



November 20, 2009

Mr. Mark Gagliardi
Senior Recycling Specialist
City of Oakland, Public Works Agency
Environmental Services Division
250 Frank H. Ogawa Plaza, Suite 5301
Oakland, CA 9461

Subject: Zero Waste System Design – System Design Outline

Dear Mr. Gagliardi:

R3 Consulting Group (R3) was engaged by the City of Oakland (City) to provide technical assistance to aid the City in completing its Zero Waste System Design, Modeling, Testing and Procurement project. This Memorandum is to support Task 1.3 of the Scope of Services.

Introduction

The City of Oakland's Franchise Agreement for Solid Waste and Yard Waste Collection and Disposal Services (Franchise Agreement) with Waste Management of Alameda County (WMAC) expires on December 31, 2012, as does the Agreement for Residential Recycling Services with California Waste Solutions (CWS). These two agreements form the backbone of the City's solid waste management system, and their pending expiration provides the City with the opportunity to develop and implement new programs and services in alignment with Mayor and City Council goals and policies adopted after these contracts commenced.

On December 5, 2006, the Oakland City Council approved Resolution #80286 C.M.S., adopting a Zero Waste Strategic Plan (Plan). The Plan calls for a 90% reduction in annual tons sent to landfills from the current 400,000 tons per year to 40,000 tons per year by 2020. Strategy 2 of the Plan states: "Development and adoption of a new waste management system design in preparation for Oakland's next collection and disposal contract is key to the goal of reducing waste."

Need for Change

While the City has made significant progress in diverting waste from the single-family residential sector and while there is additional potential diversion that can be achieved from single-family sector, in the City is to make significant progress toward its goal of reducing waste disposal by 90%, the City clearly needs to shift its focus to the commercial, multi-family residential and self-haul sectors. Unless the City can realize the same success diverting waste from these sectors that it has from the single-family residential sector it will not come close to achieving its Zero Waste Goals.

Figure 1 shows the major sources of Oakland's solid waste landfilled for 2008, divided into sectors (e.g., single-family residential, multi-family residential, commercial, self-haul). It includes all waste from Oakland that is disposed in landfills, including waste collected by WMAC under the Franchise Agreement, and waste disposed in landfills that is self-hauled by contractors, businesses and residents directly to local transfer stations, including Waste Management's Davis Street Transfer Station in San Leandro, the City of Berkeley Transfer Station, and to area landfills. As shown in

Figure 1
Oakland Solid Waste to Landfill
All Sectors 2008

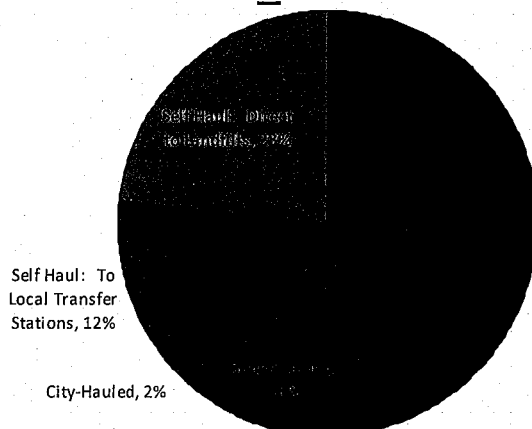


Figure 1, the single-family residential sector, where most of the City's recycling programs and resources have been focused to date, constitutes only 16% of Oakland's total landfill disposal tonnage. **The remaining 86% of solid waste is generated in sectors that do not have the same universal access that single-family residents have to recycling and organics diversion services.**

Table 1 below provides a summary of the disposal trends from 2000 - 2008. Please note that when reviewing Table 1, 2004 and 2008 appear to be anomalies and incorrectly indicate a significant downward trend in disposal where in fact the 2000 - 2008 average disposal tonnage of 405,500 tons is only 3,000 tons lower than the average disposal tons when 2004 and 2008 excluded for this same time period. The anomalies in 2004 and 2008 may be due to:

TABLE 1 City of Oakland Landfill Disposal Tonnage 2000-2008						
Year	Franchised		Non-Franchised		Total	
	Tons	%	Tons	%	Tons	%
2000	303,572	72%	119,623	28%	423,195	100%
2001	303,512	73%	114,757	27%	418,269	100%
2002	279,593	69%	125,385	31%	404,978	100%
2003	286,663	70%	122,846	30%	409,509	100%
2004	260,290	56%	202,602	44%	462,892	100%
2005	238,406	57%	178,417	43%	416,823	100%
2006	235,925	60%	159,442	40%	395,367	100%
2007	227,765	58%	163,384	42%	391,149	100%
2008	228,448	70%	98,918	30%	327,366	100%
Total 2000-2008	2,364,174		1,285,374		3,649,548	
Average 2000 - 2008	262,686	65%	142,819	35%	405,505	
Average 2000 - 2003 & 2005 - 2007	267,919	66%	140,551	34%	408,470	

- In 2004, the City experienced a peak in construction projects and had strong growth in business activities. This resulted in above average disposal because diversion programs for commercial and construction sectors were underserved and did not keep pace with the increased economic activity.
- In 2008, the City was in the first full year of the current economic recession with a significant decline in construction projects, and decline in business activities. This resulted in a significant drop in disposal not attributed to diversion programs. This disposal drop is likely to be reversed as the economy rebounds from the recession.

Table 1 illustrates under the current waste management system even if 100 percent of the current franchised tonnage is diverted from landfill by 2020, the City will fall short of its goal of 40,000 tons disposed. Accordingly, if the 40,000 ton disposal goal by 2020 is to be achieved, continuing with the current system of solid waste management is not a viable option and significant changes to how the solid waste system is structured, managed and implemented will have to be undertaken.

As stated earlier, the City's adopted Zero Waste Strategic Plan calls for an approximate 90 percent reduction in annual tons sent to landfills from the 2006 disposal figure of 400,000 tons per year by 2020. The overriding purpose of the draft Scenarios Outlines discussed below is to help the City develop a comprehensive strategy to reach the 40,000 ton disposal goal by 2020. In doing so, the draft Scenario Outlines have been prepared for consideration based on their ability to address the following issues as identified in the March 10, 2009 City Council resolution adopting "**Evaluative Criteria for Assessing Solid Waste Management Systems Designs Responsive to the Zero Waste By 2020 Goal.**"

1. Eliminate landfilling as the default option for discarded materials;
2. Providing universal access to recycling services in the commercial sector;
3. Improving performance in the low-diversion sectors (businesses and multi-family dwellings);
4. Increasing investment in local and regional processing capacity for traditional recycling, organics recycling, hard-to-recycle items and reuse/refurbishment enterprises;
5. Meeting the City's revenue requirements; and
6. Influencing the self-haul sectors that are outside the current Franchise Agreement to improve waste reduction and recycling.

After the various Scenario Outlines are fully developed, then the eight "Evaluative Criteria for Assessing Zero Waste System Design Options" as adopted by the City Council on March 10, 2009 will be applied.

Scenario Outlines

The **number, type, and content** of contracting tools, including municipal code, to provide for collection, processing, transfer and disposal will help determine the City's specific Zero Waste system components required to support the Zero Waste Goals. The following five Scenarios Outlines have been prepared for to act as the "vessels" that will contain the structure and program

features subject to modeling and testing to determine the System Design that best meets the City's Zero Waste Goals:

- Scenario 1: Status Quo;
- Scenario 2: Unbundle Transfer / Disposal from Collection and Processing (applies to Scenarios 3 – 5);
- Scenario 3: One Zone with One Exclusive Collection and Processing for all Sectors and All Service Types;
- Scenario 4: Two or More Zones with Exclusive Collection and Processing for all Sectors and All Service Types in Each Zone; and
- Scenario 5: Separate Contracts by Sectors, Service Types and/or Geographic Zones.

The City's current franchise Agreement with WMAC provides for bundled collection, processing, transfer, and disposal services. Scenario 2 provides for separating the collection and processing contract from the transfer and disposal contract, which is an option that could be pursued for Scenarios 3 through 5. Separating the recyclables and organics processing contracts from the collection contract is also an option. For purposes of developing Scenario Outlines, processing is assumed to be bundled as part of collection service, and disposal is assumed to be separate from collection services. This is not to say, for example, that separate contracts for processing should not be considered.

