



Office of the City Auditor

CONSENT CALENDAR

September 20, 2016

To: Honorable Mayor and Members of the City Council

From: Ann-Marie Hogan, City Auditor

Submitted by: Ann-Marie Hogan, City Auditor

Subject: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity

RECOMMENDATION

Request the City Manager report back by March 28, 2017, and every six months thereafter, regarding the status of recommendations until reported fully implemented.

FISCAL IMPACTS OF RECOMMENDATION

The City's \$39 million zero waste revenue stream is at risk because of continued barriers to a unified vision of zero waste operations. There are no readily quantifiable figures available to express the costs of changing mindsets from a silo view to a program oriented vision. The largest cost is time. The immediate steps to start the change have minimal costs: promote the vision at the highest management level; work as team to support operations and solve problems; and create program-oriented procedures.

Purchase of a better information system that automates workflows will help minimize billing errors, improve customer account management, and provide management with data to analyze its zero waste strategies. In 2012, Information Technology estimated total replacement costs for new zero waste billing software to be just over \$317,000. Efforts are underway to identify current replacement and implementation costs.

CURRENT SITUATION AND ITS EFFECTS

The City's current overall information system architecture for zero waste activities continues to result in inefficient use of staff time, billing and service delivery errors, and barriers to effective account management. Despite this, staff did remarkably well at limiting billing and service-level errors within their individual work units. Unfortunately, their work environment takes a silo approach to operations. This puts program goals at risk of failure and increases the likelihood of customer inequity. It also leads to frustration and misunderstandings among staff. Current workflows do not adequately acknowledge the dynamic, complex, and interconnected relationships of zero waste operations.

BACKGROUND

Refuse collection is essential for maintenance of public health, and the City of Berkeley is committed to reducing waste that reaches landfills. Public Works, Finance, and Information Technology all have roles in supporting zero waste operations, which are complex and involve a variety of systems, and various service-delivery and revenue-collection partners. Success requires that all staff involved with zero waste collection and billing understand and support the complex relationships and how they help the City achieve its goals.

While completing our zero waste audit, we learned that the City was at risk of not reaching its zero waste by 2020 goal due to insufficient resources.¹ Therefore, we chose to perform our zero waste billing audit to help the City harmonize its refuse billing and collection operations to ensure it receives its due revenue for services rendered. We initiated this audit in fiscal year 2014. Significant staff turnover citywide, including in our office, greatly delayed our audit progress. Key personnel, including multiple department directors, left the City.

ENVIRONMENTAL SUSTAINABILITY

Progress toward the zero waste by 2020 goal will help reduce greenhouse emissions. By working together and embracing the One City Team initiative, all those involved with zero waste operations and revenue collection can help the City achieve its goal and make great strides in reducing the City of Berkeley's carbon footprint.

RATIONALE FOR RECOMMENDATION

Implementing our recommendations will help the City improve billing accuracy, reduce inefficiencies, increase revenue, promote teamwork, provide customer equity, and support the City's goal to eliminate landfill waste.

CONTACT PERSON

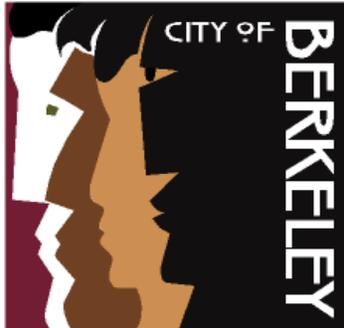
Ann-Marie Hogan, City Auditor, (510) 981-6750

Attachments:

1: Audit Report: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity

¹ Zero Waste Audit, July 2014: http://www.cityofberkeley.info/uploadedFiles/Auditor/Level_3_-_General/A%202_RPT_Zero%20Waste_Final.pdf

City of Berkeley Office of the City Auditor



Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity

Prepared by:

Ann-Marie Hogan, City Auditor, CIA, CGAP
Claudette Biemeret, Audit Manager, CGAP
Lincoln Bogard, Auditor II, MAcc, CPA, CFE
Myrna Ortiz, Auditor I
Sue English, MPA

Presented to Council September 20, 2016

TABLE OF CONTENTS

Executive Summary.....	1
Audit Objectives.....	3
Background	3
Finding and Recommendations	8
Finding 1: Integrated thinking about zero waste operations will help ensure accurate billings and customer equity.....	8
Recommendations.....	16
Fiscal Impact.....	20
Conclusion.....	21
Appendix A:	
Scope and Methodology.....	23
Appendix B:	
Audit Finding, Recommendations, and Management Response Summary.....	25
Appendix C:	
Zero Waste Enterprise Fund: Center of Revenue Streams and Operations.....	36
Appendix D:	
Manual Workflow for Customer Cases and Monthly System Updates.....	37



City Of Berkeley - Office Of the City Auditor

Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity

September 20, 2016

Purpose of the Audit

We conducted this audit to assess whether the City of Berkeley is correctly billing customers based on their actual refuse collection service levels; whether all Berkeley residents are signed up to receive refuse service as required by the Berkeley Municipal Code; and whether there are opportunities for improving both refuse and service delivery operations.

Executive Summary

Embracing zero waste operations as a whole and not its parts supports customer equity

Fostering a more collaborative culture through systems thinking will help staff ensure customer equity. The systems thinking concept recognizes the dynamic and interconnected relationships of separate functions to achieve objectives. Staff from Finance and Public Works demonstrated a commitment to their work, but their focus was limited to their own work units. They did not always understand the cross-departmental workflows and interrelated workings of zero waste operations. Known as the silo mentality, this view can hinder progress. Silos serve a purpose as they allow employees to apply their specific skills, but too much thinking within silos stands in the way of ensuring proper billing and equitable customer service. By applying the systems thinking approach, the City will gain a holistic view of activities from waste collection to revenue collection, allowing it to achieve zero waste goals through improved service delivery and accurate billing.

Manual workflows and legacy systems led to lost revenue and customer inequity

Use of legacy systems that require manual data workflows led to billing, rate-adjustment, and service-level errors:

- Customer accounts inaccurately updated with the 2015 zero waste rates led to approximately \$38,000 in underbillings and \$29,000 in overbillings in the first billing cycle of fiscal year 2015. When informed, Finance corrected the errors, but the City could have experienced \$150,000 in revenue losses and \$118,000 in customer overcharges in fiscal year 2015 had the mistakes gone undetected.

Unchecked errors in service level changes could lead to more loss

- Four percent of customer service-level changes examined did not result in the necessary updates in the zero waste billing system. The total one-time revenue loss was only \$535. When informed, Finance corrected the errors, but had those gone on undetected, that amount could have grown: over \$6,400 after one year, over \$12,800 after two years, and so on.

21% of service changes not reflected in route software

- 21 percent of customer service-level changes examined did not make it into RouteSmart. This increases the likelihood that service levels do not agree with billing rates and that the City could be mischarging customers.

While getting a new system will help reduce the manual process errors, it will not, by itself, fix the problems that led to the billing and service-level errors. A unified view of zero waste operations is needed.

Recommendations

Our recommendations provide a foundation to support zero waste activities and cross-departmental collaboration, and promote achievement of Zero Waste by 2020 goals. Key recommendations include:

- Agreeing to a unified vision for zero waste activities and communicating to staff the importance of embracing that vision.
- Forming a zero waste team of staff from Finance, Public Works, and Information Technology who work collectively to evaluate their functions; interrelationships; and practices, policies, and procedures they use to perform their zero waste activities.
- Ensuring that the zero waste team develops written procedures that support cross-departmental strategies and that they meet regularly to coordinate work, share information, and make across-departmental decisions for operational improvement.
- Budgeting for, selecting, and installing an account management system designed for zero waste activities.
- Designing data extract queries to obtain data for analyzing zero waste strategies.
- Completing a fully comprehensive route audit to align service delivery with billing rates.

2180 Milvia Street, Berkeley, CA 94704 ♦ Tel: (510) 981-6750 ♦ TDD: (510) 981-6903 ♦ Fax: (510) 981-6760

E-mail: auditor@cityofberkeley.info ♦ Web: www.cityofberkeley.info/auditor

A full copy of the report can be obtained at:

http://www.cityofberkeley.info/uploadedFiles/Auditor/Level_3_-_General/A.2_RPT_Refuse%20Billing_Issue%20Fiscal%20Year%202016.pdf

AUDIT OBJECTIVES

We conducted this audit to assess whether the City of Berkeley is correctly billing customers based on their actual refuse collection service levels; whether all Berkeley residents are signed up to receive refuse service as required by the Berkeley Municipal Code; and whether there are opportunities for improving both refuse and service delivery operations.

