Office of the City Auditor

CONSENT CALENDAR
July 1, 2014

To: Honorable Mayor and Members of the City Council

From: Ann-Marie Hogan, City Auditor

Submitted by: Ann-Marie Hogan, City Auditor

Subject: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress toward the Year 2020 Zero Waste Goal

RECOMMENDATION

Accept the recommendations in the audit report and request that the City Manager report back on December 16, 2014, and every six months thereafter until management reports full implementation of all recommendations.

SUMMARY

Berkeley has the opportunity to once again take a leadership role in moving zero waste efforts to the next level. Public Works' ability to achieve zero waste by 2020 depends on its ability to assess what is and is not working to increase waste diversion. Berkeley already has many best practices in place, but does not have a written strategic plan to identify what actions remain, who is responsible for each action, and what specific and measurable goals to focus on to increase waste diversion from landfills. Creating a strategic plan and obtaining Council approval will provide both the authority and the funding needed to carry out objectives and achieve zero waste goals.

Berkeley has nearly doubled its waste diversion rate since 1995. The City met Alameda County's goal of 75 percent diversion in 2010 with minimal outreach to the community, but has remained near that level since then. Increasing funding for education, outreach, compliance, and enforcement will help Berkeley resume its progress toward zero waste and create a path for other cities to follow. A national zero waste summit identified comprehensive and ongoing education programs in every sector of the community as a critical component throughout every phase of transition to a zero waste culture. It identified the need for education to focus on the benefits of recycling and composting, as well as the logistics for how to proceed. It also recommended having funding dedicated to education, and suggested a minimum of $3 per person per year after achieving 70 percent diversion. Berkeley can establish a regulatory fee to fund these activities since they deal directly with increasing diversion and the state mandates that every jurisdiction have a recycling program.

FISCAL IMPACTS OF RECOMMENDATION

A written strategic plan will help Public Works manage and obtain funding for the City's zero waste objectives. Better use of technology will involve upfront and maintenance costs but will make operations more efficient. Public Works has the potential to save

$500,000 a year when, over time, switching to biweekly garbage pickup results in improved service delivery and, therefore, more efficient operations. Public Works could use those savings to fund zero waste education, outreach, compliance, and enforcement activities. Savings will not be immediate. Public Works will first need to determine whether it can eliminate positions through attrition and employee reassignment. In order for biweekly service to be successful, Public Works will need to educate the public so that customers do not discard garbage in the recycling bins.

CURRENT SITUATION AND ITS EFFECTS

Public Works needs to allocate more resources to develop a comprehensive, written strategic plan that clearly defines the roles and responsibilities for those managing the zero waste program, and that assigns sufficient resources for public education and outreach. Without a clear plan, Public Works cannot properly ensure the City's compliance with state, county, and city regulations and goals related to zero waste objectives.

BACKGROUND

On March 22, 2005, the Berkeley City Council adopted a zero waste resolution reaffirming its commitment to meet the Alameda County Measure D goal of reducing waste sent to landfills by 75%, and setting a zero waste goal of eliminating waste sent to landfills by the year 2020. The Council's resolution does not define a specific zero waste percentage for Berkeley, but the language used in the resolution implies that Council's intention is 100 percent diversion.

ENVIRONMENTAL SUSTAINABILITY

Reaching zero waste will allow the Berkeley community to reduce its impact on the natural environment. Through zero waste efforts, Berkeley can help improve air and water quality, and help preserve ecosystems both locally and globally. Many of our recommendations provide a roadmap for city management to reduce solid waste through reuse, recycling, and composting waste, as well as by avoiding waste as much as possible. We manage and store our audit workpapers and other documents electronically to significantly reduce our use of paper and ink.

RATIONALE FOR RECOMMENDATION

Implementing our recommendations will help Public Works reach the City's zero waste objectives and improve customer relations through enhanced service delivery.

CONTACT PERSON

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Attachments:
1: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress toward the Year 2020 Zero Waste Goal

City of Berkeley
Office of the City Auditor

Underfunded Mandate:
Resources, Strategic Plan, and Communication Needed to Continue Progress Toward the Year 2020 Zero Waste Goal

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Presented to Council July 1, 2014

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July 1, 2014

Purpose of the Audit

We conducted this audit to assess the progress made toward achieving the City's goal of zero waste by 2020 and to identify ways that data can inform management decisions. We reviewed ways that existing data can be refined and identified additional data needed to improve program performance.

Executive Summary

Insufficient resources to effectively implement zero waste programs

The City is at risk of not meeting Council's goal to achieve zero waste by 2020. The City defines zero waste as reducing solid waste by reusing, recycling, and composting as well as avoiding waste as much as possible. Council has not allocated sufficient funding for reaching its zero waste goal. Public Works needs more resources to develop a comprehensive, written strategic plan that clearly defines the roles and responsibilities for those managing the zero waste program, and that assigns sufficient resources for public education and outreach. Without a clear plan, Public Works cannot properly ensure the City's compliance with state, county, and city regulations related to zero waste objectives. This includes Alameda County's requirement to send less than ten percent of readily-recyclable materials to landfills starting in July 2014. The county's requirement applies specifically to waste from commercial, multifamily residential properties with five plus units, and self-haulers.

Public Works reduced the deficit and increased operational efficiencies

Public Works' focus has been on reducing the deficit in its refuse fund, which accounts for revenues and expenditures related to zero waste collection services. Since fiscal year 2009, the department has successfully reduced its operating costs by $2.5 million as a way to reduce the deficit. Public Works was able to make those reductions, for the most part, by gradually reducing the number of full-time equivalent staff from 107 in fiscal year 2009 to 87 in fiscal year 2014. Public Works' intent in reducing the deficit was to improve operations, which would help the department make more efficient progress on the City's zero waste goals.

Public Works is following best practices to achieve zero waste

Public Works has implemented many zero waste best practices in addition to recycling programs. For example, the department:

- Offers organics collection services
- Provides recycling and education program services in public schools in partnership with Green Schools Initiative
- Bans landfill disposal of recyclable and compostable items from commercial waste

- Provides recycling services for construction and demolition debris at the transfer station
- Bans the use of:
  - Single-use plastic bags at food retailers
  - Styrofoam containers in restaurants
- Offers "green" business certifications

New rate structure will not support all zero waste programs

Council approved a more sustainable rate structure in May 2014 to alleviate the fund deficit and provide additional funding for zero waste programs and related construction projects. The funding is not enough to help Public Works fund all of the specified zero waste programs. Proposed construction projects alone, such as rebuilding the materials recovery facility and the transfer station, were estimated to cost $25 to $30 million in 2005.

Potential $500,000 in annual cost savings by switching to biweekly garbage service

Switching to biweekly garbage service could free up approximately $500,000. This would allow Public Works to enhance its zero waste efforts by shifting those resources to other waste diversion programs such as education, outreach, and compliance. Public Works will not be able to move to biweekly collection immediately because it will take time to educate the community so that refuse does not wind up in recycling bins. Savings will not be realized until Public Works has had time to make operational changes to increase efficiency. The department will also need time to work with the employee bargaining unit about how position reductions can be achieved through attrition and reassignment of existing employees.

Recommendations

Council and management need to invent new strategies, incentives, and methods for achieving the objective of diverting solid waste from landfills and reusing, recycling, and composting waste whenever possible. To reach this goal, Council must ensure sufficient funding for zero waste programs. Our recommendations provide a roadmap to:

- Increase landfill diversion efforts by focusing on community education and outreach.
- Target waste streams (e.g., residential waste) with the most room for improvement.
- Develop a written strategic plan that includes both short- and long-term goals.
- Prepare detailed annual work plans that identify zero waste goals for the year, the resources dedicated to those goals, and performance measures.
- Reallocate resources toward zero waste efforts.

We provided our recommendations to the Director of Public Works prior to publishing this report to allow the department to begin implementing changes as soon as possible.

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A full copy of the report can be obtained at:
http://www.cityofberkeley.info/uploadedFiles/Auditor/Level_3_-_General/A%202_RPT_Zero%20Waste_Final.pdf

AUDIT OBJECTIVES

We conducted this audit, at the request of the Public Works director, to assess the progress that Public Works' Zero Waste Division has made toward achieving the City's goal of zero waste by 2020, and to identify ways that data can inform management decisions. Specifically, we reviewed ways that existing data can be refined and what additional data is needed to improve program performance.

BACKGROUND

Zero Waste International Alliance defines "zero waste"

The Zero Waste International Alliance[1] says:

> "Zero Waste is a goal to guide people to emulate sustainable natural cycles, where all discarded materials are resources for others to use. Zero Waste means designing and managing products and processes to reduce the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them. Implementing Zero Waste will eliminate all discharges to land, water or air that may be a threat to planetary, human, animal or plant health."

Zero waste is a paradigm shift: from waste management to materials management

Zero waste means many things to different people. For the City of Berkeley, it means reducing waste by reusing, recycling, and composting waste whenever possible to limit the amount of waste a community sends to a landfill. The primary concept of zero waste is diverting solid waste from landfills. This concept is commonly referred to as "diversion." Appendix C describes the specific benefits of achieving zero waste through waste prevention and recycling, reusing, and composting waste.

