the assigned driver cannot finish the route due to their collection vehicle breaking down and not enough collection vehicles are available for the number of collection routes).
- Timing (i.e. the driver is not able to complete the route before having to empty the truck and return to the Yard empty by 4:30 PM).
- Cart not set out (i.e. a customer did not set out their cart before the collection vehicle serviced their street).
- Cart is damaged (i.e. cart is not able to be serviced due to state of disrepair and needs to be replaced).
- Miscommunication (i.e. the driver erroneously did not understand the customer was serviced by the City rather than a private hauler. This is used in cases where the majority of the street is serviced by private haulers, not the City, and the carts look similar).

5.2.2 MPU Case Comments

The MPU data set contains comments for each case that was entered in Salesforce by ESD staff. These comments are an update for other ESD staff and/or the customer based on how the staff at ESD has addressed the MPU case. From the MPU data set, it is unclear who at ESD created the comments. During interviews, it appeared that Dispatch, ARCS and Districts are responsible for completing comment fields. The following comment fields were provided in the data set:

- Case Reason
- Closure Comments
- Custom Comments (VISIBLE TO PUBLIC)
- Action Taken
- Action Taken 2

All MPU cases were provided a comment field indicating the reason for the case. This field had entries that included “Refer Elsewhere”, “Container Emptied” and “Problem Fixed” amongst

[48] Customer Site, City of San Diego
[49] Collections Metrics Template, City of San Diego
[50] Route Bid Assignment Seniority List, Collection Services SD Assignment List, June 14, 2024, City of San Diego

other entries that did not provide an obvious reason as to why the MPU occurred. This field could provide consistent and valuable information about the reason for the MPU. The inconsistent data is a missed opportunity for ESD to identify the most common reasons for MPU cases being opened, and to develop methods to prevent and/or reduce those types of MPUs from occurring again.

For the dataset reviewed, there were 6,628 MPU cases (or 26% of all MPU cases) with no comment provided by ESD in the remaining four comment fields: closure comments, custom comments, and both action taken comments. This represents a missed opportunity for ESD to better communicate internally and educate the public on what could be done differently either by ESD or the customer to resolve the current MPU and prevent future occurrences.

In general, comment field entries provided by Dispatch, ARCS and Districts are inconsistent and wide ranging in the level of detail provided. There were multiple occurrences where similar entries were observed across the five different comment fields for various MPU cases. During interviews, the ARCS and Districts indicated that there are no standards or SOP on how to complete comment fields. The following categories were identified for entries in the custom comment field, which is visible to the customer:

- **Premature report submission**: The route associated with the MPU case submission was not scheduled for service yet, therefore the container could not have been missed.
- **Container was not set out before collection vehicle serviced route:** The customer did not set the container out early enough therefore the container was not missed. ESD asks customers to set their container(s) out by 6:00 AM.
- **Container was damaged and could not be serviced:** The container was damaged which could mean the lid was broken or the container had a large hole on the side of the container and would allow material to fall out of the container before it was in the optimal position to unload into the packer. This situation is unsafe; therefore, the container was purposefully not serviced, and was not missed.
- **Due to lack of resources the route was delayed:** The associated route was delayed because ESD determined there were not enough available trucks to service all routes. Delayed routes are not the same as MPUs.
- **Container was collected:** The container was serviced according to ESD drivers and/or ARCS.
- **Driver could not access the container:** The container was not set out in the required manner therefore the driver could not service the container. Containers must be on the street next to the curb with at least three feet of room on all sides of the container.

ESD has implemented a “No Fault Policy” for cases where the driver may or may not be at fault for the MPU and the customer may or may not be at fault for the MPU. Similar No Fault Policies are common in the industry. The critical component of such policies is to provide education to both the customers and drivers to address the situation that resulted in a perceived or actual MPU and make corrections for future collections. ESD’s current practices lack adequate, direct

education and outreach from ESD to customers or drivers on how to prevent future MPUs and address common customer comments.

When customers open an MPU case in Get It Done, they are instructed to describe the issue in detail in the submission form. This information was not provided to HDR in the MPU data set from ESD. The only resident comments provided are the residents' responses to the customer satisfaction survey if the resident chooses to complete it. In the dataset provided, only 1,330 MPU cases were scored by customers, and of those, 52% or 693 MPU cases provided comments to ESD in the customer satisfaction survey. Based on the MPU cases provided that had a customer satisfaction survey completed, the average score provided by the customer was a 6 out of 10. This average is below the goal outlined in the FY25 budget for ESD shown in **Figure 5-2** shows the distribution of MPU cases along the customer satisfaction scale of 0 to 10.

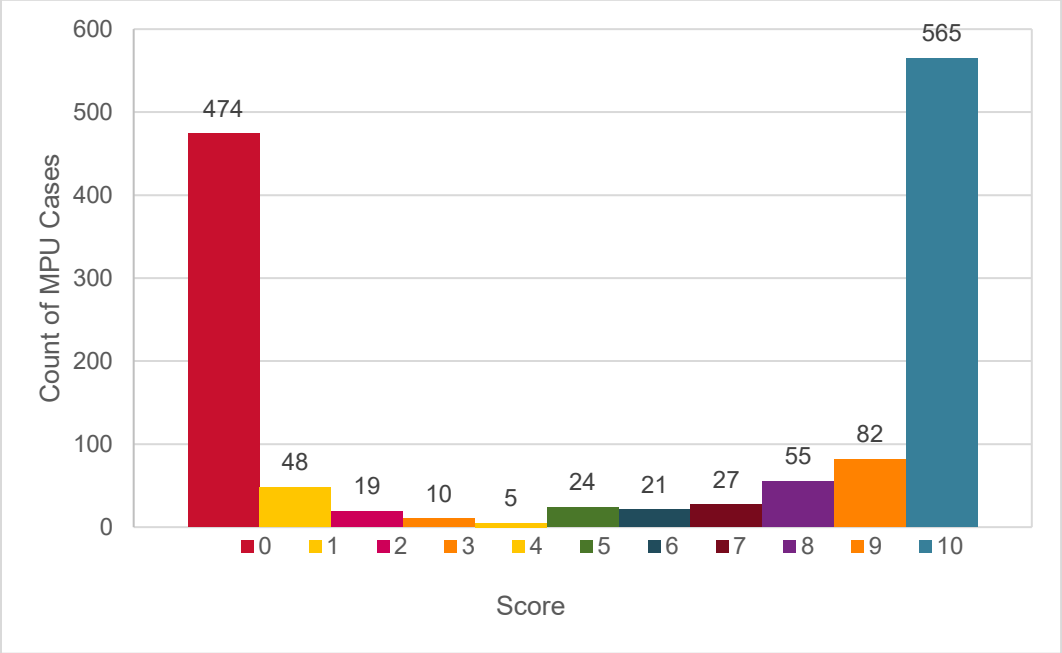

Figure 5-2 Customer Satisfaction Survey Score Distribution

As depicted in **Figure 5-2,** customer satisfaction typically falls on the extremes of the scale, either a 0 or 10. Typical comments associated with lower scores stated that their cart was still not empty, yet their MPU case had been closed by ESD staff or that it took too long to resolve the issue. Typical comments associated with higher scores applauded ESD for great customer service and a quick turnaround time.

5.2.3 Vehicle Availability

During interviews with ESD staff, the lack of available, operational vehicles was identified as a cause of MPUs. When ARCS are not provided with the same number of vehicles as the number of routes scheduled for collection that day, they must down or delay routes. When routes are downed in one section, the drivers assigned to that section must work together to collect portions of that downed route once their assigned routes are completed. Successfully servicing

downed routes depends on whether the drivers are able to complete their assigned routes in time, which could be impacted by additional unexpected breakdowns and fuel stops.

Several factors related to vehicles were considered for this component of the MPU analysis: trucks not available, routes not completed, CNG trucks not fueled, vehicle breakdowns and downed routes. The number of trucks unavailable was calculated by subtracting the daily number of vehicles available from the daily number of vehicles required according to the Collection Services Metrics Template provided by ESD. Metrics were available on a daily basis. For simplicity in viewing the data, the average number of unavailable vehicles per day was calculated for each week between January 2024 and June 2024. **Figure 5-3** displays number of vehicles unavailable, the number of routes not completed and the number of MPU cases opened in Salesforce on a daily basis from January to June of 2024.

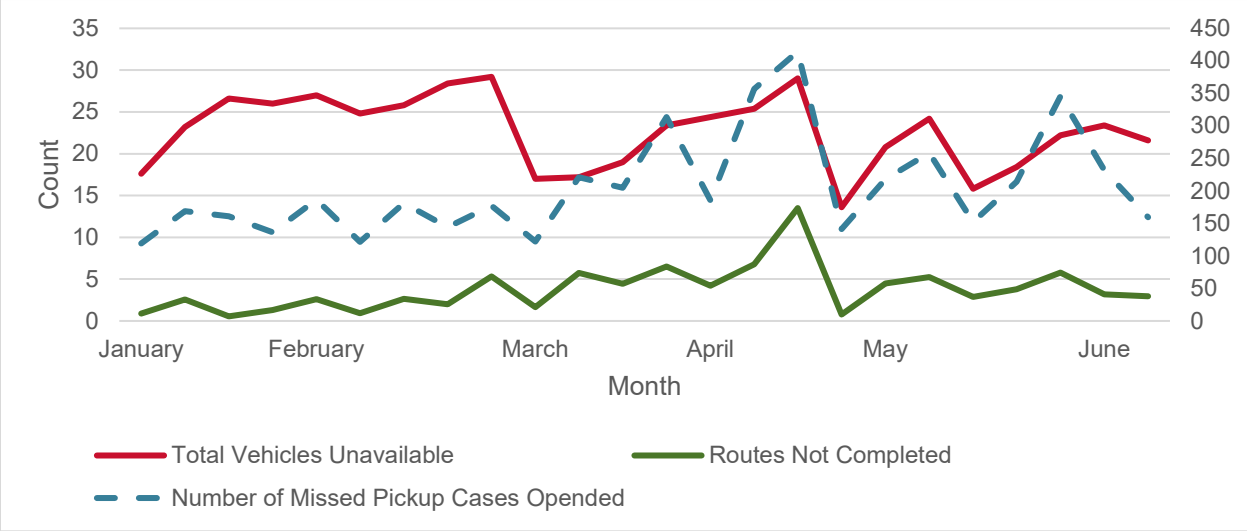

Figure 5-3 **Total Vehicles Unavailable, Routes Not Completed and Missed Pickup Cases Opened on a Daily Basis from January - June 2024**

Between January and June of 2024, an average of 1,028 MPU cases were opened weekly. On average from January to June 2024, only 83% of the vehicles required to provide collection services were available weekly. DGS Fleet is responsible for providing Collections with the needed number of vehicles to complete the routes. From January to June 2024 there was not a single week where enough vehicles were available to Collection Services to have a vehicle assigned to every route.

Figure 5-3 appears to show a strong correlation between the number of vehicles unavailable, the number of routes not completed and the number of MPU cases opened on a daily basis. When the number of unavailable vehicles increases, more routes are not completed, resulting in more MPU cases being opened. Because vehicle availability was frequently called out as a

potential cause of MPUs, Collections should focus on identifying the main reasons that cause vehicles to be unavailable.

Figure 5-4 displays the number of vehicle breakdowns, the number of CNG trucks not fueled, the number of downed routes, and the number of MPU cases opened in Salesforce on a daily basis from January to June of 2024.

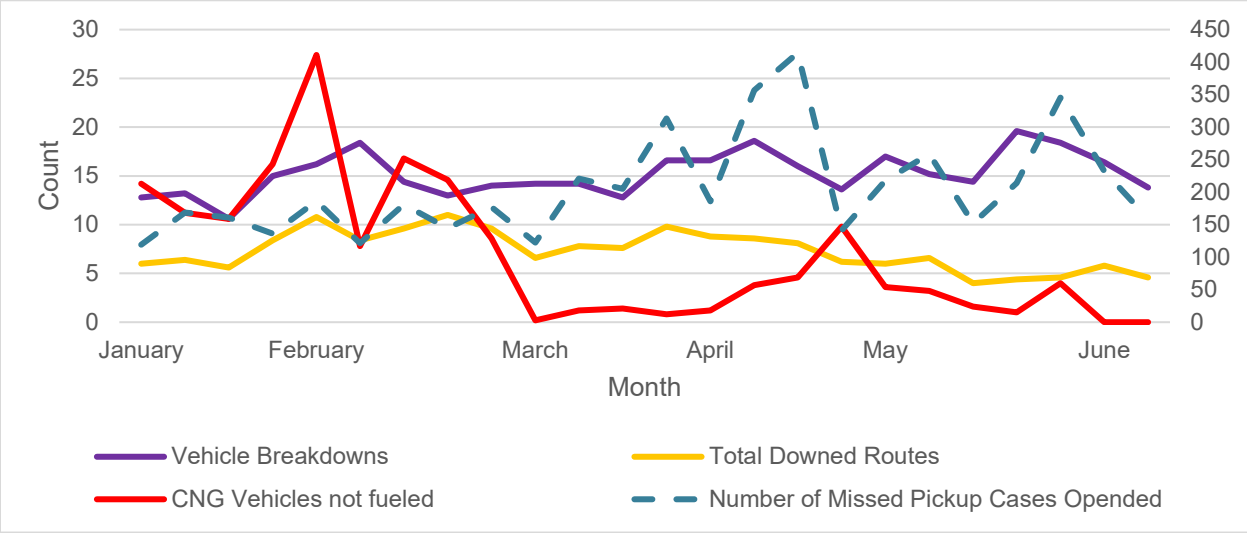

Figure 5-4 Vehicle Breakdowns, Total Downed Routes, CNG Vehicles Not Fueled, and MPU Cases Opened on a Daily Basis from January - June 2024

Figure 5-4 appears to show a weak correlation between vehicle breakdowns, CNG trucks not fueled or downed routes with the number of MPU cases opened daily. ESD staff indicated in interviews that the number of breakdowns and downed routes would directly impact the number of MPUs. However, the data does not appear to support that claim.

For the timeframe of the data set provided, there was not any week during which 100% of trucks were available or in which zero MPU cases were opened. If ESD fleet readiness was improved, the number of MPUs occurring and the number of MPU cases opened could decrease. As discussed earlier, an MPU is as much about customer perception as it is the actual occurrence. It is HDR's assumption that it is unlikely there will not be a day where MPUs occur. It is important for Collection Services staff to minimize the amount of MPUs attributable to drivers and educate customers who have the perception of an MPU.

5.2.4 Routing

The next analysis looked at MPU by Section. A Section is made up of by an ARCS and Sanitation Drivers. **Section 10.2** Route Scheduling, further discusses the makeup and scheduling of Collection Services.

Figure 5-5 displays the number of MPU cases assigned to each section based on the address of the customer that submitted the case.

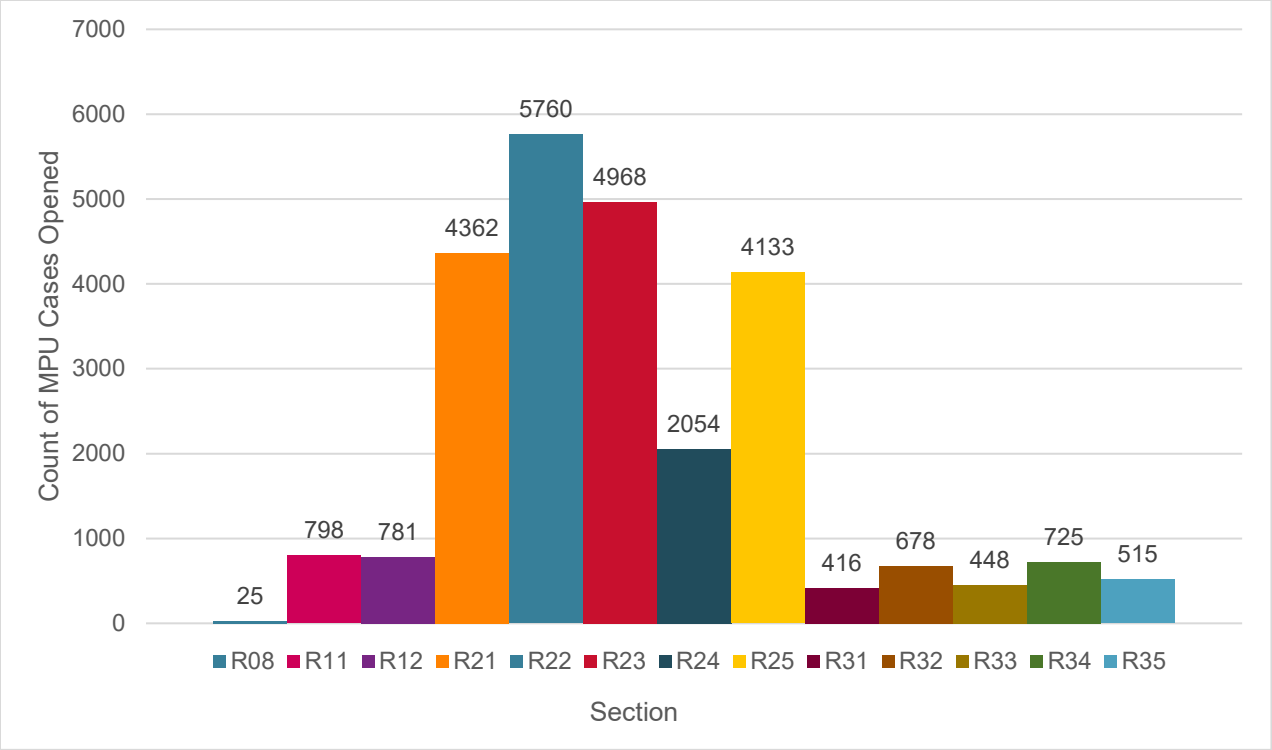

Figure 5-5 Missed Pickup Cases Opened per Section from January - June 2024

Section R-22 had the most MPU cases opened of the 13 sections identified in the data from ESD. During interviews, HDR learned that R-22 has historically been one of the most challenging sections to manage. Numerous reasons were given, including that R-22's day off is on a Tuesday, meaning drivers work Monday, Wednesday, Thursday, and Friday. A Tuesday off has typically been less preferred by more senior drivers when route bidding occurs. Thus R-22 drivers are typically less experienced. R-22 drivers are also newer to operating an ASL, as this is typically the section they are assigned to once they receive their certification to drive ASL. ARCS follow the same schedule as the drivers. The R-22 ARCS typically has less management experience, as the Tuesday off is less desirable for ARCS as well.

The data from January to June 2024 shown in **Figure 5-6** shows the distribution of MPU cases opened on each day of the week for each section.

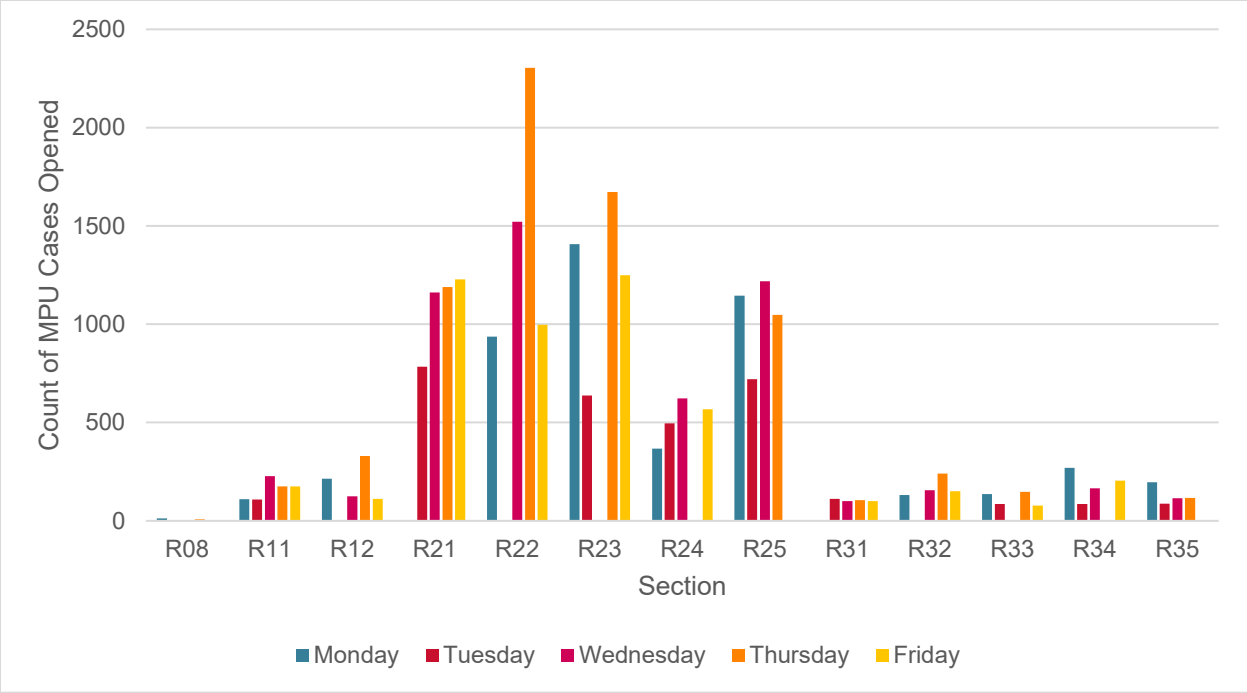

Figure 5-6 Number of Missed Pickup Cases per Section by Day of the Week from January - June 2024

The day of the week for which providing service is most challenging for each section can be seen by reviewing the number of MPU cases opened by day of the week for each section. Similar to **Figure 5-5**, the trash and recycling sections in **Figure 5-6** have the most MPU cases opened. Section R-22 appears to have the most MPU cases opened on Thursdays across all 13 sections, which could indicate there are too many routes assigned to that section for adequate service.

In **Figure 5-7,** the number of routes scheduled for collection each day of the week is displayed per section.

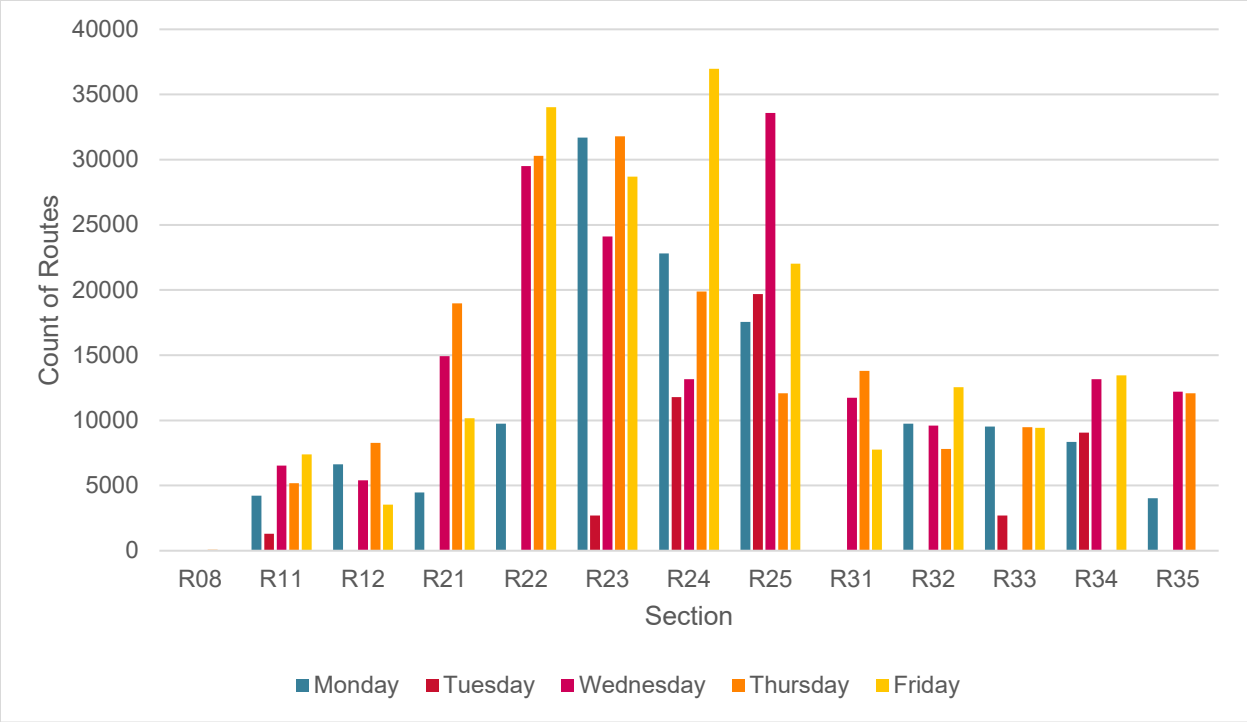

Figure 5-7 Number of Routes Scheduled for Collection by Day of the Week for Each Section

There does appear to be a direct correlation between the number of routes scheduled for each collection day per section and the number of MPU cases opened. Some sections did have more MPU cases when there were more routes per day. For example, section R-22 and R-23 have the highest number of MPU cases opened on Thursdays, and R-22 and R-23 have significantly more routes scheduled for collection on Thursdays as compared to other trash and recycling sections. R-23 had the highest number of MPU cases opened on Mondays and the highest number of routes scheduled for collections on Mondays. This correlation is not consistent across the Sections, as R-24 has the highest number of routes scheduled for collection on Fridays, but not the highest number of MPU cases opened on Fridays.

The highest number of MPU cases across all 13 sections occur on Thursdays. During interviews, most sections indicated that Thursday is a challenging day for the following reason: the majority of areas serviced are the furthest away from the Yard and disposal and processing facilities. This does not apply to sections that have Thursday off, where Wednesday or Friday may be the most challenging day of the week. Drivers may be required to travel to the most northern or southern parts of the City, which means the drivers have less time to service containers because of the necessary travel time between the Yard, the collection area, and disposal and processing facilities. **Table 5-1** shows MPU cases opened by day of the week from January to June 2024 and the number of routes typically scheduled for all sections per day of the week.

Table 5-1 Missed Pickup Cases Opened by Day of Week from January - June 2024

Day of Week for Scheduled Collection	Number of Routes to be Completed	Number of MPU Cases Opened[51]
Monday	128,780	4,938
Tuesday	47,294	3,130
Wednesday	173,967	5,435
Thursday	169,703	7,347
Friday	185,972	4,887

Of note is that Tuesdays have significantly fewer routes (less than half) to be completed as compared to other days of the week. This routing may be strategic by ESD but may also present an opportunity to address MPU and route efficiencies. The number of MPU cases opened is relatively similar on Mondays, Wednesdays, and Fridays, all of which have an average of 320 MPU per 10,000 pickups to be completed. Tuesday has over 650 MPU per 10,000 pickups to be completed. While Thursdays have the most MPU cases, it is approximately 430 MPU cases per 10,000 pickups to be completed. Friday has the greatest number of routes but the second lowest number of MPU cases, potentially indicating fewer service challenges in completing those specific routes.

5.2.5 Households serviced

As previously mentioned in **Section 2.3.6** Routing, routes at ESD typically have 1,200 RCUs/households. One household is equivalent to one customer. The average section at ESD services approximately 27,000 households of the 247,585 households currently in Salesforce as ESD customers. **Figure 5-8, Figure 5-9, Figure 5-10, Figure 5-11, Figure 5-12, and Figure 5-13** display the number of households serviced and the number of MPUs per section based on the type of cart serviced (trash, recycling or organics), where darker colors represent higher numbers and lighter colors represent lower numbers. Typically, as the number of households serviced per section increases, so does the MPUs per section as shown in the figures. Only sections that collect materials using ASLs were included in this analysis.

[51] Not including MPU cases opened for collections scheduled on Saturdays or Sundays.

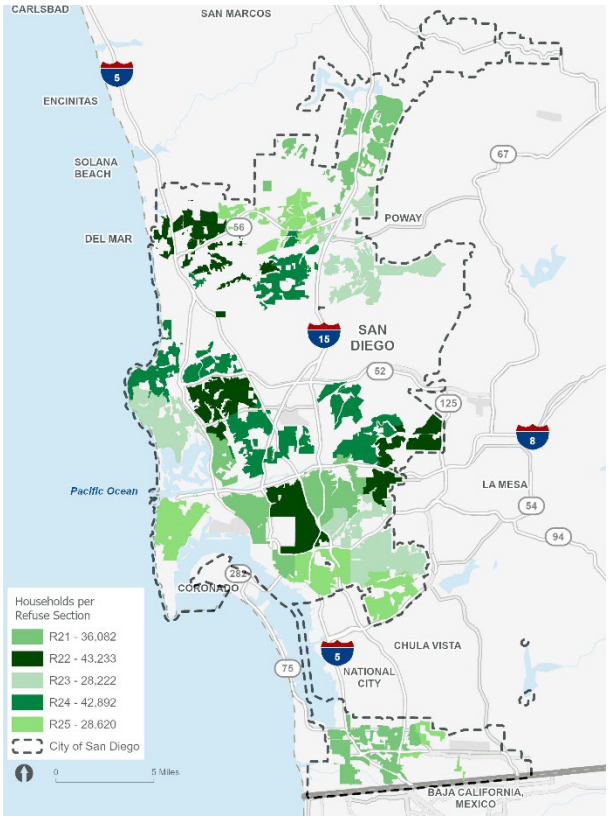

Figure 5-8 **Number of Households per Refuse Section**

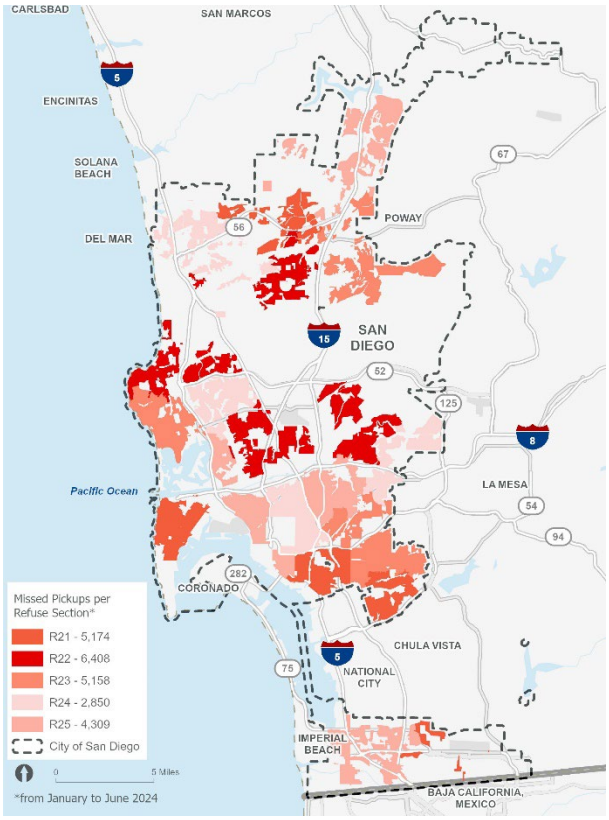

Figure 5-9 **Number of Missed Pickups per Refuse Section from January to June 2024**

Figure 5-8 shows the number of households assigned to each trash section. **Figure 5-9** shows the number of MPU cases assigned to each refuse section between January and June 2024. There are notable correlations between the number of households per refuse section and the number of MPU cases in Figure 5-8 and 5-9. For instance, R22 has the highest number of households and the highest number of MPUs of the five (5) refuse sections. Not all sections match this trend, R23 has the lowest number of households and the third highest number of MPUs of the refuse sections.

