



DATE: January 11, 2018
TO: Planning Committee/Recycling Board
FROM: Tom Padia, Deputy Executive Director
BY: Meri Soll, Senior Program Manager
SUBJECT: Five Year Program Review

SUMMARY

In August 2016 the Recycling Board approved a schedule and scope of work for the “Five Year Program Review” and in November 2016 the Recycling Board approved award of a competitively bid contract to a consulting team led by HF&H Consultants, LLC to perform the program evaluation component of the Measure D-mandated “Five Year Audit.” The consulting team included subconsultants Kies Strategies and Mr. Kelly Runyon. The final report for the separate financial and compliance component of this Five Year Audit was presented to the Recycling Board in September 2017 by Crowe Horwath LLP. Staff from HF&H will present key findings and recommendations of the Five Year Program Review at the January 11, 2018 meeting. The Executive Summary is attached (Attachment A) and an electronic file of the full report (137 pages) is available at <http://www.stopwaste.org/file/4575>.

DISCUSSION

Subsection 64.040 (C) of Measure D requires a comprehensive financial, statistical and programmatic audit and analysis to be performed within four years of the effective date of the Act and every five years thereafter. Following is the text from Measure D relating to the comprehensive audit:

SUBSECTION 64.040: RECYCLING POLICY GOALS AND RECYCLING PLAN

C. The Recycling Board shall contract, not more than four (4) years after the effective date of this Act, and then every five (5) years thereafter, for an audit to determine compliance with the Recycling Plan and the degree of progress toward the recycling policy goal then in effect. Said audits shall be conducted by an independent auditor (or auditors) with experience in source reduction and recycling. The reports of said audits shall be completed within one (1) year and issued to each municipality, the Board of Supervisors and the Authority. Said reports shall include at least the following:

1. A narrative and analytical evaluation of all recycling programs within Alameda County, whether funded through this Act or not, both Alameda County-wide and within each municipality;
2. A statistical measure of the progress toward the recycling policy goal then in effect;
3. An evaluation of the Recycling Board's activities, including, but not limited to, an accounting of the monies spent by the Recycling Board; and
4. Recommendations to the Recycling Board, the Board of Supervisors, the Authority and the municipal governing bodies for the maintenance and expansion of recycling programs, and any necessary resulting amendments to the Recycling Plan.

SCOPE OF WORK

As in previous years, the program review utilized a “forward looking” approach with actionable recommendations. In addition, the review considered StopWaste’s recent goal-setting process in order to provide a report that will be useful for the next round of long range strategic planning. Tasks included in the scope of work:

- Compile Comparative Tables. The goal for this task shifted from historical comparisons between member agencies to maximizing value data for developing member-agency specific metrics as well as agency-wide metrics. Data compiled included targeted, high value data as opposed to exhaustive profiles of each jurisdiction’s programs.
- Collect and review benchmark study data, hauler reports and CalRecycle reported data to assess diversion data and outcomes for each member agency. Develop metrics for diversion rates by jurisdictions and data on “percentage of good stuff in the garbage” (GSIG).
- Review of submitted Measure D forms (focus on 2014 and 2015 data) with a comparison of values to the Agency Benchmark Study to assess GSIG to provide a data set for member agencies to measure their progress. Review of non-Agency studies relating to material optimization issues and upstream activities, including food waste prevention and recovery as well as reuse and repair to provide insight as to what other leading agencies are working on in this arena.
- Research and review waste characterization studies from other states, regions and jurisdictions and compare to Agency programs and studies. Develop data on commonly recycled and composted materials remaining in the landfill streams and identify trends over time. Results to provide context to our local goal of “less than 10% ‘good stuff’ in the garbage by 2020.”

FINDINGS

Representatives from HF&H will present key findings of their research at the January 11 meeting. Key findings include:

- With regard to residential Good Stuff in the Garbage, Alameda County jurisdictions are leading the way on resource conservation efforts nationally. None of the other jurisdictions studied are even close to reaching the goal of less than 10% good stuff found in the garbage.
- StopWaste is on the forefront of food waste reduction and recovery programs compared to other entities studied.
- The Agency’s approach to promoting third party certification, specifically the certification incentive program for mixed C&D facilities, is a cost effective approach to assessing recovery at processing facilities.

RECOMMENDATION

It is recommended that the Recycling Board accept the final Five Year Program Review report by HF&H Consultants and that the findings and recommendations be used to inform the next Agency strategic planning process expected to begin in 2018 (for after 2020).