While completing our [zero waste](#) audit, we learned that the City was at risk of not reaching its Zero Waste by 2020 goal due to insufficient resources.¹ Therefore, we chose to perform this audit to help the City harmonize its refuse billing and collection operations to ensure it receives its due revenue for services rendered. Collection of these fees is vital for funding the City's zero waste goals.

BACKGROUND

Refuse collection is a mandated, essential service

Refuse collection is essential for the maintenance of public health and welfare. To ensure timely collection of all refuse, the [Berkeley Municipal Code](#) mandates that the City or its authorized agents collect garbage from every refuse producing property at least once a week, and that every such property owner obtain refuse collection services.² The code also provides the means for the City to establish fees for refuse collection services provided by either direct service delivery or private haulers.

The City established refuse collection rates to earn revenue for its services. Council adopted [Resolution 66,600](#) to increase the City's refuse collection rates starting in fiscal year 2015 and provide for annual inflator adjustments through fiscal year 2019.³ Rates depend on the type of service, size of bin or cart, and collection frequency.

¹ Zero waste Audit: http://www.cityofberkeley.info/uploadedFiles/Auditor/Level_3_-_General/A%2020RPT_Zero%20Waste_Final.pdf

² BMC Title 12, Chapter 32, Storage, Collection, and Disposal of Waste: <http://codepublishing.com/ca/berkeley/>

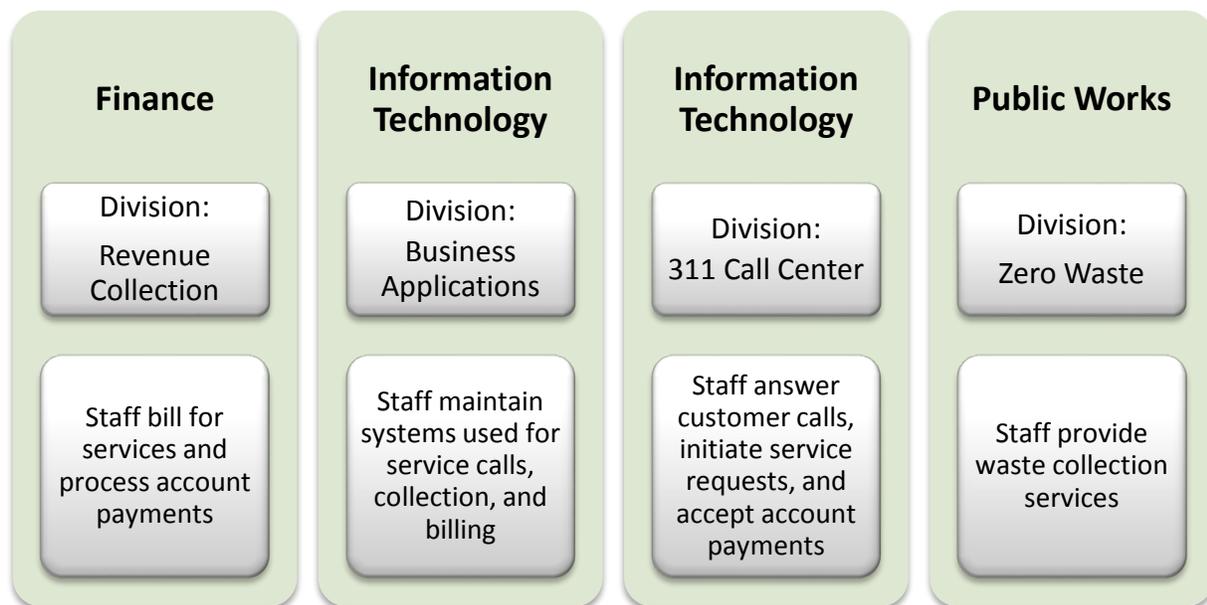
³ Resolution No. 66,600: <http://www.ci.berkeley.ca.us/recordsonline/export/16391377.pdf>

“Refuse” changed to
“Zero Waste”

To demonstrate its commitment to reducing solid waste sent to landfills, the City changed its terminology from “refuse” to “zero waste” to describe its waste collection services. The City now refers to the fees associated with refuse collection as the zero waste rates and the name of the Solid Waste Management Division is now the Zero Waste Division. In an effort to support Council’s zero waste goal, we refer to refuse as zero waste throughout the remainder of this report.

Zero waste operations:
Cross departmental
effort

Public Works, Finance, and Information Technology are all involved with zero waste billing and service operations. Staff in each department are responsible for various aspects of the interrelated functions and systems:



The City partners with
others to provide for
zero waste collection
services

City residents must use the City’s zero waste collection services, but, currently, businesses may opt to use the City’s services or private haulers that have active franchise agreements with Berkeley. The City is making plans to begin handling almost all commercial accounts. Progress on this effort is evolving. In May 2015, Public Works expected it would handle commercial accounts with the exception of businesses that use roll-off containers and compactors. Public Works reported that those businesses will still have the option of hiring a City-licensed franchise hauler for zero waste collection services.⁴

⁴ Public Works Presentation: http://www.ci.berkeley.ca.us/Clerk/City_Council/2015/05_May/Documents/2015-05-26_Item_34_Zero_Waste.aspx; Approved by Council via Action Item at May 26, 2015 Council Meeting, Item 34

The City provides curbside recycling for businesses and large, multifamily residential customers; and compost services for businesses and residents. The City also works with the Ecology Center to provide curbside recycling services for other residences, and the Community Conservation Center for sorting and sales of recyclables. The City funds the direct and third-party recycling services through its collection of zero waste charges and fees. We discuss the various waste streams, mandated collection services, and the specific services provided by Berkeley's waste-collection partners in our [zero waste](#) audit.⁵

Zero waste collection and franchise hauler fees help pay for waste diversion services

Finance collects for City-provided services by direct billing customers or through the Alameda County tax roll, and Public Works requires the franchise haulers to remit fees based on their reported gross income from their zero waste collection revenue. The City uses all revenue sources to help it achieve its zero waste goal and accounts for all revenue and expenditures in its Zero Waste enterprise fund. Until recently, the fund was operating at a deficit. Through Public Works' efforts, operating revenue exceeded expenses in fiscal year 2015 for an operating income of nearly \$5.8 million. Despite Public Works' progress, the fund still lacks enough to cover unfunded needs for zero waste goals and operations; over ten years ago, construction costs for facility improvements alone were estimated to cost \$25 to \$30 million.

Zero waste fund at center of revenue streams and operations; supports zero waste strategies

Zero waste revenue streams and operations revolve around the zero waste fund with the ultimate goal of using funding to stop landfill waste. The image in Appendix C depicts this flow. It shows the sources through which the City bills for services and receives revenue, and the various service delivery methods used for zero waste collection efforts. All of these lead to funding zero waste strategies.

⁵ Zero Waste Audit: http://www.cityofberkeley.info/uploadedFiles/Auditor/Level_3_-_General/A%20RPT_Zero%20Waste_Final.pdf

28,700+ properties in Berkeley

There are over 28,700 properties in Berkeley, most of which require zero waste collection services. Some properties, for example, common areas and vacant lots, do not. Because certain events change whether a property will require service, the number of bills the City issues fluctuates. Such events include transfers of property ownership and special events such as the City's annual kite festival. These changes may result in a brief period in which service is not needed or is increased.

In 2014, the City billed 27,389 zero waste customers and generated 216,326 bills totaling just over \$26 million. The City billed nearly half of all residential customers on the annual Alameda County property tax roll. The City billed the remainder, plus its commercial customers, directly. Most direct billed customers received their bills quarterly, while only 31 commercial clients received their bills monthly.