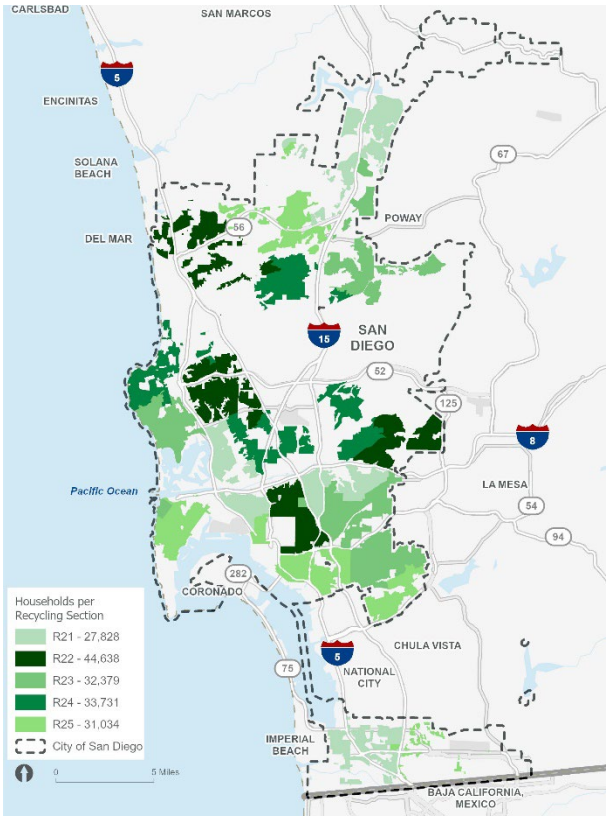

Figure 5-10 **Number of Households per Recycling Section**

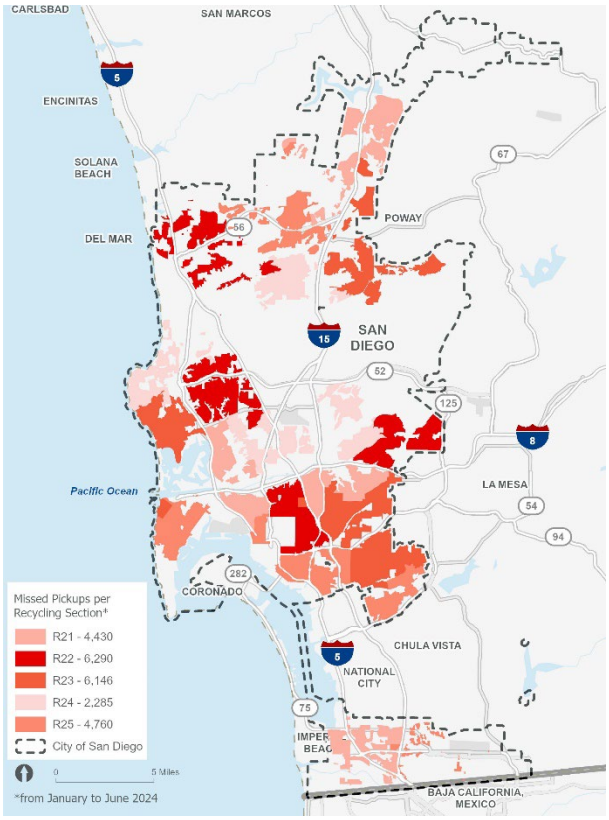

Figure 5-11 **Number of Missed Pickups per Recycling Section from January to June 2024**

Figure 5-10 shows the number of households assigned to each recycling section. **Figure 5-11** shows the number of MPU cases assigned to each recycling section between January and June 2024. There are notable correlations between the number of households per recycling section and the number of MPU cases in Figure 5-10 and 5-11. For instance, R22 again, has the second highest number of households and the highest number of MPUs of the five (5) recycling sections. Not all sections match this trend, R24 has the second highest number of households and the second lowest number of MPUs of the recycling sections.

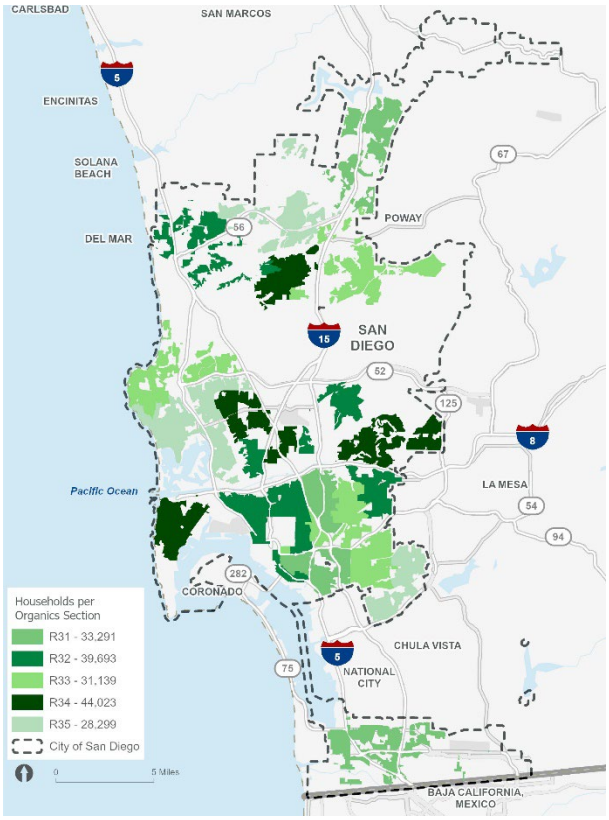

Figure 5-12 **Number of Households per Organics Section**

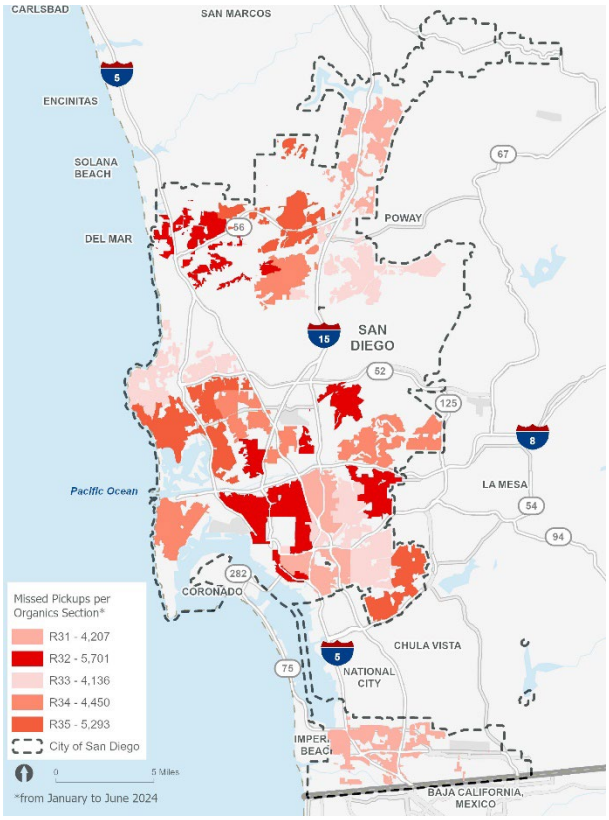

Figure 5-13 **Number of Missed Pickups per Organics Section from January to June 2024**

Figure 5-12 shows the number of households assigned to each organics section. **Figure 5-13** shows the number of MPU cases assigned to each organics section between January and June 2024. There are not as notable of correlations between the number of households per organics section and the number of MPU cases in Figures 5-12 and 5-13. For instance, the section with the highest number of households (R34) has the third highest number of MPUs of the five (5) organics sections. The section with the lowest number of households (R35) has the second highest number of MPUs of the five organics sections.

5.2.6 Materials Collected

Table 5-2 shows the number of MPU cases by material type collected. Refuse sections had the highest number of MPU cases of the three material types collected. The material type left out at the curb most often is important to note because trash has the potential to become a public health issue if left out and not picked up at least every other week.

Table 5-2 **Number of Missed Pickup Cases by Material Type Collected**

Material Type	Number of MPU Cases
Organics	3,213
Recycling	9,432
Refuse	13,102

5.2.7 Impact of Overtime Restrictions on Service

In February of 2024, a Citywide policy decision was put in place to no longer allow overtime due to budgetary restrictions. All Sanitation Drivers on 4-10's was directed to be back to the Yard by 4:30 PM. At the same time direction was given that all vehicles must be emptied before returning to the Yard. Empty vehicles have a much lower risk of catching fire due to combustible materials or improperly tossed materials such as lithium batteries that may cause fires. While both policies make sense from a budgetary and safety standpoint, consideration was not given to the fact that some routes over time have increased in customers or containers serviced since route balancing last occurred and may take more than ten hours to complete.

HDR considered the impact of these policy changes. According to **Figure 5-14,** this policy implementation did not result in an immediate increase in MPU cases, but the number of MPU cases continued to gradually increase over time. During interviews, HDR learned that this expectation to be back to the Yard at a certain time caused drivers to leave their routes incomplete so they could dispose of the material collected properly before the disposal facility closed for the day and meet the directive for no overtime, resulting in MPUs.

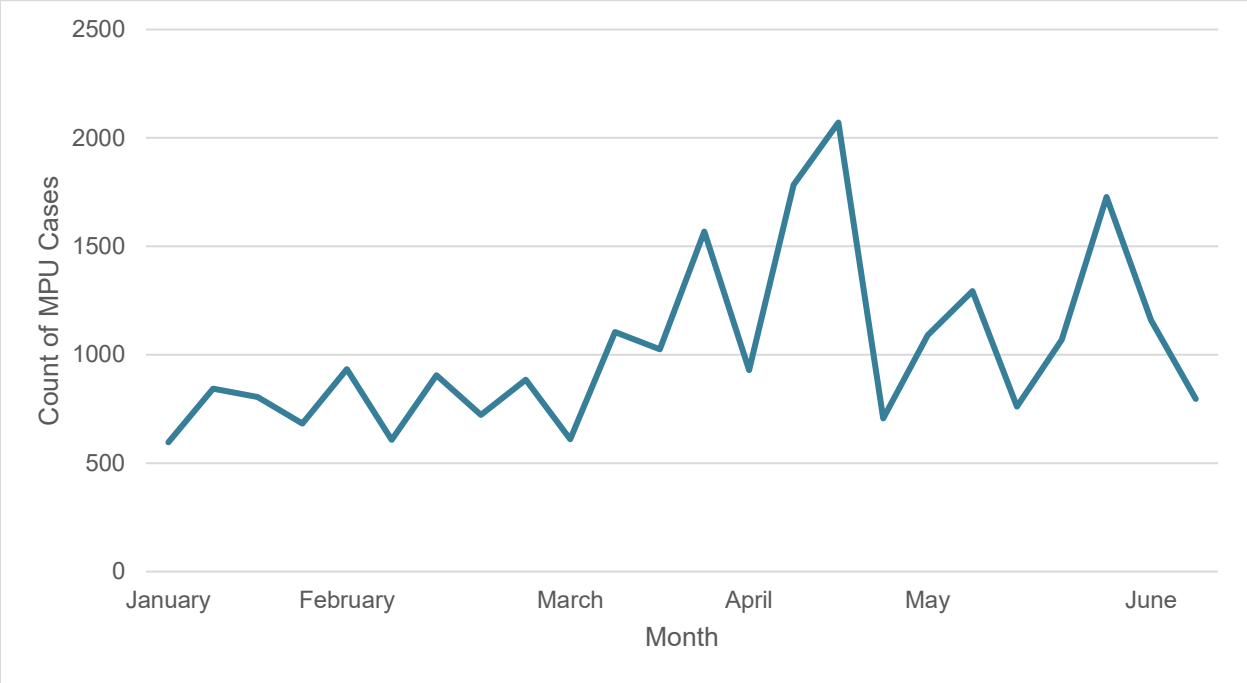

Figure 5-14 Missed Pickup Cases Opened on a Weekly Basis from January - June 2024

5.3 Recommendations

HDR's recommendations regarding MPUs can be summarized as the following:

- Standardize how and what data is collected and tracked for each MPU case.
- Adjust DGS Fleet Procurement Plan and maintenance procedures to increase the number of trucks available daily (discussed in **Section 9.1.1** Existing Fleet Description).
- Rebalance sections and routes.

- Conduct additional training for ESD employees who enter and resolve cases in Salesforce. It is critical that root cause analysis be completed for each MPU to ensure the issue is resolved regardless of if it is the responsibility of the driver or the customer.
- Require additional reporting around MPU cases. For example, HDR recommends that the data that is collected from the Get It Done cases include the details the customers provide in Step 3 around why they believe the stop may have been missed. These details could uncover potential trends and/or additional reasons why the container was missed.
- Continue the No Fault Policy. It adds value and provides an opportunity for the MPU to be resolved, the customer to be educated and preferrable, the issue will not happen again. Education of customers by the supervisors and also the Public Information Clerks will increase transparency around service and should decrease the number of MPUs over time.
- Ensure that every collection vehicle has an adequate amount of container tags. Tags were previously discussed in **Section 4.3** Communication with Customers. Container. Tags are the best way to educate customers in the moment and provide immediate feedback.
- Develop an SOP for Get It Done to clearly define how ESD staff should approach and respond to MPU cases in Salesforce. Some key points that the SOP should cover include:
    - Develop language that can be applied to different situations so consistent language is used no matter which ESD staff is working on the case.
    - Make all fields required so each case has data collected for each field.
    - Add a field for each update where ESD staff making the update can mark who it was completed by.
    - Modify the data exporting process so each case update is included in the report. (There were some MPU cases that had ten (10) responses between ESD and the public, but only one comment was provided in the data set.).

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6 Illegal Dumping

Clean SD is responsible for picking up items that are reported by residents as illegal dumping via the Get it Done website and app. Commonly reported illegally dumped items include general trash, appliances, electronics, mattresses, furniture, tires, recycling, homeless encampments, car parts, and wood. Based on high-level review of reported data, the most common items were general trash, furniture, wood (including wood debris and similar materials), mattresses, and appliances.

6.1 Analysis of Illegal Dumping Reports

ESD provided a list of one-year of illegal dumping reports. In a one-year period between August 20, 2023, and August 20, 2024, ESD received 64,883 reports of illegal dumping, for an average of 179 reports per day, shown in **Figure 6-1**. The average report is open for just over one day, meaning that crews are typically able to address concerns the same day or the next day. Approximately 75% of cases were closed the same day. Approximately 9% of reports were open for more than three days during this period.

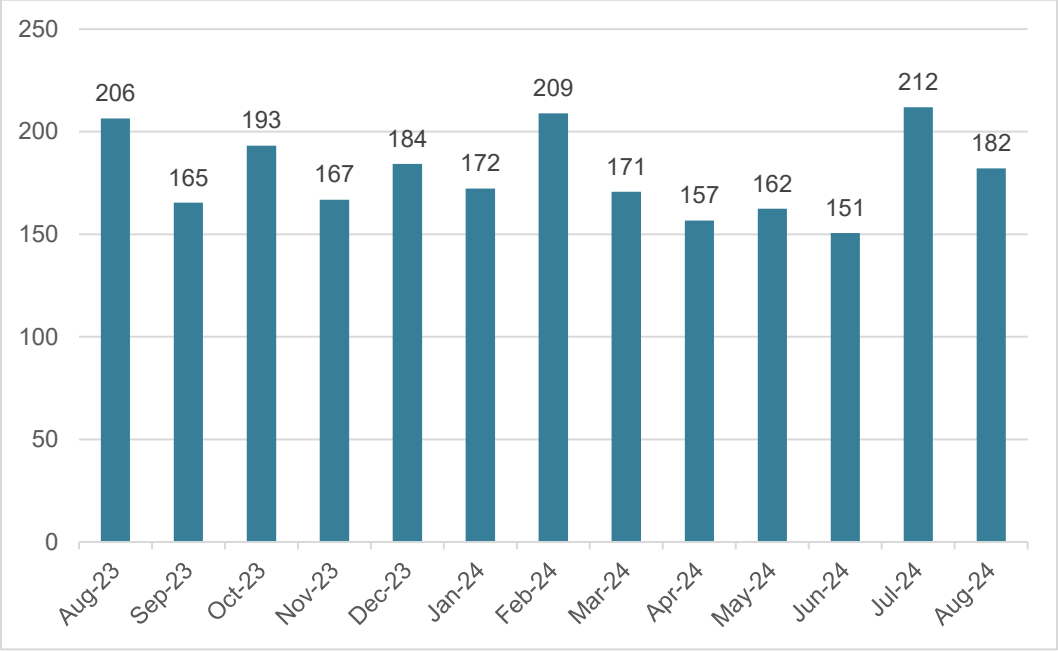

Figure 6-1 Average Number of Illegal Dumping Reports per Day

On average from September 2023 through July 2024, ESD addressed 5,361 reports of illegal dumping per month as shown in **Figure 6-2.** The data from the previous year shows a slight increase in reports in the winter months of February, March and April. Clean SD staff provided information that crew members assigned to illegal dumping are also reassigned to other tasks on occasion and specifically were required to assist with flood disaster clean up during February of 2024. This change in responsibilities and staffing may have resulted in more cases of illegal dumping and longer times for reports to be closed.

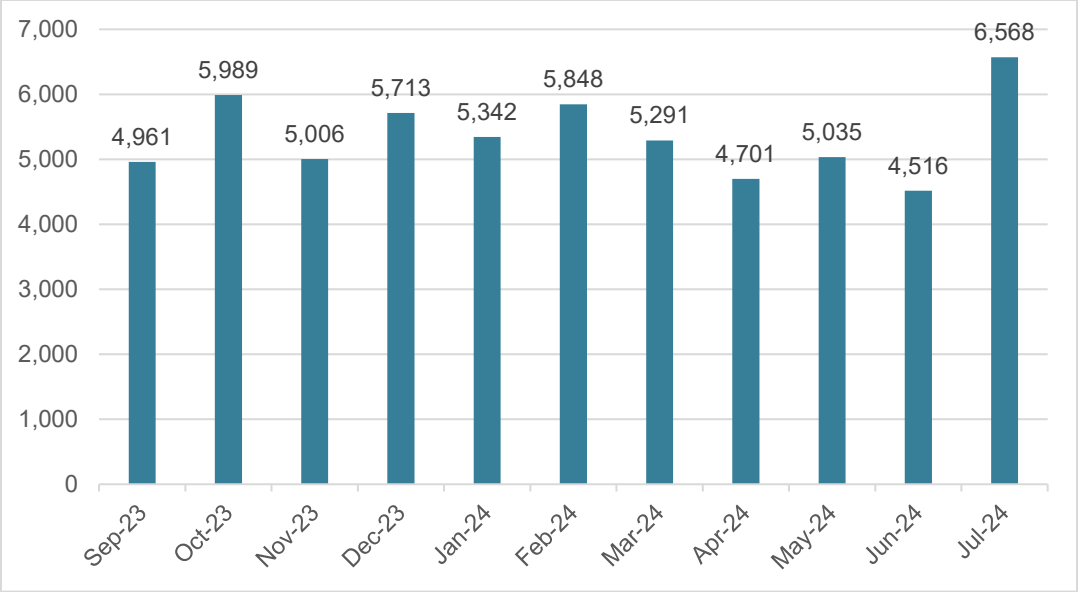

Figure 6-2 Total Illegal Dumping Pickups per Month

Residents can report illegal dumping through Get It Done. The same Get It Done system is also used by ESD staff to track where illegally dumped materials are located by Clean SD staff and to document collection. Of the 64,883 reports of illegal dumping between August 2023 and August 2024, 46,769 (72%) were reported by ESD staff and 18,114 (28%) were reported by residents via phone, email, mobile or web reports.

The locations of illegal dumping reports from August 2023 through August 2024 are shown in **Figure 6-3**. The heat map illustrates regions within the City that have more frequent illegal dumping reports within the year period. These hot spots indicate areas where illegal dumping is more common and require more staff time to collect materials. The City may consider offering additional community cleanup events in these specific regions to address the more frequent requests.

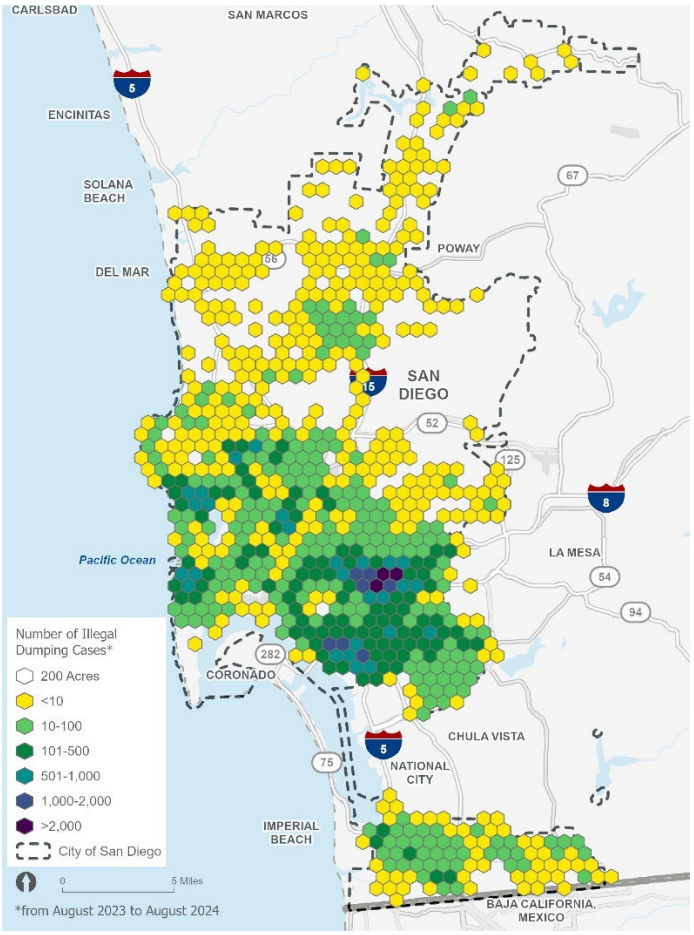

Figure 6-3 Reports of Illegal Dumping Locations Heat Map 2023-2024

The heat maps shown in **Figure 6-4** and **Figure 6-5** compare reports of illegal dumping locations in 2023 and 2024 separately. It is important to note that Figure 6-4 displays only 4.5 months of data while **Figure 6-5** displays 7.5. Similar areas of illegal dumping locations can be seen in both maps, with some slight differences in density of reports.

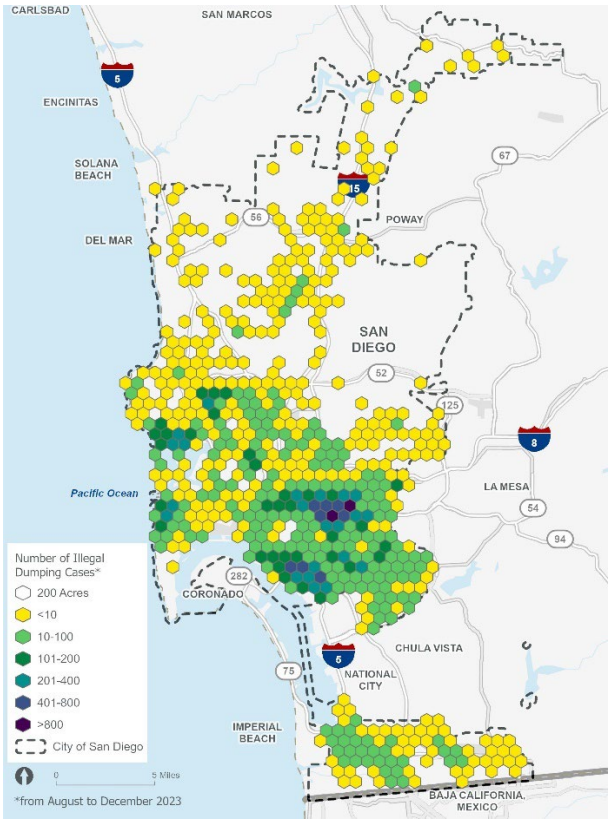

Figure 6-4 **Reports of Illegal Dumping Locations Heat Map 2023 Only**

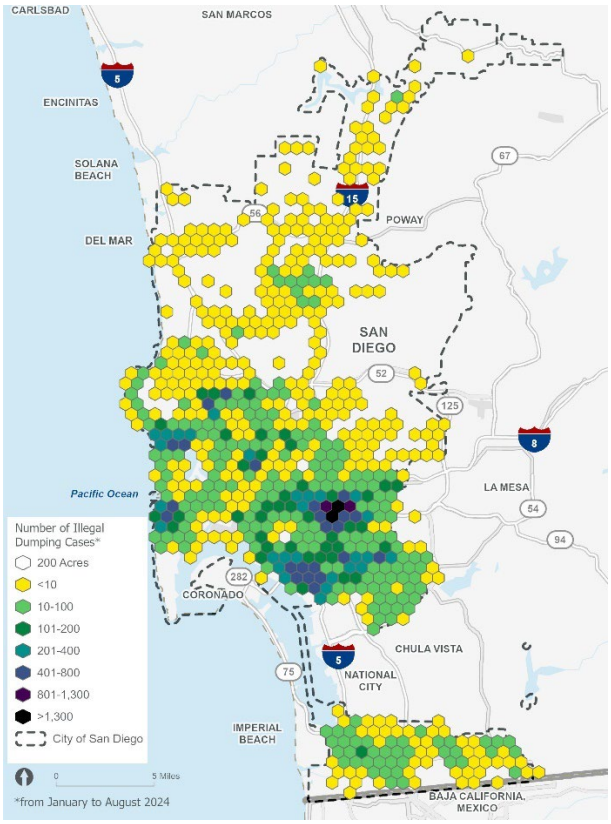

Figure 6-5 **Reports of Illegal Dumping Locations Heat Map 2024 Only**

Approximately 85% of reports are assigned to three case owners (L10, L20 or L40) for collection and management. These three case owners identified for the majority of the reports indicate the geographic location within the City and the associated crew that is responsible for servicing the reports. L40 has significantly more cases than the other two case owners during the reviewed period as shown in **Figure 6-6.**

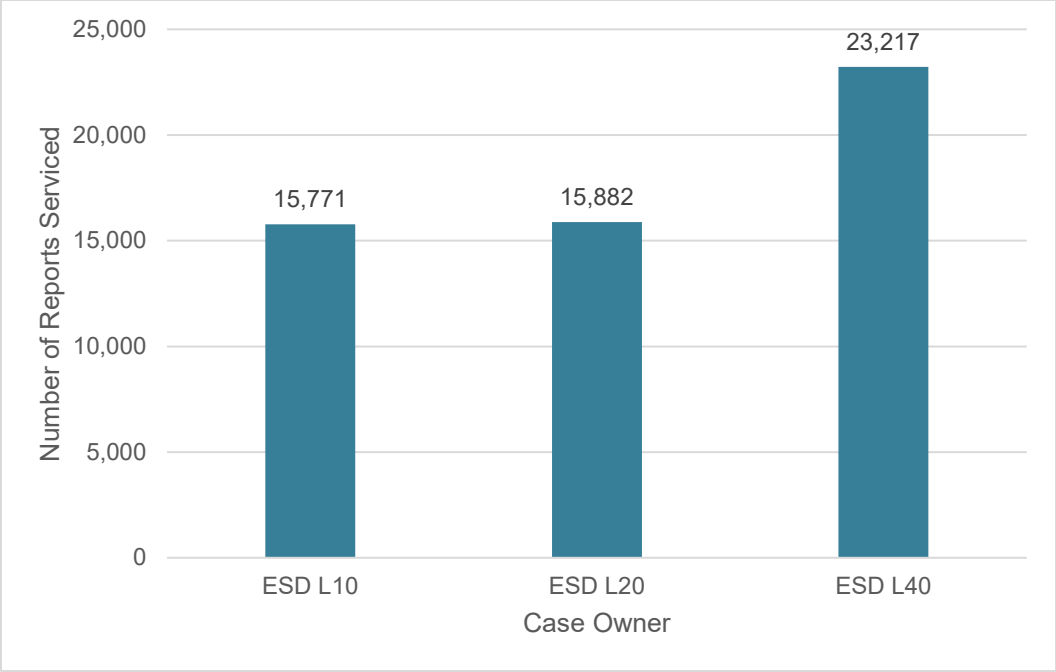

Figure 6-6 Number of Illegal Dumping Reports by Case Owner

Clean SD collects materials from both illegal dumping and curbside collection. Specific items are tracked by unit in both collection methods, including appliances, mattresses, box springs, and covered electronic waste (CEW). **Figure 6-7**, Clean SD Collected Materials illustrates the number of units of each item collected from either illegal dumping or community cleanup events during FY24. Additionally, 5,606 tires were collected in FY23 from both collection methods.

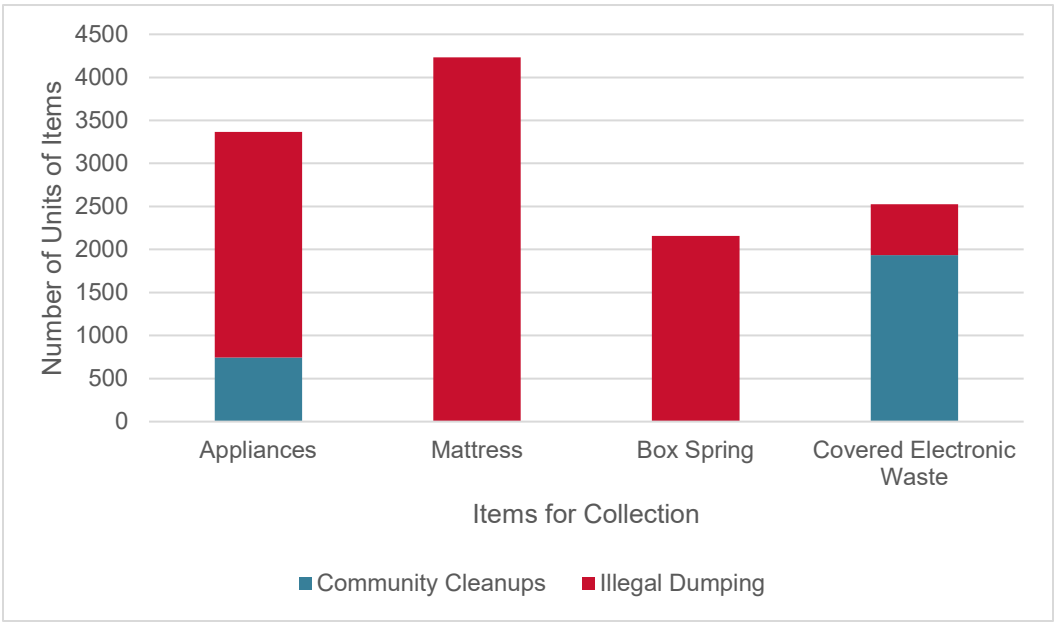

Figure 6-7 Clean SD Collected Materials

Collecting and disposing of illegally dumped materials adds expense and time to ESD operations. Collection of illegally dumped waste removal is completed reactively and

inefficiently. ESD staff collect illegal dumping materials as reported, and efficient routing for collection is rarely possible. Other municipal collection programs have implemented bulky waste collection as part of their offered services to encourage proper disposal of bulky materials and discourage illegal dumping. Prescheduled bulky item pickups allow for optimized routes based on requests and have the potential to create more efficient processes. Other programs have found success in reducing cases of illegal dumping by offering such programs and some have documented cost savings overall.

6.2 Community Cleanup Events

Clean SD provides curbside bulky waste collection via 99 community cleanup events annually, with 11 events (two major events and nine mini events) in each of the City's nine districts. The events are limited to a specific number of residents depending on location and range from 80 to 1,000 homes depending on the event. Clean SD services between 20,000 and 30,000 homes through community cleanup events each year. Recyclable materials collected from community cleanup events are separated and recycled when possible. As an example, at a major event in August 2024, Clean SD collected over 50 tons of trash and approximately 9.5 tons of recyclables. The total event cost was approximately $11,000 including staff overtime and trash disposal fees.

As part of the Measure B planning, ESD staff completed research on 61 other City programs for bulky waste pickups in San Diego, Los Angeles and Orange Counties. This research found that 51 of the 61 cities included in this research provided bulky collection curbside at least one time per year at no charge to customers, and ten cities charged for curbside collection of bulky items. Of the free programs, nine offered unlimited pickups each year (eight of which are located in Los Angeles County). Most cities, 48 of the 61, did not offer no- or low-cost passes for residents to landfills or transfer stations for drop off. Curbside service is considered the most equitable as some customers may not have access to transportation of bulky items or the means to pay additional costs for collection of bulky items.

6.3 Tracking and Reporting

ESD's internal software, Salesforce, provides tracking of customer service issues including missed pickup, illegal dumping, replace damaged cart, delayed collection, additional container, container left out and more. The dashboard allows ESD to track how many cases are reported daily, how long for resolution and change over time. Illegal dumping requires additional staff time for collection and disposal costs absorbed by ESD. When illegal dumping reports are sent to ESD, the location is based on where the request was made (ex. someone's home) rather than the location of the observed item (ex. in a park). ESD may consider updating the report process to ensure accurate locations are provided to increase efficiency and reduce the amount of time needed to resolve such cases. The Get It Done app does allow customers to specify the location of an item using their geolocation, entering a specific address and adding notes with additional details when they create a report to report an issue. Understanding common items collected from illegal dumping may provide insight into what items residents are unable or unwilling to manage properly, such as furniture, mattresses or hazardous waste which may be more inconvenient for residents to manage.

6.4 Recommendations

- Analyze reports of illegal dumping by case owner, which corresponds with a geographic location within the City. Utilize the case owner information to further improve routing efficiencies and service related to illegal dumping pickups each day. Improved efficiency and routing of collection may result in quicker service and less staff time needed to address illegal dumping.
- Add Additional community cleanup events. The community cleanup events have historically been well utilized and well received by residents, resulting in materials collected and ideally reducing illegal dumping. ESD may consider adding additional cleanup events to collect additional items and service more areas of the City, with a particular focus in areas where more frequent requests are made.
- Consider adding curbside pickup of bulky waste as part of Measure B changes. Curbside pickup of bulky waste has been shown to reduce illegal dumping reducing the cost of collections and burden of scheduling special pickups. ESD has previously considered offering bulky item pickup as an additional service to customers, which would come with an added cost for the collection and disposal of items.