Success = 90 percent diversion; Berkeley's goal is to eliminate all waste sent to landfills

The Zero Waste International Alliance (Alliance) considers success as a diversion rate of over 90 percent. The Berkeley City Council has not defined success in specific percentages; however, they adopted a zero waste resolution with the goal of eliminating waste sent to landfills by the year 2020. This language implies that Council's intention is 100 percent diversion but the accompanying Council

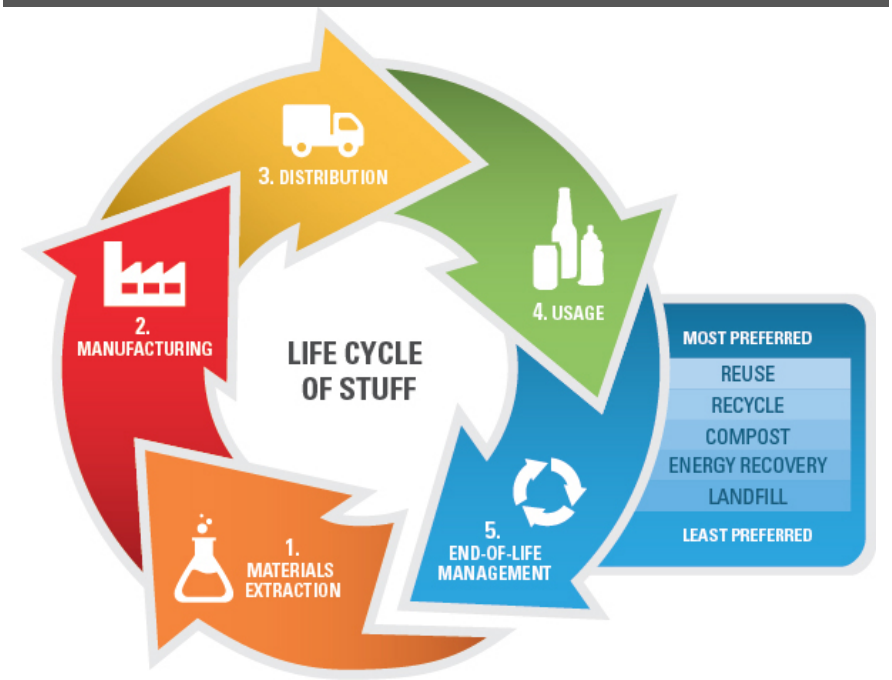
[1] The Zero Waste International Alliance is an organization working towards a world without waste through public education and practical applications of Zero Waste principles: http://zwia.org

item defines zero waste as "as close as possible." Whether opting to meet the Alliance's success standard or reaching for higher diversion rates as Berkeley has, when local governments opt to follow zero waste principles and become known as zero waste communities, they must have a total commitment to *pursuing* zero by maximizing:

1. Resource recovery through recycling and composting – "downstream" recovery
2. Longevity through reuse, repair, and durable design – "midstream" longevity
3. Waste reduction through redesign, zero waste purchasing, producer responsibility, and new rules – "upstream" reduction

The following picture shows the life cycle of food and goods from the gathering of materials to produce them through their final disposition.

Life Cycle of Food and Goods



Source: United States Environmental Protection Agency[2]

[2] http://epa.gov/climatechange/climate-change-waste/life-cycle-diagram.html

City, county, and state recycling requirements will ramp up in 2020

There are several city, county, and state requirements for recycling. The first phase of requirements took effect in 2010; the next phase takes effect in 2020. Berkeley's 2020 zero waste goal is similar to that adopted by the Bay Area Climate Change Compact signed by San Francisco, Oakland, and San Jose. The Compact encourages local action to reduce greenhouse gas emissions and recognizes that some challenges can best be addressed through regional partnerships.

City, County, and State Recycling Requirements	
Government	**Recycling Requirements**
City of Berkeley	▪ 75% diversion from landfills by 2010 ▪ Zero waste by 2020
County of Alameda	▪ 75% diversion of readily recyclable materials from landfills by 2010 ▪ Less than 10% of materials destined for the landfill are readily recyclable or compostable by 2020; applicable only to commercial, multifamily residential, and self-haul waste
State of California	▪ 50% diversion from landfills by 2000; mandate that local jurisdictions implement a commercial recycling program ▪ 75% diversion from landfills by 2020

Sources: Various city, county, and state regulations. See Appendix F for the related legislation.

The City partners with others to increase waste diversion

The Zero Waste Division of Public Works is responsible for the collection of all Berkeley residential solid waste. The City changed the name of the division from Solid Waste Management to demonstrate its commitment towards zero waste. City residents must use the City's waste collection services, but businesses may choose to use the City's services or one of two private haulers that have active franchise agreements with the City. The Zero Waste Division also offers curbside recycling and compost services to help increase diversion from landfills by collecting:

- Compostable materials from all businesses and single-family and multifamily residences.
- Recycling from commercial and large multifamily residential customers.

The City also partners with local organizations to promote zero waste efforts:

- The Ecology Center, a nonprofit organization promoting sustainability, contracts with the City to collect recycling from single-family and small multifamily residential customers.
- The Community Conservation Center (CCC) operates the City-owned Materials Recovery Facility[3] and the drop-off and buy-back centers for Berkeley. Both the facility and drop-off center accept paper products, glass, plastics, tin, aluminum, and universal waste[4] as well as reusable items such as books, clothing, and shoes.

Zero Waste Commission makes policy and goal recommendations to Council

Berkeley's Zero Waste Commission is responsible for making recommendations on City zero waste policy and goals, including commercial and residential garbage and recycling services, budgets, and other decisions relating to solid waste in the City of Berkeley. The commission supported and promoted the single-use bag ban to eliminate the use of plastic bags at food retailers. The commission also worked with the Community Conservation Center to implement the expanded plastics recycling initiatives that allow Berkeley residents to recycle a wider range of plastic items than previously allowed.

Berkeley's transfer station handles refuse, compostable materials, and construction and demolition debris

Collection trucks and self-haulers drop off refuse and compost at Berkeley's transfer station, which also accepts construction and demolition debris. Refuse is trucked from the transfer station to landfills, construction and demolition debris is salvaged and recycled, and compostable materials are trucked to a Central Valley processing plant. Berkeley residents can pick up processed compost for free at the Berkeley Marina on the last Saturday of each month.

Revenue Collection does refuse billing and collections

The Finance Department's Revenue Collection Division handles all refuse billing and collections. This includes direct billing for all commercial and some residential services. The division works with Alameda County to bill the majority of residential services through the property tax roll.

[3] Material recovery facilities specialize in receiving, separating, and preparing recyclable materials.

[4] Universal wastes are federally designated wastes, which include batteries, pesticides, mercury-containing equipment, and lamp bulbs.

311, Berkeley's all-in-one customer service line, provides support to the Zero Waste Division

Berkeley maintains a customer service hotline. Customers can call 311 from any cell phone or landline while in Berkeley, or (510) 981-CITY when outside of the City. 311 offers community members the ability to get assistance with their refuse services without determining the specific person or department to contact. 311 staff are well versed in the City's zero waste efforts and can help establish or cancel service, receive customer complaints and payments, and answer questions related to waste diversion. 311 staff also coordinate site inspections with Public Works staff, who perform the actual inspections, as a way to verify changes to service such as going from large to small waste containers. 311 is a division of the Department of Information Technology, which uses a Community Relationship Management system to capture and route calls for service and customer complaints.

Berkeley has a variable rate structure for refuse services

Berkeley uses a Pay-As-You-Throw (PAYT) rate structure, which the U.S. Environmental Protection Agency considers a best practice for helping communities prevent and divert waste. There are three PAYT pricing systems:

- Proportional structure: charges the same amount for every unit (e.g., gallon or pound) of garbage collected.
- Variable-rate structure: charges based on subscription levels (i.e., number and size waste containers). The rate may rise or fall as subscription levels increase. Berkeley uses a variable rate structure.
- Multi-tiered structure: charges a base fee for the fixed costs of service, plus a variable rate for the actual amount of garbage collected. The second tier can have a proportional or variable rate structure.

Proposition 218 imposes limits on how fees are assessed

California's Proposition 218 imposes limits on property-related fees such as garbage collection and requires rates to be proportionally shared based on the level of service received. This means, for example, that the commercial sector cannot share the cost of residential service. Proposition 218 also prohibits certain fee increases without first providing the public the opportunity to protest the change, which means that jurisdictions like Berkeley cannot increase collection rates if at least 50 percent of the affected population rejects the suggested increase. However,

Proposition 218 allows higher or lower rates for various service components to deter or encourage certain conduct. For example, rates may be higher to discourage generation and disposal of disfavored types and quantities of refuse, or lower to encourage favored refuse practices, such as separating recyclables.

Fees to support regulatory programs are not subject to Proposition 218. Municipalities can enact regulatory fees, for example, for recycling and education, outreach, and enforcement of recycling requirements without providing the public the opportunity to protest the fee or fee increase. California courts have held that regulatory program costs typically include the expense of direct regulation as well as all incidental expenses, including administration, inspection, and maintenance. These costs are allowed even if the municipality does not develop a separate pricing structure for the regulatory portion of a program.

FINDINGS AND RECOMMENDATIONS

Finding 1: Insufficient data and resources (for planning, strategy, or execution) dedicated to Berkeley's zero waste by 2020 objectives

The City is at risk of not meeting Council's goal to achieve zero waste by 2020. The City defines zero waste as reducing solid waste by reusing, recycling, and composting to the full extent possible. Council has not allocated sufficient funding for reaching its zero waste goal. This has reduced Public Works' ability to develop a comprehensive, written strategic plan that clearly defines the roles and responsibilities for those managing the zero waste program, and that allows the department to assign sufficient resources for education and outreach to the public about zero waste efforts. Without a clear plan, Public Works cannot properly ensure the City's compliance with state, county, and city regulations related to zero waste objectives. This includes Alameda County's requirement to send less than ten percent of readily recyclable materials to landfills starting in July 2014. The county's requirement applies specifically to waste from commercial, multifamily residential properties with five plus units, and self-haulers. Although staff at StopWaste[5] told us that Berkeley has the infrastructure in place to

[5] StopWaste is the Alameda County Waste Management Authority and the Alameda County Source Reduction and Recycling Board operating as one public agency: http://www.stopwaste.org/home/index.asp?page=2

meet jurisdictional requirements, it is unlikely that Berkeley will be able to meet city and county goals without increased funding for zero waste initiatives.