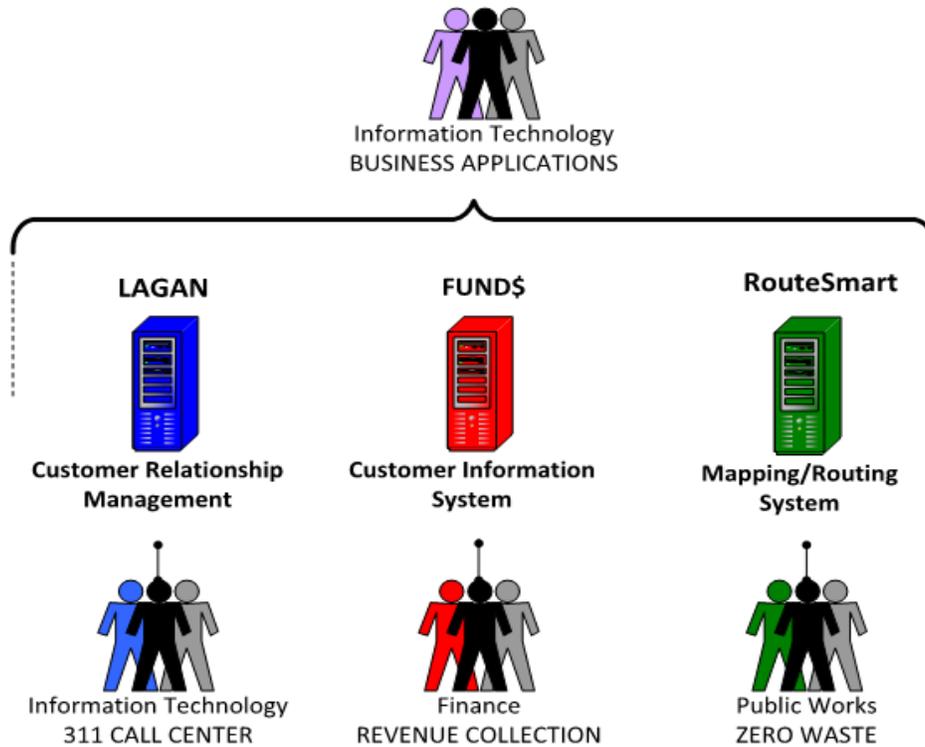
Three standalone systems used for primary zero waste account management

City staff must use three different standalone systems to manage zero waste accounts:

- **LAGAN:** A Community Relationship Management (CRM) system used by the Information Technology 311 Call Center staff to capture information about service changes and missed pickups.
- **FUND\$ Customer Information Systems (CX) module:** An account billing system used by Finance Revenue Collection staff to bill for zero waste collection services.
- **RouteSmart:** A route optimization system used by Public Works Zero Waste staff to develop refuse, recycling, and compost collection routes.

These three systems are not integrated. Finance staff receive LAGAN reports to update CX. Information Technology staff perform a monthly update to align RouteSmart and CX data: they export data from CX into Microsoft Excel to prepare it for import into RouteSmart, and then export the data out of RouteSmart back into CX. Data fields in this manual process include container size, type, and quantity.

Zero Waste Operations Systems Overview



Four additional systems used to record zero waste cash receipts and manage customer accounts

Finance also uses the FUNDS\$ Miscellaneous Receipts (MR) module to manage roll-off bin customers. There are only 12 such accounts, which Finance has historically managed in MR. Finance posts cash receipts from the MR and CX modules to the FUNDS\$ General Ledger (GMBA) through automated workflows. To identify property addressees, both CX and RouteSmart are populated with data from the City's Land Management (LX) module. Finally, Public Works and the 311 Call Center use the FUNDS\$ Work Orders and Facility Management (WF) module to establish case records for missed pickups and other account needs.

Significant staffing changes citywide

Berkeley has been experiencing significant citywide staffing changes. Longtime employees with vast institutional knowledge have retired, which has greatly impacted Public Works, Information Technology, and Finance. While it is a loss to see these individuals go, it has allowed for internal promotions and new recruitments of employees.

FINDING AND RECOMMENDATIONS

Finding 1: Integrated thinking about zero waste operations will help ensure accurate billings and customer equity

A holistic approach to zero waste operations will help ensure accurate billing and service delivery. In our meetings with staff, it became evident that the workflows across departments and the interrelated workings of zero waste functions were not entirely clear to those involved with billing and collection services. Staff focus on performing the work within their unit without fully understanding how their efforts affect citywide operations and goals. This is known as the “silos mentality.” The silos mentality can come from a place of pride and ownership over the functional work area, as well as the comfort of identifying with one’s area of expertise. While these are admirable attributes, ensuring that the City accurately bills for its zero waste services means breaking the silos boundaries.

Data errors direct result of manual data workflows

To help ensure accurate billing and customer equity, the City also needs a zero waste account management system that allows for automated data workflows and updates. Currently, staff are burdened by manual workflows. This is arduous work that takes staff away from other service-delivery and revenue-collection needs and led to rate-adjustment, billing, and service-level errors:

Manual workflows led to \$38,000 in underbillings and \$29,000 in overbillings

- 347 customer accounts were not accurately updated with the 2015 zero waste rates, leading to approximately \$38,000 in underbillings and \$29,000 in overbillings for the City’s first billing cycle of the 2015 fiscal year. Had we not brought the errors to Finance’s attention, the City could have experienced \$150,000 in revenue losses and \$118,000 in customer overcharges in fiscal year 2015. System design requires Finance staff to make over 4,000 manual zero waste rate updates, which led to the errors.
- Four percent of customer service-level changes did not result in the necessary updates in the zero waste billing system. The total one-time revenue loss was only \$535. When informed, Finance corrected the errors, but had those gone on undetected, that amount would have grown: over \$6,400 after one year, over \$12,800 after two years, and so on.

- 21 percent of customer service-level changes did not make it into RouteSmart. Although there is no clearly identifiable fiscal impact with this error rate, it demonstrates the likelihood that service levels do not agree with billing rates and that the City could mischarge customers.

Staff perform their duties with professionalism and strive for results

Finance and Public Works staff perform their duties with professionalism and are committed to achieving results. However, their views focus on their specific work functions. This is done with good intent – staff want to do their job well – but inadvertently leads to less than optimal service delivery and customer dissatisfaction. It also affects job morale. Staff become frustrated when other departments do not understand their efforts and challenges. Zero waste operations are complex and involve a variety of systems and various service delivery and revenue collection partners. Success requires that staff involved with zero waste collection and billing understand those complex relationships, and how their work helps the City achieve its goals.

Fostering a more collaborative culture will advance zero waste operations and enhance revenues

Taking a collaborative approach that acknowledges the dynamic, complex, and interconnected relationships of zero waste operations will help the City achieve success toward its zero waste goals through improved service delivery and accurate billing. This approach is known as *systems thinking* and is:

“A school of thought that focuses on recognizing the interconnections between the parts of a system and synthesizing them into a unified view of the whole.”

– Virginia Anderson and Lauren Johnson⁶

Change happens by understanding the belief systems that get in the way of progress

Recognizing the interconnections between the many parts of the zero waste system and synthesizing them into an integrated view will help the City break the silo way of thinking and encourage staff to embrace the interdependent efforts. Systems thinking starts with understanding why silos occur and considering patterns of behavior that may be contributing to inefficiencies and errors. While not easy, synthesizing zero waste operations can happen through regular interactions with a diverse pool of staff; better cross-departmental communication and collaboration; clear written and shared strategies for success; and

⁶ Virginia Anderson and Lauren Johnson define systems thinking in their book, *Systems Thinking Basics: From Concepts to Causal Loops*, Pegasus Communications, Waltham, Mass., 2007.

hiring practices that promote the big-picture view. For Berkeley, these efforts will help staff work together to accurately bill for services provided so that the City receives its due revenue and has the funding it needs to achieve its Zero Waste by 2020 goal.