HDR does not recommend any additional services as part of this Analysis but does recommend further exploration of bulky item pickups as part of the Cost of Service Study.

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7 People

The people who provide service to City Customers for trash, recycling and organics services are key to program success. Employees of ESD, DGS, Performance & Analytics, and Information Technology are all key people that allow Collection Services to successfully provide collection services. The HDR team reviewed the organizational structure including numerous roles and levels of oversight within the system. ESD has specific staff roles, schedules, union conditions and company culture detailed below.

7.1 Overview of ESD Organizational Structure

ESD's organizational structure includes a Director with support from two Assistant Directors. Collections, which is the focus of this document, reports up to one of the Assistant Directors. Clean SD and Support Services (includes Customer Services, Finance, Safety, Training, and Employee Development) report to the other Assistant Director. The Deputy Director for Collection Services carries the responsibilities for overseeing the day-to-day operations. See **Appendix B** for the complete organizational chart. **Figure 7-1** shows an ESD driver providing collection service.

Figure 7-1 An ESD Driver Providing Collection Service

The Deputy Director of Collection Services has three vacant Program Manager (PM) positions reporting to it including an Operations PM, Administration PM, and a Customer Eligibility, Customer, and Container PM. The Operations PM has four District Refuse Collection Supervisors (Districts) reporting up to that role. The Districts' responsibilities include overseeing the Area Refuse Collection Supervisors (Supervisors), coordinating with DGS Fleet on the availability of trucks for service, assigning drivers to available trucks, and determining which routes, if any, will need to be "delayed" or "downed" due to lack of resources. A delayed route is a route that will be serviced on another day. A downed route is not serviced by a specific truck rather it is picked up on the scheduled pickup date by multiple trucks.

The Districts have 13 Supervisor positions reporting to them whose main responsibilities include overseeing the drivers and ensuring routes are completed on schedule, enforcing driver safety, training, discipline, supporting and conducting daily field observations of drivers, and managing customer complaints coming from Salesforce, Customer Service, or direct phone calls. The Supervisors are given daily direction from the Districts on which drivers and trucks they can use on the routes. The Supervisors have the authority to make changes and assign drivers to routes as they see fit. The 13 Supervisors have as much as 36 drivers reporting to one Supervisor and as few as 9 drivers reporting to one Supervisor.

The drivers have two designated positions with Sanitation Driver 2 being entry level, followed by Sanitation Driver 3. The department has the option to underfill Sanitation Driver 2 with Sanitation Driver Trainee, or Sanitation Driver 1. Common across the City is a procedure to underfill positions. “Underfilling” has the characteristics of an employee being in a role one level below but performing the full range of duties associated with the higher role. After a period of up to 12 months of adequate performance of underfilling a role, the employee is considered eligible and qualified for the higher role. That employee can that move into the higher role as a career advancement. Sanitation Driver 1 at Collection Services is utilized to underfill Sanitation Driver 2.

There are 218 total driver positions including, 11 Sanitation Driver 3 positions and the remainder in Collection Services are Sanitation Driver 2 positions. The drivers’ principal responsibilities are to drive the trucks to pick up the curbside trash and deliver the trash to the landfill for disposal. The drivers are responsible for conducting a pre and post trip report on their vehicle and providing the paperwork to the supervisor. The drivers are assigned a route for their pickups that day by a Supervisor. During their route if there is a problem with the customer’s container the driver is expected to tag the container and flag what is the issue.

Reporting to the Administration PM is a Program Coordinator role that oversees administrative staff and an Associate Management Analyst. The responsibilities of this role include payroll specialists, cashiers for the container sales, timecard support, and additional duties. The Associate Management Analyst role creates route maps in GIS and performs ad hoc data analysis for leadership.

DGS Fleet provides the vehicle purchases, maintenance, and repair services for ESD services. DGS Fleet is a separate department within the City that provides fleet services across all City Departments and not just ESD. The DGS Fleet team that services ESD fleet operates from the Fleet Repair Facility at the same location Collection Services is based.

7.2 Review of the Organizational Structure

The ESD organization is rational, top-down structure that is common amongst many municipal governments. While DGS Fleet is in a separate department that does not report to ESD, this is not uncommon for municipal governments to centralize fleet services. The structure in itself, is reasonable. The following are areas of recommended improvements:

7.2.1 Additional Positions

The staff at ESD are hardworking, dedicated employees providing an essential service to the City, operating large complex vehicles on City streets. They are under-resourced both in terms of staffing levels and the number of vehicles – the two ingredients that are key to completing their mission. The vacant positions need to be filled expeditiously. The following positions are recommended to be filled or added:

Human Resources Coordinator: HDR is recommending an onsite Human Resources Coordinator (HRC) to service the sizable number of employees at the Miramar facility. This role is proposed to report to the vacant Deputy Director role under Support Services described above. The purpose of the HRC role is to support and be available for the employees who work at Miramar. It was noted that Collection Services staff lacked support or were uninformed of processes such as annual reviews, benefits, and training. **Figure 7-2** shows this recommended role.

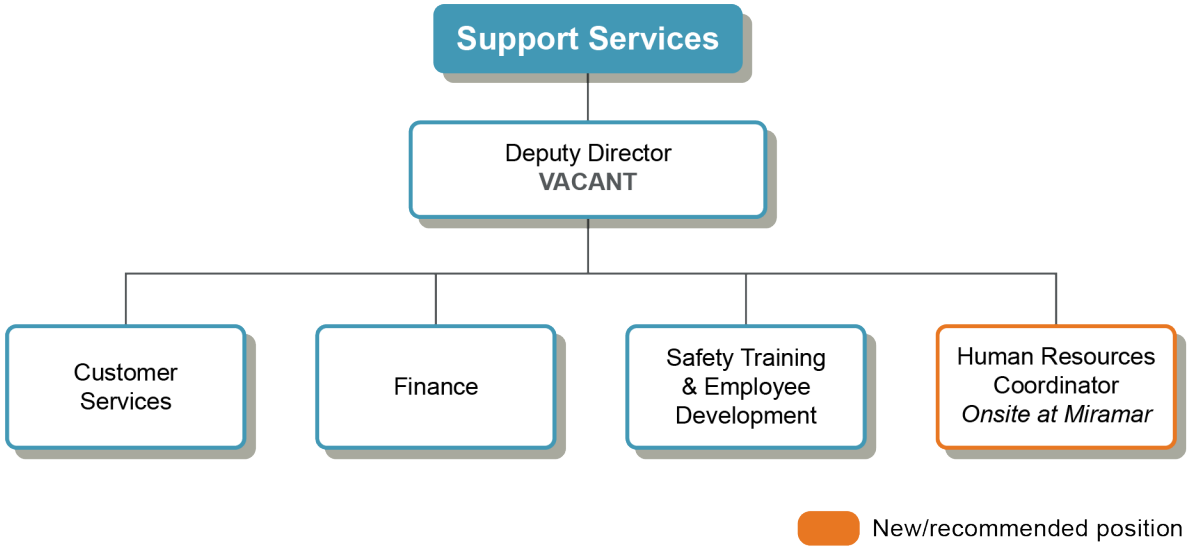

Figure 7-2 Human Resources Coordinator Role

Sanitation Driver 3: The Sanitation Driver 3 function today is not performing the duties as originally intended. The intention of the Sanitation Driver 3 role is to fulfill the responsibilities of mentoring, training, and generally filling in for the Supervisors while they are off duty. The Supervisors have a significant workload without the assistance of trained Sanitation Driver 3. HDR recommends that each supervisor have three Sanitation Driver 3 roles in place that can perform the duties described in the union contract. Today there are approximately 11 Sanitation Driver 3's. If each Supervisor overseeing routes had three Sanitation Driver 3's, then the total would come to 36 Sanitation Driver 3's. **Figure 7-3** shows this recommended role.

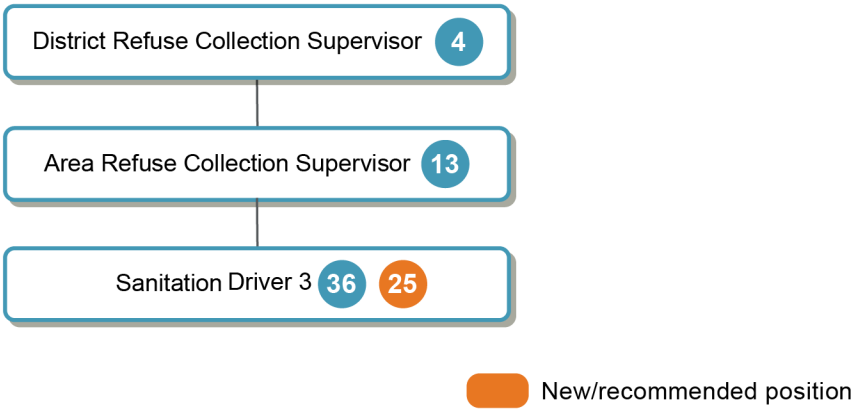

Figure 7-3 Sanitation Driver 3 Role

Automotive Engineer: In the past, Collection Services had an Automotive Engineer position that acted as liaison between ESD and DGS Fleet. Vehicles are an essential input for the service and ESD should have a representative who is knowledgeable of vehicle maintenance and operations representing their interests. HDR recommends returning to the practice of having this position in place. The responsibilities will include working with DGS Fleet to ensure there are enough vehicles operable and available to complete the daily routes, ensuring vehicles have their preventative maintenance completed on schedule, planning with DGS Fleet the retirements of vehicles and the purchasing of new vehicles, and reporting on a daily basis on vehicle availability to the Districts and ESD management. This role is proposed to report to the Program Coordinator. **Figure 7-4** shows this recommended role.

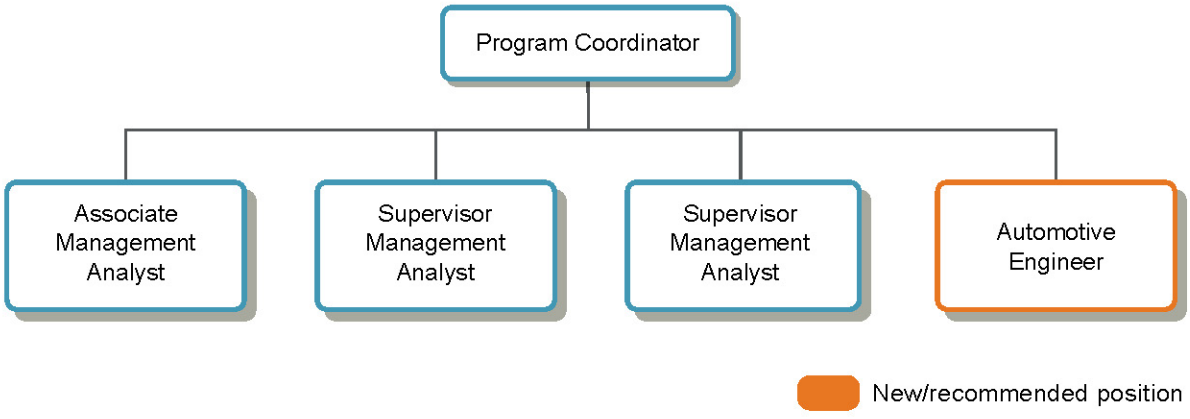

Figure 7-4 Automotive Engineer Role

Communications Coordinator: As Measure B is implemented there will be a greater demand on Collection Services to answer customer issues. It is recommended that a role of Communications Coordinator be created to support external and internal processes. The role would include responsibilities for triaging requests from the mayor's office, setting policies for Collection Services related to branding, stakeholder engagement, and written communications to customers such as bill inserts and web presence. Internally, the role could also be charged

with creating content and distributing a department newsletter for employees that includes employee news, awards, recognition, and a calendar of events. This role is proposed to report to the Deputy Director for Collection Services.

Performance Management Program Manager: This role would be responsible for overseeing the development of a comprehensive data plan for Collection Services reporting to the Deputy Director. The data plan would aim to ensure that systems utilized by Collection Services provide the data needed for performance management. The data plan will catalog and map the sources of all data needs and produce a dashboard for management to review on a weekly basis.

Organizational Effectiveness Specialist: This role would be responsible for conducting process improvement projects, revising or developing standard operating procedures, and process mapping. This role would report to the Performance Management Program Manager and generally support process improvement.

Data and Analytics Program Coordinator: This role would be responsible for carrying out the analytical efforts around data managed by the Performance Management Program Manager.

Safety Officer and Employee Development: Noting the importance of a safety culture as described in this report, an onsite presence of a safety officer to assist in training and reporting is recommended. The job performed by Collections comes with inherent dangers from operating heavy machinery. The safety officer is proposed to report to the existing Safety, Training, Employee Development Program Manager, but this new position should be onsite at Miramar. The onsite presence will support the culture of safety, and the position will be available to review safety incidents, questions, needs, and concerns.

Second Road Mechanic: In interviews it was noted that because of the current state of the vehicles, a second road mechanic per shift would be helpful to reduce the time vehicles are not available due to a mechanical issue while out on routes. Since the geography of the routes is quite spread out, wait times were sometimes noted as needing hours to be put back into service. Today there are two road mechanics on the first shift and one road mechanic on the second shift. It is recommended to add one additional road mechanic so that there are two on the second shift. An additional vehicle for this added road mechanic is also recommended.

Code Compliance Officer: The Collections team through interviews and observations noted the need for a Code Compliance Officer to assist with the field operations. This role will be dedicated to responding and investigating complaints, inspecting and enforcing City codes pertaining to solid waste, scattered litter, illegal dumping, and other ordinances. The Code Compliance Officer is recommended to report within Clean SD as there are already Code Compliance Officers organizationally housed there. It is recommended that this Code Compliance Officer be officed and physically located onsite at the Miramar facility with the Collection Services Team to facilitate better workflow with the Collections team.

Two Geographic Information Systems Analysts: Making and updating the route maps is a key internal service needed to efficiently and effectively complete the routes. This process is currently understaffed, and it is recommended that two GIS specialists be added to ensure that

route maps are continually updated. This role is proposed to report to the Management Analyst in Collection Services under the Program Coordinator.

Payroll Specialist: It was noted in interviews that the drivers desired to have a payroll specialist onsite and present during the hours before or after their shift so that they could discuss any issues with paychecks. This would not only serve the purpose of facilitating resolution of paycheck issues, but also help raise morale with drivers knowing that their needs are addressed. For clarity, this recommendation is for existing staff to make hours during the day available to be onsite. No additional position is recommended.

7.2.2 Define Clear Roles and Responsibilities and Training

Throughout the interview process, it was noted that there was a lack of formalized training up and down the ranks at Collections. There is a sense that there is not enough time to perform the training because of being resource-constrained and needing to perform their primary duties. The additional positions and staffing levels needed described in this report should alleviate the time constraints for training. Tied closely to training is the fundamental need to understand what the roles and responsibilities are for each role of Driver, Supervisor, and District. The job descriptions of each position at Collection Services are kept in what are referred to as Performance Plans. These Performance Plans are reviewed with employees at the time of hire and at annual performance reviews. It is recommended that these Performance Plans be reviewed and updated to reference the latest skills required and technologies used in operations at ESD. The outputs in terms of reports, data produced and managed, and key interactions need to be documented. There has been a lack of accountability in enforcing duties of staff seemingly due to the heavy workload of all involved. The increased amount of staffing recommended in this report should assist in alleviating the workload and encourage supervisors and management to enforce duties. Supervisors should facilitate trainings as needed for staff.

7.2.3 Develop Succession Plans

Succession plans provide clear direction on career advancements and act as a retention tool, maintains organizational performance, provides clarity to the staff and organization, reduces transition costs while averting a crisis when a key employee leaves. Having succession plans in place allows for a gradual transition. HDR recommends having succession plans in place from the Deputy Director role down to the Supervisors. After job descriptions are completed, this is another effort that the onsite HR coordinator can lead and work with management to complete. A template can be developed so that the HR Coordinator can provide the training to management and supervisors and update the plan once per year.

7.2.4 Update Standard Operating Procedures

There is a lack of documented standard operating procedures particularly around key processes such as managing customer complaints and/or MPUs, the steps drivers should take when preparing for their route in the morning, drivers' procedures to take while on route, and drivers' procedures when closing out the day. The ARCS have an outdated manual that describes certain responsibilities but needs to be updated and their key processes need to be documented

into a standard operating procedure. HDR recommends that the Performance Management role lead this effort with support from the HR Coordinator.

7.3 Staff Levels

Understanding current staff levels can provide insight on how best to collect and deliver service within the City for the collection of trash, recycling, and organic waste streams. Ensuring that staffing levels can meet ESD's needs is key for efficient and timely collections, as well as improving employee satisfaction in work. Adding the positions described above will help alleviate the pressures the management team is currently experiencing from being resourced constrained.

7.3.1 Driver Distribution

Additionally, right sizing the sections will assist with the day to day management of drivers in the field. The number of drivers per Supervisor ranges from 9 to 36 drivers. HDR recommends that the Supervisors each manage approximately the same number of drivers to even out the workload. There are 12 Supervisors overseeing the routes with 218 drivers. If evenly distributed that would put 18 or 19 drivers per section. Evenly distributing the drivers in addition to having three fully trained Sanitation Driver 3's will assist in managing routes and drivers. An additional Supervisor would bring the ratio down to 16 or 17 drivers per Supervisor warrants consideration.

7.3.2 Route Bidding

Seniority is highly valued in ESD culture and supported by the Union agreement specific to 4-10's[52] Typically, drivers, ARCS, and Districts who have worked at ESD the longest are allowed to pick which day they want off first. Drivers, ARCS, and Districts can pick which day they want off during the route bidding process that is also supported by the Union agreements. Further discussion of 4-10's is in **Section 7.4** Staff Schedules.

Route Bidding is part of the culture of ESD. Route bidding is a process where routes are open and available are posted for drivers to "bid" on. Route bidding is a process where drivers apply for specific routes and may move into other Sections with potentially different ARCS and/or Districts as a result. The Route bidding process is laid out in an Agreement with Local 127.[53]

During the interview process at Collection Services, it was identified that the route bidding process is not scheduled on a regular basis. Reasons provided were the COVID pandemic, implementation of SB1383, and Sanitation Driver (Commercial Driver License candidate) shortages. It was stated that route bidding had not been comprehensively completed since

[52] Agreement between the City of San Diego and American Federation of State, County and Municipal Employees Association – AFSCME Local 127 (Local 127) Regarding the 4-10's-5 Schedule at Environmental Services Department – (ESD) Collection Services Division as executed on March 25, 2010.

[53] Agreement between the City of San Diego (City) and American Federation of State, County and Municipal Employees Association – AFSCME Local 127 (L127) Regarding the Collection Services Division Open Route Bidding Process as executed on May 7, 2012.

2018. The lack of route bidding was identified as a cause of dissatisfaction for Sanitation Drivers.

Route bidding provides Sanitation Drivers with opportunities for the following: (i) to move to different types of equipment, (ii) only drivers assigned routes are provided with an assigned truck, and (iii) route bidding allows drivers with lower seniority to move from a five day per week schedule to 4-10's. It is important to note that all Sanitation Drivers are hired with the expectation that they will initially work five (5) eight (8) hour days, Monday through Friday. On June 14, 2024, while the HDR team was on site, routes were posted, and bidding was occurring for a series of open ASL and RL routes.

7.4 Staff Schedules

Evaluating staff schedules can help improve operations and increase efficiency in Collection Services. As noted in driver performance and staffing performance metrics, off-route time can include a significant portion of a Sanitation Driver's shift and can include travel time, unloading, refueling, and other tasks. Industry standards for collection services staff is four shifts per week of ten hours per day (4-10s) rather than five shifts per week of eight hours per day (5-8's). By implementing longer shifts, off-route time can be decreased, and staff time can be more efficiently used for collections and provide consistent services to customers during the longer shifts. ESD already implemented 4-10 shifts for this reason and should continue to prioritize such schedules for Collection Services. Other staffing schedules may need to be modified to accommodate Collection Services staff working 4-10 shifts, including supervisors and ARCS. The management staff is critical for oversight and support, but responsible use of management staff is important too from a budgetary perspective. ESD may benefit from shared responsibilities of management staff during a typical 10-hour shift to allow for work sharing. Further discussion on schedules in relationship to Sections is in **Section 10.2** Route Scheduling.

Schedules for staff unable to perform usual tasks, due to injury for example, should be evaluated and planned to maximize staff resources. Identifying tasks and special projects for injured staff to complete may benefit ESD, particularly for non-urgent tasks. During field observations, it was noted that injured staff are not well utilized and could be used more efficiently when unable to perform their usual tasks of collections and driving.

7.5 Union

Employees of ESD are represented by two separate unions: Local 127, American Federation of State, County and Municipal Employees, AFL-CIO (Local 127)[54] and the San Diego Municipal Employees Association (MEA).[55]

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[54] The City of San Diego and Local 127, American Federation of State, County and Municipal Employees, AFL-CIO. Memorandum of Understanding FY2024-2026, July 1, 2023 https://www.sandiego.gov/sites/default/files/l127i-mou-fy24-26.pdf, dl on 5/7/2024.

[55] The City of San Diego and San Diego Municipal employees Association. Memorandum of Understanding FY2024-2026, July 1, 2023. https://www.sandiego.gov/sites/default/files/mea-mou-fy24-26.pdf, dl on 8/28/2024.

Local 127 primarily represents employees that are in maintenance, labor, skilled trade, and equipment operator units. Local 127 represents employees of ESD in the following roles: Sanitation Driver Trainee, Sanitation Driver I, Sanitation Driver II, Sanitation Driver III, Utility Worker I, and Utility Worker II. Local 127 represents employees of DGS Fleet in the following roles: Assistant Fleet Technician, Fleet Technician, Master Fleet Technician, Fleet Team Leader, and Welder.

MEA represents employees that are in the administrative and field support, technical, professional, and supervisory units. MEA represents employees of ESD in the following roles: Administrative Aide, Account Clerk, Area Refuse Collection Supervisor, Assistant Management Analyst, Associate Management Analyst, Cashier, Customer Service Representative, Customer Services Supervisor, Dispatcher I, Dispatcher II, District Refuse Collection Supervisor, Payroll Specialist II, Public Works Supervisor, and Senior Management Analyst,. MEA represents employees of DGS Fleet in the following roles: Auto Parts Stock Clerk, Storekeeper, Fleet Parts Buyer, Fleet Repair Supervisor.

Approximately 92% of the 251 positions in Collection Services are represented by Local 127. Local 127 relationships with management seemed cordial and per Collection Services staff regular monthly meetings are occurring with Local 127 and management staff. Stewards of Local 127 are relatively new to their roles as stewards.

7.6 Company Culture

Company culture can provide benefits to organizations or negatively impact the work environment. ESD has a history of tenure staff and employees who have worked at the City for many years, speaking to the positive company culture and job satisfaction of many staff. Low turnover rates indicate a high level of job satisfaction and indicate that staff are pleased with their roles. Interviews with staff identified opportunities to improve company culture to benefit individual staff, and also the organization as a whole. HDR determined that increased engagement in employee recognition may improve the culture of ESD staff. Employees perform difficult tasks and provide critical services to the City’s customers. Providing recognition and public appreciation to staff can help acknowledge the benefits they provide and the challenges that the job entails.

ESD’s driver incentive program allows drivers to end their shifts sooner if completed before 4:30 PM. The incentive is intended to promote efficient and timely route completion to reward staff by allowing them to leave earlier when the work is complete and still receive pay for a full 10-hour shift. This model for Collections staff is common in the waste industry and often results in shorter days and more satisfied employees. When ESD has driver shortages or additional routes that must be completed in addition to a driver’s usual route, the incentive is less likely for drivers. Reducing the likelihood of incentive time off can negatively impact drivers and reduce their satisfaction with work hours and expectations. Interviews found that employees were frustrated by extra routes and less frequent incentive time off as a result of current operational challenges within the department.

Creating individual development plans for staff may also help personalize growth opportunities and identify key learnings for staff. Given the number of employees and similar roles, personalizing development plans has the potential to help individuals see themselves as a critical contribution to the larger system and identify their own skills that can benefit ESD.

Collective bargaining through the union allows ESD employees to negotiate terms for employment. This system for negotiations may benefit or negatively impact company cultures, particularly between union and nonunion employees. Acknowledging this challenge could help all employees better under the role of collective bargaining and improve perceptions of the union.

There exist several mechanisms in place for employees to receive recognition. Feedback from staff indicated that the efforts were either inconsistent or they were not aware of them. HDR recommends that these mechanisms become the responsibility of the Performance Management role with support from the HR Coordinator and Communications Coordinator. The goal will be to raise the visibility and participation in these activities.

HDR recommends an annual employee survey be conducted, analyzed, and results communicated to staff. The communications should indicate which areas the organization is performing well and other areas of improvement. Steps to support the areas of improvement should be articulated to communicate that the feedback was heard and being acted upon.

7.7 Recommendations

In summary, HDR's recommendations for improving operational efficiency regarding People include the following:

- Add the following positions:
  - Human Resources Coordinator (Program Manager)
  - Automotive Engineer
  - Communications Coordinator (Program Manager)
  - Performance Management (Program Manager)
  - Organization Effectiveness Specialist 3
  - Performance Management Program Coordinator
  - Safety Officer and Employee Development
  - Additional Road Mechanic (second shift)
  - Code Compliance Officer
  - Two Geographic Information Systems Analysts
  - Supervisor
  - Add 25 more drivers to Sanitation Driver 3 position
- Ensure onsite presence during the week for a Payroll Specialist to be available for drivers.

- Document or update the following:
  - Update Job Descriptions (Performance Plans) with technology skills required, ensure Performance Plans document outputs in terms of reports and data
  - Succession Plans
  - Standard Operating Procedures
- Reinvigorate employee recognition and annual employee surveys.
- Anticipated estimated cost considerations for additional staff are identified in **Table 7-1.**

Table 7-1 Additional Recommended Positions Salary and Fringe Considerations

Additional Recommended Positions	Average Salary and Fringe (FY25)
Human Resources Coordinator (Program Manager)	$252,469
Automotive Engineer	$211,831
Communications Coordinator (Program Manager)	$252,469
Performance Management (Program Manager)	$220,331
Organization Effectiveness Specialist 3	$136,556
Performance Management Program Coordinator	$220,331
Safety Officer and Employee Development	$143,877
Additional Road Mechanic (second shift)	$130,068
Code Compliance Officer	$106,705
Two Geographic Information Systems Analysts	$281,748
Supervisor	$204,710
25 Sanitation Driver 3's	$5,002,625
Total	$6,970,652

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8 Facilities

Several of HDR's Facility Design Team experts visited the Miramar Yard on June 20, 2024, to observe the office building, fleet maintenance building, parking, and general flow of Collections. A series of interviews occurred on that day surrounding the facilities, parking, and usage of the facility. A tour and review of the office building, fleet maintenance repair building and yard, including carts storage was conducted. Additional interviews occurred regarding the uses and information available in the offices. Through an interview process, HDR determined the building was originally constructed in the late 1980's by Waste Management who used the facilities until 1999. The City purchased the property and buildings at that time and proceeded to occupy the space as a central yard. Prior to the purchase of Miramar, Collection Services was located in multiple locations around the City. It was determined through interviews and observations that the Miramar buildings had largely been untouched since Waste Management sold the property in 1999. The yard has undergone several iterations for parking, storage, and fueling stations. See Appendix C for a Map of Collection Services at 8353 Miramar Place, San Diego.

8.1 Office Building and Yard

HDR began with an observation of the Miramar office building and a tour of the Miramar Yard. The following was observed:

- The Miramar office building lacks an adequate training room. Staff at Miramar lack adequate computer lab access.
- Insufficient office space exists for the current needs of ESD and DGS Fleet.
- The Miramar yard lacks the necessary stormwater controls for managing stormwater on site, particularly regarding the carts collecting stormwater on site. The lack of covered storage facilities results in additional stormwater collected in carts that must be managed.
- The existing steam bay has one hot water pressure washer wand and reel, and an adjacent uncovered area where the pressure washer and chemical tanks are stored. Currently the hot water pressure washer is not operational.

The general organization and storage at the Miramar Yard and buildings were observed. The Miramar Yard did not have items stored in a logical or planned way, resulting in inefficient use of space and opportunities to improve layout and storage to maximize available space. This includes storage of pamphlets and small organics buckets in wash bays subject to the elements and damage.

Figure 8-1 shows the outdoor breakroom at the facility. The lack of adequate indoor training or meeting space has resulted in an outdoor breakroom to allow for enough space for all staff to gather. While the majority of the location is covered, it is still exposed to weather elements. Meetings and gatherings are subject to being overheard by others or being interrupted by noise.

General housekeeping in the outdoor breakroom area was a concern. Cart storage surrounded the outdoor breakroom, including tipped over carts. The ice machine and water faucets had

debris inside and around them and did not appear to have been cleaned or serviced in quite some time.

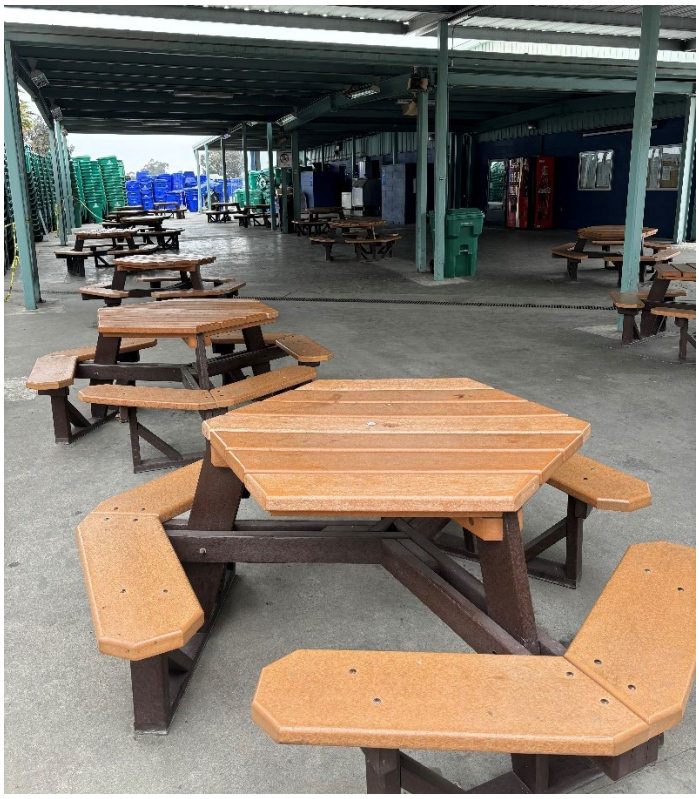

Figure 8-1 Miramar Yard Outdoor Breakroom and Gathering Space

Observation on site found that fuel lanes, including diesel, unleaded, and CNG had inadequate quantities and placement for efficient fueling. The queuing of vehicles waiting to fuel for diesel, unleaded, and fast fill CNG conflicted with vehicle access, pedestrian traffic, and the exit of the maintenance building. Opportunities exist to improve the vehicle flow on site for efficiency and safety.

8.2 Cart Storage and Maintenance

Cart storage at the Miramar Yard was observed to be organized, but occupies a large, uncovered area of the site. The recommendation for improvement is to relocate carts to an off-site storage area. The off-site storage area should have space to store 10% of the 300,000 trash carts in the field (approximately 30,000 carts). The approximate space needed for cart storage, assuming four carts are vertically stacked, is approximately 7.5 square feet for each stack. An enclosed space of approximately 26,250 square feet (includes 40% circulation factor) or a covered space of approximately 21,560 square feet (includes 15% circulation factor) would be needed for adequate storage. Uncovered cart storage is not recommended due to water from rain events getting into the carts and the potential for increased maintenance and cleaning

requirements for carts exposed to outdoor conditions. The order of magnitude cost is $13,000,000 - $16,000,000[56].

When cart storage is relocated to a covered or enclosed area off site, there will be a need for a cart repair shop or similar facility at the identified new location. The purpose of this shop will be to assemble wheel support bars, wheels, and lids for the trash, recycling, and organics carts to replace carts under warranty brought in from field operations. The cart repair shop is recommended to be approximately 1,600 square feet and have double door access to the exterior, be furnished with heavy duty steel top work benches, vises, clamps, and storage bins for parts, and be located adjacent to the cart storage area for efficiency. The order of magnitude cost is $1,000,000.[57]

8.3 Fleet Repair Facility

8.3.1 Existing Conditions

Collection Services is responsible for maintenance and updates to the for the Fleet Repair Facility where DGS Fleet repairs Collection Services' vehicles.