Public Works reduced the deficit and increased operational efficiencies

Public Works is responsible for implementing City programs to achieve zero waste. The Public Works Director said that his department uses a strategic approach that focuses on operational changes to reduce costs and bring operations up to industry standards. For example, since fiscal year 2009, Public Works reduced the refuse fund's ongoing deficit by reducing its annual operating costs by $2.5 million. The department achieved those reductions, for the most part, by gradually reducing the number of full-time equivalent staff in its Zero Waste Division. Staffing went from 107 in fiscal year 2009 to 87 in fiscal year 2014. Public Works implemented most of those staffing reductions by changing from two-operator to one-operator refuse trucks, but the reductions also included at least four administrative and oversight positions:

Zero Waste Division Historical Staffing (Full-Time Equivalent by Fiscal Year)						
FY 2009	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**
Actual	Actual	Actual	Actual	Adopted	Adopted	Adopted
107	109	97	93	89	87	87

Source: City of Berkeley biennial adopted budgets[6]

One-Operator Refuse Truck

[6] http://www.cityofberkeley.info/budgetdocuments/

Continuing deficit limited ability to use resources for achieving the zero waste goal

Despite Public Works' efforts, the refuse fund continued to operate at a deficit, in part because of the rise in personnel costs. This makes it more difficult to reduce expenditures for labor-intensive operations such as zero waste collection. The continuing deficit limited the department's ability to allocate resources toward achieving the Council's zero waste goal.

Berkeley met its 75 percent diversion goal in 2010, but fell slightly to 74 percent in 2011

Berkeley reduced its landfill disposal from nearly 140,000 tons in 2000 to just over 63,000 tons in 2010. This is in line with other cities in Alameda County and met Alameda County's goal to achieve 75 percent diversion from landfills by 2010. However, Berkeley's disposal rate dropped slightly - to 74 percent - in 2011.

Berkeley Landfill Disposal Amounts and Diversion Rates

	1995	2000	2005	2006	2007	2008	2009	2010	2011
Disposal Tonnages	109,658	139,790	120,328	112,025	98,041	88,185	71,968	63,127	69,145
Diversion Rates	41%	49%	59%	57%	62%	66%	72%	76%	74%

Source: StopWaste.org[7]

See Appendix D for a comparison diversion rates for other Alameda County jurisdictions.

Berkeley has implemented many programs needed to achieve zero waste

Berkeley has implemented many program components that are considered best practices in zero waste efforts. The City compares well against local municipalities and is ahead of many similarly sized municipalities in the United States. Some of the best practices in use are:

- Residential curbside recycling options
- Mandatory recycling for commercial, municipal, and large multifamily properties
- Recycling and education programs in public schools in partnership with Green Schools Initiative, a program aimed at improving "green" actions by kids, teachers, parents, and policymakers[8]
- Residential plant-debris and food-waste collection (organics)
- Bulky item pick up (e.g., mattresses and small appliances)

[7] http://www.stopwaste.org/docs/disposal.pdf and http://www.stopwaste.org/docs/diversion.pdf

[8] http://www.greenschools.net/

- Paper-bag fee at stores selling food and perishables
- Ban on the use of single-use plastic bags at food retailers and Styrofoam containers in restaurants
- Ban on landfill disposal of recyclable and compostable items from commercial waste
- Construction and demolition debris recycling services at the transfer station
- Green business certifications for businesses that meet rigorous standards of environmental performance[9]
- City purchasing provisions and preferences to promote the use of environmentally preferable "green" products and reduce waste

The Zero Waste Commission provided input for Chapter 5 of the City's Climate Action Plan

The Zero Waste Commission is responsible for advising the City Council about Berkeley's zero waste policies and goals, and provided input for Chapter 5 of the City's Climate Action Plan: *Waste Reduction and Recycling*. The plan establishes goals and offers implementation actions to help increase waste diversion rates. Public Works uses the Climate Action Plan as its zero waste strategic plan and has implemented these actions:

- Initiated the split-cart program to allow residents to easily divide their recyclable items for collection
- Instituted a ban on the use of plastic bags at food retailers and established a fee on paper shopping bags
- Received Council approval of an extended producer responsibility policy, which requires producers to reclaim discarded products, reduce packaging that ends as waste at the local level, and eliminate toxics from products and their waste

Public Works is in the process of implementing several other items as part of Alameda County's mandatory recycling ordinance, such as requiring managers of multifamily dwellings to provide tenants with recycling options.

[9] www.greenbiz.ca.gov

Zero waste is a lofty target, but it may be achieved by using a strategic action plan and defined goal

Zero waste is a lofty stretch target.[10] However, using the Zero Waste International Alliance's current definition, it may be achievable with both short- and long-term planning through development of a written strategic plan. Appropriate planning includes education, outreach, and compliance monitoring for the residents and businesses that will ultimately achieve zero waste by changing their behaviors to divert more of their waste from the landfill through recycling, reuse, and waste reduction. San José and Oakland each offer good local models of strategic plans to achieve zero waste. They include topics such as:

- Fiscal impact
- Existing conditions
- Key issues and impacts
- Zero waste strategies and initiatives
- Interim goals
- Staffing needs
- Methods for overcoming funding obstacles
- Waste stream analysis to increase diversion
- Programs and facilities

"Zero waste is a goal for the future which requires realistic planning and investment."

- National Waste and Recycling Association

Council tasked the Zero Waste Commission with creating a strategic plan

Council's zero waste resolution seems to acknowledge the need for planning by stating that zero waste science "is a systematic methodology for moving with maximum speed in logical increments toward the goal of zero waste." The resolution requires the Zero Waste Commission to prepare and evaluate a feasible zero waste plan for the Zero Waste Division. The commission sponsored the 2005 Solid Waste Management Plan update, but that plan was never finalized and approved by Council. Further, it was written when the goal was to achieve 75 percent diversion, which is now an outdated goal. The commission also provided input to Chapter 5 of Berkeley's Climate Action Plan, which discusses the barriers to achieving zero waste, and the current status of and opportunities

[10] According to Bob Behn's Performance Leadership Report, a "stretch target" is one that an organization cannot achieve by working a little bit harder or smarter. To achieve a stretch target, people have to invent new strategies, new incentives, and entirely new ways of achieving their purpose. Jack Welch, former president of General Electric, is credited with coining the stretch target concept and saying, "We have found that by reaching for what appears to be the impossible, we often actually do the impossible; and even when we don't quite make it, we inevitably wind up doing much better than we would have done." Behn's Performance Leadership Report is available at http://www.hks.harvard.edu/thebehnreport/All%20Issues/December2011.pdf.

for improving Berkeley's solid-waste management system. However, there is still no written strategic plan to achieve zero waste by 2020.

An effective strategic plan would address the hierarchy of goals at the state, county, and city levels

Following a typical strategic-plan format, a strategic plan to achieve zero waste in Berkeley would address the hierarchy of goals at the state, county, and city level and include the following elements for each tier of the hierarchy, each goal within the tier, and each strategy and activity within a goal[11] (see Appendix E for a sample template):

- Objective - the state, county, or city requirement to be met
  - Goals - the incremental goals for meeting the objective
    - Strategy - the specific methods and needs for reaching the goal such as:
      - Activities to be performed
      - Resources needed to perform the activities
      - Staff primarily responsible for completing the activities
      - Metrics showing improved change in performance
      - Estimated completion dates

Setting short- and long-term goals shows the city what works and what does not, and in what circumstances

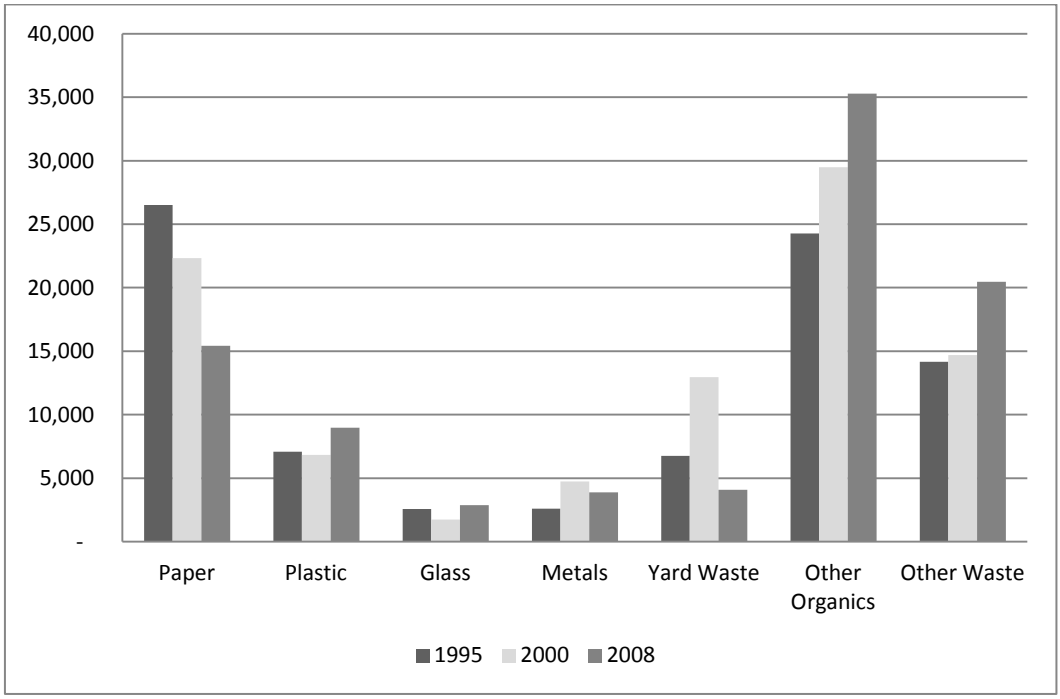
Including both short- and long-term goals in a strategic plan allows small "wins," which are progress toward the larger goal. Achieving the short-term goals also builds confidence that the stretch goals can be met and shows the organization what works and what does not, and in what circumstances. Without this accountability to achieve progress toward the long-term goal, only those who are in office in 2020 will be accountable if the goal is not met.