Staff unclear about the flow of data between software systems; this puts service delivery and billing at risk

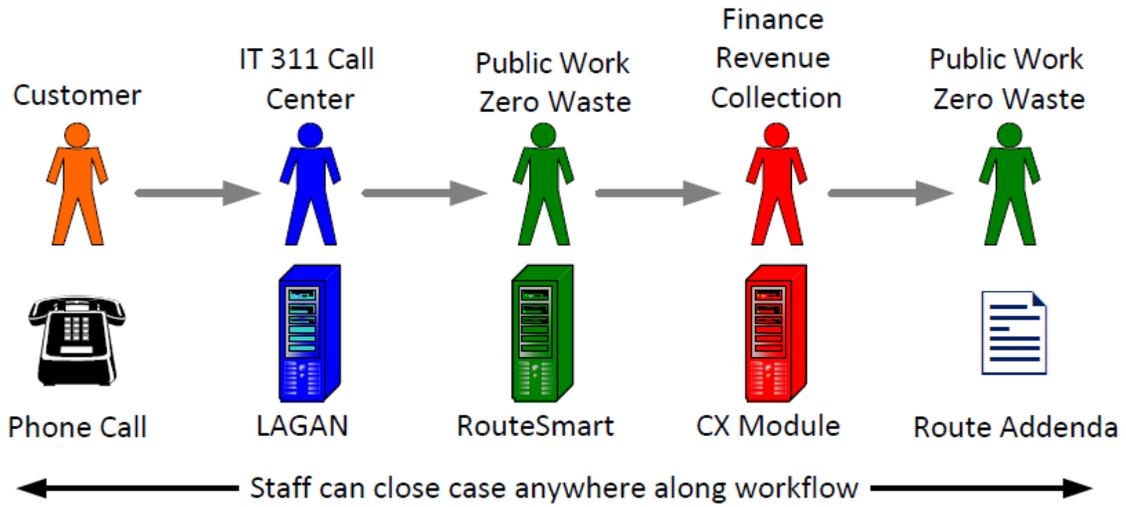
Disconnect among the departments was most evident in the misunderstanding about the data flow between the software staff use to bill for services and the software used to manage customer accounts. These systems are not integrated, which requires Information Technology to perform manual updates to reflect data changes that took place throughout the month so that the systems align. Finance staff were certain that data updates went from RouteSmart to Customer Information System (CX), while Public Works staff were convinced that data updates went from CX to RouteSmart. After close inspection of workflows provided by Information Technology, the truth was that both Finance and Public Works are correct. The difference, however, is in all the specific data fields updated. Public Works and Finance staff's misunderstanding about the data flows makes it possible for them to inadvertently overwrite updates, which can affect billing and service delivery. Information Technology provided the written workflows to Public Works and Finance staff years ago. However, there is more than one reiteration of the workflows and they are not necessarily easy for all personnel involved with zero waste billing and operations to understand.

Monthly system updates needed to reflect customer changes and needs

Monthly updates take place to align CX and RouteSmart with customer account changes that occur throughout the month. Changes happen when customers request service delivery starts, stops, and changes. Staff from Information Technology, Public Works, and Finance have a role in communicating the changes and updating customer account information. Following the path of just one service call depicts the staff effort needed to ensure that data in the systems align so that customers receive the service they requested and the City bills for the actual services provided. The process is burdensome and inefficient:

Overview: Manual Data Workflow for Customer Cases

See Appendix D for detailed workflow



In 2014, the City received nearly 3,800 calls for zero waste service starts, stops, and changes. According to Information Technology staff, the average total time spent on a single service call is 5.25 minutes. This equates to an estimated 330 hours a year on handling customer service delivery starts, stops, and changes. That is roughly one sixth of a full-time equivalent employee just in the 311 Call Center.

Not all service calls made it through the manual workflows

To ensure that manual workflows worked as intended, we followed the path of 94 service calls that initiated in the 311 Call Center. Because staff had to use manual processes to manage large, complex operations, not all the changes made it through the workflow:

Changes Made?	CX Module (Billing)	RouteSmart (Service Level)
Yes	90	67
No	4	20
N/A*	0	7
Total:	94	94
Error Rate:	4%	21%
*Customer made a subsequent service change making original call obsolete.		

**Staff efforts
commendable: few
errors given volume
of manual updates**

Most of the changes made it through the workflow. This is commendable given the volume of manual updates that staff must handle in addition to their many other responsibilities. The few changes that did not make it into the CX module led to actual errors totaling \$535 in underbillings for the month. The error rate is small, only four percent. When informed, Finance corrected the errors. However, had the errors gone on undetected, that amount would have grown: over \$6,400 after one year, over \$12,800 after two years, and so on. This assumes the errors go unchecked and no subsequent customer changes occur.

21% of customer
changes did not make it
into RouteSmart

By comparison to CX, the error rate for changes to RouteSmart was 21 percent. While this error rate does not have a clearly identifiable fiscal impact, it does mean that the route books that zero waste drivers use to manage their collection routes include incorrect information about service levels. According to Public Works, drivers are required to compare actual service levels onsite against their route books and addenda and report variances. The error rate in RouteSmart suggests that this is not always happening, which increases the likelihood that service levels do not agree with billing and that the City will mischarge customers.

Manual processes led to
errors and continually
lead to staff frustration

Staff in Finance, Public Works, and Information Technology expressed displeasure with the manual process. They are concerned that anyone can close a case along the workflow at any time; feel burdened by the process; and find it frustrating when a single customer request results in multiple case records. There are no quick-fix solutions to these concerns. However, improved interdepartmental collaboration could help resolve misunderstandings, create a shared understanding of staff and workload challenges, and find solutions to operational problems.

Lack of a holistic approach to zero waste operations is also evident in the management of roll-off bin customers. We attempted to verify the accuracy of billings for these accounts, but Public Works and Finance could not readily provide us with information regarding the revenue received or charges based on bin and compactor size. Some of these accounts have been in existence for decades and information on the dimensions that support the charges are no longer available. However, given that these services provide a revenue stream that supports the City's

CX Module not designed for zero waste account management

zero waste efforts, it is important to ensure that roll offs are billed accurately and that the revenues are collected. Without reports and documentation about the service levels, this is not possible.

The Customer Information System (CX) module that Finance uses to bill customers was not designed for zero waste account services. It was designed as a water billing system. The City installed CX to manage its zero waste accounts in 1998. Information Technology modified CX to meet Finance’s needs; however, the design creates a challenge for Public Works.

Despite the CX modifications made to meet Finance’s needs, the system architecture still creates a significant workload burden. Each year, Finance staff manually calculate all the possible service level charges based on delivery frequency and collection type, and enter the amounts into multiple fields in CX. According to Finance staff, they make over 4,000 manual updates a year, which no one reviewed for accuracy in fiscal year 2015. Finance informed us that Information Technology ran an error report for the fiscal year 2016 updates, which Finance supervisors used to verify the accuracy of the zero waste rates for the 2016 fiscal year before finalizing system changes.

Ideally, a system used for zero waste account management would automatically perform the various calculations by drawing from a rate table and allow for automatic annual inflator adjustments. Allowing for system calculations significantly reduces the risk of human error and staff time needed to make manual updates.

Manual entry errors can lead to revenue loss, customer inequity, and increased workloads

The use of manual processes led to errors in the 2015 CX module zero waste rate table. These errors affected 347 zero waste accounts and totaled over \$29,000 in overbillings and over \$38,000 in underbillings in the first 2015 zero waste billing cycle for a net loss of \$9,000. The dollars lost, though small, could have helped fund zero waste strategies. Additionally, the staff time spent on these manual updates and corrections would be better spent on revenue collection efforts. We notified Finance staff of the errors so that they could make the appropriate corrections before the City’s next billing cycle. Had we not, the errors could have resulted in \$150,000 in revenue losses and \$118,000 in customer overcharges in fiscal year 2015.

Inaccurate zero waste rates also lead to inequity in billing. Customers either overpay or underpay for the services they receive. The resulting errors affect decisions for setting zero waste rates because the City is not generating the revenue based on the actual cost of service and, therefore, could be setting the rates either too high or too low to compensate. The high risk associated with manual entry and the lack of a secondary review suggest that, historically, management may not have had accurate decision-making information.

Overall zero waste system architecture makes it difficult for Public Works to ensure its efforts align with City regulations and goals

Public Works would like to have a system that allows them to review accounts based on required service type to ensure collection efforts align with City regulations and zero waste goals. Public Works cannot do so because customer accounts use property addresses from the City's Land Management (LX) module that are based on "use" codes defined by the Alameda County Assessor's Office. The county has over 180 use codes that it created for the purpose of assessing property taxes. By comparison, Public Works has five codes that it uses to define service types. Although the system architecture does not allow for an assessment of accounts by service type, we were able to compare LX data to CX data to identify nearly 4,000 properties not included in the billing module. We provided Public Works with a detailed listing of the addresses so that they could investigate further to determine whether those properties should be signed up for service, or are receiving service but not being billed.

Zero Waste staff would like to use CX data to monitor zero waste strategies

Public Works staff would like to use CX billing data to determine whether the department's zero waste strategies are working. In theory, higher rates would lead to customers requesting smaller bins for waste meant for the landfill and, thus, recycle, reuse, and compost more. The data in CX could help paint the picture as to whether this trend is occurring. With data extracts, such as the one used to obtain data for this audit, Public Works could use data from the CX module to perform trend analyses. However, it was unclear to Public Works staff that they could obtain the data since the department is not the CX module leader. According to Information Technology, CX data belong to all those involved with zero waste activities. According to Finance, the department need only grant approval to enter or modify CX module data, not to run queries or perform data extracts.