During the tour of the existing Fleet Repair Facility, it was observed that there is a total of 17 bays within the building. The building has a set of two operational mobile column lifts, and two surface-mounted platform lifts. Additionally, two post in-ground lifts of the four existing vehicle lifts are not operational. **Figure 8-2** shows the platform lift in the maintenance building. Review of current operations found that the existing maintenance building is at maximum capacity, servicing a fleet of 172 solid waste vehicles (excluding Active Seized and Holdover vehicles). Definitions for active seized and holder collection vehicles can be found in **Section 9.1.1** Existing Fleet Description. These vehicles are serviced in two shifts, with one PM bay and 13 repair bays.

Based on site observations and feedback from mechanics, the portable column lifts occasionally present connectivity issues that cause lifts to rise at irregular rates, or cause one of the four lifts to not function, resulting in delays in repair and an increase in safety concerns. Both existing in-ground lifts and one of the two platform lifts are red-tagged as nonoperational, requiring an increased dependence on the portable column lifts and jack stands, which results in an increase in the time required to start and complete repairs. The non-operational in-ground lifts and platform lifts are estimated to be, at a minimum, 20 years old.

The on-site observation team also observed the welding area. The equipment overall was outdated, and the area appeared cluttered with other materials stored in the same area. During interviews, the welder commented specifically on needing better equipment and quarters to properly weld the vehicles. The on-site observation team recommends the welding shop be expanded with an additional fabrication shop, to be located adjacent to the welding bay. Appropriate equipment for the welding shop should be provided such as a welding table, arc

[56] The estimated costs for the development of a cart storage area are based on $597/square foot.
[57] The estimated costs for the development of a cart repair shop are estimated based on $597/square foot.

welder, MIG and TIG welders, plasma cutter, vertical and horizontal band saws, drill press, buffer/grinder with pedestal, storage areas for welding materials with cabinets, steel storage racks, bins and a bridge crane coverage over both shop area and welding bays.

Figure 8-2 Platform Lift for Preventative Maintenance of Vehicles

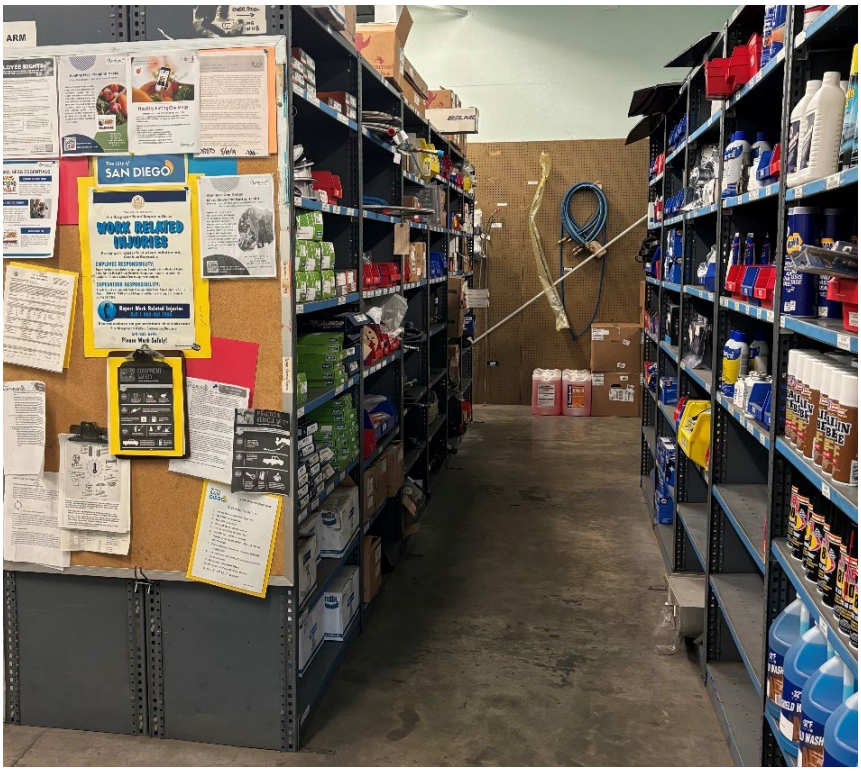

Figure 8-3 Secured Parts Storeroom in the Maintenance Building

Figure 8-3 shows the secured parts room storage in the maintenance building. Access to parts and timeliness of receiving parts for repairs has been an ongoing concern for DGS Fleet staff. During review of work orders and interviews, the on-site team observed that delays in receiving

needed parts was a common reason for vehicles not being repaired and remaining on Red-Tag. Many of the parts that have longer delays in availability are specialty parts for solid waste vehicles. A common way to reduce this delay is to order parts before they are needed in adequate quantities to be sure they are always available. In order to accommodate the need to stock additional parts, there would be a need to expand the parts storeroom.

During on-site observations, the team observed the existing fluids/compressor room. The room was cramped and appeared undersized for the quantity of fluid tanks and compressors currently needed for operations. Safety and maintenance issues can occur when there are inadequate operational clearances for maintenance access and operation of equipment. Fluids and compressor rooms are typically loud and dustier environments. The fluids and compressor room would be better located acoustically and physically separate from other areas to prevent noise migration, dirt, and fumes. The room appeared undersized for access of new and used bulk fluid tanks, compressors, and refrigerated dryers. Access to the room is located via the interior, whereas double exterior doors would provide better access for deliveries.

8.3.2 Vehicle Service Capacity

To evaluate the adequacy of the Fleet Repair Facility to meet the service demand of the existing solid waste fleet, the current active vehicles were compared to the number of PM and repair work orders completed in 2023.

Upon reviewing work order data from 2023, there were a total of 476 PM inspections and 11,710 repairs performed in 2023, at an average duration of 3.5 hours each.[58] Additionally, approximately 20% of the fleet was observed to be down, listed as Red-Tag awaiting repair completion, effectively reducing the total available fleet to complete routes.

The main cause for Red-Tag vehicles was gathered based on site observations and feedback during interviews with key staff. The main causes identified include:

- Issues with hydraulic system and components.
- Inability to perform engine repairs in the field.
- Extended lead time on essential parts and components.
- Welding related mechanical damage to components, and corrosion caused by trash or other materials collected.

Table 8-1 shows a by-the-numbers comparison of the existing number of vehicles in the Collections fleet, 2023 total number of work orders broken down by type, average number of work orders per day, and average fleet technician staffing for 2023. The data received indicated that Collections had 190 vehicles in the fleet. For 2023, a total of 12,186 work orders were completed. Of the work orders, 476 or 4% were for PM and 11,710 or 96% were for repairs.

[58] The estimated time to complete work orders is based on the average time to complete both PM and repair jobs based on work orders received from 01/01/2023 through 31/12/2023. The time required for repair orders varied between less than one hour to over 20 hours depending on task and complexity.

Repairs can be defined as unplanned work needed on the fleet vehicles. Using 260 working days per year, there was, on average, 47 work orders per day. Each vehicle had an average of 64 work orders over the course of 2023.

Table 8-1 2023 Work Orders and Repairs by the Numbers

Category		Number
Total Number of Collection Vehicles [1]		190
Total Number of Work Orders 2023 [2]		12,186
	PM Work Orders (%)	476 (4%)
	Repairs Work Orders (%)	11,710 (96%)
Average Orders per Day [3]		47
Average Orders per Vehicle [4]		64
Staffing – Fleet Technicians [5]		34
Shifts per Day		2

Note:
[1] Represents all packer trucks (e.g., both side load and rear load vehicles) in the fleet. This includes 42 packer trucks that are past their planned retirement date and 63 packer trucks that are at least seven years old. 172 vehicles are considered active (e.g., not marked as holdover or active seized)
[2] Represents work orders serviced in 2023.
[3] Accounts for 1.83 for PM and 45.04 for Repairs. Calculated by dividing work orders by 260 working days per year.
[4] Average work order per vehicle calculated by total work orders divided by 190 active solid waste vehicles.
[5] Includes 34 fleet technicians. There are also three welders and two Master Fleet Technicians.

Of the 190 vehicles in Collections fleet, 172 vehicles are considered active. Active is defined as not marked as holdover or active seized. The total number of active vehicles was used to calculate the existing vehicle service capacity of the maintenance building. **Table 8-2** shows the estimated number of bays required to meet the service capacity needs of the existing 172 solid waste vehicles considered active in the fleet.

Table 8-2 Vehicle Service Capacity Analysis

Total Active Existing Fleet	Vehicle Serviced per Bay [1]	Estimated Required Bays	Existing Active Bays
172	10	17.2	13

Note:
[1] Based on national average for repair bay ratios for solid waste collection vehicles. Actual required service bays may vary.

Each vehicle had a work order generated 64 times on average in 2023. The expected frequency of work orders per vehicle may vary based on the average daily mileage driven by each vehicle, age of vehicle, or other information, as discussed in **Section 9.1** Fleet. Each vehicle on average had five work orders per month, which directly impacts the operating capacity of the maintenance building.

Based on the Analysis, the existing maintenance building bays should provide sufficient service capacity but are not able to due to the number of bays out of service. Also, while it seems that 34 fleet technicians are adequate, given the total number of bays, the fleet technicians are

spread over the current two-shift schedule. In addition, DGS Fleet vacancy rates average between 12 and 16% and DGS Fleet leadership indicated that there were multiple challenges with coverage of Fleet Technicians on Industrial Leave and PTO.

8.3.3 Fleet Technician Capacity

During the on-site observations and interviews, the team met with several groups of fleet technicians, both as interview panels and in the maintenance building. Based on 2024 data, DGS Fleet staff consists of 15 fleet technicians plus seven vacancies, three welders and two Senior Fleet Technicians comprised the staff at Miramar Yard for the first shift. The second shift has 14 fleet technicians plus three vacancies, one welder, and six other staff. In **Section 8.3.2** Vehicle Service Capacity, it was determined that 13 bays are an adequate capacity for the existing vehicle numbers and work orders. Industrial Leave, PTO and vacancies impact the number of fleet technicians available daily. Additionally, there are two first shift welders and one second shift welder on the second shift. While not specifically reviewed in the work orders, during on-site observations, it was repeatedly indicated that some sort of welding is required for most repairs, particularly around the arm on the automated side load, tipper on the back of the rear load, and the packer portion of the vehicle.

HDR recommends one additional fleet technician as a second road mechanic on the second shift. HDR also recommends one additional welder for the second shift. This will increase the number of welders from three to four to allow for completion of repairs when welding is required.

8.3.4 Previously Proposed Mezzanine in Maintenance Building

ESD previously explored an option to expand and improve the vehicle parts storage room in 2016 by proposing a mezzanine level above the existing space. The proposed site improvements included constructing a mezzanine with stairways and a mechanical lift for vehicle parts storage within the existing maintenance building. An additional firefighting apparatus was proposed at the time but is no longer needed since fire truck maintenance and repair for the City has relocated to a different location.

The proposed mezzanine in the vehicle parts storage room would provide additional storage space on site and offer more space within the existing building by moving light duty storage and parts that are not frequently replaced to the new mezzanine location.

The site improvement plan provides details that may be considered again to improve the layout and storage on site. The entire mezzanine project estimated probable cost from 2016 was estimated at about $500,000. Further review of the construction of a mezzanine level would be required to estimate 2024 costs due to recent inflationary trends and the impact of construction on current operations in the maintenance building.

8.4 Recommendations

Site improvements recommended based on observations include the following.

8.4.1 Office Building

- Construct a dedicated computer lab and training room for Miramar facilities and Collection Services employees to allow for efficient work and necessary resources. Such improvements could include increased office capacity at the facility.

8.4.2 Yard

- Improve fuel lanes at the Miramar facility. Improvements may include providing protection and signage on site to avoid functional and operational clashes between vehicles fueling and those entering and exiting the Miramar Yard.

- Relocate carts from the Miramar facility to an off-site, covered storage area for more efficient storage, to reduce cart damage, and provide more space on site at the Miramar facility. This new location should also include a cart repair shop to repair carts and replace parts as needed, allowing for sufficient space to address such tasks.

- Improve existing steam bay with two hot water pressure washers with dual nozzle detail wand (one hot water, one soap), reel, scabbard, soap tanks, and remote starter for use in cleaning vehicles, including the underside, before bringing into PM or repair bays.

- Provide an enclosed room for high pressure washers, tanks, and soap drums adjacent to the steam bay. Tanks should be sized to support the wash of at least four Refuse Trucks per hour.

- Provide eye wash station to be used in the event of an emergency.

8.4.3 Fleet Repair Facility

- Provide lubrication stations at locations (to be coordinated later) in sufficient quantity to provide expedited lubrication of required components on vehicles, utilizing the frequency recommended by manufacturers.

- Expand the parts storeroom to accommodate the additional storage of parts and materials that are frequently used or experience delay in availability, to improve speed of repairs. The estimated size of the expanded parts storeroom is 5,700 square feet for pallet racks, bulk racks, and shelving units.

- Expand the welding shop to improve timeliness of repairs. The recommended size is 1,200 square feet for the welding and fabrication shop, to be located adjacent to the welding bay. This welding shop should be equipped with welding equipment such as a welding table, arc welder, MIG and TIG welders, plasma cutter, vertical and horizontal band saws, drill press, buffer/grinder with pedestal, storage areas for welding materials with cabinets, steel storage racks, bins, and a bridge crane coverage over both shop area and welding bays.

- Locate the fluids and compressor room to an area acoustically and physically separate from other areas to prevent noise migration, dirt, and fumes. The existing fluids and compressor room is undersized for the current quantity needed for fluid tanks and compressors for operations. The room should be furnished with double door exterior access for deliveries. The room should be sized to consider the adequate operational clearance for the access and maintenance of new and used bulk fluid tanks,

compressors, and refrigerated air dryers. The updated fluids and compressor room should be approximately 500 square feet based on current needs.

- Repair the three Fleet Repair Facility bays with broken vehicle lifts. Each bay should be updated to become operational, with a fully functioning vehicle lift (e.g., in-ground post-style lift, vertical-rise platform-style lift, or portable column lift, etc.).[59]

8.4.4 Additional Staffing

- Add one additional road mechanic (fleet technician) and one additional welder is recommended to increase the amount and timeliness of work orders, including PM and repairs.

Based on the recommendations specific to facilities, cost considerations could include fees associated with building improvements, expansions, or relocations. Making improvements to the Miramar office building, yard, and cart storage could benefit ESD by improving efficiency and allocating more space for needed services. Cost considerations are detailed in **Table 8-3.**

Table 8-3 Facilities Recommendation Cost Considerations

Recommendation	Improvements or Tools for Consideration	Order of Magnitude Cost
Miramar office building improvements	Computer lab and training room	To be determined
Miramar Yard improvements	Steam bay and wash eq. room.	$290,000
Fleet Repair Facility improvements	Vehicle replacement, expand welding shop, lube	$3,400,000 - $4,014,000
	Update fluid and compressor room	$300,000
	Repair equipment in three bays[57]	$900,000
	Expand the parts storeroom	$3,400.000
	Welding bay and fabrication shop	$720,000
	Construct previously proposed mezzanine	$500,000
Miramar Yard modifications	Cart storage facility	$13,000,000 - $16,000,000
	Cart repair shop	$1,000,000
Additional staffing needs	One additional fleet technician	$130,061
	One additional welder	$122,803

[59] The estimated costs are for equipment procurement only, do not include structural, and MEP costs. Costs for outsourcing any structural repairs on Red-Tag vehicle lifts are not included in this estimate.

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9 Equipment

The relationship between Collection Services and DGS Fleet is symbiotic and the two need to work together seamlessly as a team to ensure customers are provided with collections. In this section the City's fleet is only intended to refer to Collection Services' fleet unless otherwise noted. Vehicles in the fleet are shown in **Figure 9-1.**

9.1 Fleet

This Analysis uses the term "fleet" throughout to describe the vehicles necessary to provide collection services activities to the customers of Collections. Collection Services and DGS Fleet are the two entities primarily responsible for activities related to fleet. Collectively the two departments make decisions on the types of vehicles to be used to provide collection and operations services. DGS Fleet is responsible for the purchases and replacement plans for the fleet. In addition, DGS Fleet is responsible for repair and maintenance of the fleet that Collection Services uses and providing an adequate number of vehicles for Collection Services to complete their routes. Collection Services is responsible for safely operating the vehicles on routes and operating the equipment in a way that is appropriate for the vehicle type and conditions.

Figure 9-1 Rear Load Compressed Natural Gas Truck at Miramar Yard

9.1.1 Existing Fleet Description

Currently, Collection Services has 190 refuse trucks in its fleet. The Collections fleet includes 153 (81%) ASL vehicles and 37 (19%) rear loaders. Compressed natural gas (CNG) is used in 78% of the City's collection services fleet and the remaining 22% of vehicles use diesel. **Figure 9-1** shows a CNG truck parked at the Miramar Yard near a CNG slow fill station.

Figure 9-2 ESD Truck at Facility

Collection Service's fleet contains vehicles in Active, Holdover, and Active Seized status. These status types are defined as follows:

- **Active:** Vehicle is in service.
- **Holdover:** Replacement vehicle is in service. This vehicle was allowed to be held over until deemed "beyond economical repair," when it will be retired and sent to auction. This vehicle will not be replaced.
- **Active Seized:** Vehicle has been seized by the attorney's office due to accident. Vehicle will be or already has been replaced.

Most of the refuse trucks are in Active status, as shown in **Table 9-1**.

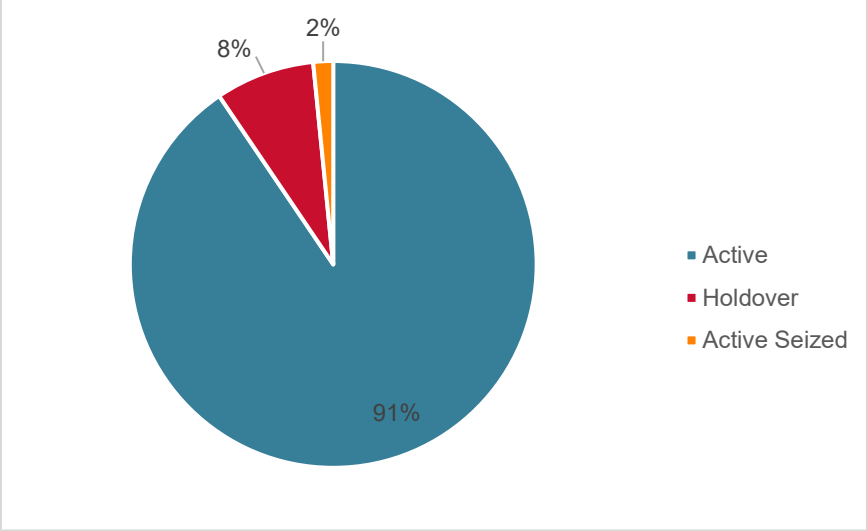


Figure 9-3 Status of Fleet Vehicles

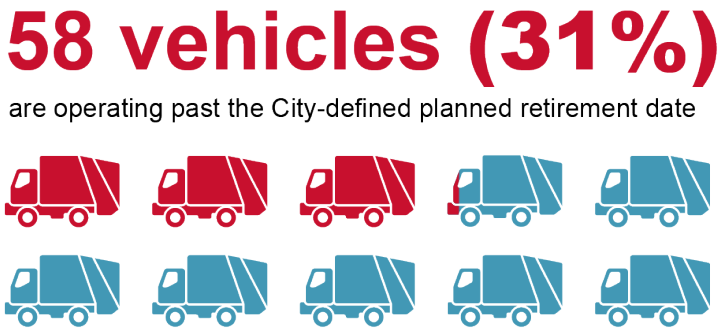
9.1.2 Existing Fleet Age

The current fleet includes vehicles that began service between 2011 and 2024. **Table 9-1** shows the number of vehicles by model year. Typically, vehicles began service in the same year as the model year, but in some cases the date the vehicle came into service is the year before or after the model year. Vehicles used for trash, recycling, and organics collection are specialized and the number of manufacturers is limited. This can result in delays in availability of vehicles of 12 to 18 months.

Table 9-1 Summary of Refuse Trucks by Model Year

Model Year	Truck Age	Number of Vehicles in Fleet	Percentage of Total
2011	13	3	2%
2012	12	1	1%
2013	11	1	1%
2014	10	6	3%
2015	9	17	9%
2016	8	1	1%
2017	7	23	12%
2018	6	27	14%
2019	5	18	9%
2020	4	18	9%
2021	3	11	6%
2022	2	0	0%
2023	1	61	32%
2024	-	3	2%

As shown in **Table 9-1**, vehicles are not replaced on a consistent schedule. DGS Fleet did not purchase vehicles for Collection Services from model year 2022 and purchased 61 vehicles from model year 2023. Collection Service's current vehicle replacement schedule for ASLs and RLs is every six years, however HDR throughout this report recommends a change to replacement every seven years. The replacement schedule of seven years is such that vehicles are ordered to be available to Collection Services as the vehicle reaches seven years and DGS Fleet purchasing plans for the delays that will happen in manufacturing and procurement.



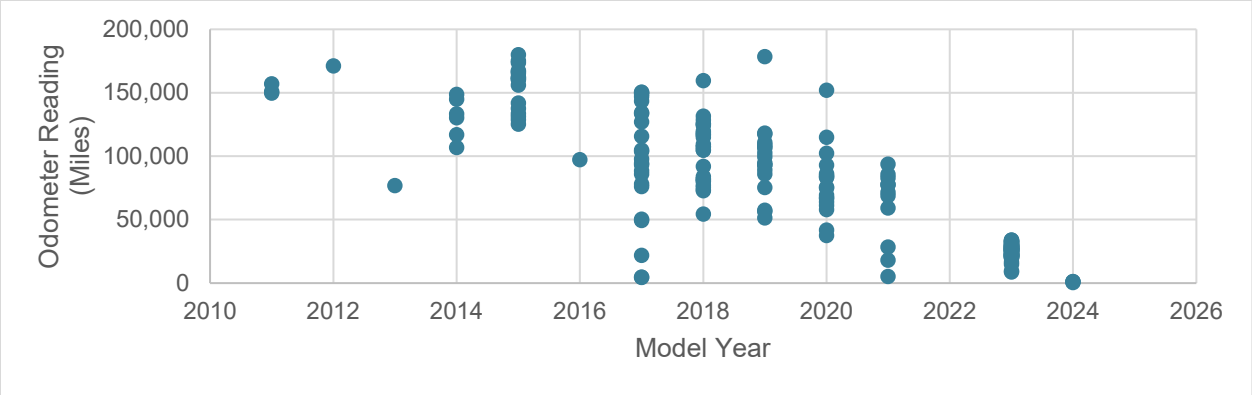
Based on details in **Section 2.3.5** Vehicle Replacement and Maintenance, HDR used the industry standard where the City moves toward a schedule where vehicles are replaced every seven years for modeling purposes.[60] Currently, the City has 47 vehicles or 25% of the total fleet, that are more than seven years old. An additional, 58 vehicles or 31% are operating past the City-defined planned retirement date for each vehicle. The planned retirement dates are based on the City's standards by vehicle type. Each vehicle is assigned an estimated retirement date based on the anticipated lifespan of the vehicle (which ranges from 72 to 96 months for packer trucks) when the vehicle is purchased by DGS Fleet. The *estimated* retirement date sets the *planned* retirement date, but DGS Fleet may modify the planned retirement date by vehicle to meet its current needs.

As discussed in **Section 5.2.3** Truck Availability, there are not currently enough vehicles to service the existing routes. Standard practice in collections is to have enough "frontline" equipment that is used on a daily basis to complete routes. After the fleet age reaches a certain point, seven years in this case, vehicles are replaced. However, the vehicles replaced are not necessarily sold or removed from the fleet. They become what is defined as Holdover vehicles by the City and are used as "spares". Spares are collection vehicles that are greater than in this case seven years and are intended to only be used when frontline equipment is not able to be repaired outside of route collection hours. Spare vehicles are not intended to be used as frontline equipment on a daily basis. A set of spare collection vehicles could be established that are greater than seven years as "Holdover" vehicles. SWANA recommends that municipalities maintain a backup pool of approximately 20% of the total number trucks needed to service their routes.[61] Vehicles older than seven years may be used as spares but are not recommended for daily collection.

The total mileage of each vehicle is recorded when vehicles are out of service for planned preventative maintenance or for unplanned repairs. In general, older vehicles have higher odometer readings compared to newer vehicles, as shown in **Figure 9-4,** Comparison of Milage by Model Year. However, DGS Fleet staff reported that mileage is only recorded when vehicles have an open work order, and in some cases, the mileage is not updated. This is the best available data at this time but may not accurately reflect actual odometer readings.

[60] Efficient Management of Waste and Recycling Collection Resources: March 2022, Solid Waste Association of North America (SWANA)'s Applied Research Foundation, www.swana.org

[61] Efficient Management of Waste and Recycling Collection Resources: March 2022, Solid Waste Association of North America (SWANA)'s Applied Research Foundation, www.swana.org



Note: DGS Fleet staff reported that mileage is only recorded when vehicles have an open work order, and in some cases, the mileage is not updated. The data in this figure is the best available at this time but may not reflect actual odometer readings.

Figure 9-4 Comparison of Mileage by Model Year

9.1.3 Maintenance and Repair Costs

Operating an older fleet can significantly increase maintenance and repair costs. The cost analysis included in SWANA's Applied Research Foundation's (ARF) *Effective Management of Waste and Recycling Collection Resources* indicated that annual maintenance and repair costs are approximately equivalent to annual capital expenditures, and therefore "deferring new vehicle purchases at the end of optimal service life will likely increase total service costs."

Based on data provided by the DGS Fleet, $49.6 Million has been spent on maintenance and repair over the lifetime of its existing Collection Services fleet. This is compared to a purchase cost of $64.7 Million for its existing fleet Note that costs have not been equalized to 2024 dollars, as the lifetime cost data is tracked cumulatively, rather than by year. **Table 9-2** shows a summary of fleet costs.

Table 9-2 Summary of Fleet Costs [1]

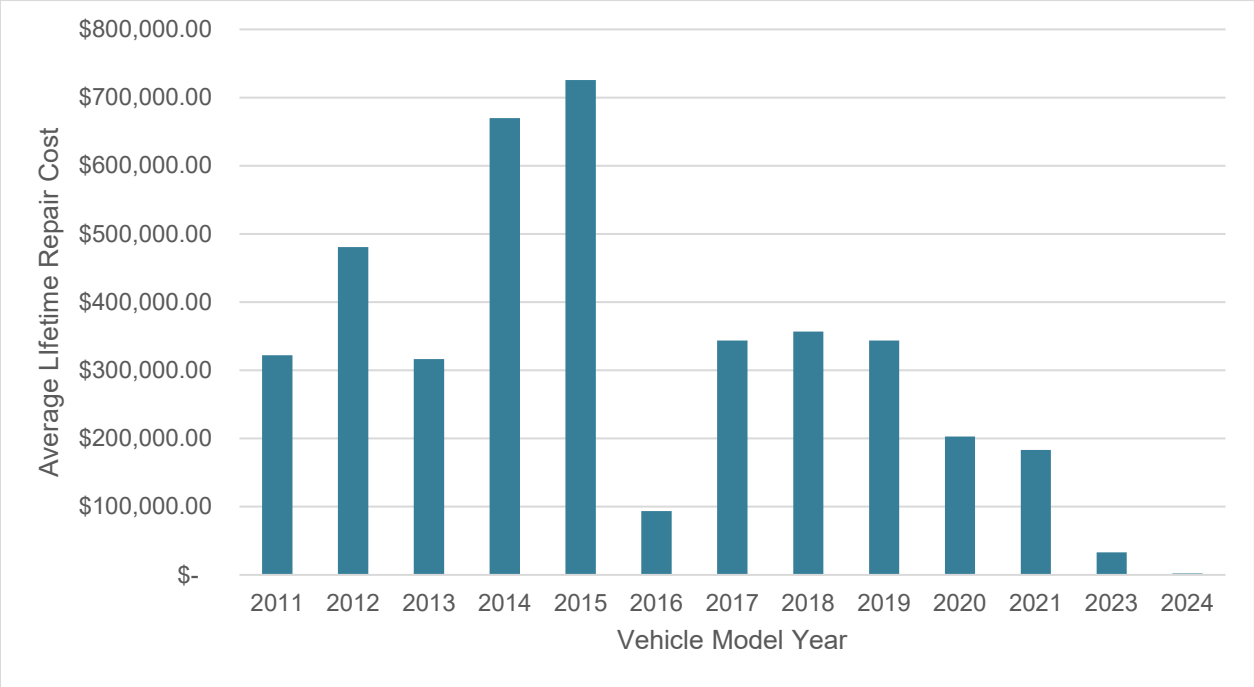
	Total – Entire Fleet	Average Cost for Newer Trucks (< 7 Years of Service)	Average Cost for Older Trucks (≥ 7 Years of Service
Purchase Cost	$64.7 Million	$367,920	$256,930
Lifetime Repair Costs [2]	$49.6 Million	$170,880	$535,870
Lifetime Preventative Maintenance Costs [2]	$1.6 Million	$6,970	$12,250
Work Order Costs - 2022 to 2024	$13.8 Million	$62,050	$135,210

Note:

[1] Costs have not been equalized to 2024 dollars. Nominal costs are shown in the table.

[2] DGS Fleet staff noted that the date that data collection began for lifetime repair cost is unknown. Costs for repair and maintenance have been consistently reported since approximately 2016, but the level of detail on previous records is unknown. Therefore, repair data from early model years (e.g., 2011-2013) may not include all lifetime costs.

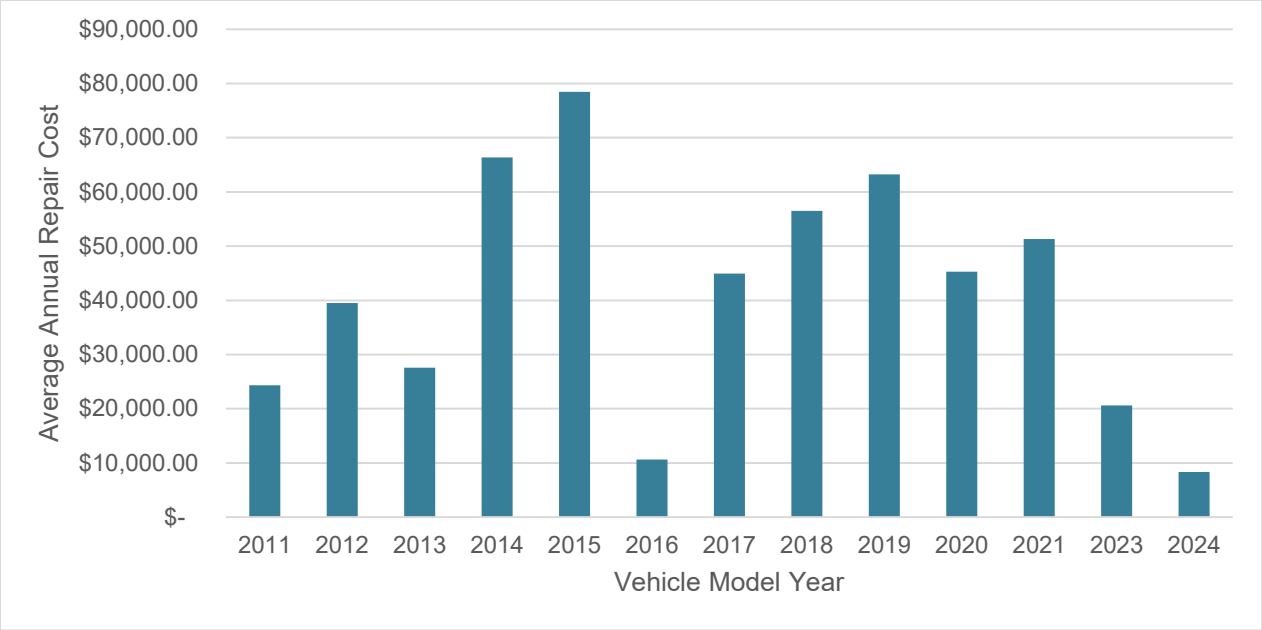
As shown in **Figure 9-5**, the average lifetime repair costs by truck are generally lower for vehicles that have only been in service since 2016 compared to vehicles that have been in service between 2011 and 2016.



Note: DGS Fleet staff noted that the date that data collection began for lifetime repair cost is unknown. Costs for repair and maintenance have been consistently reported since approximately 2016, but the level of detail on previous records is unknown. Therefore, repair data from early model years (e.g., 2011-2013) may not include all lifetime costs.
[1] Costs have not been equalized to 2024 dollars. Nominal costs are shown in the table.