Berkeley has already undertaken many tasks to increase recycling and composting. This includes significant improvements to the diversion of construction and demolition debris. Now, Public Works needs to identify new and more challenging ways to increase diversion. The 2008 Alameda County Waste Characterization Study identified the amount of various types of waste that are being disposed of in the landfill but that could be recycled or reused. Berkeley had the most room to improve waste diversion of compostable paper, food waste, untreated lumber, treated wood waste, and crushable and other waste. Public Works has made improvements in these areas; however, more can be done to divert

[11] There can be multiple goals for a single objective and multiple strategies for each goal.

this waste. By focusing efforts primarily on the areas of largest impact, the City can begin to customize education, outreach, compliance, and enforcement and establish interim goals on the road to zero waste. Public Works management can focus on activities that will ensure compliance with the county ordinance, while simultaneously progressing toward the Council mandate of zero waste citywide.

Types of Divertible Berkeley Waste Disposed of in Landfills: 1995 to 2008



Source: Stopwaste.org[12]

Next steps: behavioral changes through education, outreach, enforcement, and regulation

The next steps for Public Works to increase waste diversion are challenging. The department can focus its strategy on certain waste sectors, e.g., residential waste and commercial waste, to reach the City's goal as well as the Alameda County requirements. Regardless of where the department focuses, strategies will need to include an emphasis on behavioral changes that can best be addressed through a combination of public education and outreach, enforcement of zero waste practices, and regulations requiring specific waste diversion efforts.

[12] http://www.stopwaste.org/docs/acwcs-2008r.pdf, Appendix A3, Figure 7

Public Works' annual work plan lacks accountability

Public Works' annual work plan does not include measurement, cost, or resource information. Ideally, the annual work plan should identify smaller targets for the year that work toward the long-term goals in the strategic plan. At a minimum, targets should address:

- Objectives and short-term goals
- Actions to be taken
- Responsible parties
- Employees dedicated to the task
- Expected cost and impact of implementation
- Performance measures
- External factors affecting performance and progress

Although an annual work plan is not meant to be as in depth as the strategic plan, the targets should be detailed enough to measure specific achievements and should inform Council regarding the status and progress made annually or biennially. Communicating the goals and targets to Public Works personnel and other city staff involved in zero waste related activities would increase buy-in at all levels of the organization.

Council approved an extended producer responsibility policy in June 2013

Moving in a positive direction, the Zero Waste Commission drafted, and Council approved, an extended producer responsibility (EPR) policy in June 2013. An EPR is a type of product stewardship that requires producers of products to be responsible for disposal at the end of the products' useful life. It is based on the theory that producers, not consumers, have control over the design, manufacture, and packaging of products and should, therefore, have responsibility for the product's final disposal costs. Producers generally accomplish this by building a disposal fee into a product's cost and accepting responsibility for its disposal later. Placing this responsibility and cost on the producer also encourages producers to change product designs to minimize the negative impact on human health and the environment at every stage of a product's lifecycle. Over the long term, implementing EPR policies and programs helps:

- reduce total volume of waste;
- ensure products are designed to be recyclable and/or repairable; and
- ensure products are manufactured with little or no toxic content.

Berkeley's policy states that the City should support state-level efforts for new product stewardship initiatives, but national and international actions will also help relieve the current waste burden on local government.

Berkeley's diversion is in Phase 2 of a proposed three-phase plan to achieve zero waste

Participants in a national zero waste summit in 2010 produced a white paper that identified an "aggressive" 10-year action plan, to be completed in three phases, to help communities achieve zero waste. By achieving more than 70% waste diversion, the City is considered to be in Phase 2 of the summit's 10-year action plan:

National Zero Waste Summit 10-Year Action Plan to Achieve Zero Waste		
Phase 1 **Years 1-4: 50%**	**Phase 2** **Years 5-8: 70%**	**Phase 3** **Years 9-10+: 90%**
Commit to Zero Waste path	Biweekly residential trash service	Aggressive producer responsibility
Community education	Community education	Economic signals
Deposits for recycling construction and demolition debris	Construction and demolition debris targets increase	Enforce source separation
Facility planning and construction	Organics collections for business and multifamily units	Focus on waste reduction
Government internal initiatives	Producer responsibility for hard-to-recycle materials	Landfill disposal bans
Organics collection for homes	Product bans and fees	Mixed waste processing
PAYT rates for homes	Source-separated organics for food generators and households	Self-haul to transfer stations only
Universal curbside recycling	Source-separated recycling for businesses and homes	Universal zero waste labeling
Zero Waste events		

Source: Eco-Cycle 2010 White Paper on Zero Waste. E-mail kate@ecocycle.org, subject: white paper request.

Funding for education is critical to achieve zero waste

The summit white paper provides examples of activities that can be included in a strategic plan for both the short- and long-term. It identifies comprehensive and ongoing education programs in every sector of the community as a critical component throughout every phase of transition to a zero waste culture. It states that education should focus on the benefits of recycling and composting, as well as the logistics of how to proceed toward achieving zero waste. It also recommends having funding dedicated to public education, and suggests a minimum of $2 per person per year to achieve zero waste after achieving a 50 percent diversion rate, and $3 per person per year after achieving 70 percent diversion. The white paper recommends that education focus on specific issues and products, such as:

- Updating bin and cart labels with the items acceptable for recycling, composting, and the landfill
- Educating customers on:
  - Recyclable and compostable items
  - Purchasing products with ecofriendly packaging
  - Reusing, repairing, or repurposing products
  - Acceptable disposal methods for items that cannot be left curbside, for example, appliances
  - Separating materials prior to transporting them to the transfer station

Once 90 percent diversion is achieved, phasing waste out of the community takes center stage

The white paper recommends that the final years of the plan focus on reducing the amount of waste generated per person and phasing waste out of the community through landfill bans, enforcing materials separation at the source, and aggressively increasing the responsibilities of waste producers (e.g., manufacturers).

Education and enforcement should be clear and easy to understand

Specific ideas for conducting education and enforcement in the community include:

- Repeatedly provide clear and easy-to-follow instructions.
- Use interns or lower-level employees to go door-to-door to educate the public regarding ways they can improve their recycling and composting habits.
- Provide customer information packets to new residents and businesses when they begin waste services.

- Develop enforcement options for various sectors in the community (e.g., commercial, multifamily residential, and residential) and educate the public on the penalties for lack of compliance.

Berkeley must now focus efforts on increasing diversion of more difficult items

Berkeley has surpassed the 70 percent diversion rate, which suggests the City should be ready to move to Phase 3 of the summit's zero waste plan. The summit's timeline indicates that a community should be able to achieve zero waste within two years of having attained a 70 percent diversion rate, which means that Berkeley should achieve zero waste throughout the City by 2020. However, Berkeley lacks the comprehensive education and outreach necessary to move into Phase 3. The City achieved its high diversion rate primarily through businesses' and residents' recycling of common recyclables such as paper, plastics, and cans, which is not enough to move to the next phase. The summit participants' conclusion that a 10-year plan is aggressive and the fact that Berkeley has not yet developed a plan are further evidence that Berkeley may not meet the Council's goal to achieve zero waste throughout the City by 2020.

New rate structure not enough to meet proposed funding demands

The Council approved a new rate structure for waste collection services in May 2014. The new rate structure cites many uses for the funds resulting from the proposed rate increases. This includes fully implementing Alameda County's requirement for businesses and certain multifamily buildings to provide recycling and composting services, as well as education and outreach for that mandate. Management expects the new rate structure to result in a fund balance beginning in fiscal year 2016 that can be used for education, outreach, compliance, and enforcement. However, this is likely not enough for the City to reach its zero waste goals. Berkeley has contracted with Alameda County for compliance and enforcement efforts beginning in July 2014, but that does not include single-family residential properties of four units or less. To meet its zero waste goal, Berkeley will need substantial compliance and enforcement in addition to education and outreach. Further, the aggregate expenses for all of the programs seem too large to fund based on the new rate increase. Rebuilding the transfer station and the materials recovery facility are likely to require more funds than the rate structure can carry. Estimated costs from 2005

show that rebuilding those facilities will cost the City anywhere from $25 to $30 million. The Council has not discussed the option of implementing a separate regulatory fee for education, outreach, compliance, and enforcement, which is allowed under Proposition 218.

Defined processes and procedures needed to help staff work toward zero waste

Although public education and outreach are key components of achieving zero waste, they can only be done if City staff understand their roles and responsibilities for achieving the goal. Our interviews with line staff in the Zero Waste Division revealed that they needed clearer, structured guidance about their roles and responsibilities for helping the City achieve zero waste. Most staff, especially those at the transfer station, were aware of the zero waste goal, but the general consensus was that they need defined processes and procedures to help them reach zero waste. The more information and tools that employees have, the better suited they are to support the City's zero waste goal and make efforts to help customers understand their role in achieving zero waste.

StopWaste.org: a good source for Berkeley to use or link to its webpage

Berkeley does not have to reinvent the wheel to develop education and outreach materials for its businesses and residents. Alameda County's website, www.StopWaste.org, is a good source for waste characterization, waste diversion, and education and outreach materials for residents, business and industry, and local governments. The resources include guides that show how to recycle, identify state and county laws, and provide a comprehensive directory showing where virtually all household goods can be reused or recycled in Alameda County.