In addition, as the Scenarios are modeled and tested, there is an extensive list of specific programmatic items to be included in the analysis (e.g., product bans), and more definition will be needed on other pieces of the base Scenarios (e.g., rate structures). Disposal and diversion tonnage estimates will need to be made, as well as estimates for the totals system costs, customer rates, City revenue, and revenue due to the service provider(s).

The following describes the major system components in the five Scenario Outlines.

Scenario 1: Status Quo

Under, the "Status Quo" scenario, the City would continue to operate as it currently does with no major changes to the City's existing franchise agreements/contracts or the City's municipal code. Under this scenario, the major system components would continue to be as follows:

- Single-family residential, multi-family residential and commercial **solid waste** would continue to be provided by a single franchised hauler;
- Single-family **recycling collection and processing** services would continue to be provided by two haulers operating in two distinct geographic areas, with one of the single-family recycling services providers the same hauler as the company that provides exclusive single-family, multi-family and commercial solid waste collection, transfer and disposal services;
- City-wide **single-family organics** services would continue to be provided by the same hauler as the company that provides exclusive single-family, multi-family and commercial solid waste collection, transfer and disposal services;

- City-wide **permanent roll-off** services would continue to be provided by the same hauler as the company that provides exclusive single-family, multi-family and commercial solid waste collection, transfer and disposal services;
- **Commercial recycling** services would remain unregulated with open competition;
- **Temporary roll-off services** would remain unregulated with open competition;
- **Street sweeping** would continue to be provided by City crews;
- **Illegal waste clean-up** would continue to be provided by City crews;
- Rate structures would continue to be based on the size of solid waste containers and frequency of collection; and
- The City would continue to collect enough revenue to cover its cost to provide management oversight, street sweeping, illegal waste clean-up, and the cost for the second single-family recycling contractor.

Under Scenario 1, the City would have **no options** for making the changes necessary to meet the 40,000 tons disposal goal. In addition, **Scenario 1 only addresses one of the six system redesign issues** as adopted by the City Council's March 10, 2009 City Council resolution adopting the system redesign evaluative criteria.

Table 2 Scenario 1: Ability to Address Major Redesign Issues					
1 Eliminate landfilling as the default option	2 Providing universal access to recycling services	3 Improving performance in the low- diversion sectors	4 Increasing investment in local and regional processing capacity	5 Meeting the City's revenue requirements	6 Influencing the self- haul sectors
No	No	No	No	Yes	No

Scenario 2: Unbundle Transfer / Disposal from Collection and Processing

Under Scenario 2, The City would "unbundle" collection from transfer/disposal by entering into a separate transfer/disposal contract(s) and **not be linked to collection¹**. The City would direct its franchised hauler(s) to utilize the transfer/disposal facility(ies) it has under contract. Collection services could be provided by one or more service providers, by geographic areas, by sectors or types, or a combination (Scenarios 3 – 5).

The City could utilize this "unbundling" of collection from disposal to provide financial incentives to the City's franchised hauler(s) to indirectly **improve diversion performance** from the commercial and multi-family sectors. This could be done by the use of disposal fees that significantly increase the cost of disposal in comparison to processing. This would also support the policy goal of **discontinuing landfilling as the default** option.

Under Scenario 2 the major system elements would include:

¹ For the purposes of Scenarios 2 - 5, collection also includes processing.

- Set a cap on the maximum allowable tonnage disposal by the franchised hauler(s) that would be eligible for "reimbursement" through customer rates;
- "Tier" the disposal fees paid by the franchised hauler(s) based on pre-set disposal tonnage allowances; and
- Charge the franchised hauler(s) a higher disposal fee and use the difference between the City's fee and what is charged to the franchised hauler(s) as a rebate amount to help offset the cost of recycling and organics programs.