Figure 9-5 Average Lifetime Repair Costs by Vehicle Model Year [1]

As shown in **Figure 9-5**, newer vehicles have lower *lifetime* repair costs compared to older vehicles. However, older vehicles also have higher *annual* costs. **Figure 9-6** shows the lifetime PM and repair costs divided by the number of years each vehicle has been in service to estimate an annual cost per vehicle. In general, older vehicles have higher repair costs by year compared to newer vehicles. The data shown in **Figure 9-6** shows that vehicles from model years 2011, 2012, and 2013 have lower lifetime repair costs compared to other vehicles. However, City staff noted that the date that data collection began for lifetime repair cost is unknown. Costs for repair and maintenance have been consistently reported since approximately 2016, but the level of detail on previous records is unknown. Therefore, repair data from early model years (e.g., 2011-2013) may not include all lifetime costs.



Note:
[1] Costs have not been equalized to 2024 dollars. Nominal costs are shown in the figure.
[2] DGS Fleet staff noted that the date that data collection began for lifetime repair cost is unknown. Costs for repair and maintenance have been consistently reported since approximately 2016, but the level of detail on previous records is unknown. Therefore, repair data from early model years (e.g., 2011-2013) may not include all lifetime costs.
[3] Lifetime repair costs were divided by the number of years each vehicle was in service to estimate the annual repair cost.

Figure 9-6 Average Annual Repair Cost by Model Year

DGS Fleet has spent a significant amount on lifetime repair and PM costs on its existing Collection Services fleet, particularly on vehicles that are more than seven years old. **Table 9-3** shows the 20 vehicles with the highest lifetime repair and PM costs. The total cost of work orders from 2022 to 2024 for these 20 vehicles was also included for reference.

Table 9-3 Summary of Vehicles with Highest Lifetime Repair Costs

Equipment ID	Life Cycle Description	Model Year	Manufacturer	Model	Vehicle Type	Total Lifetime Repair& PM Costs	Total Work Order Cost (2022-2024)
815322	ACTIVE	2015	AUTOCAR	ACX64	ASL	$949,435	$200,212
815302	HOLDOVER	2014	AUTOCAR	ACX64	ASL	$880,920	$179,652
815308	HOLDOVER	2015	AUTOCAR	ACX64	ASL	$857,838	$197,394
815305	HOLDOVER	2014	AUTOCAR	ACX64	ASL	$844,769	$144,851
815304	HOLDOVER	2014	AUTOCAR	ACX64	ASL	$831,218	$170,721
815318	ACTIVE	2015	AUTOCAR	ACX64	ASL	$828,029	$154,049
815317	ACTIVE	2015	AUTOCAR	ACX64	ASL	$822,563	$179,758

Equipment ID	Life Cycle Description	Model Year	Manufacturer	Model	Vehicle Type	Total Lifetime Repair& PM Costs	Total Work Order Cost (2022-2024)
815316	ACTIVE	2015	AUTOCAR	ACX64	ASL	$806,081	$151,815
815325	ACTIVE	2015	AUTOCAR	ACX64	ASL	$799,373	$178,711
815336	ACTIVE	2017	PETERBILT	320	ASL	$771,709	$196,767
815319	ACTIVE	2015	AUTOCAR	ACX64	ASL	$769,737	$183,654
815303	HOLDOVER	2014	AUTOCAR	ACX64	ASL	$731,831	$150,991
815307	HOLDOVER	2015	AUTOCAR	ACX64	ASL	$706,852	$150,090
815313	HOLDOVER	2015	AUTOCAR	ACX64	ASL	$701,659	$139,775
815309	HOLDOVER	2015	AUTOCAR	ACX64	ASL	$686,107	$178,690
815311	HOLDOVER	2015	AUTOCAR	ACX64	ASL	$680,246	$116,411
815306	HOLDOVER	2014	AUTOCAR	ACX64	ASL	$676,867	$155,299
815324	ACTIVE	2015	AUTOCAR	ACX64	ASL	$676,622	$171,029
815321	ACTIVE	2015	AUTOCAR	ACX64	ASL	$661,999	$133,297
815323	ACTIVE	2015	AUTOCAR	ACX64	ASL	$651,135	$161,864

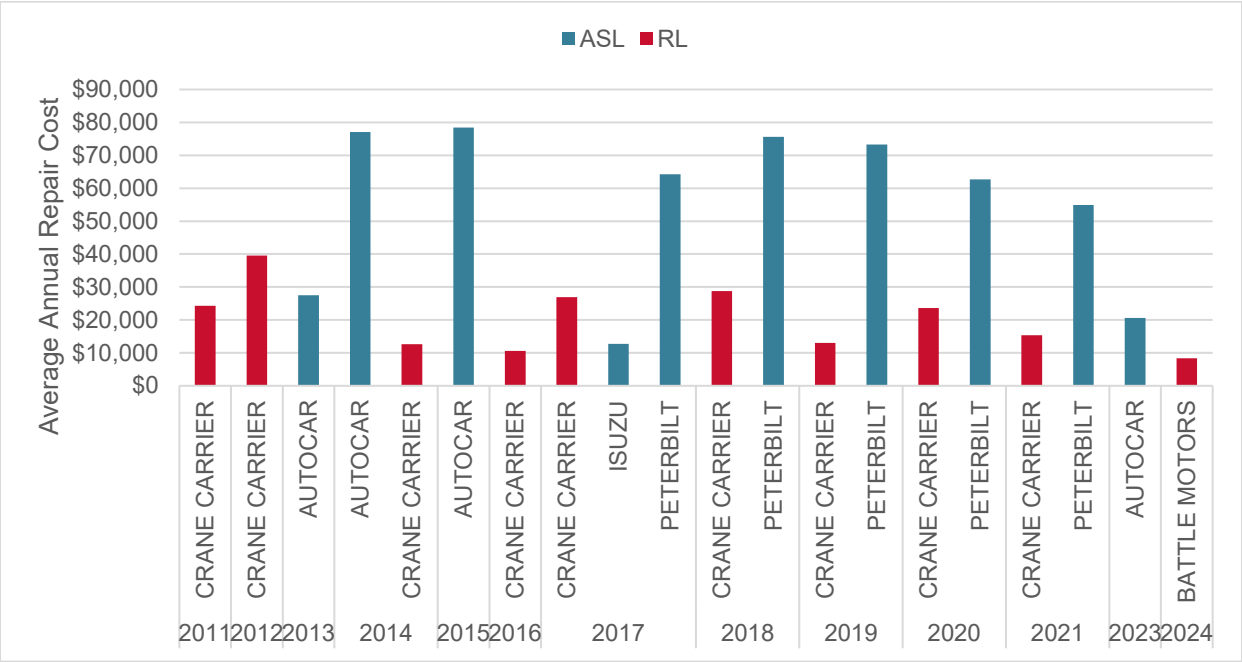
Note:
[1] Costs have not been equalized to 2024 dollars. Nominal costs are shown in the table.
[2] DGS Fleet staff noted that the date that data collection began for lifetime repair cost is unknown. Costs for repair and maintenance have been consistently reported since approximately 2016, but the level of detail on previous records is unknown. Therefore, repair data from early model years (e.g., 2011-2013) may not include all lifetime costs.

The Collection Service's current fleet includes vehicles from five manufacturers:

- Autocar (ASL)
- Isuzu (ASL)
- Peterbilt (ASL)
- Battle Motors (RL)
- Crane Carrier (RL)

Figure 9-7 shows the lifetime repair cost per service year by each manufacturer. In general, the cost to repair ASL vehicles is higher compared to RL vehicles. This is anticipated as ASL pick up two to three times the number of carts per day of RL and have more hydraulics and moving parts. Isuzu has the lowest lifetime repair costs compared to other manufacturers. Collection

Services has five diesel Isuzu trucks that were purchased in 2017. However, Collection Services staff noted that the Isuzu trucks serve a different function than the other ASL vehicles; they are used for litter pickup and do not run residential routes. The differences in repair costs are likely due to their different function and lighter use in the ESD's system. This Analysis did not review actual repairs completed in comparison to each vehicle's operating manual recommendations.



Note:

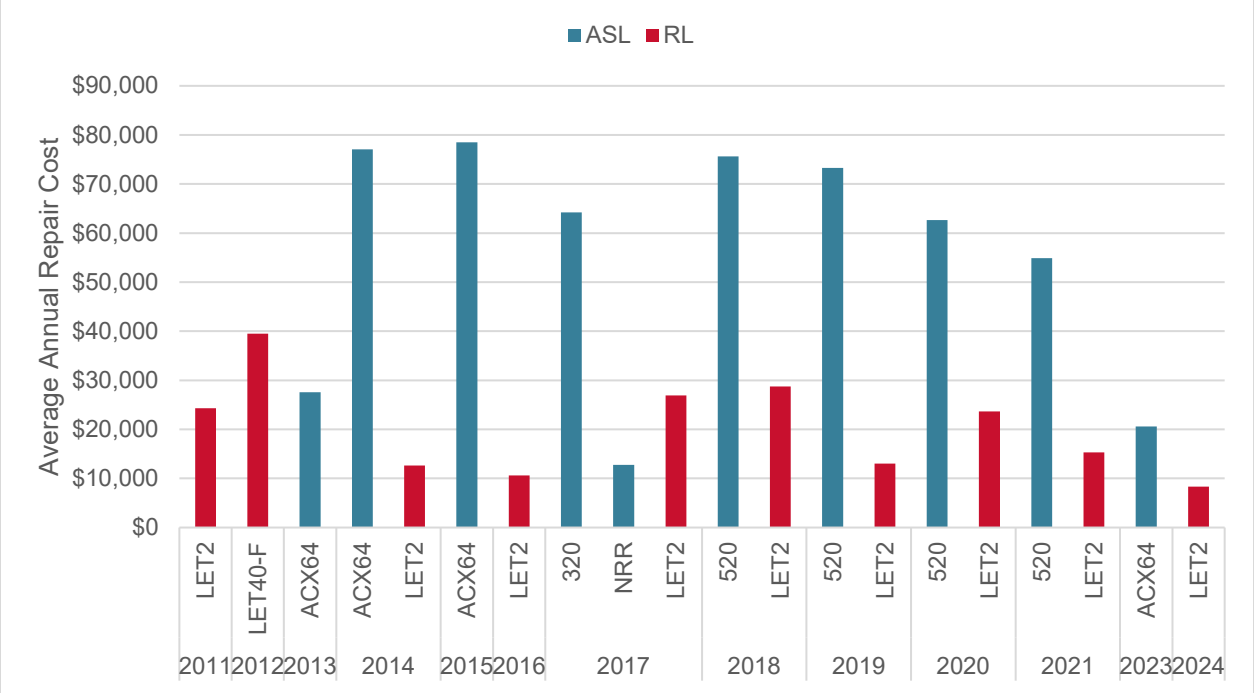
[1] Costs have not been equalized to 2024 dollars. Nominal costs are shown in the table.

[2] DGS Fleet staff noted that the date that data collection began for lifetime repair cost is unknown. Costs for repair and maintenance have been consistently reported since approximately 2016, but the level of detail on previous records is unknown. Therefore, repair data from early model years (e.g., 2011-2013) may not include all lifetime costs.

[3] Lifetime repair costs were divided by the number of years each vehicle was in service to estimate the annual repair cost.

Figure 9-7 Average Annual Repair Cost by Manufacturer

Figure 9-8 shows lifetime repair costs by model to see whether there are differences in cost by vehicle model. There does not appear to be a significant difference by vehicle model. Again, ASL vehicles tend to have more costly repairs compared to RL vehicles.



Note:

[1] Costs have not been equalized to 2024 dollars. Nominal costs are shown in the table.

[2] DGS Fleet staff noted that the date that data collection began for lifetime repair cost is unknown. Costs for repair and maintenance have been consistently reported since approximately 2016, but the level of detail on previous records is unknown. Therefore, repair data from early model years (e.g., 2011-2013) may not include all lifetime costs.

[3] Lifetime repair costs were divided by the number of years each vehicle was in service to estimate the annual repair cost.

Figure 9-8 Average Annual Repair Cost by Model

9.1.4 Maintenance Repair Times

DGS Fleet provided work orders from 2022 to 2024. The average time that a vehicle is out of service for a repair ticket was 4.8 days, and the average time for a PM ticket is 1.8 days. The average cost for a repair ticket was $730, and the average cost for a PM ticket was $484. HDR did notice some issues with the data provided that need to be resolved. Work orders also sometimes had overlapping dates for the same vehicle. These issues make it difficult to track when vehicles are out of service. DGS Fleet reported that there are changes in process through better use of the fleet focus system and management of work order procedures.

9.1.5 Potential Impacts of Emission Requirements

The California Air Resources Board's (CARB) Advanced Clean Fleets Regulation mandates that State and Local Government fleets – including municipal refuse trucks – transition to 100% zero-emission vehicles (ZEVs).[62] The mandated schedule requires that 50% of the total number of vehicle purchases each calendar year be ZEVs and that stating January 1, 2027, 100% of the

[62] https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-waste-and-wastewater-fleet-option

number of vehicle purchased each calendar year be ZEVs.[63]

These regulations also allow Fleets to request vehicle exemptions for certain specialty vehicles that are not available to purchase as ZEVs or NZEVs. The Configurations List will include front-loader refuse compactor trucks, side-loader refuse compactor trucks, rear-loader refuse compactor trucks, street sweepers among others.[64]

To comply with this CARB regulation, ESD will need to operate 19 zero-emission garbage trucks by 2030. The City's refuse fleet currently consists of 190 trucks, with 78% of trucks powered by CNG and 22% powered with diesel. Today's technology and market trends indicate that hydrogen fuel cell propulsion systems are the most viable zero-emission technology for the City's refuse truck fleet. Hydrogen is the preferred propulsion system for three reasons:

- **Hydrogen vehicle range is ideal for hauling:** The hydrogen vehicle market is rapidly developing for heavy duty vehicles intended to haul materials. Heavy duty electric vehicles have struggled to manage the weight of battery packs and weight being loaded into the vehicle, resulting in lower ranges for these vehicles. The light weight of hydrogen storage is a more viable zero-emission alternative for heavy duty vehicles that haul materials.
- **Integration with CNG:** Hydrogen and CNG are both "lighter-than-air" gases which have similar safety requirements. Facilities with existing CNG vehicles already have some safety elements in place which would apply to hydrogen vehicles. Adding hydrogen vehicles to a CNG facility will still require some upgrades – such as gas detection systems for H2 and air ventilation compliance – but CNG facilities are better positioned for upgrades compared to diesel and gasoline facilities.
- **California hydrogen leadership**: California is one of the leaders in hydrogen production within the US. California is the first state to officially launch a Hydrogen Hub, which aims to provide cost-effective green hydrogen, and the only state in the US which operates public hydrogen fueling stations.[65,66]

9.2 Carts

Collection Services is responsible for servicing nearly 1.4 million carts within the system for the collection of trash, recycling and organic waste (examples shown in **Figure 9-9**). Almost half of the carts in service are for trash collection, and about one-third for recycling and one-fifth for organic waste, as shown in **Figure 9-10**. Customers are offered 65 or 95-gallon carts for all services and 35-gallon carts for organic waste only. Nearly 85% of the carts in service are 95 gallons, as shown in **Figure 9-11**. Over 78% of the carts in service are for single-family homes,

63 https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-zev-milestones-option

64 https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-zero-emission-vehicle-purchase-exemption

65 https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics-collection/hydrogen

66 https://archesh2.org/arches-officially-launches/

and the other carts are serviced from apartments, multifamily housing, businesses, government buildings and more.

Figure 9-9 Trash, Recycling, and Organic Carts in Service

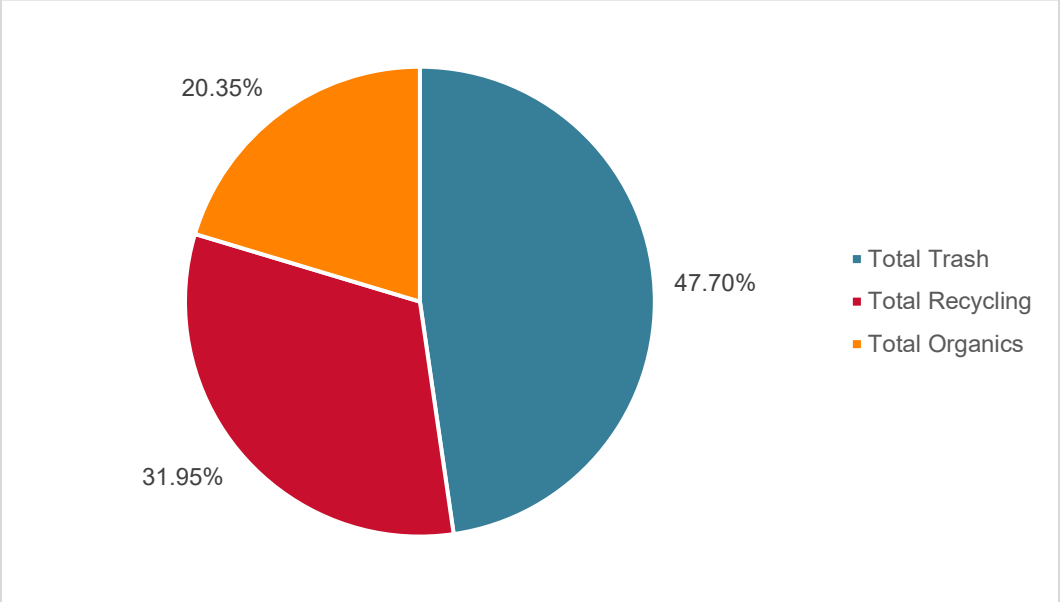


Figure 9-10 Types of Carts in Service

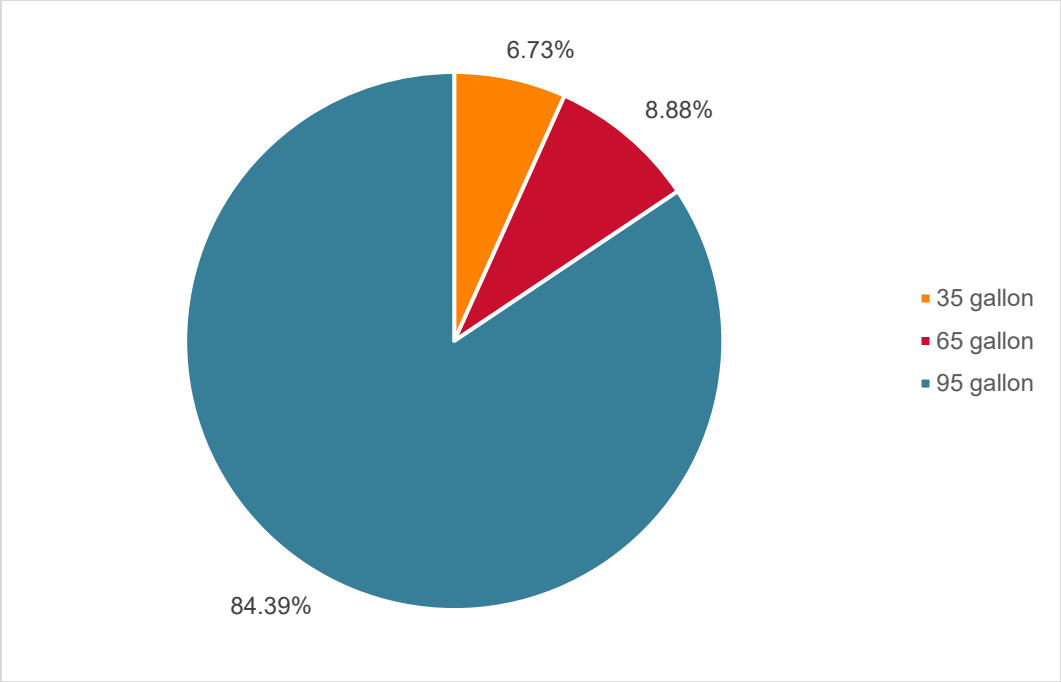


Figure 9-11 Sizes of Carts in Service

Collection Services is responsible for collecting the material containerized within the carts, and responsible for the delivery of new carts, replacement of damaged carts and retraction (or removal) of carts no longer needed by customers. During the timeframe between July 2022 and June 2024, Collection Services provided cart service to over 38,000 carts and averaged over 1,600 cart services per month (**Figure 9-12**). The majority of the services were for cart replacements and only three cases of cart retraction, shown in **Figure 9-13**. The amount of carts services required by Collection Services each month indicates the significant amount of time and resources dedicated to cart maintenance.

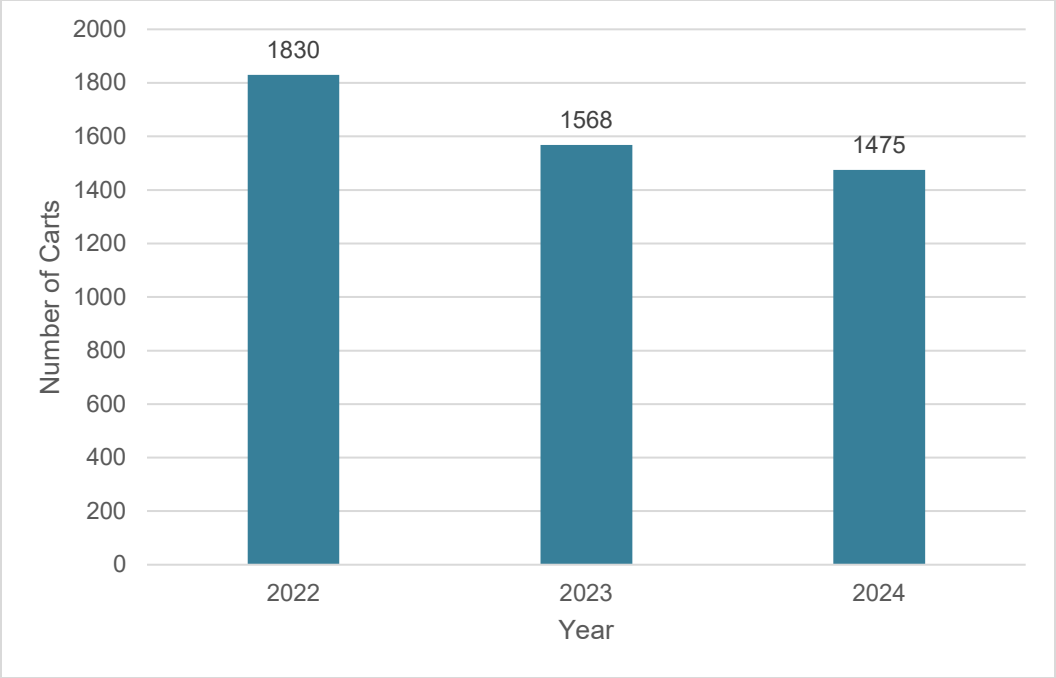


Figure 9-12 Average Number of Cart Replacements and Deliveries per Month

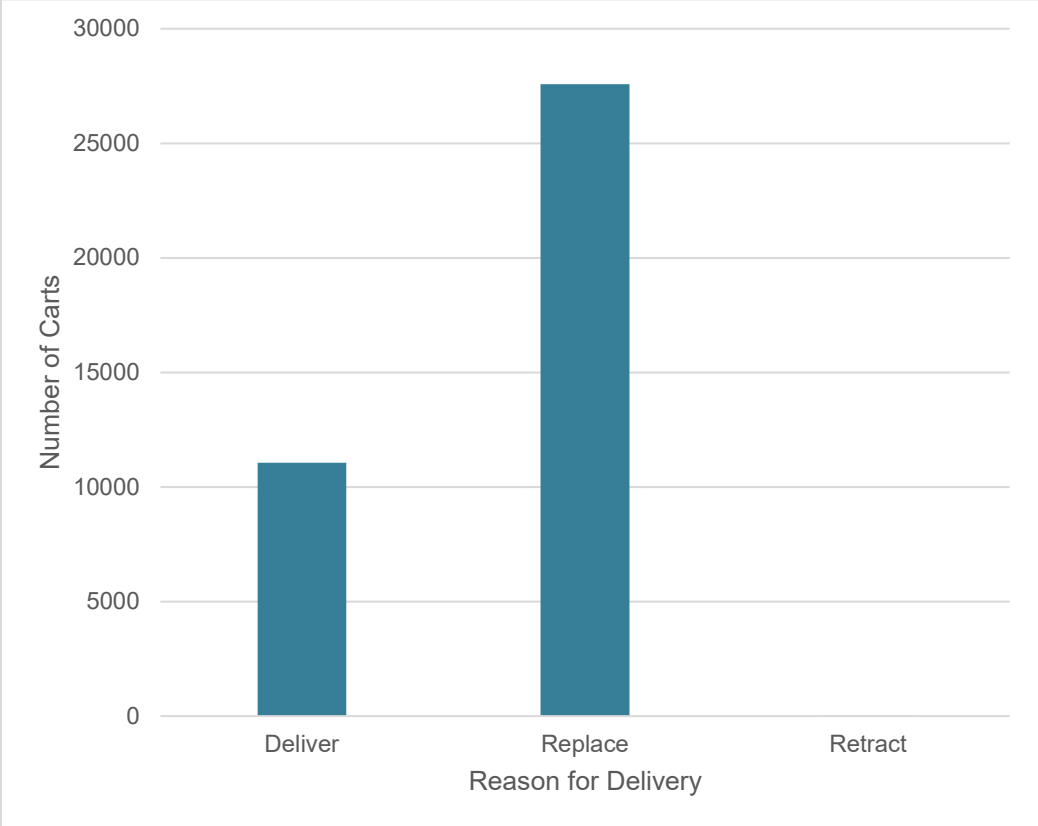


Figure 9-13 Reason for Cart Delivery Requests (July 2022 – June 2024)

Collection Services charges customers for the purchase of carts for trash, recycling and organic waste services. Trash carts (65 and 95-gallon) are $70 and an additional $25 delivery fee.

Recycling carts (65 and 95-gallon) are free if picked up by customers or $25 for delivery. Organics carts (35, 65 or 95-gallon) are free for the first two carts if picked up by customers or $25 per cart for delivery. Additional organics carts are $25 for the third cart and $50 for the fourth and any additional carts. City-issued carts have an expected lifespan of ten years. Carts that become defective before that warranty period are issued a prorated fee for replacement.[67]

Providing residents with cart collection and automated truck collections was implemented for City Customers many years ago and illustrates the forward-thinking mindset of the City. Automated truck collection is more efficient and offers customers a convenient option of collecting materials in carts. Observations on site found that many carts in service are over their 10-year warranty period, with many carts in service over 20 years in age. Older carts often break more easily, particularly due to Collection Service's gripper system which is hard on the carts.

Replacing and delivering carts takes a significant amount of time and resources from Collection Services. Customers are incentivized to pick up their own carts to avoid the $25 delivery fee, which also requires Collection Services staff to distribute carts and collect payment on site. As Collection Services begins planning for delivering new carts to customers, considerations may be helpful to evaluate the most efficient way to distribute carts throughout the City. The average age of cart which is currently over 20 years of age based on estimates and observations of carts in the field. Carts are typically warrantied for ten years which is considered their useful life. Most carts last longer than that, depending on type of manufacture and resin used. Based on observations and interviews with Collection Services, carts are a common cause of MPU when carts are no longer able to be serviced. Due to the cost necessary for a customer to replace a cart, needing to buy a new cart can be a financial barrier to customers receiving service.

9.3 Recommendations

9.3.1 Fleet Recommendations

These recommendations are provided for Collection Services fleet but with the recognition that procurement, replacement, and maintenance and repairs are the responsibility of DGS Fleet. It is critical that these activities be in coordination between the two departments.

The following are recommended to improve fleet management and align with industry standards:

- Replace vehicles on a regular schedule improves fleet safety and efficiency and reduces out of service days. It is recommended that Collections vehicles should be replaced every seven years.
- Maintain at least 140 frontline vehicles that are available daily that are less than seven years old.

[67] https://www.sandiego.gov/environmental-services/collection/general/containers

- A set of spare collection vehicles should be established that are greater than seven years of age as "Holdover" vehicles. It is recommended that the SWANA recommendation that municipalities maintain a backup pool of approximately 20% of the total number of vehicles needed to service their routes.[68]
- Replace collections vehicles such that enough vehicles less than seven years are available to service the daily route needs and an additional 20% of the vehicles be retained as spares.
- Maintain as spares an additional 20% should be maintained as spares. A total of 28 spare vehicles need to be available and route-ready daily that may be older than seven years.
- Set a vehicle replacement schedule, along with planned procurement dates based on the lead time for new vehicles.
    - Appropriate future budgeting is necessary to purchase a set number of new vehicles every year and order new vehicles such that they are ready to be in service when the vehicles they replace are set to be retires.
- Conduct preventative maintenance on existing fleet in accordance with each vehicle's operating manual.
- Operate collections vehicles consistent with vehicles operating manual and duty cycle.
- Set standards for data tracking and performance management of vehicles and then educate Collection Services and DGS Fleet on these metrics and why they are critical. Data collection is key. DGS Fleet tracks lifetime costs for repair and PM, but the date that tracking began is unknown, so the lifetime costs may not include all costs, particularly for older vehicles.
- Plan for future regulation changes in vehicle and fleet fuel type mixes in particular to comply with known CARB regulations and the City's Climate Action Plan.

HDR recommends the following schedule for vehicle replacement for ASL collection vehicles, as shown in **Table 9-4**. The table shows the year that replacement vehicles should be ordered, assuming that there is a two-year lead time before the vehicles are in service; the number of vehicles added to the fleet each year; the number of vehicles retired; and the total number of vehicles in service. By 2027, the fleet will have 140 vehicles in service, which includes the recommended backup pool for refuse vehicles.

The replacement schedule assumes that vehicles will be replaced with delivery of Collection Services vehicles as the vehicles reach seven years. The replacement schedule recommends that Collection Services vehicles are maintained and operated per the manufacture's recommendations, which is a more aggressive schedule than DGS Fleet has used for Collection Services vehicles in the past. It will also result in a smaller fleet than is currently in place, as newer vehicles are anticipated to be out of service less often. The recommended replacement

[68] Efficient Management of Waste and Recycling Collection Resources: March 2022, Solid Waste Association of North America (SWANA)'s Applied Research Foundation, www.swana.org

schedule is expected to increase safety and efficiency and reduce repair costs associated with older vehicles.

Table 9-4 Proposed ASL Vehicle Replacement Schedule

Year	# of ASL Trucks Ordered	# of ASL Trucks Added to Active Fleet	# of ASL Trucks Retired	Total # of ASL Trucks in Service
2024	-	-	-	137
2025	20	52	41	148
2026	20	0	0	148
2027	20	20	28	140
2028	20	20	20	140
2029	20	20	20	140
2030	20	20	20	140
2031	20	20	20	140

Note:

[1] City of San Diego Collection Services approximately 100 routes daily.

[2] SWANA recommends that municipalities maintain a backup pool of approximately 20% of the total number of vehicles needed to service their routes (Efficient Management of Waste and Recycling Collection Resources: March 2022, Solid Waste Association of North America (SWANA)'s Applied Research Foundation, www.swana.org).

[3] 140 ASL vehicles needed total.

[4] Retire vehicles purchased prior to 2019 in 2025 when new vehicles arrive.

[5] 20 vehicles/year replacement is based on the assumption that vehicles will be replaced every seven years, assuming a total fleet size of at least 140 vehicles.

[6] Vehicle procurement takes two years between the order date and the in-service date.

9.3.2 Collection Services Cart Recommendations

Trash carts that are in use for City Customers are older than 20 years. Carts not functioning and breaking causes issues with MPUs and drivers to not be able to provide services to customers. The Cost of Service Study should review replacement of at a minimum trash carts and potentially recycling carts to provide appropriate service to customers.

Based on the recommendations specific to fleets, DGS Fleet and Collection Services should consider additional costs associated with vehicle replacement, preventative maintenance and lifetime repairs of vehicles. Improvements to data tracking and consistent use of the existing GPS system will allow DGS Fleet and Collection Services to make decisions based on vehicle usage and ongoing repair and maintenance costs. The City as a part of Measure B should consider the costs of such recommendations based on the high-level estimates listed in **Table 9-5.**

Table 9-5 Equipment Recommendation Cost Considerations

Recommendation	Improvements or Tools for Consideration	Anticipated Rough Order of Magnitude Cost
Modify maintenance and repair equipment	Upgrade/replace pressure washers, enclosed room and eye wash station	$290,000
Updated truck replacement schedule	7-year truck replacement schedule	$430,000 per truck[1]
Additional data tracking related to fleet	Utilize tools consistently through staff training and implementation	Additional staff time to be determined along with specific data tracking and tools

Note:
[1] Based on 2023 cost per truck

10 Routes

Routes in Collection Services are organized by sections. Each section is led by an ARCS, and multiple ARCS are managed by a District. Within each section the number of routes and drivers that the ARCS is responsible for managing varies. **Section 7** People, contains further information on the Organization and reporting structure.