Biweekly garbage collection and weekly organics collection has proven effective in other states

Biweekly garbage service is an emerging best practice in the zero waste movement. Examples are Boulder, Colorado; Portland, Oregon; Tacoma and Renton, Washington; several east coast cities; and many Canadian cities. Renton, Washington experienced almost a 20 percent reduction in garbage during its biweekly garbage service pilot program and an average increase in recycling diversion of nearly 10 percent. These cities have achieved success because most continue to collect compostables weekly. Since compostables are the wastes that attract flies, rodents, or other vectors, and emit offensive odors, residents are more likely to take the effort to separate compostables from other refuse and recyclables so they

are removed from their property as quickly as possible. An added benefit of providing biweekly refuse services with weekly compostable collection is that it reduces the cost of providing collection services, reduces truck traffic and thus, carbon emissions, and encourages participation in recycling and composting programs.

Berkeley is currently prevented from shifting to biweekly collection services because state law requires that all refuse, other than inert materials, not remain on any premises for more than seven days. The impetus for the law is outdated because it was written before separating compostables from other refuse was a recognized environmental practice. In fact, the law states that its purpose is to avoid attracting flies, rodents, and other vectors, as well as to minimize offensive odors in garbage, which are the factors that support separating and collecting only compostables weekly. California requires refuse collection every seven days and, if that cannot be accomplished, requires agencies to obtain a waiver from the weekly refuse collection requirement.

Biweekly garbage collection could save at least $496,000 annually

Although Council has discussed shifting to biweekly collection services, it cannot do so until the City obtains a waiver or permission to implement a pilot program. We estimated that Berkeley could achieve savings of at least $496,000 per year by having biweekly refuse collection services and weekly recycling and compostable collection services. That savings is based on salaries only for eliminating two, one-person side loader routes and one, two-person rear loader route. It does not include other savings that may occur by reducing the number of collection trucks, depreciation expense, or landfill fees from reduced service and increased diversion. In all, these savings could be reallocated toward the activities needed to achieve zero waste.

The change to biweekly service and the savings would not be immediate for two reasons. One, resources will be needed for additional community outreach and education to avoid unintended consequences such as garbage showing up in recycling bins. Two, Public Works, working with the employee bargaining unit, will have to determine whether positions can be eliminated through attrition or reassignment.

Recommendations

The Department of Public Works should:

1.1 Request the City Council to redefine and then reaffirm its commitment to zero waste (i.e., the percentage that the Council considers to be success), and to ensure sufficient resources to fund appropriate staffing and the necessary infrastructure to achieve stated goals by 2020.

1.2 Draft and obtain Council approval of a written strategic plan to achieve zero waste by 2020, including annual or biennial interim waste diversion goals. Topics that the strategic plan should discuss include:

- Objectives and long-term and interim goals
- Actions to be taken
- Responsible parties
- Expected cost and impact of implementation
- Performance measures
- External factors affecting performance and progress

1.3 Prepare detailed annual work plans that contain:

- Objectives
- Annual/biennial (short-term) goals
- Actions to be taken
- Budget allocated for the actions
- Timeline for completion
- Lead staff responsible for task completion
- Full-time equivalent employees assigned to the tasks
- Performance measures

1.4 Regularly communicate zero waste goals and achievements to City staff and the Council, and offer training to staff on how they can help Berkeley achieve zero waste. This includes sharing strategic and annual work plan goals and regular updates regarding progress and completion.

1.5 Determine if additional funds are needed for the education, outreach, compliance, and enforcement necessary to reach zero waste goals. If sufficient funds are not available, propose to Council a separate fee to cover those costs for the City's zero waste program, such as a regulatory fee as allowed under Proposition 218.

1.6 Update the City's Zero Waste website to include easily accessible information regarding:

- How and where to recycle materials that are not accepted in curbside collection.
- What can be brought to the transfer station and materials recovery facility.
- Zero waste goals and progress toward those goals.

StopWaste.org is a good example and has resources that Berkeley can direct customers to use. Updates should be made as changes are made to the list of materials accepted through each waste stream.

1.7 Engage in discussions with the appropriate state or county agency to obtain permission to collect garbage biweekly instead of weekly while maintaining weekly collection of compostables. Perform additional education and outreach prior to implementing biweekly garbage service to educate the public on the change. Alternatively, seek permission to implement a pilot project for biweekly garbage service.

City Manager's Response

The City Manager agreed with the recommendations. The full response is at Appendix B.

Finding 2: Limited use of available technologies affects operational efficiencies

Changes to current systems and use of mobile technologies could improve route-specific reporting, increase operational efficiencies, and help implement activities for achieving zero waste. Over time, these improvements could lead to cost savings that Public Works could reallocate towards zero waste activities such as public education and outreach, and compliance activities.

Public Works uses RouteSmart software to develop refuse, recycling, and organics collection routes for optimal efficiency. RouteSmart has standard reporting capabilities, but some of the department's reporting needs require time-intensive manual data collection and entry into other systems because there is no interface between RouteSmart and the Community Relationship Management (CRM) system.

Routing software does not interface with City systems; Public Works relies on Department of Information Technology for reporting needs

CRM is used by Information Technology's 311 Call Center staff to capture information about service changes and missed pickups. Public Works currently relies on 311 staff for data entry and reporting from both the CRM and RouteSmart systems. For example, drivers manually create Daily Truck Reports to identify route-related issues, such as locations where they did not make a scheduled pick-up. A Public Works Office Specialist III (OS III) spends about 30 minutes scanning the reports and sending them to 311. A Customer Service Specialist III (CSS III) in 311 spends another 90 minutes manually entering the report information into the City's financial and CRM systems. The OS III and CSS III tasks cost an average of $27,680 per year, including benefits.

Route-specific reports needed to monitor and manage performance

Public Works management would like to have monthly status reports that show the nature of calls to 311 by route. There is one report for route-specific complaints, but 311 staff must manually populate the field that contains the crew code and the field often contains excess or insufficient information. The City does not use the CRM mapping features that would allow mapping of calls by route. These limitations prevent Public Works from monitoring service and complaints on a route-by-route basis, measuring individual performance, and correcting the behaviors of poor performers. Berkeley's CRM system can provide specialized reporting for departments, but Public Works must specify its needs to Information Technology before IT can prepare the reports.

CRM software can be configured to provide improved reporting capabilities

IT management told us that the CRM software can be configured with a required field to contain valid route codes. This would allow reporting by route and other standardized reports to be developed or generated by having IT program a link between RouteSmart and the CRM system. To develop reports that meet all of Public Works' needs, IT said Public Works managers, supervisors, and line staff need to identify both their operational and analytical requirements.

Internal expertise needed to maximize use of RouteSmart software

Public Works also relies on IT to develop and produce RouteSmart reports because Public Works staff do not have the expertise to do so. For example, an IT programmer spends about three hours each month preparing the monthly route books for Public Works. In our

April 2013 audit report of Shelter Plus Care,[13] we highlighted the importance of departments having a working knowledge of software applications unique to their department, and that IT's responsibility should be to provide guidance and assistance. In October 2013, in response to our audit recommendation, the IT director sent an email to all department heads asking them to confirm their "department application leaders" for all departmental software applications. The communication reminded department directors that the application leaders are to serve as the departmental line-of-business expert. These experts should be thoroughly familiar with the day-to-day operational features and functions of software applications for which they are responsible, including producing management reports, and rely on IT for only technical assistance such as programming. Public Works does not yet have a "business-line expert" who can develop the RouteSmart reports needed for effective oversight and management.

Route-specific reports would help management identify reasons and trends for customer complaints

Public Works management said they would like route-specific reporting to better understand why customer complaints for refuse services increase significantly during the month following annual route bids, which allows drivers to select the route they want to drive for the next year. Management believes it can use this information to determine whether the increase in complaints occurs due to changes in driver routes that result from that process. Management's implementation of RouteSmart equalized route workloads and eliminated some of the advantages of the route-bidding process, but the bidding practice continues. Our analysis of complaints showed that spikes do occur after the bidding process, and at various other times during the year. Route-specific reporting would allow management to monitor and understand the reasons for any spike in customer complaints and develop corrective action.

[13] Shelter Plus Care audit report is available at http://www.cityofberkeley.info/uploadedFiles/Auditor/Level_3_-_General/C%201_RPT_Audit%20Report_Final_043013.pdf

Mobile technology would provide efficiencies and reduce reliance on IT

Mobile technology would allow configuration of direct links between RouteSmart, the CRM system, and the City's financial system, and would allow Public Works to:

- Implement electronic route books.
- Provide automated reporting from the field, including the Daily Truck Reports.
- Allow drivers to enter information directly into the CRM system while on their routes.
- Allow drivers to take pictures of why they skipped scheduled pickups.
- Improve quality of service and, thus, customer service
- Reduce staff and supervisory time on customer service complaints and missed pickups

Use of this technology could potentially lead to financial benefits of the routing efficiencies when, over time, quality-of-service improvements allow for a reduction in the number of refuse-collection routes. The City will likely experience other unquantified savings from process changes such as reducing paper and ink costs by not printing paper route books and truck reports. The costs of mobile technologies will depend on the vendor chosen and the necessary recurring maintenance and upgrade needs.

Having someone become a line-of-business expert, either with the existing RouteSmart software or with new mobile technology, would reduce Public Works' reliance on IT and allow the department to develop reports timely to meet their management oversight needs. It would also allow Public Works to create new reports to measure progress toward achieving the City's zero waste goal. By clearly communicating their mutual expectations, Information Technology and Public Works can develop and plan for the effective use of improved technology and reporting needs.