Unbundling disposal from collection would also provide financial incentives to support Zero Waste Goals by:

- **Limiting landfill as the default option** for all sectors through strong financial incentives to dissuade the use of disposal as the first/primary option;
- **Influencing local recycling and organic processors** to build new or expanded existing processing capacity in anticipation of receiving increased recyclables, organics, or mixed waste to processes; and
- Providing limited **incentives** to the **self-haul sector** to adopt more aggressive diversion programs by requiring the contracted transfer/disposal facilities to charge a disposal rate to Oakland originated disposal tons that is higher than the "open market" disposal rates. However, the effectiveness of this would hinge on 1) accurate and honest reporting of tonnages by Oakland's self-haul sector and the contractor transfer/disposal facility, 2) adopting a City ordinance that would require Oakland's self-haul sector to only use the contracted transfer/disposal facilities, and 3) aggressive enforcement by Oakland for the self-haul sector and the contracted transfer/disposal facility to comply with the ordinance and/or contract.

Unbundling collection from disposal would also provide a more competitive environment for procuring any new collection services because:

- All potential collection service providers would know with 100% certainty the cost for transfer / disposal and this would be the same cost for all service providers;
- Potential collection service providers that do not own/operate landfill / transfer stations would be on the same competitive footing with those companies that are able to subsidize their collection costs through ownership/operation of landfill /transfer stations; and
- Award of contracts to provide collection services would be based on the qualifications, technical and financial merits of a company that provides only collection services.

Scenario 2 would provide the City with **limited options** for making the changes necessary to meet the 40,000 tons disposal goal. **Scenario 2 addresses one of the six system redesign issues, with the potential to address the five other redesign issues.**

<p>Table 3 Scenario 2: Ability to Address Major Redesign Issues</p>					
1 Eliminate landfilling as the default option	2 Providing universal access to recycling services	3 Improving performance in the low- diversion sectors	4 Increasing investment in local and regional processing capacity	5 Meeting the City's revenue requirements	6 Influencing the self- haul sectors
Potential	Potential	Potential	Potential	Yes	Potential

Scenario 3: One Zone with One Exclusive Collection and Processing for all Sectors and All Service Types

Under Scenario 3, a **Single Service Provider** would provide exclusive collection and processing services to all sectors and all service types City-wide. Transfer and disposal would be provided under a separate contract (Scenario 2). Major system components of Scenario 3 include:

- One Franchise Agreement covering services for:
 - Mandatory provision of commercial solid waste, recycling, and organics collection and processing services;
 - Mandatory provision of multi-family solid waste, recycling, organics and bulky waste collection and processing services;
 - Mandatory provision of single-family solid waste, recycling, organics, and bulky waste collection and processing services;
 - Temporary roll-off boxes collection, transfer, processing, and disposal, including construction and demolition materials. (Note: this could be included in the exclusive franchise or handled separately under a permit or non-exclusive franchise system);
 - Street sweeping services; and
 - Illegal dumping collection services.

In addition, under this Scenario (as well as Scenarios 4 and 5), it will be critical to include supporting components such as:

- Franchised Diversion Performance Requirements:
 - Provide recycling and organics collection services to all sectors;
 - Process all solid waste prior to disposal;
 - Provide "minimum diversion/maximum disposal" capacity to all sectors where diversion capacity is equal to ____% (i.e., 300%) of solid waste capacity; and
 - Tie to disposal incentives from Scenario 2.
- Adopt rate structures for all sectors that provide financial incentives to both the franchised hauler and customers to aggressively participate in diversion programs:

- "Utility" rate structures that include a base rate for all basic required services and a base volume level, PLUS a volume rate for the amount of material set out for collection over the base level. This could be done for all material types;
 - Rebate/Credit structures that establishes solid waste at a high fee, and provides rebates, or credits back to customers based on the volume of recycling and volume of organic service they subscribe to; and
 - Tiered rate structures that sets the cost for solid waste at a percentage higher than recycling and organics.
- Regulatory Requirements:
- Regulate "no customer fee" commercial recycling collection;
 - Regulate "no customer fee" organic collection;
 - Prohibit or ban self-haul of solid waste from all sectors;
 - Require mandatory participation in recycling programs from all sectors; and
 - Require mandatory participation in organics programs from all sectors.