10.1 Routes by Section

Sections are made up of designated drivers assigned to various routes who collect specified container types in a unique geographic area of the City of San Diego. The number of drivers and routes in each section varies. Sections may have a combination of assigned and visiting drivers. Each section is under the supervisor of an ARCS. (See also “Driver” and “Area Refuse Collection Supervisor”). Sections use the following nomenclature:

R-##

The variable numbers that follow the hyphen either start with a ‘1’, ‘2’ or a ‘3’. R-1# sections service trash, recycling and organics carts using Rear Loaders. R-2# sections service trash and recycling carts using Automated Side Loaders. R-3# sections service organics carts using Automated Side Loaders.

Figure 10-1, Figure 10-2, and **Figure 10-3** depict how the City of San Diego sections are distributed across the twelve (12) ARCS. Sections may collect trash, recycling, and/or organics. These Figures were developed using GIS data provided by ESD. R-11 and R-12 sections were not included in this data set as R-11 and R-12 cover the entire City servicing stops where RL are needed including Hard to Collect stops.

In **Figure 10-1** and **Figure 10-2,** the same sections are identified because both sections service trash and recycling carts. In **Figure 10-3,** the areas serviced by ESD are labeled by sections that collect organics.

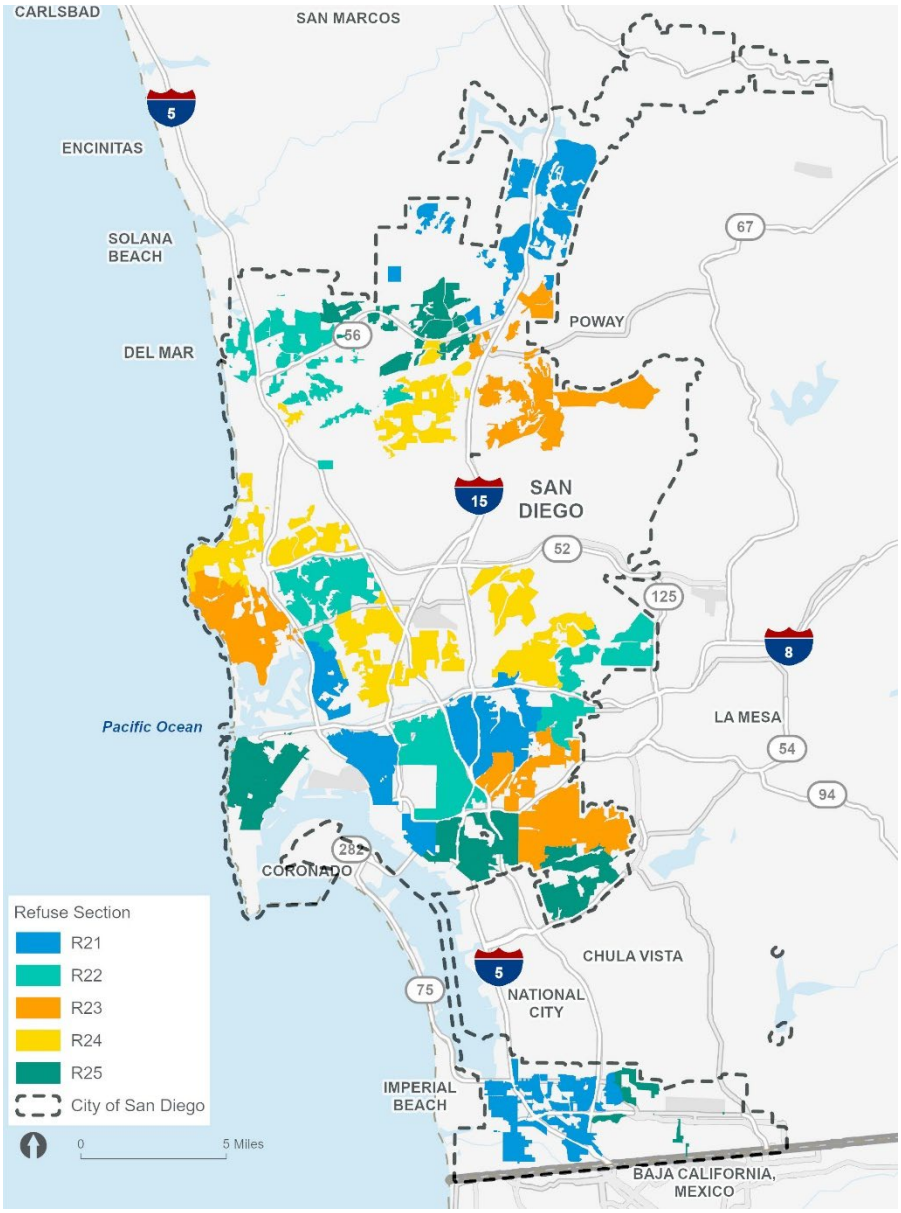


Figure 10-1 City of San Diego ESD Service Areas by Refuse Sections

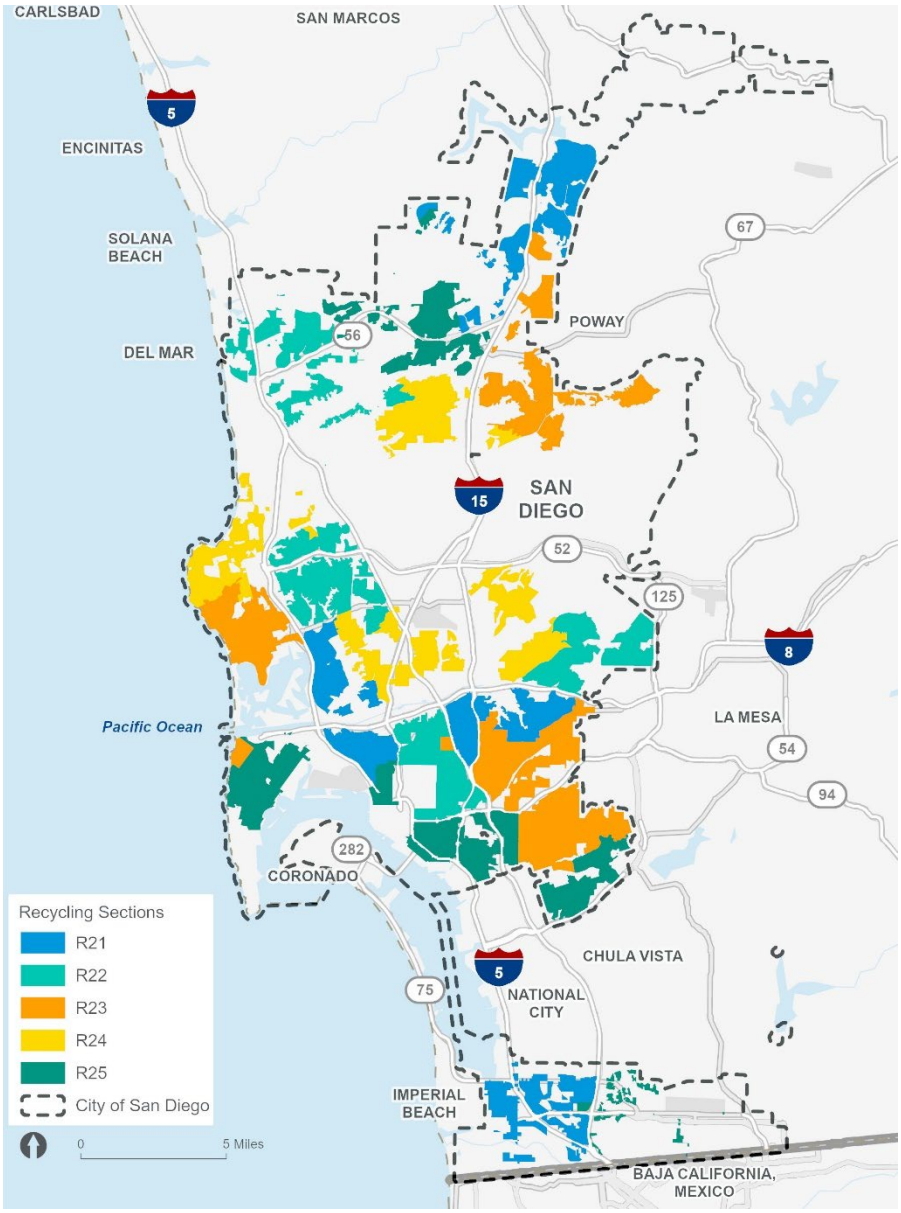


Figure 10-2 City of San Diego ESD Service Areas by Recycling Sections

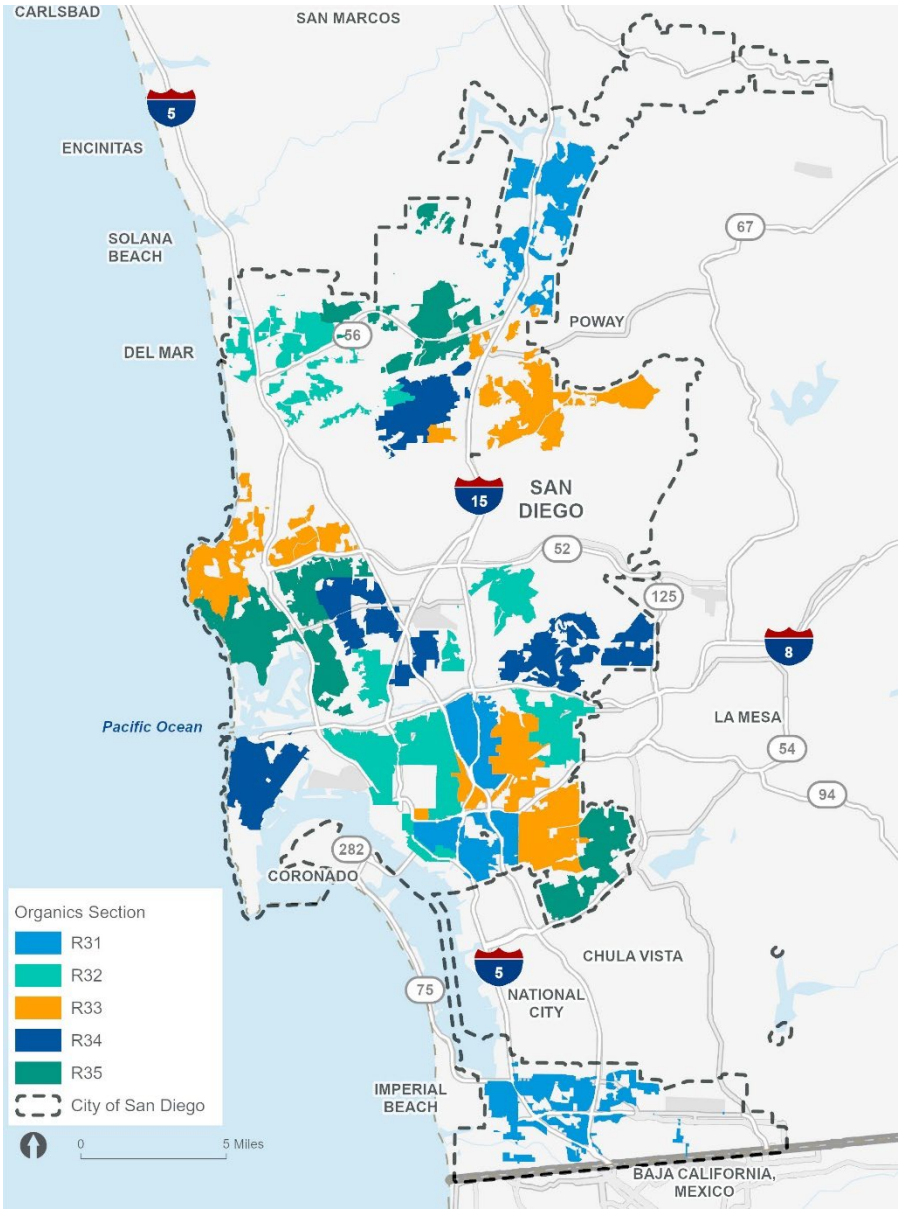


Figure 10-3 City of San Diego ESD Service Areas by Organics Sections

10.2 Route Scheduling

The majority of Collection Services staff have a schedule of 4-10's. Sanitation Drivers, ARCS, and Districts get one day off during the week which can be Monday, Tuesday, Wednesday, Thursday, or Friday. See **Section 7.3.2** Route Bidding, for more details on the route bidding process which determines which day of the week drivers have off.

Route Scheduling and the scheduled day off for a section impacts how the sections are named. For instance, Section R-21 is a refuse and recycling route that has Monday off. The first number ('2' in this example) corresponds to the materials collected and how they are collected where Trash, Recycling and Organics collected by RLs = 1, Trash and Recycling collected by ASLs = 2 and Organics collected by ASLs = 3. The second number ('1' in this example) corresponds to

the day of the week that section gets off where Monday = 1, Tuesday = 2, Wednesday = 3, Thursday = 4 and Friday = 5.

Routes are not currently right-sized to allow for off route time activities to be completed. Based on a 10-hour day, the time required to service the route must not exceed eight hours to account for the drivers' lunch break, pre- and post-trip inspections and travel time. Rebalancing the routes could remove the need for a daily downed route. Drivers can focus on their one assigned route and request a helper truck if their truck breaks down before their route is complete.

10.3 Recommendations

Routes are discussed throughout this Analysis including in **Section 5** Missed Pickups and Delayed Collections, and **Section 7.3** Staff Levels. As discussed previously, sections need to be balanced in terms of the ratio between the number of customers to be serviced and drivers available to service those customers. Rebalancing the sections (number of drivers and number of routes) and routes (number of customers) could reduce the number of MPU cases opened per section since each section would have the resources required to service all assigned routes.

Recommendations for considerations with routing both discussed prior and here include:

- Reassign the geographic area of each section. All routes within one section should be in proximity to each other, not spread out across the City.
- Collection Services should use data to track set out rates and tonnage collected per route daily.
- Rebalance sections so there is one route per driver per day and there is adequate time for off route activities such as the drivers' lunch and break times, pre- and post-trip inspections and travel time to and from route and disposal locations.

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11 Technology

Technology is critical to developing the proper tools needed for ESD to do their job. This section specifically addresses technology that has not been called out elsewhere in this report.

11.1 Route Planning

11.1.1 Routeware

Routeware is the tool that has been selected to take Collection Services routes from paper maps to in cab directionals similar to how a vehicle is routed using Google Maps or another online tool. Routeware includes capabilities for pre and post trip inspections, routing functionality, as well as opportunities for drivers to report issues with a stop by simply pushing a button. Routeware was placed into Collection Services vehicles over one year ago when tablets were installed. Routeware is yet to be functional as a tool. **Section 7** People, discusses appropriate staffing to get Routeware functional. Challenges in Routeware have occurred as multiple people currently have responsibility for implementation of Routeware and management of the Scope of Work has not successfully been completed. Designate one employee in ESD to be responsible for Routeware and its implementation which should include management of the Routeware contract and its Scope of Work. Additional functionalities may be available within Routeware and should be explored.

11.1.2 Tablets

Tablets are necessary for Routeware function appropriately. During on-site visits it was noted that not all tablets work and that employees may shut off tablets. Tablets need to be on for tracking of information as discussed in **Section 2** Measuring Performance. Shutting off tablets should not be considered acceptable moving forward to allow the necessary data to be tracked. Tablets could also be used for other functions in addition to routing. This could include timekeeping or payroll, pre and post trips and potentially messages on maintenance or other truck needs.

11.1.3 Electronic Tracking of Materials

ARTS is a Microsoft Access database system that was developed in the early 2000. ARTS communicates with the Miramar Landfill scale system. ARTS is used to track the truck and driver assignments and trash, recycling, and organics tonnages that are picked up by each daily route. It also includes information on the truck and driver assigned to each route. Currently materials weighed at Miramar Landfill are able to be manually uploaded to ARTS. Non-City disposal and processing locations provide manual tickets or reports for manual data entry by ARCS. Errors can happen with this manual data entry process or even lost scale tickets.

Microsoft Access is no longer a Microsoft supported tool and ARTS needs to be replaced with a modern database server. Opportunities for Routeware or other systems to be utilized is dependent on having a modern database server that enables integration through API keys.. While onsite, landfill staff notified Collection Services of a new landfill software system. The new

software system needs to allow for electronic data transfer to the tonnage tracking system to be used by Collection Services in the future. The technology also needs to be updated to allow for uploading of electronic scale tickets from other non-City owned facilities. This will also prevent manual data entry issues.

11.2 Vehicle Operation

11.2.1 Pre- and post- Pre- and post-trip electronic forms

Pre and post trip forms are discussed in several section of this Analysis including **Section 3** Safety and **Section 9** Equipment. Collection Services currently uses paper pre- and post-trip forms. These paper forms have several challenges including getting misplaced or not turned in by drivers or not being available when needed to investigate incidents. It is critical that pre and post trip forms go to an electronic form that allows for easy tracking and storage of the forms by ESD and DGS Fleet. The type of technology for electronic pre and post trip forms can be Routeware, Geotab, or other systems that Collection Services currently has in place.

11.2.2 Safety Cameras and Sensors

Collection Services already has truck hopper cameras on their vehicles to view the material going into the vehicle. This is for the safety of the driver to view what is entering the vehicle as well as to confirm the carts are emptied. As the fleet is updated, Collection Services and DGS Fleet should explore new and additional safety technology options.

Additional safety cameras should be explored including in-cab cameras for safety. Several companies provide in-cab cameras that are always on but only record when an incident happens such as sharp deceleration or acceleration or an impact. These recordings are useful when incidents occur at determining fault and many times protect the driver of the vehicle who may have not been at fault. Additional 360 cameras could also be added to trucks and should be explored. City policies and 127 agreements should be reviewed to determine if safety cameras are an option.

Similar to other vehicles light and heavy duty, additional sensors and lights or sounds (e.g., side-view mirrors) should be explored to make the vehicle safer. Sensors and lights could warn of proximity to objects (e.g., mailboxes, cars, trees) to make the vehicles safer. This technology would need to be explored to be sure it doesn't in itself create a distraction.

11.2.3 RFID Readers on Trucks

Understanding cart collection accuracy and efficiency can provide benefit to ESD. Routeware may have capabilities to provide geolocation of carts to confirm when service is complete, and carts are emptied. If that is not a currently available service, ESD may consider the implementation of RFID tags. RFID tags on carts and readers on vehicles can provide enhanced collection efficiencies and confirmation of completed collection service. The RFID tags are located on each cart handle and read by the arm of the collection truck when it is emptied. Individual cart tracking through tags can improve route efficiency and confirm

collection services are completed. RFID tags and readers can often track the weight of the cart content and estimate the fullness of carts.

11.3 Staffing and Training

The employees are the lifeblood of all organizations, and it is no different at ESD. It was apparent from interviews and onsite observations that there is a general lack of training of all frontline staff.

In terms of training manuals, there are two copies of a training manual for supervisors that contains some material dated from the 1990's. Training of supervisors is principally performed by an existing supervisor during one on ones and in vehicle observations. While this is an admirable method of performing training, there is not a standard operating procedure for training. Most notably as the organization continues to adopt technology, there is not basic training in the use of computers, tablets, software used, and email and other forms of electronic communications. These technologies are becoming the essential tools to performing the role of a supervisor. There seems to be the sense at ESD that there is no time to perform this training. If there are an adequate number of drivers as described in the performance metrics section of this report, then time should be available to train staff appropriately.

11.4 Recommendations

In summary, HDR's recommendations for improving operational efficiency regarding Technology include the following:

- Designate one employee in ESD to be responsible for Routeware and its implementation which should include management of the Routeware contract and its Scope of Work.
- Additional functionalities may be available within Routeware and should be explored.
- Provide tablets in every vehicle that are operating and create policies to enforce use of and leaving tablets on when vehicles are in use.
- Replace ARTS with a modern database serve that can integrate with Routeware or another suitable driver, vehicle, and tonnage tracking system. The new system needs to allow for electronic upload of information rather than manual data entry processes.
- Pre- and post- trip forms need to be electronic. Collection Services and DGS Fleet should collaboratively develop a solution that works for both Departments.
- Explore the addition of additional safety cameras and sensors to the vehicles that are being ordered as a part of the fleet upgrade.
- Staffing and Training: Create role for an onsite HR liaison to oversee the rewriting of job descriptions to ensure that the technology tools are included. Develop a training curriculum based on needs.

Based on the recommendations specific to communication, ESD should consider technology improvements to make communications more efficient and streamline utilizing software, automated systems, and industry best practices. Existing programs may have capabilities to

meet ESD needs, but further investigation is needed to determine the best tools to meet programmatic needs. Cost considerations are detailed in **Table 11-1.**

Table 11-1 Technology Recommendation Cost Considerations

Recommendation	Improvements or Tools for Consideration	Anticipated Rough Order Magnitude Cost
Designate one employee to make Routeware fully functional and to explore additional Routeware services	Staff	Estimated need of one FTE Cost based on specific services needed
All trucks have a functioning tablet	Tablet purchase	Dependent on number of tablets still needed or not operating (Est. $500 each)
Update ARTS To a format that is fully supported	Staff	Implementation based on specific services needed
Electronic pre and post trip forms	Software	Cost based on specific services to be utilized (Geotab and Routeware are both options)
Additional safety equipment including cameras and sensors	Software and Hardware	Cost based on additional safety equipment available from manufacturers
Additional staff to support customer service and HR needs within the organization	Staff	Estimated need of two FTE
Software and system improvements for improved communication and efficiency	Tools and systems to be determined based on specific needs and available options	Estimation dependent on selected tools and programs

12 Summary of Recommendations

Section 12 Summary of Recommendations, includes a complete list of the recommendations from the Analysis. Recommendations are provided in **Table 12-1**, which is intended for ESD's use in planning upcoming projects with improved efficiency and service, and as a potential work plan and approach for the team. **Table 12-1** is set up with the following information:

- **Section Number:** This indicates the section of this Analysis where the recommendation is located.
- **Category:** This is the primary focus of the recommendation.
- **Subcategory:** This is the process or procedure impacted by the recommendation.
- **Recommendation:** This is the recommendation amended for clarity from the Analysis.
- **Cost Impacting:** This indicates if the recommendation has a cost impact (Yes or No).
- **Cost:** This is the order of magnitude cost to implement the recommendation.
- **Timeline for Implementation**: The Analysis uses three types of timelines: Short, Medium and Long. Short is less than one year; Medium is one to three years; and Long is greater than three years. Timelines identified as Short, Medium, and Long indicate the time needed to finish the recommended task. Timelines identified as Ongoing indicate that the recommendation will need to continue to be monitored and managed.
- **Priority:** The Analysis uses three categories of priority[69]: Low, Medium and High. Low is neither urgent nor important. These tasks can be scheduled for later or eliminated if necessary. Medium is tasks that are urgent but less important. These tasks require attention but don't contribute as much to overall objectives. High is "drop everything" tasks. These tasks are both urgent and important, often contributing significantly to long-term goals.
- **Level of Effort:** The analysis uses three categories of level of effort: Low, Medium and High. Low does not require dedicated time and attention by one person or team. Medium requires some dedicated time and attention by one person and/or team. High requires dedicated time and attention from one person and/or team.

[69] Adapted from: Levels of Priority: Key to Peak Productivity in Business and Project Management - SixSigma.us (6sigma.us)

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Table 12-1 Summary of Recommendations

Line Item	Section Number	Category	Subcategory	Recommendation	Cost Impacting (Y/N)	Cost ($)	Timeline for Implementation	Priority	Level of Effort
1	2	Become a Data Driven Organization	Safety	Prioritize safety in performance metrics (e.g., TRIR or number of incidents).	N	N/A	Ongoing	H	L
2	2	Become a Data Driven Organization	Customer Satisfaction	Track the number of complaints received per 1,000 RCU, number of complaints per route or number of complaints per driver.	N	N/A	Ongoing	H	L
3	2	Become a Data Driven Organization	Missed Pickups	Continue to track missed pickups.	N	N/A	Ongoing	H	L
4	2	Become a Data Driven Organization	Driver Performance & Staffing	Track number of available drivers compared to drivers needed.	N	N/A	Ongoing	L	L
5	2	Become a Data Driven Organization	Turnover Ratio	Track the employee turnover rate and benchmark to an initial target of 10%.	N	N/A	Ongoing	L	L
6	2	Become a Data Driven Organization	Truck Availability	Track the number of trucks available daily compared to number of routes to be completed.	N	N/A	Ongoing	L	L
7	3	Prioritize Safety as a Culture	Trainings	Prioritize and develop in-person trainings over virtual trainings for drivers. These trainings need to be interactive and applicable to what a driver experiences on a daily basis.	N	N/A	Medium	M	M
8	3	Prioritize Safety as a Culture	Trainings	Utilize NWRA and SWANA “Safety Stand Down” and other available tools to gain additional awareness around solid waste collection worker safety.	N	N/A	Short	L	L
9	3	Prioritize Safety as a Culture	Trainings	Expand the training room to include additional seating and modern audio-visual (AV) equipment.	Y	>144,000	Short	L	L
10	3	Prioritize Safety as a Culture	AR 75.12 Process	Digitize the AR 75.12 Process. A portal can be developed using ESD’s internal website.	Y	>300 a month	Long	M	M
11	3	Prioritize Safety as a Culture	AR 75.12 Process	Implement an EHS software to track reported safety incidents to streamline the process from incident recording to disciplinary action.	N	N/A	Long	H	M
12	3	Prioritize Safety as a Culture	AR 75.12 Process	Remove redundant or unnecessary signatures from the AR 75.12 Process to minimize bottlenecks and increase the AR 75.12 Process completion rate.	N	N/A	Short	H	L
13	3	Prioritize Safety as a Culture	AR 75.12 Process	Provide adequate training to ARCS on properly reporting incidents using the AR 75.12 Process during Out of Class Assignment (OCA) and job shadowing period when drivers are learning how to take on the role of ARCS.	N	N/A	Ongoing	M	M
14	3	Prioritize Safety as a Culture	AR 75.12 Process	Re-evaluate the Cal/OSHA reporting process within ESD and add this responsibility to the job description of certain roles so ESD staff are knowledgeable on who to contact for reporting.	N	N/A	Short	M	L
15	3	Prioritize Safety as a Culture	Performance Metrics	Develop safety performance measures to track incidents at ESD.	N	N/A	Medium	H	M
16	3	Prioritize Safety as a Culture	Performance Metrics	Create a safety board for drivers that will be displayed in the safety training room that displays pertinent information like Cal/OSHA reporting timelines, steps to report injuries, incidents and near misses internally, broad regulatory and compliance facts and rights of workers regarding safety (Cal/OSHA has many resources online ready for employers to display).	Y	< 100	Short	M	L
17	4	Maintain Effective Communication	Communications Role	Consider a communications role to handle both internal and external communications regarding Measure B. Schedule regular meetings between the Deputy Director and the Districts to ensure that the communications reach frontline employees.	N	N/A	Medium	H	M

Line Item	Section Number	Category	Subcategory	Recommendation	Cost Impacting (Y/N)	Cost ($)	Timeline for Implementation	Priority	Level of Effort
18	4	Maintain Effective Communication	Internal Communications	Develop a dashboard with information like vehicle availability and status, and other information relevant to the status of the vehicle would benefit staff in Collections and DGS Fleet, to eliminate daily emails.	Y	150,000	Short	M	M
19	4	Maintain Effective Communication	Cart Tagging	Develop standard operating procedures for tagging of containers and follow-up with residents by supervisors and train drivers on proper use of tags.	N	N/A	Ongoing	H	M
20	4	Maintain Effective Communication and Prioritize Safety	Safety and Communication	Add one additional dispatcher.	Y	$126,167	Short	H	M
21	4	Maintain Effective Communication	Communication	Annual training on Dispatch communication.	N	N/A	Short	H	L
22	5	Missed Pickups	Data Tracking	Standardize how and what data is collected and tracked for each MPU case.	N	N/A	Short	H	L
23	5	Missed Pickups	Maximize Use of Fleet	Adjust DGS Fleet Procurement Plan and maintenance procedures to increase the number of trucks available daily.	N	N/A	Short	M	L
24	5	Missed Pickups	Route Management	Rebalance sections and routes.	N	N/A	Short	M	M
25	6	Illegal Dumping	Data Management	Improve efficiency and routing for collection of illegal dumping, including categorization of reports.	N	N/A	Medium	H	M
26	6	Illegal Dumping	Programs	Consider adding additional cleanup events to collect additional items and service more areas of the city, with a particular focus in areas where more frequent requests are made.	Y	Estimated cost $11,000 per "major" clean up event	Medium	M	H
27	6	Illegal Dumping	Programs	Consider pickup of bulky waste to reduce illegal dumping and reduce the cost of collections and burden of scheduling special pickups.	Y	Unknown	Medium	M	H
28	7	People	Staffing resourcing	Add the following positions in ESD: - Human Resources Coordinator (Program Manager) - Automotive Engineer - Communications Coordinator (Program Manager) - Performance Management (Program Manager) - Organization Effectiveness Specialist 3 - Performance Management Program Coordinator - Safety Officer and Employee Development - Additional Road Mechanic (second shift) - Code Compliance Officer - Two Geographic Information Systems Analysts - Supervisor - Add 25 more drivers to Sanitation Driver 3 position	Y	6,970,652	Short	H	H
29	7	People	Employee Support	Ensure a Payroll Specialist is available on-site during the week for drivers.	N	N/A	Short	L	L
30	7	People	Employee Support	Maintain clear documentation of the following: - Job Descriptions - Succession Plans - Standard Operating Procedures	N	N/A	Short	H	H
31	7	People	Employee Support	Reinvigorate employee recognition and annual employee surveys.	Y	Insignificant	Short	H	L
32	8	Facility	Trainings	Develop dedicated computer lab and training room for Miramar facilities and collections employees.	Y	Unknown	Medium	H	H

Line Item	Section Number	Category	Subcategory	Recommendation	Cost Impacting (Y/N)	Cost ($)	Timeline for Implementation	Priority	Level of Effort
33	8	Facility	Safety	Improve fuel lanes to reduce pedestrian and vehicle conflicts at the Miramar facility including additional protection of fueling stations and signage.	N	N/A	Short	H	M
34	8	Facility	Building	Relocate carts from the Miramar facility to an off-site, covered storage area including a cart repair shop to repair carts and replace parts as needed.	Y	14 million to 17 million	Long	H	H
35	8	Facility	Equipment	Add two hot water pressure washers with dual nozzle to clean vehicles for PM and repairs. Provide an enclosed room for high pressure washers and tanks and soap drums. Size tanks to support wash of at least four refuse trucks per hour.	Y	290,000	Short	H	M
36	8	Facility	Equipment	Provide eye wash station for use in the event of an emergency.	Y	Insignificant	Short	H	H
37	8	Facility	Equipment	Provide lubrication stations at locations in sufficient quantity to provide expedited lubrication of required components on vehicles, utilizing the frequency recommended by manufacturers.	N	N/A	Medium	M	H
38	8	Facility	Building	Expanding the parts storeroom to accommodate the additional storage of parts and materials that are frequently used or experience delay in availability, to improve speed of repairs.	Y	3.4 million	Long	L	H
39	8	Facility	Building & Equipment	Expanding the welding and fabrication shop, to be located adjacent to the welding bay. Update with welding table, arc welder, MIG and TIG welders, plasma cutter, vertical and horizontal band saws, drill press, buffer/grinder with pedestal, storage areas for welding materials with cabinets, steel storage racks, bins and a bridge crane coverage over both shop area and welding bays.	Y	3 million to 4 million	Short	H	H
40	8	Facility	Building	Expand and relocate the existing fluids and compressor room separate from other areas to prevent noise migration, dirt and fumes. Add double door exterior access for deliveries and adequate operational clearance for the access and maintenance of tanks, compressors, and dryers.	Y	300,000	Long	L	H
41	8	Facility	Building	Make improvements to the welding bay and fabrication shop.	Y	720,000	Short	H	H
42	8	Facility	Building	Construct previously proposed mezzanine.	Y	500,000	Short	H	H
43	8	Facility	Equipment	Repair 3 non-operational bays, with a fully functioning vehicle lift.	Y	900,000	Short	H	H
44	8	Facility	Staffing resourcing	One additional Fleet Technician (as a road mechanic) and one additional welder are recommended to increase the amount and timeliness of work orders including PM and repairs. The recommended additional staff will also assist with covering PTO and training time that City employees receive.	Y	252,864	Short	H	H
45	9	Equipment	Vehicles	Replace vehicles on a regular schedule (every 7 years) to improve fleet safety and efficiency and reduce out of service days.	N	N/A	Short	L	M
46	9	Equipment	Vehicles	Maintain at least 140 frontline vehicles that are available daily that are less than 7 years old.	N	N/A	Medium	H	H
47	9	Equipment	Vehicles	Establish a set of spare collection vehicles that are greater than 7 years of age as “Holdover” vehicles. SWANA recommends that municipalities maintain a backup pool of approximately 20% of the total number trucks needed to service their routes.	N	N/A	Medium	H	H