Billing audit could generate annual revenue

Public Works staff perform limited reviews of commercial routes, conduct select site inspections, and work regularly with Finance staff to update information in the City's refuse billing system. However, the City has not performed a complete commercial billing audit since 2003 and the last comprehensive billing audit was performed in 1992 by an outside vendor. The 1992 audit resulted in eliminating one residential and one commercial route, and the

2003 audit identified at least 50 commercial customers that had stopped participating in the recycling program. The length of time since the last audits means the City may be missing out on revenue from improperly billed accounts and may be missing opportunities to make progress toward the zero waste goal. Based on this information, our office has added a refuse billing audit to its 2014 audit plan. Our audit is not intended to replace the need for a fully comprehensive route audit, but will help determine revenue-recovery potential.

Customer service cases closed before action is complete

311 staff create cases in the CRM system and route them to departments based on script flows programmed into the CRM system. The script flows show where cases are supposed to be routed for action and often involve multiple departments before a case is closed. However, staff sometimes receive information that leads them to inadvertently close a case before the flow is complete. This leads to missed revenue opportunities due to billing errors. For example, a case for new or changed service may be closed before it is routed to the Revenue Collection Division in the Department of Finance to set up or adjust the account billing. In addition to the lost revenue, these errors increase costs because staff must research and correct them if and when someone discovers them.

Community members cannot track the status of cases online; they must call 311

The City does not use the CRM capability for community members to check the status of their 311 cases online; instead, they must call 311 for updates. Information Technology implemented See-Click-Fix software in October 2013, which includes a feature for emailing status updates for 311 Call Center cases and letting community members know, upon closure of a case, what corrective actions were taken. However, because IT implemented See-Click-Fix as a pilot project, it is currently configured only for certain types of cases, which does not include missed pickups, and the automated email feature is not currently in use. IT staff said they are currently working with Public Works staff to program See-Click-Fix for 311 cases related to Public Works and waste collection services. Eliminating or reducing the number of customer call backs will save the City about $0.05 for each call not made through 311 and greatly improve customer service.

Recommendations

The Department of Public Works should:

2.1 Work with the Department of Information Technology to configure the CRM system with a required field that auto populates valid route information based on address and service delivery type so that route-specific data can be collected on a going-forward basis.

2.2 Work with the Department of Information Technology to create a link between RouteSmart and the CRM system (or the software implementation of Recommendation 2.5 below).

2.3 Appoint individuals at the management, supervisory, and line staff levels to meet and identify Zero Waste Division operational and analytical reporting needs based on the performance goals at each level of the organization. Work with IT staff to determine responsibility and establish timelines for developing the reports.

2.4 Designate a business-line expert within the Zero Waste Division and require that expert to develop internal capacity to configure optimal collection routes and produce standardized reports for route-specific reporting using existing software (or the software implementation of Recommendation 2.5 below). The reports developed should allow measurement of the performance metrics developed in Recommendation 1.2 and 1.3 above.

2.5 Assess the benefits of using mobile technologies that would allow drivers to enter information directly into the CRM system while on their routes, take pictures of why pickups were skipped, and implement electronic route books and other mobile field reporting. Include in the assessment changes to job responsibilities that might require a meet and confer with union representatives. Purchase the software and hardware if cost beneficial.

2.6 Work jointly with the Department of Information Technology and the Department of Finance to develop and automate script flows in the CRM system to ensure that all cases undergo the appropriate reviews before a case can be closed.

The final step in the script flow should be a final review by someone who has authority to verify that all required steps have occurred before the case is closed.

2.7 Use the reports developed from implementing recommendation 2.4 to monitor customer complaints and determine what impact the annual bid process has on customer service. If the information demonstrates the annual bid process significantly affects customer service, meet and confer with union representatives to discuss the elimination the annual route bidding process to help reduce customer complaints and improve service delivery. Implement change if agreement is reached.

The Department of Information Technology should:

2.8 Create a method for community members to track the status of their cases online, which will reduce the call volume to the 311 Call Center.

City Manager's Response

The City Manager agreed with the recommendations. The full response is at Appendix B.

FISCAL IMPACT

Refuse–collection revenues not enough to cover fund deficit

Refuse-collection revenues totaled $33.3 million in fiscal year 2013 yet they were not enough to cover a fund deficit. The City's refuse collection fund had a negative balance of $1.1 million at the end of fiscal year 2013, which Public Works covered with a loan from the workers' compensation fund in fiscal year 2014. The Council approved a new rate structure in May 2014 to help prevent a future fund deficit and provide funding for needed zero waste programs and construction projects. However, that funding is insufficient: proposed construction projects alone, such as rebuilding the materials recovery facility and the transfer station, were estimated to cost $25 to $30 million in 2005. This is more than the new rate structure can accommodate.

Potential savings of nearly $500,000 annually

Public Works could achieve $496,000 in annual salary savings by changing to biweekly garbage collection service. This estimate does not include other items from implementing biweekly garbage service and other recommendations that we did not dollarize, such as:

- Savings on operation and maintenance costs from reducing the number of collection trucks.
- Savings on depreciation expense of unneeded collection trucks.
- Savings on landfill fees resulting from increased diversion.
- One-time revenue from selling unneeded collection trucks.
- Revenue enhancements from creating automated work flows in the CRM system to ensure that cases are not closed prior to any necessary billing changes.
- Cost savings for 311 from creating or purchasing an online portal that community members can use to check the status of cases and find out what actions have been taken.

While these items cannot be quantified at this time, they have the potential to achieve significant cost savings and revenue enhancements.

Public Works can realize savings from switching to biweekly garbage service only after the department is able to eliminate routes and reduce refuse collection positions through reassignment and, possibly, attrition. Public Works will not be able to see these savings in the immediate future as it will take time to make operational changes and increase efficiency, and work with the employee bargaining units if the elimination of routes requires reassignment of existing employees. Public Works will also need time to educate the community about improving zero waste efforts so that recyclable items do not end up in garbage bins.

CONCLUSION

Creating a written strategic plan will provide Berkeley the path to attain zero waste

Public Works' ability to achieve zero waste by 2020 depends on its ability to assess what is and is not working to increase diversion for each sector: single family residential, multifamily residential of five or more units, commercial, and self-haul. Berkeley already has many best practices in place, but there is not a written strategic plan to identify what actions remain, who is responsible for each action, and what specific and measurable goals to focus on to increase diversion of waste from landfills. Creating a strategic plan and obtaining Council approval for it will provide authority to carry out objectives and obtain the necessary funding to achieve stated goals.

Allocating funds for education programs will help Berkeley resume its progress toward zero waste

Berkeley met the County goal of 75 percent diversion in 2010 with minimal outreach to the community, but has remained near that level since then. Increasing funding for education, outreach, compliance, and enforcement will help Berkeley resume its progress toward zero waste. A national zero waste summit identified comprehensive and ongoing education programs in every sector of the community as a critical component throughout every phase of transition to a zero waste culture. It identified the need for education to focus on the benefits of recycling and composting, as well as the logistics for how to proceed toward achieving zero waste. It recommended having funding dedicated to education, and suggested a minimum of $3 per person per year after achieving 70 percent diversion. Berkeley can establish a regulatory fee to fund these activities since they deal directly with increasing diversion and the state mandates that every jurisdiction have a recycling program.

Public Works is making progress

Public Works is making progress towards zero waste goals and has already begun the process of implementing some of our audit recommendations. We would like to thank the Department of Public Works for demonstrating a commitment to achieving zero waste by requesting this audit to help them get there. We would also like to thank management for being receptive to our findings and recommendations, and Zero Waste Division and Department of Information Technology staff for their continued cooperation.

APPENDIX A:
Scope and Methodology

We audited the progress that the Zero Waste Division in the Department of Public Works has made toward achieving the City's goal of zero waste by 2020. We focused on industry best-practices and compared those to the City's actual practices. We included the City's efforts and progress made through March 2014. We met with management to determine how the City is planning to achieve county and city goals for zero waste by 2020. We reviewed audit reports from other jurisdictions, reports from solid waste associations and zero waste professionals, and the results of a zero waste summit. We reviewed applicable regulations for solid waste at the national, state, county, and city levels. We talked to representatives from CalRecycle, the state's waste management division; and StopWaste, the county's zero waste division, to determine Berkeley's compliance with waste-diversion requirements. We met with staff in the Zero Waste Division and 311 to understand what role they play in the zero waste process. We also visited the transfer station and the Community Conservation Center to see how the City processes waste and recyclables.

We contacted the private haulers that have active licenses with the City as a part of this audit to compare their practices to the City's. Our information requests to those two haulers were only briefly answered and did not provide the support and documentation requested. Based on the limited responses received, we cannot determine whether the private haulers' practices meet or exceed Berkeley's.

Data Reliability

We performed a limited assessment of the reliability of the Customer Relationship Management system (CRM). The data in the CRM system does not materially support our findings, conclusions, or recommendations, but our report does include some recommendations regarding improved and more detailed reporting from the CRM system. Therefore, we limited our assessment to reviewing the data input and contained in the CRM system and comparing the data to certain reports generated from the program to ensure reporting is complete. We also had management that is knowledgeable about the CRM System complete a questionnaire about the database so we would could gain an understanding of its functionality and use. We determined that the data were sufficiently reliable for the purpose of this report.

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 objectives.