Attachment: Five Year Program Review Executive Summary



Five Year Program Review



December 2017



HF&H Consultants, LLC

in conjunction with

Kelly Runyon
Kies Strategies

This page intentionally left blank

EXECUTIVE SUMMARY

Overview

This Five Year Review (Review) has a "forward-looking" and topical focus. The Review seeks to provide information and analysis to support StopWaste's current and future strategic planning efforts, including to measure progress towards StopWaste's "Good Stuff in Garbage" (GSIG) goal and to support strategic planning past 2020. This summary is organized as follows:

- Where are Recycling Markets Headed?
- Pending Organics Management Issues
- The Value of Third-Party Certification
- Developing Metrics for Better Measurement
- "Ultimate Disposition" of Discards: from Collection to New Products

Where are Recycling Markets Headed?

The National Sword

In late July 2017, the Chinese national government announced its "National Sword" policy, introducing a great deal of uncertainty into the recyclables export markets. In general terms, the policy seeks to ban the import of fiber (paper and paper-related materials) and plastics with more than 0.3 percent contamination. The National Sword should not come as a surprise. The policy is a logical extension of the earlier "Green Fence" policy to reduce contamination of incoming materials, coupled with the interests of a rapidly developing economy in encouraging use of its own feedstock materials. There is ongoing speculation about the possible impacts of the National Sword.

In general, note that when there are market restrictions relatively cleaner material will be accepted while more contaminated material will not, and cleaner material will receive more favorable pricing.

Our first suggestion is "don't panic." The details of how the National Sword will be implemented, and its impacts on commodity pricing are not yet known. Our second, related suggestion is to avoid modifying recycling collection programs by dropping collected materials, or by allowing disposal. Fortunately, the Bay Area has close proximity to markets, and in the short-term there is likely to be an available market for nearly any material.

The "Evolving Ton"

The "evolving ton" is a related complication for collectors and processors.

"The Evolving Ton"

The composition of recyclables is shifting rapidly and becoming lighter with societal and commodity changes such as the "Amazon effect" (cardboard!), less newsprint, thinner plastic bottles, and use of new plastic resins.

Managing Risk

Many franchise agreements from the 1990s and early 2000s included revenue-sharing mechanisms. These provisions provided for member agencies and franchisees to share the risks and benefits of uncertain market revenues. It is now common for franchisees to enjoy the benefits as well as absorb the risks, but there may be value in returning to arrangements with shared risk. Key objectives for structuring these types of provisions should include simplicity and use of published indices and other objective measures to reduce disputes. There are many approaches for structuring these provisions, consideration of which is beyond the scope of the Review.

Pending Organics Management Issues

CalRecycle is developing regulations for SB 1383, the Short-Lived Climate Pollutants Reduction Act. In many ways, the Mandatory Recycling Ordinance (MRO) anticipates the requirements of SB 1383, including required material separation, outreach, and enforcement. Two provisions of SB 1383 are among those that will directly affect member agencies. First, SB 1383 requires landfill diversion of a broad range of organics by 2022, most of which member agencies are now collecting. Among the added materials are textiles. The Review covers approaches other jurisdictions are taking to textile recovery. Second, SB 1383 will increase demand for organics processing capacity, while more stringent facility siting and operating requirements from the State Water Resources Control Board (Water Board) will make facility siting more difficult. Together, the requirements will increase the cost of processing and possibly make it higher relative to the cost of landfilling.

Urban wood is another organic material for which demand for collection and recovery will increase.

Wood waste recovered from C&D has historically been used as a fuel for biomass plants. However, at the same time as demand for collection and recovery has increased through State action, there are significant growing market barriers for management of discarded urban wood.

The Value of Third Party Certification

Third party certification is a unifying theme of the Review. Perhaps most visibly, StopWaste's promotion of third party certification for mixed C&D facilities currently provides a cost-effective means of ensuring that C&D recovery efforts meet expectations without each member agency needing to conduct its own review of facility performance. The C&D certification process has the added value of addressing change over time, as discarded materials, processing technology and markets all evolve. Among other StopWaste programs, third party certification is an important element of materials optimization and green building (LEED certification). Among areas of interest to the Agency and member agencies for which third party certification could be of value:

- Assessment of recyclables and organics processing facility performance parallel to that for C&D, including verification of facility residue rates.