Line Item	Section Number	Category	Subcategory	Recommendation	Cost Impacting (Y/N)	Cost ($)	Timeline for Implementation	Priority	Level of Effort
48	9	Equipment	Vehicles	Maintain adequate number of vehicles to service the daily route needs plus an additional 20% of the trucks be retained as spares.	N	N/A	Medium	H	H
49	9	Equipment	Vehicles	Set a truck replacement schedule, along with planned procurement dates based on the lead time for new vehicles. Appropriate future budgeting is necessary to purchase a set number of new trucks every year and order new vehicles such that they are ready to be in service when the vehicles they replace are set to be retired.	Y	430,000 per truck	Medium	H	H
50	9	Equipment	Vehicles	Conduct preventative maintenance on existing fleet in accordance with each vehicle's operating manual.	Y	290,000	Medium	H	H
51	9	Equipment	Vehicles	Set standards for data tracking and performance management of vehicles and then educate ESD and DGS Fleet on these metrics and why they are critical.	N	N/A	Short	H	M
52	9	Equipment	Vehicles	Plan for future regulation changes in vehicle and fleet fuel type mixes in particular to comply with known CARB regulations and the City's Climate Action plan (CAP).	N	N/A	Short	M	M
53	9	Equipment	Carts	Review replacement of at least trash carts and potentially recycling carts to provide appropriate service to customers.	N	N/A	Long	H	H
54	10	Routes	Route Management	Reassign the geographic area of each section. All routes within one section should be in proximity to each other, not spread out across the City.	N	N/A	Short	H	H
55	10	Routes	Route Management	Track set out rates and tonnage collected per route daily.	N	N/A	Ongoing	H	M
56	10	Routes	Route Management	Rebalance sections so there is one route per driver per day and there is adequate time for off route activities such as the drivers' lunch and break times, pre- and post-trip inspections and travel time to and from route and disposal locations.	N	N/A	Short	H	M
57	11	Technology	Software	Designate one employee in ESD to be responsible for Routeware and its implementation which should include management of the Routeware contract and its Scope of Work.	Y	Cost of one full time employee	Short	M	L
58	11	Technology	Software	Explore additional functionalities within Routeware.	Y	Cost of one full time employee	Short	L	L
59	11	Technology	Equipment	Provide tablets in every vehicle that are operating and create policies to enforce use of and leaving tablets on when vehicles are in use.	Y	~500 each tablet	Short	M	L
60	11	Technology	Software	Replace ARTS with Routeware or another suitable driver, vehicle, and tonnage tracking system. The new system needs to allow for electronic upload of information rather than manual data entry processes.	Y	Dependent on selected replacement	Medium	H	H
61	11	Technology	Software	Convert pre- and post- trip forms to an electronic platform. Collection and Fleet should collaboratively develop a solution that works for both Departments.	Y	Cost based on specific services needed	Short	H	L
62	11	Technology	Equipment	Include the option of additional safety cameras and sensors to the vehicles that are being ordered as a part of the fleet upgrade.	Y	Based on manufacturer availability	Ongoing	H	L
63	11	Technology	Staff	Create role for an on-site HR liaison to oversee the rewriting of job descriptions to ensure that the technology tools are included. Develop a training curriculum based on needs.	Y	Cost of two full time employees	Medium	M	M

Line Item	Section Number	Category	Subcategory	Recommendation	Cost Impacting (Y/N)	Cost ($)	Timeline for Implementation	Priority	Level of Effort
64	11	Technology	Software	Explore software and system improvements for improved communication and efficiency	Y	Dependent on selected tools and programs	Medium	M	M

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A

Appendix A – San Diego Cost of Service Study Operational Efficiency Workshops Summary

The City of SAN DIEGO

Cost of Service Study

Operational Efficiency Workshops

Overview, Objectives & Participants

Workshops Overview

Date/Time	Workshop Goals & Objectives
Monday, July 22 8:30-12:30 p.m.	• Team Building • Shared Project Understanding • Identification of Strengths & Areas of Improvement • Consensus Building
Tuesday, July 23 12:30-4:30 p.m.	• Team Building • Development of Approach & Strategies to Address Areas of Improvements • Goals & Vision Setting for What Lies Ahead • Consensus Building
Friday, July 26 12:30-4:30 p.m.	• Team Building • Measuring Outcomes & Success • Developing a Framework for Implementation • Consensus Building

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Workshops Participants

- **Andrea Deleon**, Deputy Director, Waste Reduction Division
- **Arnie Reyes**, Program Manager, Support Services Division
- **Bradley Albison**, Area Refuse Collection Supervisor
- **Brian Curran**, Area Refuse Collection Supervisor
- **Chase Weigand**, Interim Program Manager, Collection Services Division
- **David Onate**, Program Manager, Fleet Operations
- **Desmond Stecher**, Safety and Training Manager, Support Services Division
- **Franklin Coppersmith**, Deputy Director, Clean SD Division
- **George Katsikaris**, Program Manager, Support Services Division
- **Jenny Gonzalez**, Customer Services Manager, Support Services Division
- **Jeremy Bauer**, Assistant Director, Environmental Services Department
- **John Hsu**, Information Systems Analyst, Support Services Division
- **Tito Rabago**, Fleet Manager, Fleet Operations
- **Kirby Brady**, Interim Director, Environmental Services Department
- **Luis Nunez**, District Refuse Collections Supervisor
- **Maria Diego**, Senior Management Analyst, Collection Services Division
- **Matthew Cleary**, Assistant Director, Environmental Services Department
- **Michael Tully**, Assistant Director, Department of General Services
- **Mike Simonds**, Deputy Director, Fleet Operations
- **Mohammad Yassin**, Associate Management Analysis, Collection Services Division
- **Monique Coleman**, Interim Program Coordinator, Collection Services Division
- **Musheerah Little**, Director, Department of General Services

- **Paula LaBond**, Area Refuse Collections Supervisor
- **Rania Amen**, Acting Deputy Chief Operating Officer
- **Rolando Gonzalez**, Area Refuse Collections Supervisor
- **Sarah Sims**, Interim Deputy Director, Collection Services Division
- **Jennefer Klennert**, HDR Consultant Team
- **John Carlton**, HDR Consultant Team
- **Lisa Marie Alley**, HDR Consultant Team
- **Stephen Kuhr**, HDR Consultant Team
- **Tiffany Mendoza**, HDR Consultant Team

Workshops Summary & Input Provided

What We Heard

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Workshop Day 1: Operational Strengths & Areas of Improvement

Top Categories

People

Process

Facilities & Equipment

Technology

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Workshop Day 1:
Operational Areas of Improvement

People

- Resources Across the Board (Staffing Levels)
- Staff Development (Training, Onboarding, Mentoring, Enforcement)
- Communications (Internal, External)
- Employee Empowerment & Recognition

Process

- SOP & Enforcement (Establishment & Implementation, Roles & Responsibilities)
- Planning & Budgeting (Coordination, Lifecycle of Equipment, Electronic File Management)
- Performance Measures (Required vs Desired)

Facilities & Equipment

Equipment:

- Resources
- Vehicle Availability
- Vehicle Operations
- Containers Maintenance

Facilities:

- Lack of Maintenance
- Security
- Right Size Facilities
- Container Management

Technology

- Asset Management & Implementation (Staff training, IT Support)
- Tools at the Facilities (Computers, Printers, Wifi)
- Modernizing Tools (Timecards, Accounts)
- Full Implementation of Existing Technology Tools
    - Routeware
    - Get it Done Ap
- Cameras & AI

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Workshop Day 2:
Operational Areas of Improvement
Approaches and Strategies

Overall Themes

- HR Resources
- Hiring More People & Resources
- Employee Training/Staff Growth
- Employee & Supervisor Empowerment, Expectations and Recognition
- Centralize Materials
- Utilization of Technology
- Equipment, Equipment, Equipment
- Creating a Culture of Quality & Safety

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Workshop Day 3:
Pillars for Successful Implementation of Measure B

People

- Re-evaluate ratio of supervisors to drivers, drivers to vehicles and vehicles to mechanics.
- Increase engagement in employee recognition.
- Update job duties within ESD to be clear on roles and responsibilities
- Create succession planning for key roles

Process

- Update documents and identify gaps/create policy documents for missing needs
- Compile documents in one central location and create a document "map"
- Grow accountability and knowledge of consequences.

Facilities & Equipment

Equipment:

- Review truck life cycle and plan accordingly
- Predictive maintenance (repair before it breaks)

Facilities:

- Improved safety on sites
- Dedicated computer lab and training room for employees

Technology

- Ensuring all software systems use application programming interface (API) key so they can "talk" to each other
- Improved technology at facilities and on vehicles
- Site visits to observe innovative technology in operation

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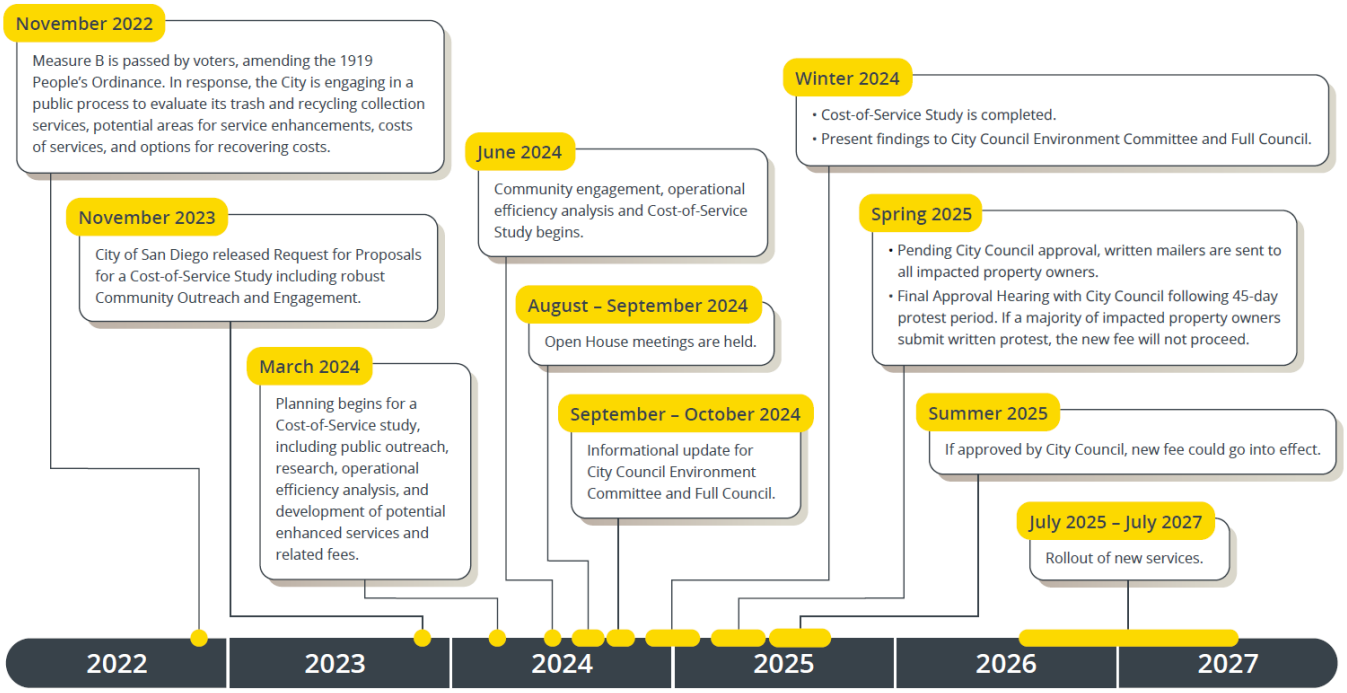
What Comes Next

Timeline: Cost of Service Study



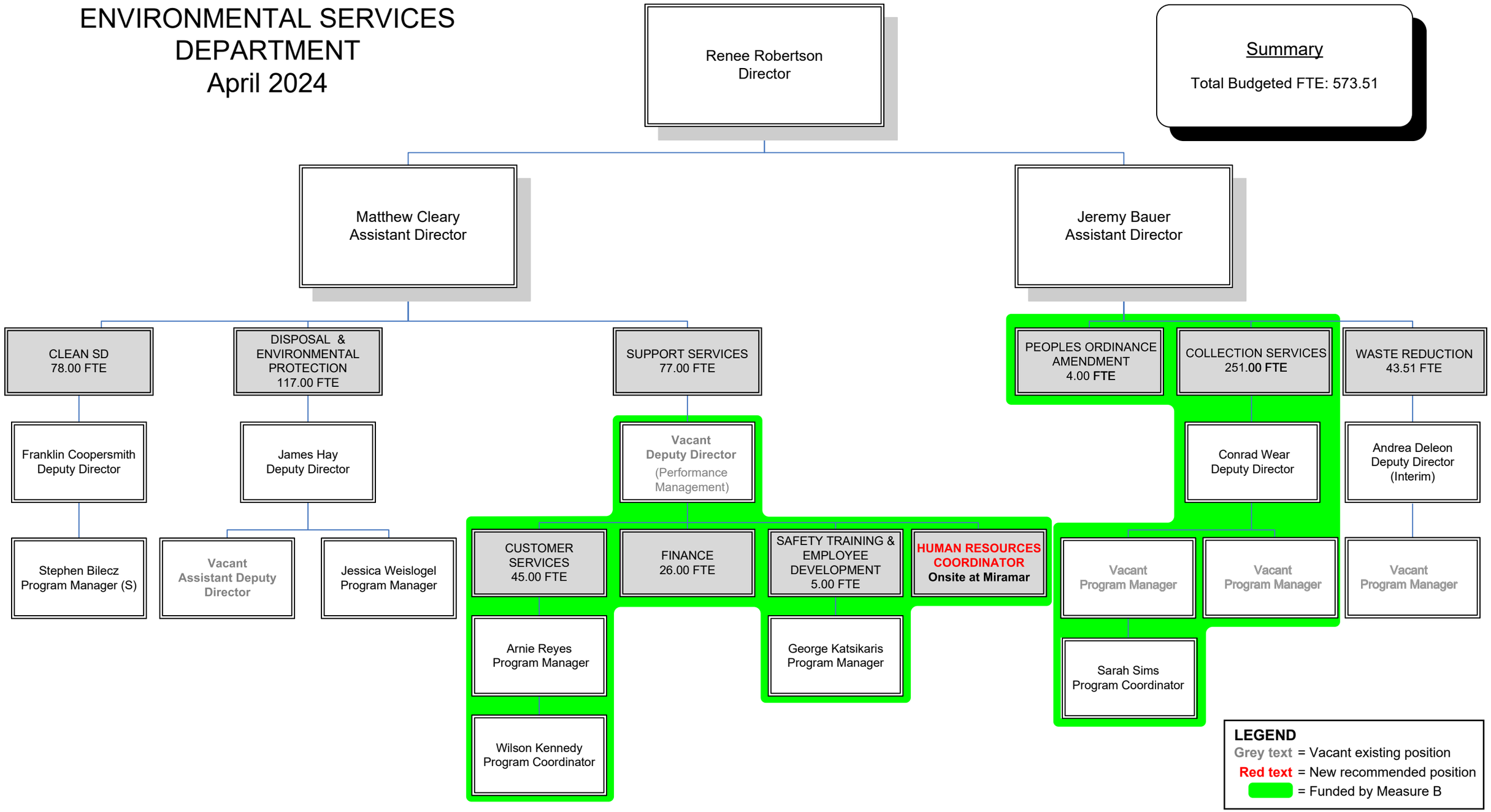
Operational Efficiency Study: Next Steps

- Deep Dive into Data
- Verification of Best Practices
- Developing Recommendations
- Draft Report for City Review - September 6
- HDR to continue to coordinate with City staff throughout process

B

Appendix B – San Diego Environmental Services Department Org Chart, Updated

ENVIRONMENTAL SERVICES DEPARTMENT
April 2024



ENVIRONMENTAL SERVICES DEPARTMENT
CLEAN SD
April 2024

Deputy Director/2214
F Coopersmith/31021970
1.00 FTE 100000

Summary
Budgeted FTE 78.00
Supplemental FTE 1.00

FIELD OPERATIONS
Public Works Supt/1977
A Perez/31004688
1.00 FTE 100000

Field Ops Support 1
Public Works Supv/1961
M Buelna/30003515
1.00 FTE 100000

- Equipment Operator 2/ 1440
  S Futialo/30003505
  1.00 FTE 100000
- Heavy Truck Driver 2/ 1512
  T Giles/30003509
  D Ruiz-Rosales/ 31011428
  F Vargas/31012838
  3.00 FTE 100000
- Heavy Truck Driver 1/ 1513
  R Allen/30003504
  1.00 FTE 100000
- Utility Worker 2/1979
  J Gutierrez/30003534
  Vacant/30003535
  2.00 FTE 100000
- Utility Worker 1/1978
  B White/30003521
  Vacant/30003526
  2.00 FTE 100000

Field Ops Support 3
Public Works Supv/1961
A Todd/30003684
0.75 FTE 700039
0.25 FTE 700048

- Heavy Truck Driver 1/ 1513
  Vacant/30003533
  D Freeman/30003670
  1.00 FTE 100000
  1.00 FTE 700048
- Utility Worker 2/1979
  J McRaney/30003527
  C Arms-Hill/30003530
  J Olivo Aguirre/ 30003531
  J Vinoray/30003532
  4.00 FTE 100000
- Utility Worker 1/1978
  T Crosby/30003525
  1.00 FTE 100000

Public Works Supv/1961
J Lacey/31012836
1.00 FTE 100000

- Heavy Truck Driver 2/ 1512 L
  Galera/31022838
  Vacant/31022895
  J Williams/31023016
  F Hernandez/31024935
  S Gilliam/31024995
  Vacant/31024996
  Vacant/31025164
  7.00 FTE 100000
- Heavy Truck Driver 1/ 1513
  S Morris/31009758
  R McDavid/31011427
  2.00 FTE 100000
- Utility Worker 2/1979
  Vacant/31012840
  Vacant/31012841
  H Brown/31012842
  3.00 FTE 100000

Heavy Truck Driver 2/ 1512
E Garcia/30003507
D Davis/30003508
A Egan/31012837
3.00 FTE 100000

- Heavy Truck Driver 1/ 1513
  H Sanchez Llamas/ 31009757
  1.00 FTE 100000
- Utility Worker 1/1978
  A Zepeda/30003522
  A Munoz/30003523
  A Uribe/30003524
  J Estrada Vasquez/ 30003528
  T Crosby/30003529
  5.00 FTE 100000

Program Manager/2270
S Bilecz/31017075
1.00 FTE 100000 (S)

CODE ENFORCEMENT
Sr CC Supv/1912
M Dykes/31012830
1.00 FTE 100000

Abatements
CC Supervisor/1357
G Warren/31012831
1.00 FTE 100000

- Code Compliance Officer/1356
  E Velasquez/30003494
  K Gower/30003556
  R Tabbs/31015477
  J Jewett/31015751
  J Chavez/31016927
  P Sroka/31017000
  C Miller/31022866
  H Cisneros/31022896
  J Solomon/31022940
  B Thompson/31025252
  10.00 FTE 100000

Abatements
CC Supervisor/1357
T Carrington/31017782
1.00 FTE 100000

- Code Compliance Officer/1356
  H Serrano/30003492
  K Napoleon/31024998
  2.00 FTE 100000

Abatements
CC Supervisor/1357
T Sadler/31015528
1.00 FTE 100000

- Code Compliance Officer/1356
  L White/30003558
  D Yu/30003665
  A Evans/30003666
  D Perry/30003667
  M Fusco/31016976
  T Barkley/31017781
  J Escoto/31017882
  D Jarrett/31019673
  8.00 FTE 100000

Citywide Code Enforcement
CC Supervisor/1357
S Workman/31019877
1.00 FTE 100000

- Code Compliance Officer/1356
  J Khalifah/30003493
  D Sanchez/30003498
  Vacant/31012833
  T Smith/31016903
  J Molina/31022914
  5.00 FTE 100000

Citywide Code Enforcement
CC Supervisor/1357
T Powers/30019122
1.00 FTE 100000

- Code Compliance Officer/1356
  E Trillo/30003497
  F Cruz/30003499
  B Garcia/30013180
  J Bradley/31012832
  J Ramsey/31012834
  5.00 FTE 100000

LEGEND
Grey text = Vacant existing position
Red text = New recommended position
= Funded by Measure B

ENVIRONMENTAL SERVICES DEPARTMENT
COLLECTION SERVICES
April 2024

Deputy Director/2214
C Wear/30002564
0.75 FTE 100000
0.25 FTE 700048

Program Manager/
2270
Vacant/31000382
0.50 FTE 100000
0.50 FTE 700048

Summary
Budgeted FTE 251.00
Provisional FTE 1.00
Supplemental FTE 19.00

CONTINUED ON PAGE 4

District Refuse Collection Supv/1839
K Digiulio/30002563
0.75 FTE 100000
0.25 FTE 700048

Area Refuse Collection Supervisor/1835
B Curran/30003655
1.00 FTE 700039

Utility Worker 2/1979
Vacant/30003656
K Moore/30003657
D Schrader/30003658
Vacant/30003659
Vacant/30003728
M Russell/30003729
N Johnson/30003730
R Littleton/30003731
M Blancet/31007354
A Rodriguez/31017925
Vacant/31017927
8.00 FTE 100000
3.00 FTE 700048

Utility Worker 1/1978
A Diego/31022856
P Reyes/31022883
L Long Jr/31023009
Vacant/31026826 (S)
Vacant/31026825 (S)
Vacant/31026754 (S)
3.00 FTE 100000
3.00 FTE 100000 (S)

Public Works Dispatcher/1766
P Van Cleave/30002526
C Wells/30002527
M Wells/31025159
2.20 FTE 100000
0.10 FTE 700039
0.70 FTE 700048

Area Refuse Collection Supervisor/1835
P LaBond/30003721
1.00 FTE 700048

Sanitation Driver 3/1824
Vacant
Vacant
Vacant/30002531
1.00 FTE 100000

Sanitation Driver 2/1832
D Ford/30002546 (T)
T Hill/30002548
E Perez/30002551 (T)
J Cook/30002554
L Chavez Bobadilla/
30007569
S Marquez/30007597
M Murrell/30007608
J Nunes/30007618
H Rahim/30007625 (1)
S EscaleraJaime/30007628 (T)
S McKinney/31018403 (S) (T)
J Lopez/31018404 (S)
G Oruta/31018406 (S) (T)
B Daniel/30008025 (T)
T Cluke//30008032
D Cook/30008033
E Razo/31003432
S Santos/30003709
A Trejo/30003715
M Reyes/30003717
R Castaneda/30007989
R Iapala/30007996 (T)
M Barker/30008000
R Castro/30008009
A Ramirez Ramirez-
Leon/30008013
Vacant/30008020
M Valdez/30008035
M Montoya/30008039
M Hamilton/30008041
J Garcia/31018411 (S) (T)
P Shaw/31018413 (S)
T Bowman/31018408 (S)
E Rojas Jr/31020558
B Smith/31020571
G Delgadillo/31020579
24.00 FTE 100000
6.00 FTE 100000 (S)
5.00 FTE 700048

Area Refuse Collection Supervisor/1835
K Simmons/30002558
1.00 FTE 100000

Sanitation Driver 3/1824
Vacant
D Cordice/30002535
Vacant/30003696
1.00 FTE 100000
1.00 FTE 700048

Sanitation Driver 2/1832
A Macedo/30002543
A Thompson/30002544
D Verdugo/30007570
A McCorley/30007576
M Osoimalo/30007580
X Dent/30007589
N Williamson/30007614
R Galloway/30007621
R Storm/30007624
Vacant/30008008
O Bastidas/30003707
S Thrower/30008012
R Fitiausi/30008027
V Amador/31003431
K Clayburn/30007998
10.00 FTE 100000
5.00 FTE 700048

Area Refuse Collection Supervisor/1835
B Albison/30002555
1.00 FTE 100000

Sanitation Driver 3/1824
Vacant
Vacant
R Rowe/30003694
1.00 FTE 700048

Sanitation Driver 2/1832
O Medina/30002545
A Madison/30007547
C Tarling/30007549
M Rodriquez/30007558
E Garcia Estrada/30007560
J Gonzalez/30007568
S Galvez/30007572
S Scales/30007584
J Rockwell/30007588
T Fitiausi/30007590
J Silva/30007595
C Hernandez/30007606
N Trejo/31007274 (T)
J Holden/31009398
R Buckley/30003704
D Castaneda/30008001
M Esquivel/30008018
C Scherff/30008021
F Escobar/30007995
J Corella Abril/31020552
16.00 FTE 100000
4.00 FTE 700048

District Refuse Collection Supv/1839
Vacant/31023020
1.00 FTE 100000 (S)
Supplemental

Area Refuse Collection Supervisor/1835
Vacant/30003720
1.00 FTE 100000

Sanitation Driver 3/1824
Vacant
Vacant
J Brown/30002528
1.00 FTE 100000

Sanitation Driver 2/1832
F Al-Hibshi/30007578 (T)
A Ruvalcaba/30007609 (T)
C Kennedy/30007607
M Franklin/30007553 (1)
F Salcedo/30007582
T Washington/30007611
A Ruiz Macias/30007626 (T)
D Alvarez Dias/30007627 (1)
J Best/31018351 (S) (T)
S Schwarz/31018401 (S) (1)
J Farfan/31018402 (S) (T)
J Moore-Pettis/31018405 (S)
B Forster/30003697(T)
J Eddington/30003710
E Orozco/30007994
V Franklin/30008003
S White/30008015
R Carter/30008042
C Hill/30008045 (T)
M Mack/30007993
S Leomiti/30008029 (T)
M Pumariega/30008031
J Lujan/30008037
F Montiel/30008038
S Shannon/30008044 (1)
A Serna/31018407 (S) (T)
L Favela/31018409 (S) (T)
N Launiu/31020567
15.00 FTE 100000
6.00 FTE 100000 (S)
7.00 FTE 700048

Area Refuse Collection Supervisor/1835
S Rodriguez/30002560
1.00 FTE 100000

Sanitation Driver 3/1824
E Rojas/30002530
Vacant/30002532
R Verdugo/30003701
2.00 FTE 100000
1.00 FTE 700048

Sanitation Driver 2/1832
D Bugg/30002537
G Hubert/30002539
M Jacobs/30002541
V Carrillo/30002542
S Glover/30007548
A Antillon/30007550
V Padilla/30007555
L Parra/30007556
J Payan/30007593
F Limon/30007610
R Young/30007616
M Sanchez/30007623
J Lindsay/30003708
K Flores/30007986
Es Garcia/30008017
J Nunez/30008026
T Clanton/30008028
O Munoz/31009394
G Lucio Rivera/31020578
13.00 FTE 100000
6.00 FTE 700048

Area Refuse Collection Supervisor/1835
K Biggers/30002559
1.00 FTE 100000

Sanitation Driver 3/1824
Vacant
Vacant
M Means/30002536
1.00 FTE 100000

Sanitation Driver 2/1832
A Jones/30002538
A Long/30007557
M Liverpool/30007561
L Monarrez/30007579
E Valdovinos/30007600
O Johnson/30007602
S Alvarez/30007603
L Ruvalcaba Jr/
30007615 (T)
C Johnson/30007617
E Johnston/30007619
O Rodriguez/30007629
D Ortega/31009397
M Tuitasi/30007987
Vacant/30008014
Ez Garcia/30008022
J Mason/30008024
Ad Johnson/31009395
B Arrington/30007999
F Rangel/31020550
Vacant/31017881 (P)
14.00 FTE 100000
5.00 FTE 700048
1.00 FTE 100000 (P)

District Refuse Collection Supv/1839
L Nunez/30002562
0.75 FTE 100000
0.25 FTE 700048

Area Refuse Collection Supervisor/1835
S Bailey/30003722
1.00 FTE 700048

Sanitation Driver 3/1824
Vacant
Vacant/30007545
J Zaragoza/30003700
1.00 FTE 100000
1.00 FTE 700048

Sanitation Driver 2/1832
M Nieto/30007564
R Hayes/30007581
D Sawyer/30007583
J Parkhill/30007585
K Gaines/30007587
R Hill/30007591
D Bullock/30007592
T Wilson/30007594
E Verdugo/30007596
A Sanchez/30007598
F Webb/30007599
W Lewis/30007605
A Wilder/30003703
M Andrews/30003705
T Henry/30007984
J San Nicolas/30008004
J Serrano/31009396
D Cruz/30008005
A Valdivia/31020551
14.00 FTE 100000
5.00 FTE 700048

LEGEND
Grey text = Vacant existing position
Red text = New recommended position
= Funded by Measure B

CONTINUED FROM PAGE 3

ENVIRONMENTAL SERVICES DEPARTMENT
COLLECTION SERVICES
April 2024

Deputy Director
C Wear
Continued

Program Manager/2270
Vacant31021930
1.00 FTE 100000

Program Coordinator/
2282
S Sims/31022051
1.00 FTE 100000

Assoc Mgmt Analyst/
1218
M Alsheikh Yassin/
31009563
0.60 FTE 100000
0.40 FTE 700048

Admin Aide 2/1107
C Storno/31025165
1.00 FTE 100000

Supv Mgmt Analyst/
1917
M Coleman/30003725
0.50 FTE 100000
0.50 FTE 700048

Assoc Mgmt Analyst/
1218
C Williams/30003653
1.00 FTE 700039

Payroll Specialist 2/1648
M Monillas/30002566
J Del Rosario/31006501
1.12 FTE 100000
0.06 FTE 700039
0.82 FTE 700048

Senior Mgmt Analyst/
1106
M Diego/30003689
1.00 FTE 700048

Admin Aide 2/1107
K Andrews/30003724
1.00 FTE 700048

Account Clerk/1104
Vacant/30002523
1.00 FTE 100000

Supv Mgmt Analyst/
1917
Vacant/31010031
0.35 FTE 100000
0.34 FTE 700039
0.31 FTE 700048

Automotive
Engineer

Senior Mgmt Analyst/
1106
Vacant/31020267
1.00 FTE 100000

E&E Intern
J Mosqueda/31021941
I Ichiyama/31021942
Vacant/31022228
S Aguilar/31021945

Admin Aide 2/1107
X Vue/31023801
1.00 FTE 100000

Cashier/1330
K Hodges/30019232
E Tuitasi/30003688
1.00 FTE 100000
1.00 FTE 700048

District Refuse
Collection Supv/1839
E Carter/31020125
1.00 FTE 100000

Area Refuse Collection
Supv/1835
A Sandoval/31019826
1.00 FTE 100000

Sanitation Driver 3/1824
Vacant
Vacant
Vacant

Sanitation Driver 2/1832
A Valencia/30008019
S Garcia/31018350 (S)
M Arango/31018412 (S)
G Gonzalez Martinez/
31020559
A Vejar/31020576
R Razo/31020581
M Lopez Castillo/31020582
D Cardenas/31020583
I Reynoso/31020588
7.00 FTE 100000
2.00 FTE 100000 (S)

Area Refuse Collection
Supv/1835
R Gonzalez/31023235
1.00 FTE 100000

Sanitation Driver 3/1824
Vacant
Vacant
Vacant

Sanitation Driver 2/1832
J Ordaz/30007992
T Testa/31020554
R Morales/31020557
J Berber/31020562
J Anaya/31020572
M Tuisee/31020580
G Escalante/31020585
T Saenz Jr/31020586
G Jaime/31020589
9.00 FTE 100000

Area Refuse Collection
Supv/1835
New FY24/31024826
1.00 FTE 100000

Sanitation Driver 3/1824
Vacant
Vacant
Vacant

Sanitation Driver 2/1832
A Cerone/31020561
E Duran Urias/31020563
C Perez/31020565
J Bolanos/31020566
S Doxey/31020569
W Faddis/31020570
B Nunez/31020573
C Fermin/31020575
H Herrera/31020577
M Ruiz Torrez/31020584
10.00 FTE 100000

Area Refuse Collection
Supv/1835
B Ocegueda/31023236
1.00 FTE 100000

Sanitation Driver 3/1824
Vacant
Vacant
Vacant

Sanitation Driver 2/1832
L Arango/30003716
W Cervantes/30007988
V Jaramillo/30008023
J Garcia/30008030
G Rodriguez/31020553
K Franklin/31020556
R Mendez/31020560
R Ramirez/31020564
J Hernandez/31020568
J Arredondo/31020574
10.00 FTE 100000