Finance rejected proposed software for better zero waste account management

In 2008, Public Works pursued new software that would allow for better account management, but Finance staff rejected the selected system. The specific reasons for Finance’s decision rest with the retired Revenue Collection Manager; current staff know only that the former manager felt the system did not meet Finance’s needs. What is clear from this event is that better communication and collaboration could have helped lead to solutions that allow for a holistic approach to account management. Software options exist to improve billing and fee collection efforts, track trends, monitor zero waste strategies, and automate workflows. Information Technology included software replacement as part of the City’s overall Enterprise Resources Planning (ERP) needs. In its March 25, 2014, [FUND\\$ Status Report](#), the department reported to City Council that total replacement costs for a new zero waste billing system would be approximately \$317,000, but no funding had been allocated specifically to the project at that time.⁷ Recently, the City launched its ERP project, which includes assessing software replacement and funding needs. A new system for zero waste activities is included in the project.

Prior audits found similar system inefficiencies and billing errors

We reported similar zero waste billing errors and automation inefficiencies in three prior audits:

- Public Works – Solid Waste Management Division Phase I Refuse Collection Billing Operations, [May 1993](#): billing errors; not billing roll-off customers.
- Transfer Station Financial Operations Solid Waste Management Divisions, [April 1994](#): lack of automation and system integration.
- Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress toward the Year 2020 Zero Waste Goal, [July 2014](#): lack of automation and system integration.⁸

⁷ FUND\$ Status Report: [http://www.cityofberkeley.info/Clerk/City_Council/2014/03_Mar/Documents/2014-03-25_Item_34_FUND\\$_Status_Report.aspx](http://www.cityofberkeley.info/Clerk/City_Council/2014/03_Mar/Documents/2014-03-25_Item_34_FUND$_Status_Report.aspx)

⁸ City Auditor Reports: <http://www.cityofberkeley.info/ContentDisplay.aspx?id=7236>

Management and staff took action to address our recommendations from 1993 and 1994, and improved operations and reduced billing errors. However, the intent behind some of those recommendations remains unaddressed as billing errors continue. Public Works, Information Technology, and Finance are currently taking action to implement recommendations from our 2014 zero waste audit and understand that the intent of those recommendations is to improve operational efficiency and reduce the risk of human error.

**Franchise hauler
may have underpaid
City**

Public Works has plans to change its operations and start performing most of the commercial collections now done by private haulers. Therefore, we did not do a detailed assessment of third-party hauler fee remittances during this audit. However, while gaining an understanding of zero waste operations, we noticed that one of the haulers removed recyclables from its fee calculations. The contract language requires franchise haulers to pay a fee of 26 percent of its gross revenue for waste collection, including recyclables. According to Public Works staff, the institutional knowledge about whether it was allowable for the franchise hauler to have excluded its recycling collections revenue from its fee calculation is not documented and the prior Zero Waste supervisor, who may have had this information, retired. Public Works staff said they would investigate the discrepancy but that their preliminary assessment is that no money is owed. However, if the franchise hauler's adjustment was not allowable, the revenue loss for the one quarterly invoice we reviewed would be \$41,657.

Recommendations

Agree to a unified vision for zero waste operations

The City Manager's Office, and the Departments of Finance, Information Technology, and Public Works should:

- 1.1 Agree to a common and unified vision for zero waste operations. Discuss the long-term zero waste goals, objectives, and key initiatives and share that information with those responsible for day-to-day operations. Use meetings and informal communications to regularly encourage staff to embrace a unified view of zero waste operations.

The Departments of Finance, Information Technology, and Public Works should:

- | | |
|---|---|
| Form a zero waste team | 1.2 Form a zero waste team comprised of managers and line staff involved with zero waste operations (i.e., waste collection, billings, customer calls, systems support). Include a diverse pool of people who can share ideas, resources, and knowledge. Have the team members work collectively to evaluate their respective functions; the interrelationships among their departmental activities; and the practices, policies, and procedures they use to perform their zero waste account management and operations functions. Ensure that the team understands that their goal is to develop and support a holistic approach to zero waste operations not only to ensure billing accuracy, but also to help accomplish zero waste by 2020 and ensure continued efficient and effective operations beyond that achievement. |
| Develop cross-departmental zero waste activity procedures | 1.3 Require the zero waste team formed in response to recommendation 1.2 to develop written procedures that clearly support cross-departmental strategies and help staff perform their work, as well as understand how their work contributes to success. Include information that helps promote the unified view of zero waste operations, while also explaining the individual tasks that take place within the departments and how those connect. Examples include, but are not limited to, describing the process for routing customer cases from 311 calls, and detailing in layman's terms the monthly updates that take place to align the CX and RouteSmart systems. Also see recommendation 1.2. |
| Have the zero waste team meet regularly to discuss its shared zero waste operations | 1.4 Require the zero waste team formed in response to recommendation 1.2 to have regular meetings, e.g., quarterly, to share information about their operations and the known or expected changes and events that may impact cross-functional efforts. These meetings may need to be more frequent at first and less frequent over time. The team should use their meeting time to: <ul style="list-style-type: none">▪ Identify continued barriers to change.▪ Decide on solutions that will help overcome barriers.▪ Share information about the challenges preventing staff from meeting operational objectives. |

- Make cross-departmental decisions to improve processes and customer service.

Also see recommendation 1.2.

The Departments of Finance and Public Works should:

Budget for, select, and install an improved zero waste account management system

- 1.5 In collaboration with Information Technology and as part of Enterprise Resource Planning, budget for, select, and install an account management system designed for zero waste activities. Use information from the zero waste team evaluation (recommendation 1.2) and zero waste strategy analyses (recommendation 1.8) to identify the critical business needs that should be included in the purchase of new zero waste account management system, or that should be considered when determining whether sufficient middleware options exist to fully integrate existing systems with the new account management software. Also see recommendations 1.2 and 1.8.

Promote cross-departmental collaboration in recruitments

- 1.6 Incorporate systems thinking into the hiring process for both competitive and promotional recruitments:
- Describe the interdependent nature of zero waste operations in job announcements.
 - Highlight the cross-functional responsibilities and relationships in job descriptions.
 - Discuss cross-functional experiences during job interviews to gain an understanding of an applicant’s mindset about shared accountability.

The Department of Finance should:

Perform independent review of zero waste rate calculations and rate-table data entry

- 1.7 Require that someone other than the person who manually calculated the zero waste rates and entered the updated rates into the CX module perform an independent review of the calculations and data entry for accuracy. Have the reviewer report back on any errors. Ensure that management is also notified of the errors, verifies that the corrections were made, and signs off on the review.

The Department of Public Works should:

Obtain data for zero waste strategy analyses

- 1.8 Request that Information Technology use CX module data extracts, such as the one used for this audit, to provide Public Works staff with the data they need to analyze zero

		waste strategies. Use the data extracts to further identify the critical business needs for new zero waste account management software. Also see recommendation 1.5.
Perform, or contract for, a fully comprehensive route audit	1.9	<p>Perform, or contract for, a fully comprehensive route audit to align service delivery with billing rates. Use the route audit to:</p> <ul style="list-style-type: none"> ▪ Make CX module and/or RouteSmart system updates to ensure customers are billed correctly for their City-provided services. ▪ Ensure that all residential accounts are receiving required services. ▪ Ensure that the commercial accounts that the City is responsible for receive and pay for the zero waste services required by City policy. ▪ Verify that roll-off bin customers serviced by the Zero Waste Division are accurately billed.
Enforce route book to service level comparison requirement	1.10	<p>Enforce the requirement for zero waste drivers to compare actual service levels against route books and addenda during their collection routes, and report any variances to the Zero Waste Division supervisor for correction. Ensure that the drivers' efforts are supported by taking action to correct the discrepancies.</p>
Clearly define fee calculation requirements in new franchise hauler agreements	1.11	<p>When drafting new franchise hauler agreements:</p> <ul style="list-style-type: none"> ▪ Clearly define the fee calculation requirements. ▪ Clearly define the type of financial data and reports that the haulers must submit to support their fee calculations. ▪ Create and enforce the use of standardized forms for the franchise haulers to use when remitting their fees to facilitate Public Works staff's review.
Investigate questioned franchise hauler fee calculation	1.12	<p>Continue to investigate whether the franchise hauler erroneously removed recyclables from its fee calculations and, if so, back bill as allowable, per state law and city code.</p>

City Manager's Response

The City Manager agreed with all but recommendation 1.12. Management provided the rationale for partially agreeing to that recommendation. The full response is at Appendix B.