- Documenting residue levels during intermediate processing, as discussed in regard to ultimate disposition of materials.
- Ensuring responsible handling of e-scrap in regard to data security and environmental and labor impacts of e-scrap recycling practices, especially overseas.

Developing Metrics for Better Measurement

Overview

StopWaste’s Strategic Plan contains two goals for 2020. One goal, based upon the questionable State methodology of calculating total waste generation, is to achieve diversion of discards from landfill of “75% and Beyond.” The Agency and the member agencies use CalRecycle’s per-capita disposal method to track progress towards this goal. The second aspirational goal is to reduce GSIG to no more than ten percent by weight. The Agency’s FY 2017-18 budget includes “interim goals” for assessing progress towards meeting the ten percent GSIG goal.

Figure ES-1: Interim Goals for Materials Management

		Organics	Packaging	Built Environment
Upstream  Downstream	Increase in materials optimization	Additional upstream goals in development during 2017/18		
	Increase in awareness	10% increase by 2018 of families likely to prevent food waste at home	N/A	N/A
	Reduction in waste generation	10% food recovery by restaurants and groceries by 2018	50% reduction in all single-use bags distributed by newly affected stores	<45% construction and demolition waste in landfill by 2018
	Increase in proper sorting	<20% organics in landfill by 2018	<5% recyclables in landfill by 2018	

The Review analyzes the use of metrics, primarily as a means of measuring progress towards “downstream” interim goals of improving sorting. The Review also provides analysis of issues related to more “upstream” issues, and especially the interim goal for food recovery.

Metrics may provide “direct” measurement when based on data collected through waste sorts or other direct observation of GSIG or related behavior, such as through surveying. “Indirect” measurement involves use of surrogate “indicators” that provide for more simple and less costly assessment of progress using readily-available data to measure factors such as changes in program participation, the volume of subscribed service, the per-capita weight of specific discards, or the weight of material collected in

relation to the available volume. The Agency's current Characterization Study will provide crucial data for creating a new GSIG baseline.¹

Data Sources

Figure ES-2 and the following text summarize the data sources analyzed for the Review.

Figure ES-2: Sources of Data for Downstream Metrics

Data Category	Data Sub-category	Source	Materials				Indirect	Direct
			Recyclables	Organics	Disposal	Other*		
Disposal Reporting		California State			✓		✓	
Discard Stream Reporting		California State	✓	✓		✓	✓	
Member Agencies	Measure D Forms	Member Agencies	✓	✓	✓		✓	
	Hauler Reporting	Member Agencies	✓	✓	✓		✓	
	Other Data	Member Agencies					✓	
Benchmark Service Audits		StopWaste			✓			✓
Waste Characterizations	Disposal Stream (GSIG)	StopWaste, Various Jurisdictions			✓			✓
	Diverted Streams	Jurisdictions, Facility Operators	✓	✓				✓

* "Other" refers to C&D, food transported for recovery, and other materials.

1. Disposal Reporting Data. CalRecycle uses jurisdiction-specific disposal data to calculate an actual annual per-capita disposal rate for comparison to a CalRecycle target rate.
2. State Discard Stream Reporting Data. Draft regulations for recent state legislation (AB 901) expands the disposal reporting system to create the "Recycling and Disposal Reporting System." Reliable data will likely not be available until later in 2018 or early in 2019, and may prove to be more useful at the state or regional level, than at a more local level.

¹ Given the wide variation of factors affecting the materials discard "system" in multiple ways, equating cause and effect is generally difficult if not impossible. Statisticians refer to the difficulty of separating "signal from noise," which requires having an adequate amount of data and applying statistical analysis to isolate the cause(s) of a given outcome. For example, to what degree was increased organics participation for September for a given member agency a function of recent outreach efforts, the end of the summer vacation season, greater organics participation rates due to higher seasonal volumes of yard trimmings and/or other factors?

3. Member Agency Collection Data. StopWaste staff have used a "Measure D Form" since 2013 to collect annual data from each member agency, with a focus on franchise collection of recyclables, organics, and garbage from residences and businesses.²
4. Benchmark Service Audit Data. From 2013 through mid-2017, StopWaste funded "waste sorts" (characterization of the types of material contained primarily in material collected for disposal) to collect and directly analyze GSIG.
5. Waste Characterization Data. The Review focuses on the use of applicable waste characterization data from other jurisdictions to measure GSIG, with the addition of data from the current Characterization Study, once completed.