APPENDIX B

Audit Findings, Recommendations, and Management Response Summary

Audit Title: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress Toward the Year 2020 Zero Waste Goal					
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**
Finding 1: Insufficient data and resources (for planning, strategy, or execution) dedicated to Berkeley's zero waste by 2020 resolution					
1.1	Request the City Council to redefine and then reaffirm its commitment to zero waste (i.e., the percentage that the Council considers to be success), and to ensure sufficient resources to fund appropriate staffing and the necessary infrastructure to achieve stated goals by 2020.	Public Works	Agree This is consistent with the strategic approach the Public Works Department has taken to correct operational deficiencies and create an organization more capable of continuing the work to reach the City's zero waste goal. The Department is poised to undertake an open search for a new ZWD Manager whose input, perspective, and anticipated professional expertise will be essential in analyzing the resources necessary to achieve the goal and drafting suitable recommendations to Council.	June 2015	

Audit Title: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress Toward the Year 2020 Zero Waste Goal					
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**
1.2	Draft and obtain Council approval of a written strategic plan to achieve zero waste by 2020, including annual or biennial interim waste diversion goals. Topics that the strategic plan should discuss include: • Objectives and long-term and interim goals • Actions to be taken • Responsible parties • Expected cost and impact of implementation • Performance measures • External factors affecting performance and progress	Public Works	Agree The Public Works Department has taken a strategic approach to solving the structural deficit and making progress toward our zero waste goal. The Department improved the efficiency of operations, followed the strategies in the Climate Action Plan, is currently completing a commercial franchise study, and in May 2014 completed a Prop 218-compliant rate increase. PW will continue to focus on maintaining efficient operations, high quality customer service, and improvements to waste diversion efforts. The Department will take the next step toward zero waste by reassessing the current situation, and developing a strategic plan intended to guide the Department through the increasingly difficult path to zero waste. Part of this process requires evaluating the existing Transfer Station infrastructure, along with what might be required to reach the zero waste goal as defined.	December 2015	

Audit Title: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress Toward the Year 2020 Zero Waste Goal					
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 strategic plan will be flexible so that annual work plans can be designed to address changing conditions. Public Works will build upon relevant content in the 2005 Solid Waste Management Plan, the 2009 Climate Action Plan, and incorporate input from the Zero Waste Commission.		
1.3	Prepare detailed annual work plans that contain: • Objectives • Annual/biennial (short-term) goals • Actions to be taken • Budget allocated for the actions • Timeline for completion • Lead staff responsible for task completion • Full-time equivalent employees assigned to the tasks • Performance measures	Public Works	Agree Public Works will continue to prepare its annual work plan under the direction of the City Manager, in coordination and consistent with other Department work plans. Goals, objectives, and actions for the Zero Waste program will be organized and managed by the Zero Waste Manager.	June 2015	

Audit Title: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress Toward the Year 2020 Zero Waste Goal					
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	Regularly communicate zero-waste goals and achievements to City staff and the Council, and offer training to staff on how they can help Berkeley achieve zero waste. This includes sharing strategic and annual work plan goals and regular updates regarding progress and completion.	Public Works	Agree Prepare an annual report to Council, highlighting progress toward strategic plan and work plan goals to achieve zero waste in Berkeley.	Jan 2015	
1.5	Determine if additional funds are needed for the education, outreach, compliance, and enforcement necessary to reach zero-waste goals. If sufficient funds are not available, propose to Council a separate fee to cover those costs for the City's zero-waste program, such as a regulatory fee as allowed under Proposition 218.	Public Works	Agree The Public Works Strategic Plan process will evaluate and identify the necessary resources, and if funding is insufficient, a recommendation will be made to consider an Integrated Waste Management Fee or other appropriate mechanism to fund additional staffing and/or outreach needs.	July 2015	

Audit Title: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress Toward the Year 2020 Zero Waste Goal					
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	Update the City's Zero Waste website to include easily accessible information regarding: • How and where to recycle materials that are not accepted in curbside collection. • What can be brought to the transfer station and materials recovery facility. • Zero waste goals and progress toward those goals. StopWaste.org is a good example and has resources that Berkeley can direct customers to use. Updates should be made as changes are made to the list of materials accepted through each waste stream.	Public Works	Agree	May 2015	

Audit Title: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress Toward the Year 2020 Zero Waste Goal					
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**
1.7	Engage in discussions with the California Department of Resources Recycling and Recovery to obtain permission to collect garbage biweekly instead of weekly while maintaining weekly collection of compostables. Perform additional education and outreach prior to implementing biweekly garbage service to educate the public on the change. Alternatively, seek permission to implement a pilot project for biweekly garbage service.	Public Works	Agree The ZWD will investigate the process of obtaining legal permission to pilot biweekly rubbish collection. We will identify the operational and outreach preparation necessary to evaluate the feasibility of this pilot.	October 2015	

Audit Title: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress Toward the Year 2020 Zero Waste Goal					
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**
Finding 2: Limited use of available technologies affects operational efficiencies					
2.1	Work with the Department of Information Technology to configure the CRM system with a required field that auto populates valid route information based on address and service delivery type so that route-specific data can be collected on a going-forward basis.	Public Works	Agree	December 2014	
2.2	Work with the Department of Information Technology to create a link between RouteSmart and the CRM system (or the software implementation of Recommendation 2.5 below).	Public Works	Agree Zero Waste will work with IT to create the most efficient link between RouteSmart and the CRM system that can be created, given available resources. One solution, budget permitting, would be implementing the best of breed billing system that integrates with RouteSmart, rather than to trying to configure the CRM system to handle functions it was never designed to handle.	April 2015	

Audit Title: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress Toward the Year 2020 Zero Waste Goal					
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**
2.3	Appoint individuals at the management, supervisory, and line staff levels to meet and identify Zero Waste Division operational and analytical reporting needs based on the performance goals at each level of the organization. Work with IT staff to determine responsibility and establish timelines for developing the reports.	Public Works	Agree.	February 2015	
2.4	Designate a business-line expert within the Zero Waste Division and require that expert to develop internal capacity to configure optimal collection routes and produce standardized reports for route-specific reporting using existing software (or the software implementation of Recommendation 2.5 below). The reports developed should	Public Works	Agree	October 2014	

Audit Title: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress Toward the Year 2020 Zero Waste Goal					
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**
	allow measurement of the performance metrics developed in Recommendation 1.2 and 1.3 above.				
2.5	Assess the benefits of using mobile technologies that would allow drivers to enter information directly into the CRM system while on their routes, take pictures of why pickups were skipped, and implement electronic route books and other mobile field reporting. Include in the assessment changes to job responsibilities that might require a meet and confer with union representatives. Purchase the software and hardware if cost beneficial.	Public Works	Agree The Zero Waste Division will work with Information Technology and Human Resources Departments to assess the pros, cons, and feasibilities of mobile technologies (hardware and software).	December 2015	

Audit Title: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress Toward the Year 2020 Zero Waste Goal					
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**
2.6	Work jointly with the Department of Information Technology and the Department of Finance to develop and automate script flows in the CRM system to ensure that all cases undergo the appropriate reviews before a case can be closed. The final step in the script flow should be a final review by someone who has authority to verify that all required steps have occurred before the case is closed.	Public Works	Agree	April 2015	
2.7	Use the reports developed from implementing recommendation 2.4 to monitor customer complaints and determine what impact the annual bid process has on customer service. If the information demonstrates the annual bid process significantly affects customer service, meet	Public Works	Agree Zero Waste will use the CRM system to monitor customer complaints and help assess the effect of the yearly bid process.	May 2015	

Audit Title: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress Toward the Year 2020 Zero Waste Goal					
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**
	and confer with union representatives to discuss the elimination the annual route bidding process to help reduce customer complaints and improve service delivery. Implement change if agreement is reached.				
2.8	Create a method for community members to track the status of their cases online, which will reduce the call volume to the 311 Call Center.	Information Technology	Agree This functionality will be available after the upgrade of our CRM system is complete, currently scheduled to be no later than the end of FY 2015.	June 2015	

APPENDIX C
Achieving Zero Waste

On Average, Each Individual in the U.S. Discards 4.4 Pounds of Waste Daily

Despite significant progress in promoting recycling and other strategies to manage waste in more economically, socially, and environmentally beneficial ways, Americans are still producing too much waste. According to an Alameda County Waste Prevention and Sustainability Case Study, on average, each individual in the U.S. discards approximately 4.4 pounds of material each day:

- 30% is recycled or composted
- 15% is burned at incineration facilities
- 56% is disposed of in landfills

Local governments are in a unique position to impact the waste stream from their own internal operations and from the community as a whole. Waste-prevention activities undertaken by a jurisdiction also form a fundamental link between governmental operations and programs to increase community sustainability.

Waste Generation and its Management Have a Substantial Impact on Community Sustainability

Waste generation and how waste is managed have a dramatic impact on the overall sustainability of a community. Collecting and disposing of solid waste is expensive, adversely affecting the financial situation of the local government that carries out these duties and the residents and businesses that pay taxes or directly fund their waste disposal costs. Waste generation and disposal also have a dramatic effect on the natural environment. The use of disposable products strains resources and ecosystems used to produce those products in numerous ways:

- Through mining activities
- The use of timber and other natural resources
- Chemical releases during the manufacturing process

The disposal of these products also has environmental impacts such as air quality at incinerators and potential for groundwater contamination at landfills. Beyond the environmental and economic impacts, there are also social costs to waste generation, whether it is the impact that the above environmental conditions can have on human health or the conversion of valuable landscapes to landfills and the negative impacts that they can have on surrounding communities. Alternatively, waste management can provide economic opportunities in new recycling industries, decreasing the amounts of materials that need to be purchased, or “closing the loop” – taking a former waste product and using it as the input for another industry, often reducing the costs for both parties. Decisions about how waste is

managed also influence the environmental issues mentioned above; and alternative disposal techniques can create jobs, reduce health impacts, and increase the efficiency of operations.