Area Refuse Collection
Supv/1835
L Ruvalcaba/31019698
1.00 FTE 100000

Sanitation Driver 3/1824
Vacant
Vacant
Vacant

Sanitation Driver 2/1832
J Lopez/30003706
V Nunez/30003712
B Ordille/30003714
R Martinez/30007562
O Naranjo/30007563
J Ramos/30007575
H Gonzalez/31007273
S Ramos/31018410 (S)
E Aguilar Lucio/31020555
R Llerenas/31020587
G Rios/30007990
9.00 FTE 100000
1.00 FTE 100000 (S)
1.00 FTE 700048

LEGEND
Grey text = Vacant existing position
Red text = New recommended position
= Funded by Measure B

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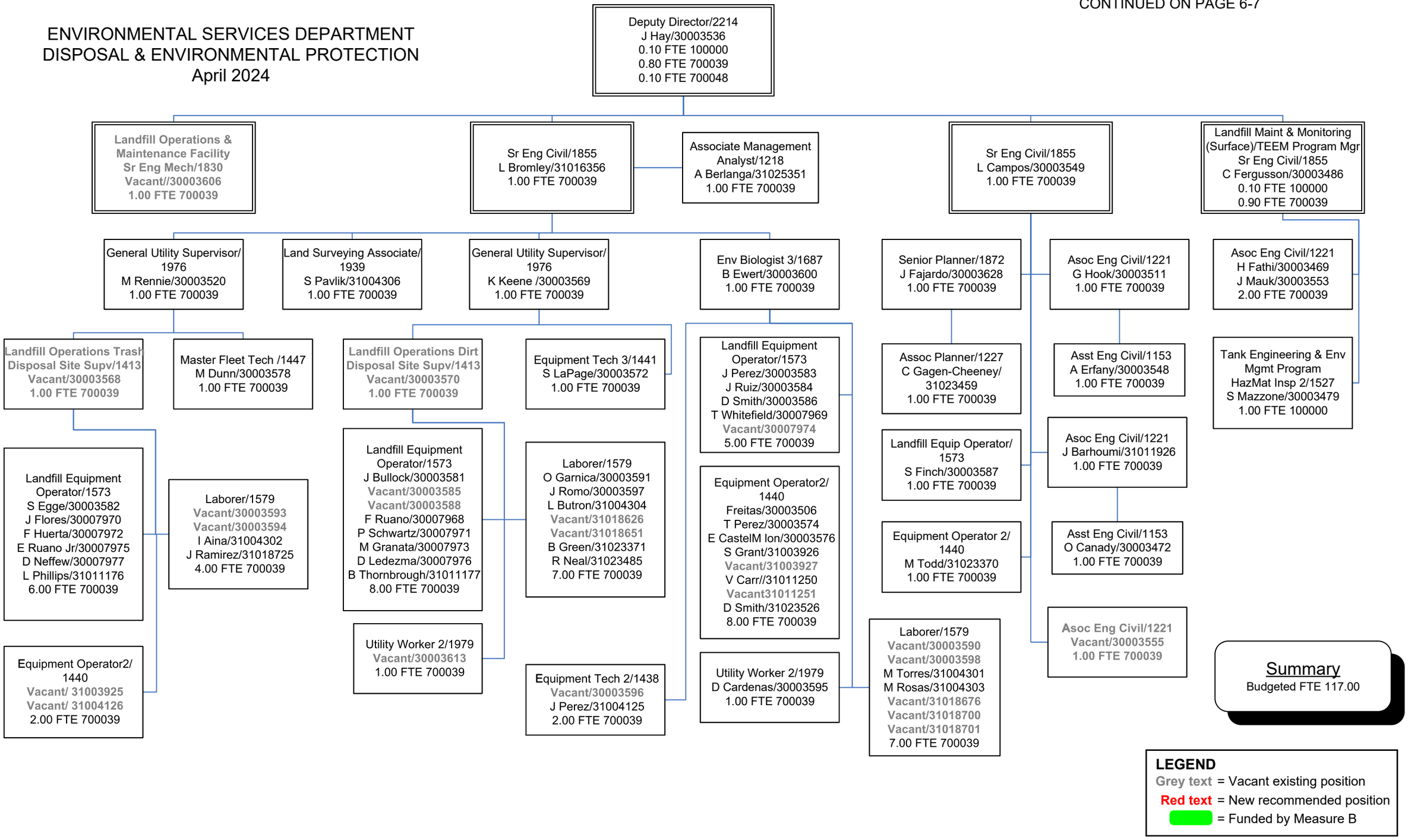
ENVIRONMENTAL SERVICES DEPARTMENT
DISPOSAL & ENVIRONMENTAL PROTECTION
April 2024



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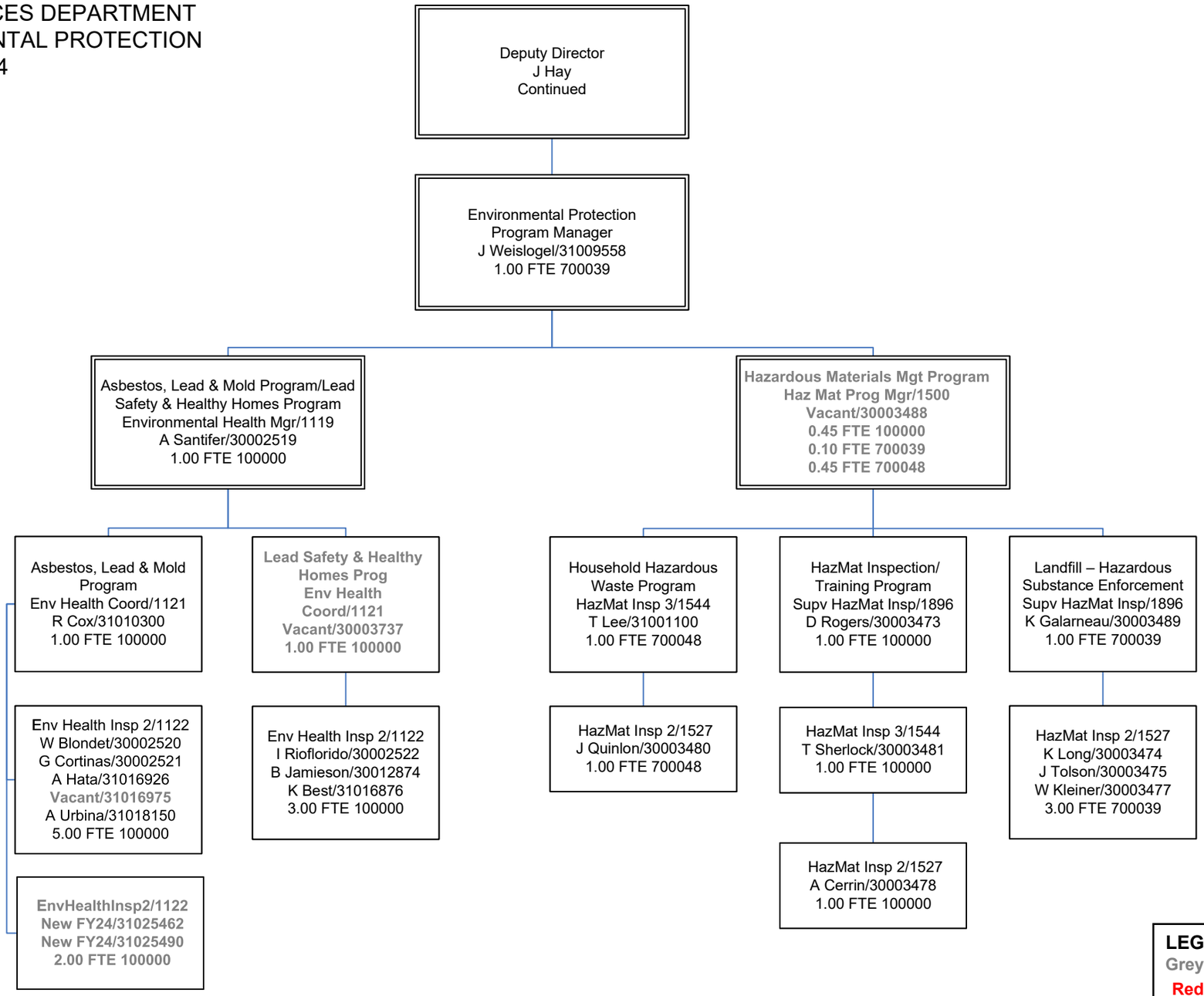
ENVIRONMENTAL SERVICES DEPARTMENT
DISPOSAL & ENVIRONMENTAL PROTECTION
April 2024



LEGEND

Grey text = Vacant existing position

Red text = New recommended position

= Funded by Measure B

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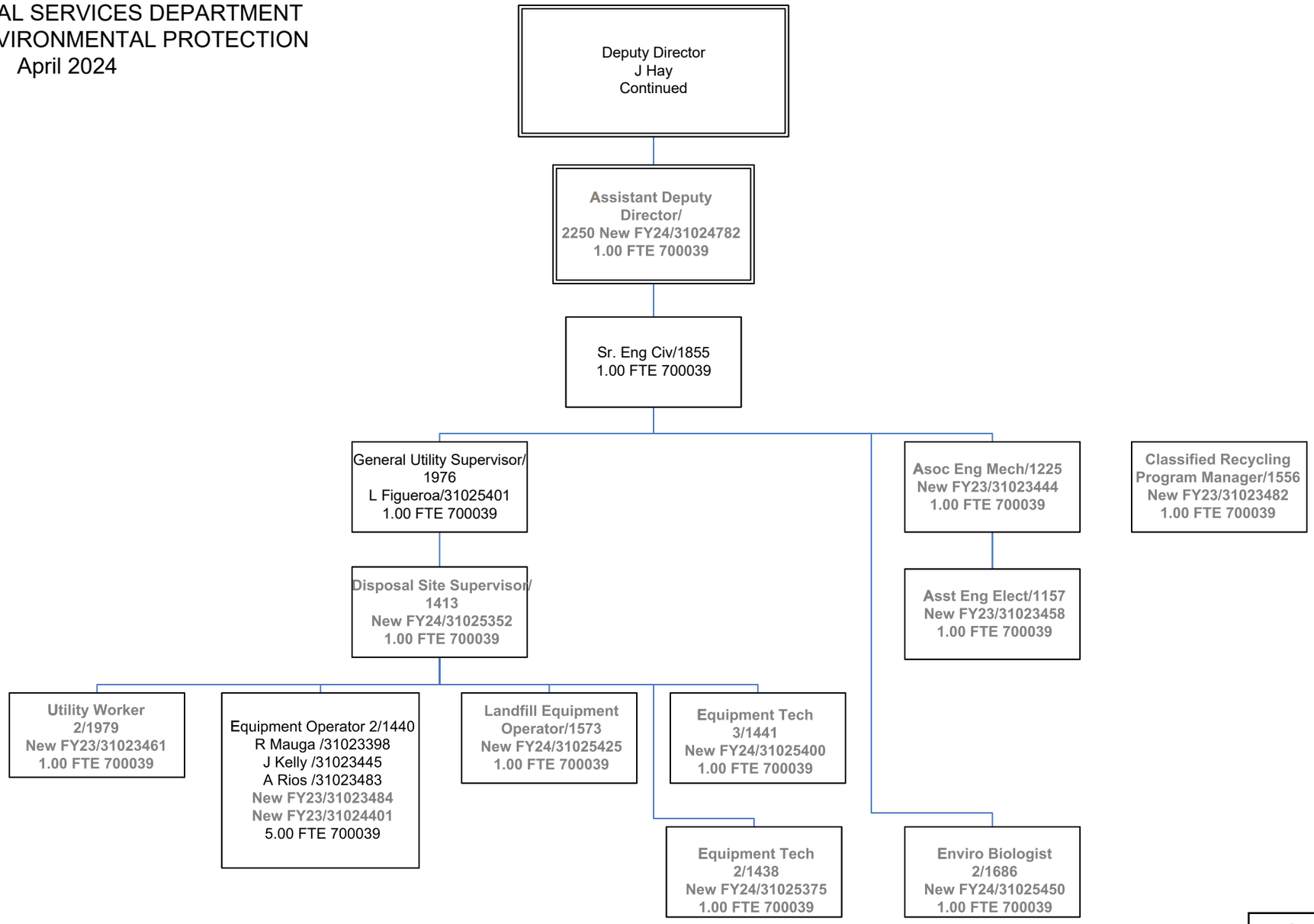
ENVIRONMENTAL SERVICES DEPARTMENT
DISPOSAL & ENVIRONMENTAL PROTECTION
April 2024



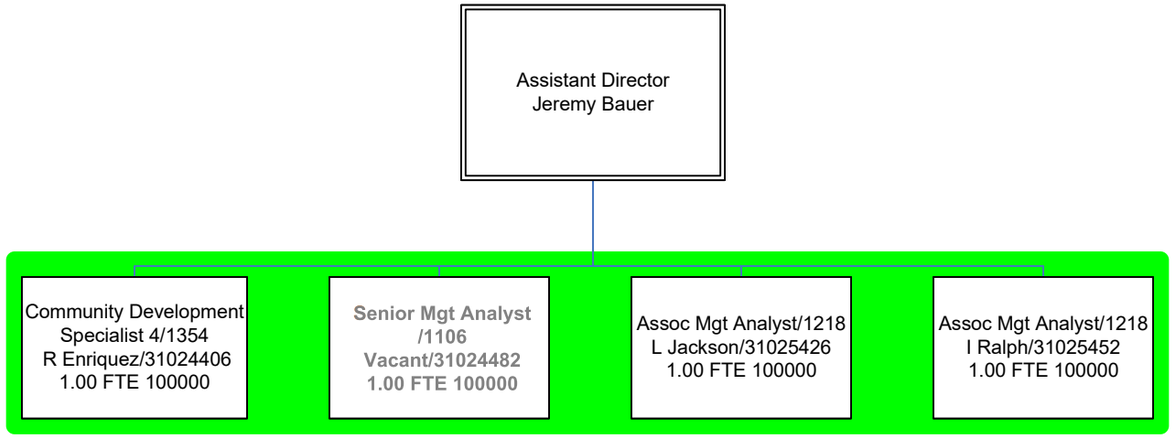
LEGEND

Grey text = Vacant existing position

Red text = New recommended position

= Funded by Measure B

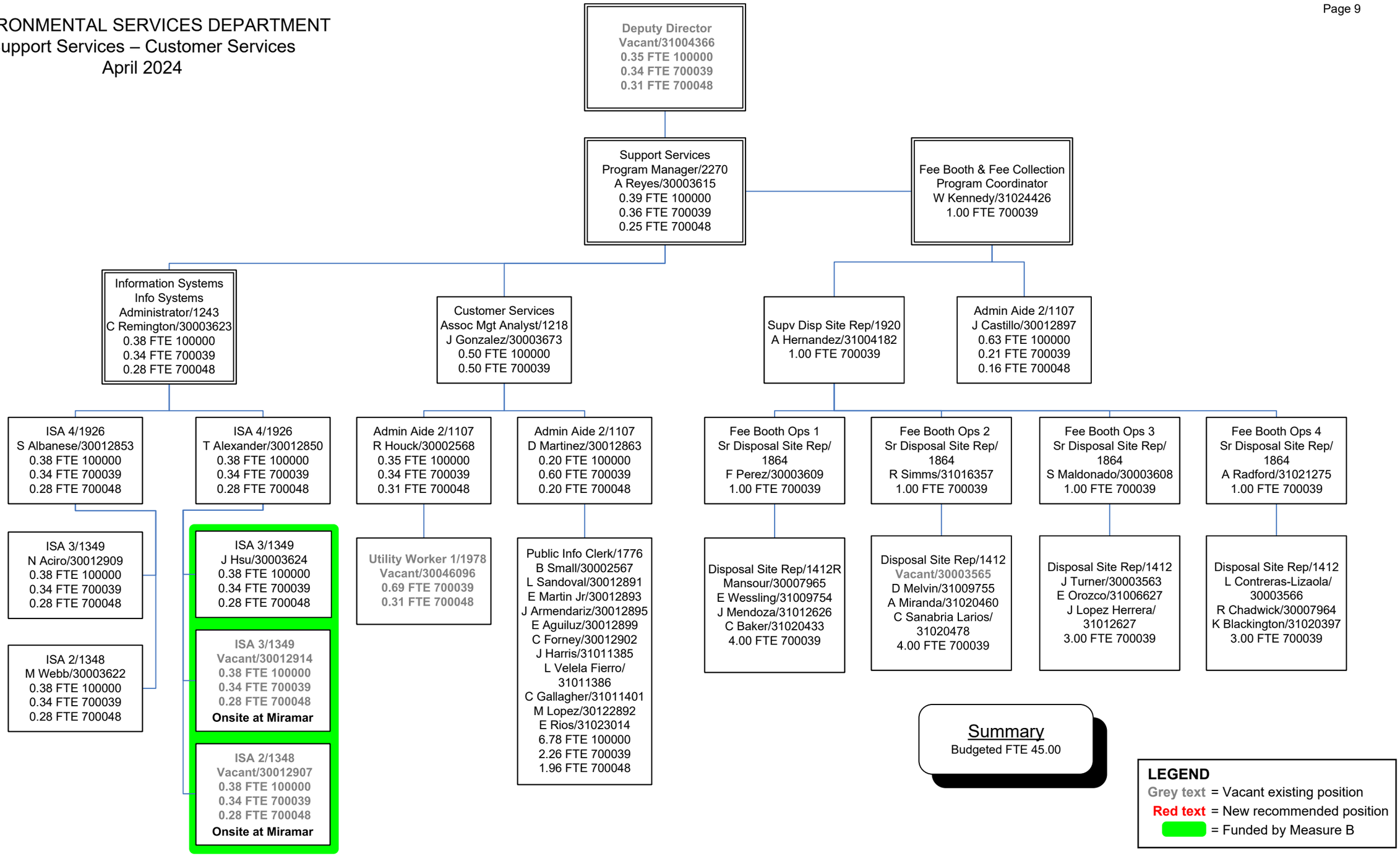
ENVIRONMENTAL SERVICES DEPARTMENT
Peoples Ordinance Amendment
April 2024



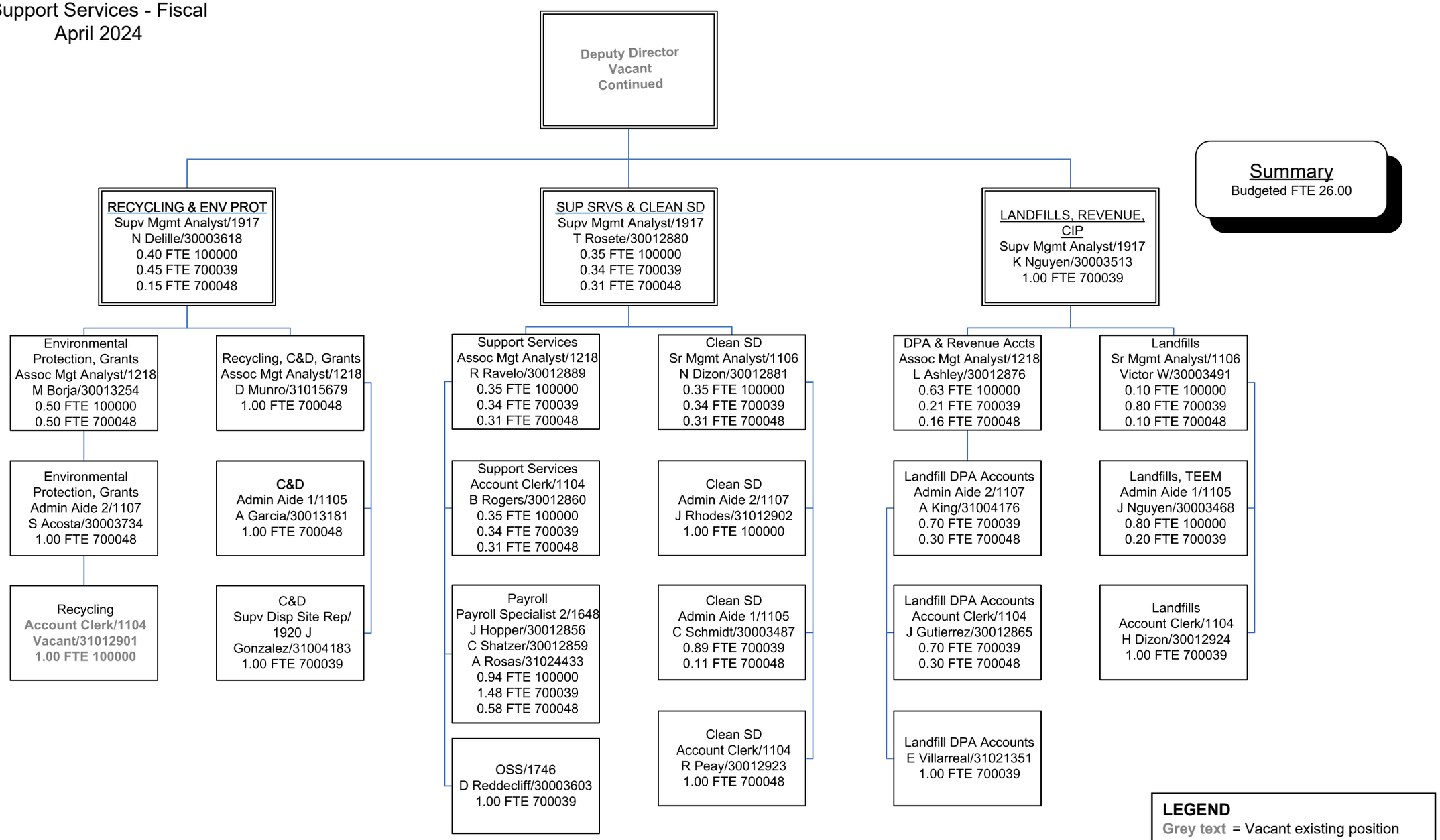
Summary
Budgeted FTE 4.00

LEGEND
Grey text = Vacant existing position
Red text = New recommended position
= Funded by Measure B

ENVIRONMENTAL SERVICES DEPARTMENT
Support Services – Customer Services
April 2024



ENVIRONMENTAL SERVICES DEPARTMENT
Support Services - Fiscal
April 2024



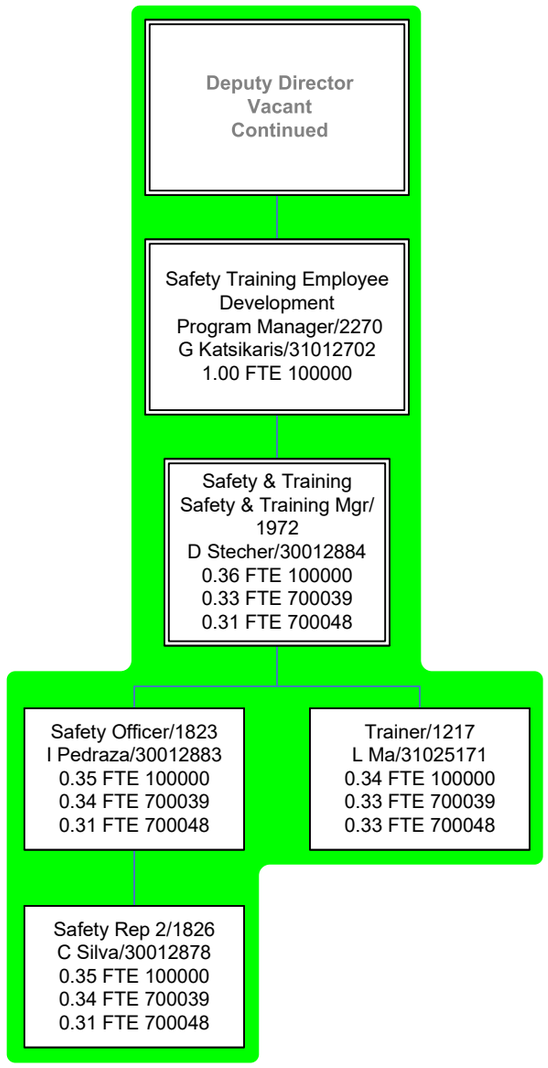
LEGEND

Grey text = Vacant existing position

Red text = New recommended position

= Funded by Measure B

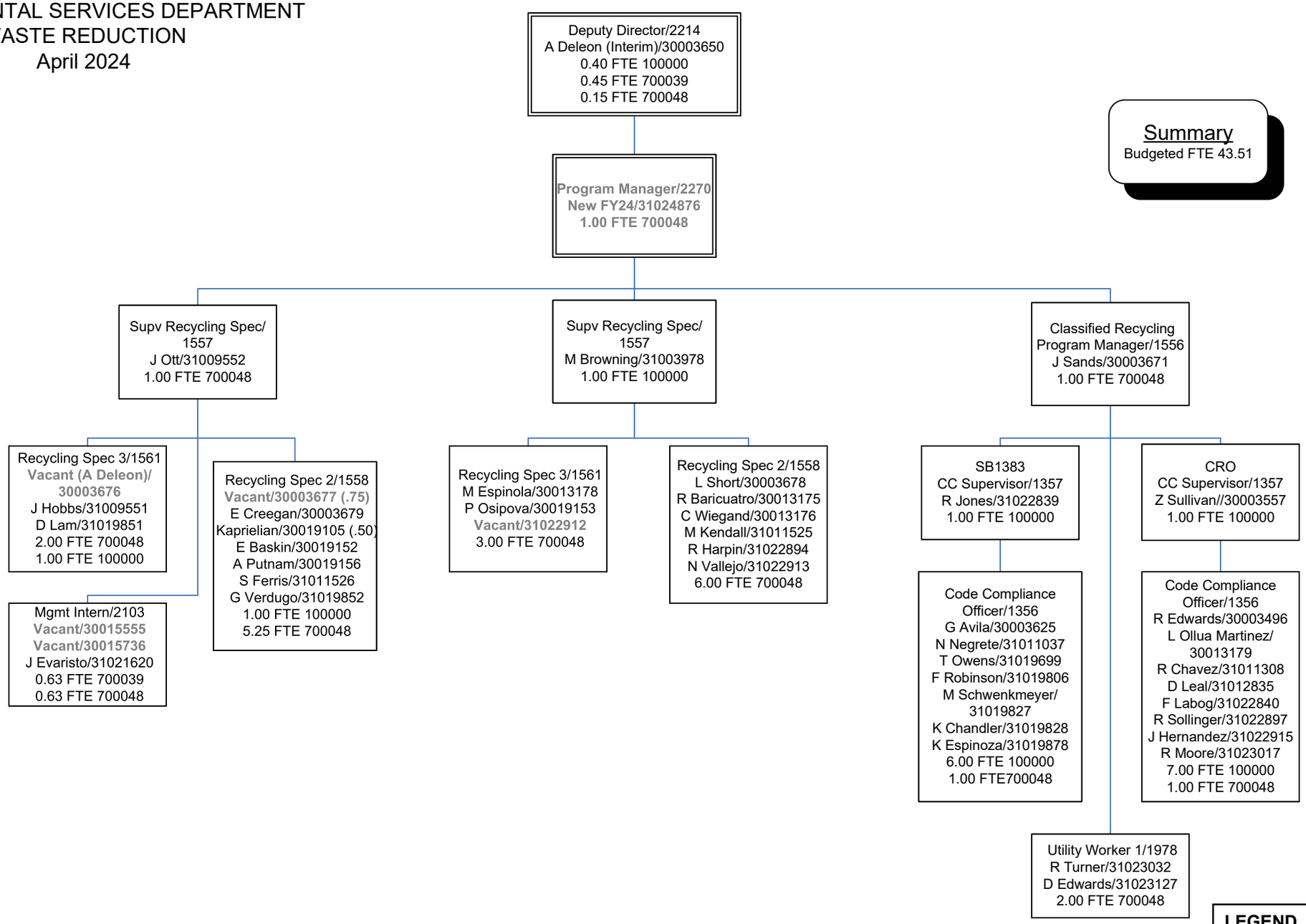
ENVIRONMENTAL SERVICES DEPARTMENT
Support Services - Safety, Training, Employee Development
April 2024



Summary
Budgeted FTE 5.00

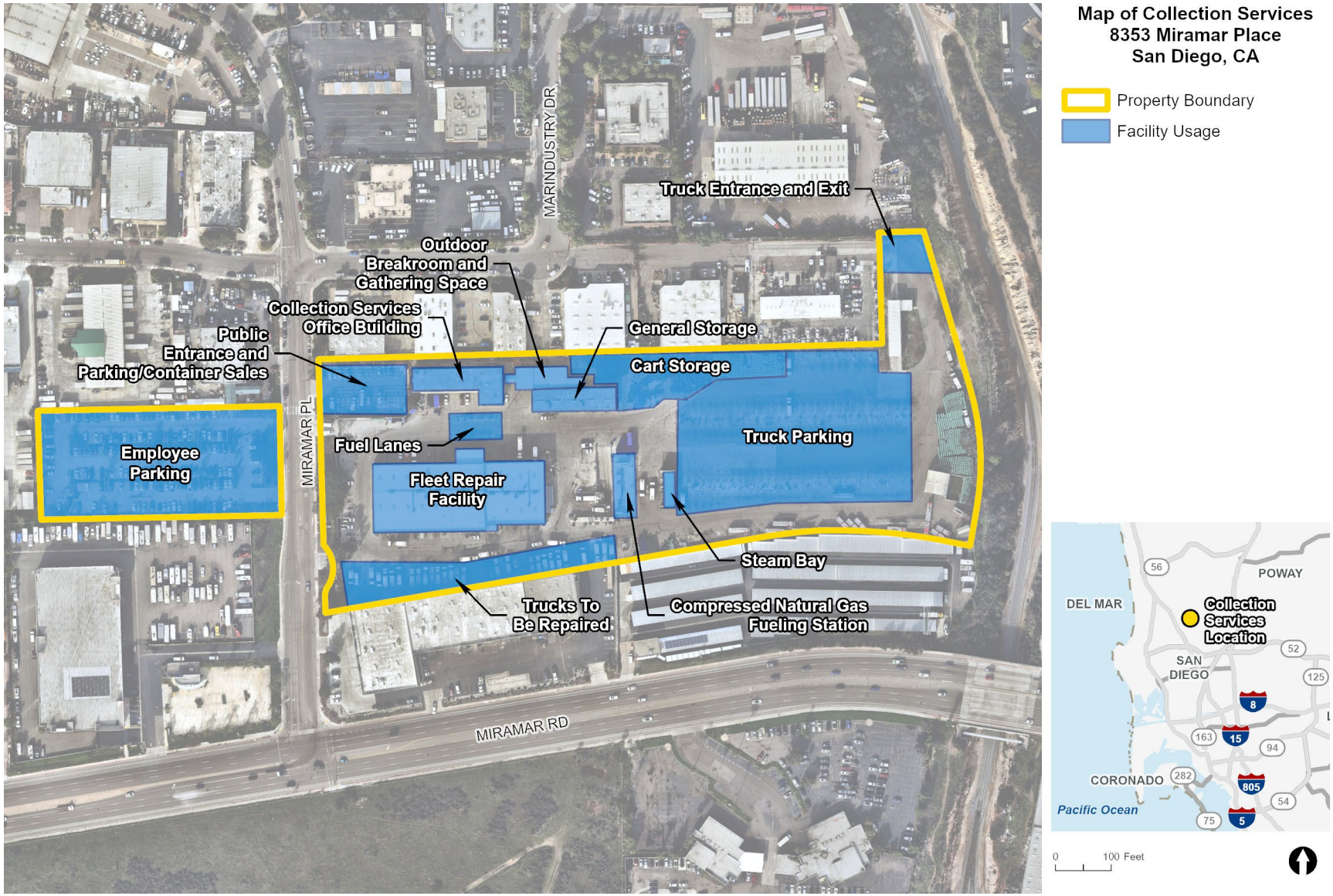
LEGEND
Grey text = Vacant existing position
Red text = New recommended position
= Funded by Measure B

ENVIRONMENTAL SERVICES DEPARTMENT
WASTE REDUCTION
April 2024



C

Appendix C – Map of Collection Services, 8353 Miramar Place San Diego, CA 92121


Map of Collection Services
8353 Miramar Place
San Diego, CA
Property Boundary
Facility Usage
Truck Entrance and Exit
Outdoor Breakroom and Gathering Space
Collection Services Office Building
General Storage
Public Entrance and Parking/Container Sales
Cart Storage
Employee Parking
Fuel Lanes
Truck Parking
Fleet Repair Facility
Steam Bay
Trucks To Be Repaired
Compressed Natural Gas Fueling Station
MARINDUSTRY DR
MIRAMAR PL
MIRAMAR RD
POWAY
DEL MAR
Collection Services Location
SAN DIEGO
CORONADO
Pacific Ocean
0
100 Feet