Progress Towards the "75% and Beyond" Goal

As shown in Figure ES-3, based on a calculated Agency-wide diversion rate for 2015 of 73 percent, the "75% and Beyond" goal is within reach.

Figure ES-3: Member Agency Disposal Tonnages and Diversion Rates, 2012 through 2015

Member Agency	2012		2013		2014		2015	
	Disposal Tonnages	Diversion Rate	Disposal Tonnages	Diversion Rate	Disposal Tonnages	Diversion Rate	Disposal Tonnages	Diversion Rate
Alameda	36,625	76%	35,121	77%	35,880	76%	32,036	79%
Albany	5,428	84%	6,427	81%	5,989	82%	6,096	82%
Berkeley	73,917	73%	60,659	78%	68,874	75%	67,246	76%
Dublin	24,478	76%	27,919	74%	34,787	70%	34,731	71%
Emeryville	18,052	70%	17,973	70%	10,811	83%	8,419	87%
Fremont	144,771	72%	138,179	74%	158,694	71%	160,861	71%
Hayward	106,953	72%	101,757	74%	93,153	76%	106,975	73%
Livermore	57,720	77%	57,317	77%	60,456	76%	64,811	75%
Newark	31,370	73%	35,891	69%	33,081	72%	36,190	69%
Oakland	284,151	66%	281,139	67%	269,850	68%	254,262	71%
Piedmont	4,731	71%	3,304	80%	3,026	82%	3,156	81%
Pleasanton	77,170	70%	80,682	69%	74,666	72%	91,292	67%
San Leandro	103,238	62%	115,220	58%	73,145	74%	76,743	73%
Union City	36,778	77%	36,959	77%	37,208	78%	36,223	78%
Unincorporated County	71,243	72%	71,235	72%	76,340	71%	70,996	73%
Total Tons/Avg Rate (Weighted)	1,076,625	71%	1,069,782	71%	1,035,960	73%	1,050,037	73%

Significant amounts of material collection, processing, and disposal activity occur outside of the franchise agreement, and are thus not "municipally-controlled." This is especially true for C&D and commercial recyclables. Figures ES-4 and ES-5 illustrate the value of the "municipally-controlled" concept in highlighting both the importance of monitoring material collected through the franchise to ensure increased diversion over time, as well as the crucial role that material collected outside of each member

² Private sector companies provide collection of dry commercial materials in Berkeley; all other residential and commercial services are municipally-provided.

agency's franchise plays in contributing to overall diversion of discards and to achieving "75% and Beyond."

Figure ES-4: Municipally-Controlled Disposal Tonnages, 2015

Member Agency	Total Disposal Tonnages	Municipally-Controlled Disposal Tonnages	Municipally-Controlled Disposal (Percentage)
Alameda	32,036	26,341	82%
Albany	6,096	4,315	71%
Berkeley	68,221	40,136	59%
Dublin	34,731	28,435	82%
Emeryville	8,419	7,840	93%
Fremont	174,899	121,839	70%
Hayward	108,106	84,555	78%
Livermore	65,094	41,654	64%
Newark	36,190	26,253	73%
Oakland	254,262	156,410	62%
Piedmont	3,521	2,320	66%
Pleasanton	91,292	52,201	57%
San Leandro	82,466	36,402	44%
Union City	38,420	30,513	79%
Unincorporated County *	70,996	n/a	
Castro Valley Sanitary District	n/a	14,213	92%
Oro Loma Sanitary District	n/a	50,803	
Total	1,074,746	724,230	67%