Recycling, Remanufacture, and Reuse Create Many More Jobs Than Landfills

Recycling, remanufacture, and reuse have economic value. For every 10,000 tons of

- waste land filled, only 1 job is created
- organic materials composted, 4 jobs are created
- recyclables processed through conventional materials recovery facilities, 10 jobs are created
- recyclables processed by recycling-based manufacturers, 25 jobs are created
- reusables processed, 18 to 300 jobs are created

The recycling industry in America is as large as the automobile and trucking industry, and in California, is as large as the movie and video industry. Recycling a ton of "waste" has twice the economic impact of burying it in the ground. Recycling one additional ton of waste instead of sending it to landfills will:

- Pay $101 more in salaries and wages.
- Produce $275 more in goods and services.
- Generate $135 more in sales.

America is Transitioning Toward a Zero Waste Society

According to the National Waste and Recycling Association, America is transitioning slowly but surely towards a zero waste society. The objective of zero waste is to reduce the waste stream to the point that no commercially achievable economic value exists for the remaining residual waste. Eco-Cycle, a nonprofit organization providing zero waste services, held a Zero Waste Summit and their conclusions support this contention. In a 2012 white paper, they stated that landfills and incinerators are no longer our only choices for managing society's discards. There is a third option now for communities that create jobs, protect the environment, and strengthen the local economy. That option is zero waste.

Berkeley was the first city in the nation to offer curbside recycling

The City of Berkeley has a history of leadership in the effort to divert solid waste from landfills. Berkeley was the first city in the nation to offer curbside recycling. In 1976, City Council established a 50% waste diversion goal, 13 years before the goal was mandated by the State through the California Integrated Waste Management Act.

Sources – More Information Available in Complete Reports

The information in Appendix C was excerpted from the following:

- ICLEI – Local Governments for Sustainability USA report *Waste Prevention and Sustainability: Case Studies for Local Governments* prepared for StopWaste.org in August 2005: http://www.stopwaste.org/docs/casestudiesprint.pdf
- Institute for Local Self-Reliance: http://www.ilsr.org/recycling-means-business/
- United States Environmental Protection Agency – Results of the National Recycling Economic Information Study: http://www.epa.gov/waste/conserve/tools/rmd/rei-rw/result.htm
- California Integrated Waste Management Board: Recycling – Good for the Environment – Good for the Economy: http://www.calrecycle.ca.gov/Publications/Documents/Economics%5C41004002.pdf
- National Waste & Recycling Association – Zero Waste: https://wasterecycling.org/
- EcoCycle – 10-Year Bridge Strategy to Zero Waste: http://www.ecocycle.org/bridgeStrategy
- Berkeley's Climate Action Plan: http://www.cityofberkeley.info/uploadedFiles/Planning_and_Development/Level_3_-_Energy_and_Sustainable_Development/Berkeley%20Climate%20Action%20Plan.pdf

APPENDIX D

1995 to 2011 Diversion Rates[1] by Alameda County Jurisdiction

Source: http://www.stopwaste.org/docs/diversion-rates-by-jurisdiction.pdf

Jurisdiction	1995	1996	1997	1998	1999	2000	2005	2006	2007	2008	2009	2010	2011
Alameda	48%	48%	56%	59%	64%	65%	68%	66%	66%	67%	71%	75%	72%
Albany	42%	52%	61%	60%	56%	62%	70%	70%	71%	77%	78%	83%	79%
Berkeley	41%	41%	41%	42%	50%	49%	59%	57%	62%	66%	72%	76%	74%
Dublin	26%	37%	43%	31%	33%	54%	55%	56%	61%	66%	73%	75%	73%
Emeryville	51%	61%	49%	41%	42%	48%	64%	75%	63%	74%	70%	77%	65%
Fremont	49%	54%	50%	47%	57%	62%	63%	64%	64%	68%	71%	74%	73%
Hayward	41%	39%	44%	45%	44%	52%	62%	65%	56%	68%	68%	67%	71%
Livermore	26%	25%	45%	37%	38%	50%	63%	63%	60%	64%	71%	73%	74%
Newark	27%	34%	49%	50%	48%	53%	62%	66%	67%	72%	75%	69%	72%
Oakland	27%	34%	39%	40%	41%	52%	58%	59%	57%	66%	67%	65%	65%
Piedmont	47%	47%	50%	52%	60%	63%	64%	66%	68%	72%	84%	75%	69%
Pleasanton	28%	35%	47%	50%	43%	48%	53%	53%	55%	61%	71%	71%	73%
San Leandro	34%	37%	45%	46%	42%	51%	59%	65%	64%	73%	61%	69%	77%
Union City	49%	53%	62%	61%	59%	61%	62%	64%	71%	76%	77%	77%	75%
Unincorporated[2]	56%	51%	59%	58%	63%	65%	60%	69%	60%	63%	59%	67%	76%
Average	39%	43%	49%	48%	49%	56%	61%	64%	63%	69%	71%	72%	73%
County-Wide Weighted Rate[3]	37%	42%	47%	46%	48%	54%	59%	61%	61%	67%	69%	70%	72%

[1] Diversion rates calculated by StopWaste.org using data submitted to CalRecycle by the listed jurisdictions.

[2] Unincorporated area includes Castro Valley Sanitary District and Oro Loma Sanitary District.

[3] StopWaste.org derived the countywide rate prior to 2007 using a calculated diversion rate equal to total tons disposed of in Alameda County divided by tons generated in Alameda County, using data from each jurisdiction's annual reports submitted to the California Integrated Waste Management Board. Beginning in 2007, the countywide rate was calculated using a different methodology, with a weighted average diversion rate based on the population of each jurisdiction and its target disposal per capita.

APPENDIX E

Sample Strategic Plan

Strategic plans are sometimes prepared in a report style that provide a great deal of background information, but are less user-friendly than the table format presented here. Text-dense documents require the people responsible for implementing strategies to sort through the information to find out specifically what needs to be done, what resources are needed, and who is responsible for the work. A more friendly option is a table format that management can provide as an attachment to a document with background information, or as a stand-alone item. This format works equally as well for annual work plans, though the detail is specific to the goals and activities to be completed during the year.

GOALS	STRATEGIES	ACTIVITIES	RESPONSIBILITY	FUNDING	PERFORMANCE MEASURES	TARGET COMPLETION DATE	STATUS
Objective: State the objective (e.g., state, county, or city waste-reduction requirement)							
Identify incremental goal (e.g., reduce materials sent to landfills from the commercial waste stream by x%)	Identify strategies to achieve goal (e.g., education, outreach, compliance monitoring, enforcement)	Identify activities that will be performed to achieve the goal (e.g., onsite education events, staff inspection of waste bins)	Identify staff responsible for achieving the goal and the number of full-time employees dedicated to the work (usually by position title, not name)	Identify the funding source and funding needed to complete the activities	Identify change in performance expected to be achieved after performing the strategy tasks	Cite the expected completion date for the strategy (some may be ongoing because they will need to be continued over the life of the program, but interim goals should have specific dates)	Report the current status toward achieving the goal; identify reasons if not expected to meet target completion date

APPENDIX F

City, County, and State Zero Waste Related Legislation

Government	Legislation
City of Berkeley	▪ Ordinance 6,904-N.S. and Resolution 62,849-N.S. http://www.ci.berkeley.ca.us/recordsonline/search.aspx ▫ 75% diversion from landfills by 2010 ▫ Zero waste by 2020
County of Alameda	▪ Measure D http://www.stopwaste.org/docs/measure-d.pdf https://www.stopwaste.org/docs/recycling_plan_-_2006_revised.pdf ▫ 75% diversion of readily recyclable materials from landfills by 2010 ▪ Ordinance 2012-1 https://www.stopwaste.org/docs/ordinance_2012-1_mandatory_recycling-executed.pdf ▫ Less than 10% of materials destined to the landfill are readily recyclable or compostable by 2020; applicable only to commercial, multifamily residential, and self-haul waste
State of California	▪ Assembly Bill 341 http://www.leginfo.ca.gov/pub/11-12/bill/asm/ab_0301-0350/ab_341_bill_20111006_chaptered.pdf ▫ 50% diversion from landfills by 2000; mandate that local jurisdictions implement a commercial recycling program ▫ 75% diversion from landfills by 2020

APPENDIX G

Waste Diversion Resources

Organization	Resource	Web Location
City and County of San Francisco	Zero Waste Strategic Plan	http://www.sfenvironment.org/sites/default/files/editor-uploads/zero_waste/sfe_zw_strategic_plan_14.pdf
City of Oakland	Zero Waste Strategic Plan	http://greencitiescalifornia.org/assets/waste/Oakland_zero waste_Strategic-Plan-Staff-Report-2006.pdf
	Zero Waste Strategic Plan Update Supplemental System Design	http://greencitiescalifornia.org/assets/waste/Oakland_zero waste_Supplemental-System-Design-Staff-Report-2012.pdf
City of San Jose	Zero Waste Strategic Plan	http://www.sanjoseca.gov/DocumentCenter/View/1020
Ecocycle.org	10-year Bridge Strategy to Zero Waste	http://www.ecocycle.org/bridgestrategy
Sloan Vazquez, LLC	Solid Waste Recycling Assessment Report and Presentation	http://www.cityofberkeley.info/Clerk/City_Council/2011/03Mar/City_Council__03-08-2011_-_Special_Meeting_Agenda.aspx
StopWaste.org	2008 Alameda County Waste Characterization Study	http://www.stopwaste.org/docs/acwcs-2008r.pdf
	Compliance Guide for Businesses	https://www.stopwaste.org/docs/mrcomplianceguideforbiz.pdf
	Zero Waste Resources and Information	http://www.stopwaste.org/home/index.asp?page=1