FISCAL IMPACT

Billing accuracy vital to achieving zero waste goals

Money earned from zero waste collection services provides Public Works with the means to implement its zero waste strategies. The success of those strategies requires that everyone involved with waste collections does their part to ensure the City receives its due revenue for services rendered. As an enterprise operation, zero waste activities should be self-funded but Public Works has struggled to get the fund out of a deficit. Hard work and diligence helped the department ensure its revenues outpaced expenditures resulting in nearly \$5.8 million in operating income at the end of fiscal year 2015. However, this is not enough to fully fund the needs for achieving zero waste by 2020. In 2005, facility improvements alone were estimated to cost between \$25 and \$30 million.

Software replacement costs last estimated at approximately \$317,000; small price to manage \$39 million per year revenue stream

Purchase of a better information system that automates workflows will help minimize billing errors, improve customer account management, and provide management with data to analyze its zero waste strategies. Information Technology last estimated the total replacement costs for new zero waste billing software to be just over \$317,000, which includes software licensing, IT labor, and departmental labor. That showed that the cost to replace the existing zero waste billing system is minimal compared to the \$39 million annual revenue stream it supports.

Manual workflows jeopardize the Zero Waste Fund's fiscal health

The use of legacy systems that require manual data workflows led to billing, rate-adjustment, and service-level errors:

- Customer accounts not accurately updated with the 2015 zero waste rates led to approximately \$38,000 in underbillings and \$29,000 in overbillings in the first billing cycle of the 2015 fiscal year. Finance corrected the errors, but the City could have experienced \$150,000 in revenue losses and \$118,000 in customer overcharges in fiscal year 2015 had the mistakes gone undetected.
- Four percent of customer service-level changes did not result in the necessary updates in the zero waste billing system. The total one-time revenue loss was only \$535. When informed, Finance corrected the errors, but had those gone on undetected, that amount would have grown: over \$6,400 after one year, over \$12,800 after two years, and so on.

- 21 percent of customer service-level changes did not make it into RouteSmart. This increases the likelihood that service levels do not agree with billing and that the City could be mischarging customers.

CONCLUSION

Silos are needed but hinder progress

It is important to recognize that silos are necessary. They allow for expertise in certain areas. They also foster a sense of independence and pride of ownership, which is good. However, silos also hinder progress. Public Works, Finance, and Information Technology play an integral part in zero waste operations and they rely on each other to perform their functions. In order for zero waste operations to work efficiently and for the City to receive its due revenue for services rendered, information needs to be shared and decisions made across silos. Taking a systems thinking approach to zero waste operations will allow all staff to achieve successful results.

Sharing information and making decisions across silos leads to success

Breaking the silo mentality and embracing zero waste operations as a whole and not its parts will take time. Because change is often hardest for those who have been engaged in their work for many years, promoting cross functional efforts during staff turnover provides an opportunity to embrace new ideas. While staff who have recently left the City are greatly appreciated for their dedicated service, now is an excellent time for change.

Changes in staffing create an opportunity to promote collaboration

Current zero waste billing systems are outdated, difficult to use, and lead to errors

The City's current overall system architecture for zero waste activities continues to result in inefficient use of staff time, billing and service delivery errors, and barriers to effective account management. With the City's complex zero waste rate structure; myriad service-type and service-level variations; and large number of accounts, there is substantial need for a better system to manage accounts, ensure billing accuracy, and monitor zero waste strategies. Systems exist that will meet the needs of the City's zero waste functions and billing activities. Public Works and Finance, in close collaboration with Information Technology, must work together to find a solution that aligns with not only City goals for zero waste, but also goals for streamlined operations through automation.

We appreciate and thank staff and management for their consideration and assistance

We would like to thank Finance, Public Works, and Information Technology staff for their assistance during this audit. Their responses to our inquiries allowed us to gain a more complete understanding of zero waste billing and related operations, as well as the challenges staff have in meeting their obligations. We appreciate management's consideration of our finding and recommendations.

APPENDIX A:

Scope and Methodology

We audited the City’s zero waste billing process, which involves the departments of Public Works, Finance, and Information Technology, to determine whether the City is accurately billing customers for their zero waste collection service levels. We also considered the impact of not receiving payment for provided services on the City’s Zero Waste by 2020 goal. We specifically reviewed information systems and process workflows to understand whether:

- Data systems and workflows ensure that the City accurately bills customers.
- Berkeley residents are signed up to receive zero waste services as required by the Berkeley Municipal Code.
- There are opportunities for improving the billing and service delivery processes.

We met with Public Works, Finance, and Information Technology management and staff to gain an understanding of the zero waste billing process; cross-departmental workflows; interrelated workings of zero waste functions; use of the existing zero waste information systems; and needs for true zero waste account management software. We also contacted other local government jurisdictions that provide zero waste collection services to understand the types and efficiency of the systems they use for zero waste activities. We performed data analyses to determine the accuracy of fiscal year 2015 zero waste rates in the CX module rate table, and to identify property locations lacking a zero waste account in the LX module and, therefore, potentially not signed up for service in accordance with City policy. We reviewed:

- Zero waste operations and billing audits performed by other local governments.
- Best practices for billing strategies.
- Berkeley Municipal Code Title 12, Chapter 32, Storage, Collection, and Disposal of Waste; and Title 2, Chapter 44, Section 040, Finance Department – Functions.
- Berkeley Adopted Resolution No. 66,600-N.S., Increasing Rates for Residential and Commercial Refuse Collection and Rescinding Resolution No. 66,205-N.S.
- Active City of Berkeley franchise hauler agreements (i.e., revenue contracts).
- Software proposals and marketing materials for information on zero waste account management software and automation solutions.
- Professional articles pertaining to the silo mentality and systems thinking.

We obtained CRM data and isolated the 3,766 calls related to customer case records for zero waste service starts, stops, and changes in fiscal year 2014. We used a sample size calculator to select the records to examine. We input a confidence level of 95 percent and confidence interval of 10 to determine our sample size of 94 customer cases. We traced those cases from CRM to determine whether the workflow allowed for accurate, timely, and complete updates to customer accounts in both the CX module and RouteSmart. We found four instances (four percent error rate) in which customer changes did not make it through the workflow to the CX model, three of which resulted in

billing errors. We also found 20 instances (21 percent error rate) in which the customer changes did not make it through the workflow to RouteSmart, which had no clearly identifiable fiscal impact.

Data Reliability

We assessed the reliability of:

- The Customer Information System (CX) by interviewing a knowledgeable data owner (i.e., CX Module leader); reviewing the systems data dictionary; tracing a statistical sample of data from source data files; and electronically verifying that data fields are populated as expected with valid data. We determined that the data were sufficiently reliable for the purposes of our report.
- RouteSmart by interviewing knowledgeable data owners and managers; reviewing data workflows; tracing a statistical sample of data from source data files; and electronically verifying that data fields are populated as expected with valid data. We determined that the data were sufficiently reliable for the purposes of our report.
- The Community Relationship Management (CRM) system and Land Management (LX) module by interviewing personnel knowledgeable about the data; electronically verifying that data fields are populated as expected with valid data; reviewing the LX system data dictionary; and reviewing the systems functions in the CRM user guide. We determined that the data were sufficiently reliable for the purposes of our report.

Audit Delay

We initiated this audit in fiscal year 2014. Substantial staff turnover citywide, including in our office, delayed our audit progress. Key personnel in Public Works and Finance, including department directors, left the City. This required us to set aside our audit, twice, and reprioritize our workload. However, we ensured that the status of our finding and conclusions was accurate before issuing this report by speaking with Finance, Information Technology, and Public Works staff and management; reviewing departmental communications, e.g., reports to Council; and carefully assessing whether operations that are in flux and evolving have had an impact on our report content. We determined that the factual accuracy of our finding, recommendations, and conclusions remains. The delay in completing our audit had no effect on our assessment of the fiscal impact of errors related to calls for service starts, stops, and changes in fiscal year 2014. Nor did the delay change our assessment of the silo effect and its negative impact on efficiency and effectiveness, and billing and service delivery accuracy.