By having a single service provider covering all sectors and service types, the City would:

- Clearly eliminate disposal as the default option;
- Provide universal access to recycling services by mandating both the franchised hauler provide the service and that businesses participate in recycling;
- Improve performance in the commercial and multi-family sectors through the combination of required services to be provided by the franchised haulers (collection and processing), mandatory requirements placed on the commercial and multi-family sectors, and rate structures that provide financial incentives to both the franchised hauler and the customer;
- Hold a single entity accountable for all franchised diversion programs;
- Provide significant financial incentives to the franchised hauler to aggressively implement recycling and organics collection and processing programs for all sectors;
- Provide significant financial incentives to all customers to actively participate in diversion programs;
- Reduce City management oversight/cost by only dealing with one collection service provider; and
- Attract competitive pricing strategies from hauling companies that would be interested in receiving a single contract for all sectors and service types City-wide.

Under Scenario 3, the City would have **significant options** for making the changes necessary to meet the 40,000 tons disposal goal (assumes Scenarios 3 and 2 are coupled). **Scenario 3 addresses five of the six system redesign issues, with the potential to address the remaining redesign issue.**

However, Scenario 3 is a significant departure from the status quo because it effectively vests all collection activities with one franchised hauler. This may be perceived as risky in the event the single franchised hauler defaults on its service requirements. In addition, many of solid waste

companies, non-solid waste recycling companies, C&D haulers, and self-haul companies operating in the Bay Area may try to influence any decision to close the system down to a single service provider.

<p>Table 4 Scenario 3: Ability to Address Major Redesign Issues</p>					
1 Eliminate landfilling as the default option	2 Providing universal access to recycling services	3 Improving performance in the low- diversion sectors	4 Increasing investment in local and regional processing capacity	5 Meeting the City's revenue requirements	6 Influencing the self- haul sectors
Yes	Yes	Yes	Potential	Yes	Yes

Scenario 4: Two or More Zones with Exclusive Collection and Processing for All Sectors and All Service Types in Each Zone

Splitting Oakland in multiple **geographic** zones with separate contracts for each geographic zone may increase competition, and may provide a means to provide continued innovation in services through "competition" between the franchise zones. Under Scenario 4, each separate geographic zone would be serviced under a separate franchise agreement covering all sectors and service types. Transfer and disposal would be provided under a separate contract (Scenario 2).

Under Scenario 4, most if not all the discussion for Scenario 3 would apply, but for two or more geographic zones. Similar to Scenario 3, by having a single service provider covering all sectors and service types in a **defined geographic zone**, the City would:

- Clearly eliminate disposal as the default option;
- Provide universal access to recycling services by mandating that the franchised haulers must provide the service, and that businesses participate in recycling;
- Improve performance in the commercial and multi-family sectors through the combination of required services to be provided by the franchised haulers (collection and processing), mandatory requirements placed on the commercial and multi-family sectors, and rate structures that provide financial incentives to both the franchised hauler and the customer;
- Hold a single entity accountable for all franchised diversion programs in a **defined geographic zone**;
- Provide significant financial incentives to the franchised haulers to aggressively implement recycling and organics collection and processing programs for all sectors;
- Provide significant financial incentives to all customers to actively participate in diversion programs; and
- Attract competitive pricing strategies from hauling companies that would be interested in receiving a relatively large contract for all sectors and service types.

In comparison to Scenario 3, Scenario 4 may, however, provide the City with several challenges:

- City management oversight/cost may be increased do to management of multiple franchised haulers;
- The haulers' pricing for the same services may be different between the separate geographic zones. This may require the City to "levelize" customer rates between geographic zones and may trigger Prop 218 issues, or the City may face questions from customers as to why their rate is higher for the same service; and
- Some geographic zones of the City may prove to be more difficult to implement the required changes and diversion results may lag, or customer rates will be higher.

Similar to Scenario 3, under Scenario 4, the City would have **significant options** for making the changes necessary to meet the 40,000 tons disposal goal (assumes Scenarios 4 and 2 are coupled). **Scenario 4 addresses five of the six system redesign issues with the potential to address the remaining redesign issue.**

While Scenario 4 is also a major departure from the status quo, it does share one significant feature with the Status Quo: two haulers operating in distinct geographic zones, even though currently only one other hauler provides single-family recycling collection and processing services. Accordingly, Scenario 4 may be perceived as less risky in comparison of having one City-wide service provider for all sectors and service types.