Standards Compliance Statement

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

APPENDIX B

Audit Finding, Recommendations, and Management Response Summary

Audit Title: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity						
Finding: Integrated thinking about zero waste operations will help ensure accurate billings and customer equity						
Findings and Recommendations		Lead Dept.	Agree, Partially Agree, or Do Not Agree and Corrective Action Plan	Expected or Actual Implementation Date	Status of Outstanding Audit Recommendations and Implementation Progress Summary	
1.1	Agree to a common and unified vision for zero waste operations. Discuss the long-term zero waste goals, objectives, and key initiatives and share that information with those responsible for day-to-day operations. Use meetings and informal communications to regularly encourage staff to embrace a unified view of zero waste operations.	City Manager's Office and Team Response: Public Works, Finance, and Information Technology	Agree	12/2016		
1.2	Form a zero waste team comprised of managers and line staff involved with zero waste operations (i.e., waste collection, billings, customer calls, systems support). Include a diverse pool of people who can share ideas, resources, and knowledge. Have the team members work collectively to	Team Response: Public Works, Finance, and Information Technology	Agree	10/2016	Completed. Zero Waste, 311, and IT meet on a monthly basis to discuss operational issues that affect the three divisions. This meeting schedule has been in existence for over one year. Since there was already a setup in place, we decided to include Finance as	

Audit Title: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity				
Finding: Integrated thinking about zero waste operations will help ensure accurate billings and customer equity				
Findings and Recommendations	Lead Dept.	Agree, Partially Agree, or Do Not Agree and Corrective Action Plan	Expected or Actual Implementation Date	Status of Outstanding Audit Recommendations and Implementation Progress Summary
<p>evaluate their respective functions; the interrelationships among their departmental activities; and the practices, policies, and procedures they use to perform their zero waste account management and operations functions. Ensure that the team understands that their goal is to develop and support a holistic approach to zero waste operations not only to ensure billing accuracy, but also to help accomplish zero waste by 2020 and ensure continued efficient and effective operations beyond that achievement.</p>				<p>a participant versus create a separate team. We expanded the group and meeting scope to accommodate the Auditor’s recommendations. At every meeting, it will be the first agenda item to make sure all participants are made aware of the team’s concept. We will consider this completely implemented by October 2016, as at that time we will have met twice within the capacity required by this audit recommendation. This will be a regular meeting for the foreseeable future. The team members do understand that the Zero Waste operation is an enterprise with different parts and that the success of the operation depends on each of these distinctive units working together.</p>

Audit Title: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity					
Finding: Integrated thinking about zero waste operations will help ensure accurate billings and customer equity					
Findings and Recommendations		Lead Dept.	Agree, Partially Agree, or Do Not Agree and Corrective Action Plan	Expected or Actual Implementation Date	Status of Outstanding Audit Recommendations and Implementation Progress Summary
1.3	Require the zero waste team formed in response to recommendation 1.2 to develop written procedures that clearly support cross-departmental strategies and help staff perform their work, as well as understand how their work contributes to success. Include information that helps promote the unified view of zero waste operations, while also explaining the individual tasks that take place within the departments and how those connect. Examples include, but are not limited to, describing the process for routing customer cases from 311 calls, and detailing in layman’s terms the monthly updates that take place to align the CX and RouteSmart systems. Also see recommendation 1.2.	Team Response: Public Works, Finance, and Information Technology	Agree	12/2017	Staff from the Zero Waste Division, 311 Customer Service Center, Information Technology, and Finance Revenue Collection are reviewing and updating standard operating procedures for refuse and recycling services; reconfiguring and updating webpages; and creating technical assistance tools for zero waste customers. In July 2016, the group participated in an IT Strategic Plan Workshop to review the start of service process using the Rapid Workflow Process Model. The group will use this model to review other critical workflow processes.

Audit Title: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity					
Finding: Integrated thinking about zero waste operations will help ensure accurate billings and customer equity					
Findings and Recommendations		Lead Dept.	Agree, Partially Agree, or Do Not Agree and Corrective Action Plan	Expected or Actual Implementation Date	Status of Outstanding Audit Recommendations and Implementation Progress Summary
1.4	<p>Require the zero waste team formed in response to recommendation 1.2 to have regular meetings, e.g., quarterly, to share information about their operations and the known or expected changes and events that may impact cross-functional efforts. These meetings may need to be more frequent at first and less frequent over time. The team should use their meeting time to:</p> <ul style="list-style-type: none"> ▪ Identify continued barriers to change. ▪ Decide on solutions that will help overcome barriers. ▪ Share information about the challenges preventing staff from meeting operational objectives. ▪ Make cross-departmental decisions to improve processes and customer service. <p>Also see recommendation 1.2.</p>	<p>Team Response: Public Works, Finance, and Information Technology</p>	<p>Agree</p>	<p>10/2016</p>	<p>Completed. As we mentioned in response to recommendation 1.2, we expanded our existing monthly meeting to include Finance. The purpose of those meetings has always been to share information about operational and staff challenges. We expanded the meeting to include the specific suggestions of this recommendation. This initiative will be a continuous process that will be put in place for years to come as it becomes part of managing the operations of Zero Waste.</p>

Audit Title: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity						
Finding: Integrated thinking about zero waste operations will help ensure accurate billings and customer equity						
Findings and Recommendations		Lead Dept.	Agree, Partially Agree, or Do Not Agree and Corrective Action Plan	Expected or Actual Implementation Date	Status of Outstanding Audit Recommendations and Implementation Progress Summary	
1.5	In collaboration with Information Technology and as part of Enterprise Resource Planning, budget for, select, and install an account management system designed for zero waste activities. Use information from the zero waste team evaluation (recommendation 1.2) and zero waste strategy analyses (recommendation 1.8) to identify the critical business needs that should be included in the purchase of new zero waste account management system, or that should be considered when determining whether sufficient middleware options exist to fully integrate existing systems with the new account management software. Also see recommendations 1.2 and 1.8.	Team Response: Public Works and Finance	Agree	07/2019		

Audit Title: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity					
Finding: Integrated thinking about zero waste operations will help ensure accurate billings and customer equity					
Findings and Recommendations		Lead Dept.	Agree, Partially Agree, or Do Not Agree and Corrective Action Plan	Expected or Actual Implementation Date	Status of Outstanding Audit Recommendations and Implementation Progress Summary
1.6	<p>Incorporate systems thinking into the hiring process for both competitive and promotional recruitments:</p> <ul style="list-style-type: none"> ▪ Describe the interdependent nature of zero waste operations in job announcements. ▪ Highlight the cross-functional responsibilities and relationships in job descriptions. ▪ Discuss cross-functional experiences during job interviews to gain an understanding of an applicant’s mindset about shared accountability. 	<p>Team Response: Public Works and Finance</p>	<p>Agree</p> <p>Difficult to implement I and II because some classifications are not specific to Zero Waste operations but are general classifications that are Citywide.</p> <p>Item III - During job interviews for Zero Waste functions, questions are tailored to</p>	07/2016	<p>Public Works is currently recruiting for zero waste and using the interview techniques described. Finance and IT, however, are not in the process of, or able to identify when they will be, recruiting for a position for which this recommendation applies. Therefore, we cannot identify a future implementation date. However, both IT and Finance applied these concepts in recent hires. Additionally, all the departments intend to use the concepts described in the recommendation as much as allowable and consider this recommendation implemented.</p> <p>During the interview process, candidates are provided an overview of Zero Waste Division operations including relationships with other departments, the strategic priorities</p>

Audit Title: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity					
Finding: Integrated thinking about zero waste operations will help ensure accurate billings and customer equity					
Findings and Recommendations		Lead Dept.	Agree, Partially Agree, or Do Not Agree and Corrective Action Plan	Expected or Actual Implementation Date	Status of Outstanding Audit Recommendations and Implementation Progress Summary
			potential hires about the working conditions specifically as they relate to Zero Waste		used to guide our everyday thinking and application of resources, and owning the commitment to excel in the areas of courtesy, knowledge, promptness, and teamwork. To the extent possible and allowable by the City's recruitment practices, we will include in our recruitment materials information that conveys to applicants for general classifications that their work will include cross-functional responsibilities and shared accountability.
1.7	Require that someone other than the person who manually calculated the zero waste rates and entered the updated rates into the CX module perform an independent review of the calculations and data entry for accuracy. Have the reviewer report back on any errors. Ensure that management is also notified of	Finance	Agree	07/2015	Completed. For FY 2016 updates, which was input in 2015, Finance implemented a Quality Assurance process in which an error report was produced by IT. The Supervisor reviewed the report and made corrective changes. The report was re-

Audit Title: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity					
Finding: Integrated thinking about zero waste operations will help ensure accurate billings and customer equity					
Findings and Recommendations		Lead Dept.	Agree, Partially Agree, or Do Not Agree and Corrective Action Plan	Expected or Actual Implementation Date	Status of Outstanding Audit Recommendations and Implementation Progress Summary
	the errors, verifies that the corrections were made, and signs off on the review.				produced two other times to make sure all the error were fixed and the Manager of the unit signed off on the final report before finalizing system changes
1.8	Request that Information Technology use the CX module data extracts, such as the one used for this audit, to provide Public Works staff with the data they need to analyze zero waste strategies. Use the data extracts to further identify the critical business needs for new zero waste account management software. Also see recommendation 1.5.	Public Works	Agree	12/2016	We will ask IT to provide our fiscal services and zero waste strategy staff with CX data using existing data extracts, and use that for data analytics using software such as Excel. We will use these extracts to help identify the reporting needs of a new zero waste account management system. If needed, IT staff can provide reports or training to Public Works staff so they are able to run the reports themselves or extract the information in the format needed, if feasible.

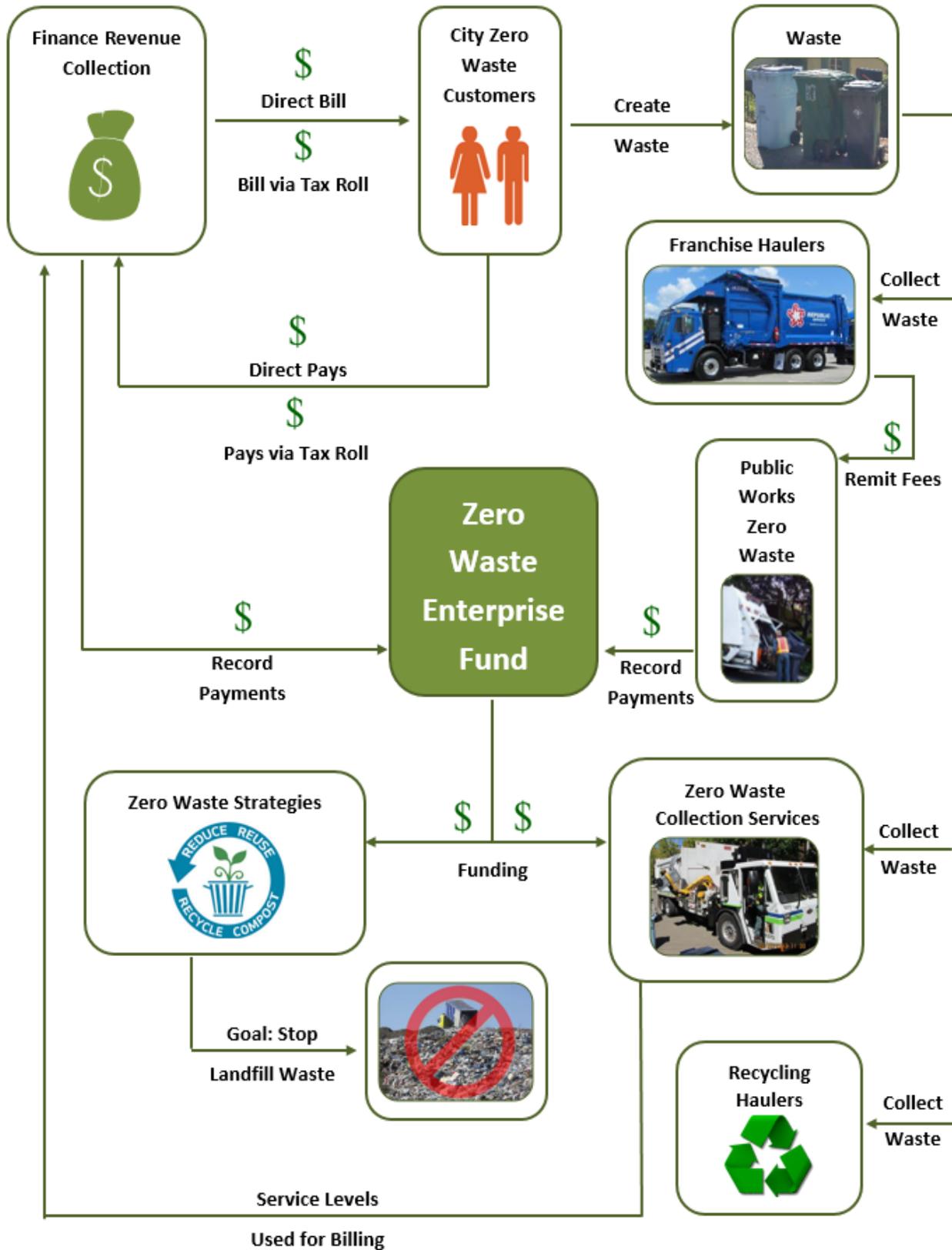
Audit Title: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity					
Finding: Integrated thinking about zero waste operations will help ensure accurate billings and customer equity					
Findings and Recommendations		Lead Dept.	Agree, Partially Agree, or Do Not Agree and Corrective Action Plan	Expected or Actual Implementation Date	Status of Outstanding Audit Recommendations and Implementation Progress Summary
1.9	<p>Perform, or contract for, a fully comprehensive route audit to align service delivery with billing rates. Use the route audit to:</p> <ul style="list-style-type: none"> ▪ Make CX module and/or RouteSmart system updates to ensure customers are billed correctly for their City-provided services. ▪ Ensure that all residential accounts are receiving required services. ▪ Ensure that the commercial accounts that the City is responsible for receive and pay for the zero waste services required by City policy. ▪ Verify that roll-off bin customers serviced by the Zero Waste Division are accurately billed. 	Public Works	Agree	07/2018	As part of the route audit, actual service levels will be compared against data in the CX module and appropriate updates made to ensure that all residential and commercial accounts are receiving required services and billed correctly for those services. Route books will also be updated to reflect the results of the route audit.

Audit Title: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity					
Finding: Integrated thinking about zero waste operations will help ensure accurate billings and customer equity					
Findings and Recommendations		Lead Dept.	Agree, Partially Agree, or Do Not Agree and Corrective Action Plan	Expected or Actual Implementation Date	Status of Outstanding Audit Recommendations and Implementation Progress Summary
1.10	Enforce the requirement for zero waste drivers to compare actual service levels against route books and addenda during their collection routes, and report any variances to the Zero Waste Division supervisor for correction. Ensure that the drivers' efforts are supported by taking action to correct the discrepancies.	Public Works	Agree	07/2018	We agree that the actual service levels should be compared against route books but believe that enforcing the policy to have drivers do onsite comparisons is no longer an efficient use of our drivers' time. We are exploring other options, such as using student interns to do the comparisons.
1.11	When drafting new franchise hauler agreements: <ul style="list-style-type: none"> ▪ Clearly define the fee calculation requirements. ▪ Clearly define the type of financial data and reports that the haulers must submit to support their fee calculations. ▪ Create and enforce the use of standardized forms for the franchise haulers to use when remitting their fees to facilitate Public Works staff's review. 	Public Works	Agree	12/2017	The City has contracted with a consultant to assess development and implementation costs related to the City's planned in-house commercial hauling system, and evaluate the financial and operational impacts of that system on the City and on existing commercial customers. The study will look at future franchise agreements for waste collection services and will include these factors.

Audit Title: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity					
Finding: Integrated thinking about zero waste operations will help ensure accurate billings and customer equity					
Findings and Recommendations		Lead Dept.	Agree, Partially Agree, or Do Not Agree and Corrective Action Plan	Expected or Actual Implementation Date	Status of Outstanding Audit Recommendations and Implementation Progress Summary
1.12	Continue to investigate whether the franchise hauler erroneously removed recyclables from its fee calculations and, if so, back bill as allowable, per state law and city code.	Public Works	Partially Agree	12/2016	<p>City Council approved a Public Works Action Calendar Item to replace the current non-exclusive franchise collection system. Public Works' long-term plan is for the department to take over all commercial zero waste services except for roll-off containers and compactors. Given the planned changes, it is not practical or cost-effective to undertake the task of investigating the past fee calculations.</p> <p>However, moving forward, for any franchise hauler agreements we may have, we will require that staff have written procedures in place that describe the correct calculations for determining what that haulers owe the City, and that staff review hauler invoices for accuracy in comparison to those calculation requirements.</p>

APPENDIX C

Zero Waste Enterprise Fund: Center of Revenue Streams and Operations



APPENDIX D

Manual Workflow for Customer Cases and Monthly System Updates