Table 5 Scenario 4: Ability to Address Major Redesign Issues					
1 Eliminate landfilling as the default option	2 Providing universal access to recycling services	3 Improving performance in the low- diversion sectors	4 Increasing investment in local and regional processing capacity	5 Meeting the City's revenue requirements	6 Influencing the self- haul sectors
Yes	Yes	Yes	Potential	Yes	Yes

Scenario 5: Separate Contracts by Sectors, Service Types and/or Geographic Zones

Scenario 5 may be the most radical of all scenarios. Under this scenario, the City would be divided by sectors, service types and potentially geographic zones. Under Scenario 5, most of the discussion for Scenarios 3 and 4 would apply. Transfer and disposal would be provided under a separate contract (Scenario 2). Major system components of Scenario 5 would include:

- Franchise Agreements covering services by **Sector**:
 - Commercial solid waste, recycling, organics, bulky waste collection and processing;
 - Multi-family solid waste, recycling, organics, bulky waste collection and processing;
 - Single-family solid waste, recycling and organics collection and processing;
 - Temporary roll-off boxes collection, transfer, processing, and disposal, including construction and demolition materials;
 - Street sweeping services -- assigned to a specific sector; and

- Illegal dumping collection services -- assigned to a specific sector.
- Franchise Agreements covering services by **Service Type**:
 - Solid waste collection -- commercial, single-family, and multi-family;
 - Recycling collection and processing -- commercial, single-family, and multi-family;
 - Organics collection and processing -- commercial, single-family, and multi-family;
 - Bulky waste collection and processing --single-family and multi-family;
 - Street Sweeping services; and
 - Illegal dumping collection services.
- Franchise Agreements covering services by **Geographic Zones**:
 - Combination of Sectors and Service Types split by Geographic Zones.

Under Scenario 5, oversight and implementation is significantly more complex than any other scenario. However, Scenario 5 would allow the City to:

- Clearly eliminate disposal as the default option;
- Provide universal access to recycling and improve performance in the commercial and multi-family sectors by entering into multiple contracts for specific services types:
 - Contracting with a **recycling only** hauler by sector; and
 - Contracting with an **organics-only** hauler by sector.
- Establish payment provisions for the recycling-only and organics-only services based on diversion performance (participation/set-out levels, contamination, pounds/pickup, etc.); and
- Allow for smaller, local companies that provide specialized services to compete for their niche service.

In comparison to Scenarios 3 and 4, Scenario 5 will, however, provide the City with several significant challenges:

- City management oversight/cost will be increased do to management of multiple franchised haulers, potential 20+ separate service providers;
- The City would not be able to hold a single entity accountable for franchised diversion programs in a **defined geographic zone or sector**.
- Splitting the City into service sectors, service types and geographic zones may significantly weaken receiving competitive pricing strategies from companies that would be more interested in receiving a larger contract for all sectors and service type;
- The hauler's pricing for the same services may be different between the separate sectors, service types and geographic zones. Similar to Scenario 4, this may require the City to "levelize" customer rates but is more complex due to potentially different service providers for each sector, service type or geographic zones and may trigger Prop 218 issues, or the City may face questions from customers as to why their rate is higher for the same service; and

- Some sectors, service types and geographic zones of the City may prove to be more difficult to implement the required changes and diversion results may lag, or customer rates will be higher.

Similar to Scenarios 3 and 4, Under Scenario 5, the City would have **significant options** for making the changes necessary to meet the 40,000 tons disposal goal (assumes Scenarios 5 and 2 are coupled). **Scenario 5 addresses five of the six system redesign issues, with the potential to address the remaining other redesign issue.**

However, Scenario 5 is a radical departure from the status quo, and would require significant management oversight by the City, may cause confusion as to who provides service to specific customers due to the potential of having 20+ service providers, and would greatly lessen specific hauler performance accountability. Accordingly, Scenario 5 may be perceived as too risky in comparison to Scenarios 3 or 4.

Table 6 Scenario 5: Ability to Address Major Redesign Issues					
1 Eliminate landfilling as the default option	2 Providing universal access to recycling services	3 Improving performance in the low- diversion sectors	4 Increasing investment in local and regional processing capacity	5 Meeting the City's revenue requirements	6 Influencing the self- haul sectors
Yes	Yes	Yes	Potential	Yes	Yes