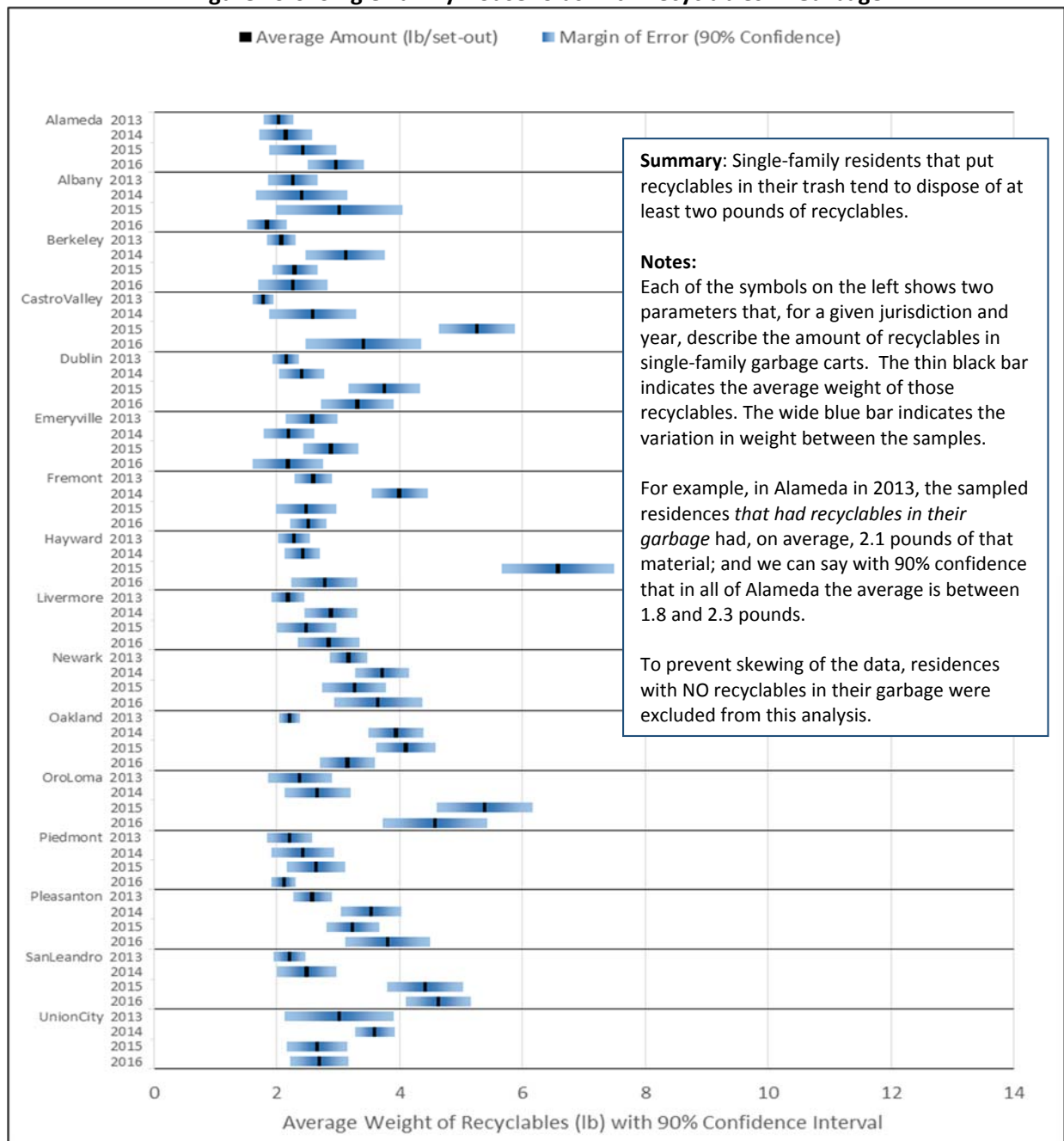
Figure ES-5: Municipally-Controlled Material Tonnages, 2015

Member Agency	Total Recyclables	Total Organics	Total Disposal	Total Generated	Diversion Rate
Alameda	11,458	11,835	26,341	49,634	47%
Albany	2,411	2,669	4,315	9,396	54%
Berkeley	15,877	22,601	40,136	78,614	49%
Dublin	19,185	9,980	28,435	57,600	51%
Emeryville	7,009	2,766	7,840	17,616	55%
Fremont	28,112	32,829	121,839	182,780	33%
Hayward	23,703	22,772	84,555	131,030	35%
Livermore	18,657	20,642	41,654	80,952	49%
Newark	5,398	5,296	26,253	36,947	29%
Oakland	38,500	53,601	156,410	248,511	37%
Piedmont	2,196	2,581	2,320	7,096	67%
Pleasanton	8,440	11,878	52,201	72,519	28%
San Leandro	8,097	9,788	36,402	54,286	33%
Union City	9,724	9,619	30,513	49,857	39%
Castro Valley Sanitary District	9,063	9,850	14,213	33,126	57%
Oro Loma Sanitary District	15,559	18,805	50,803	85,167	40%
Total	223,388	247,513	724,230	1,195,131	39%

Benchmark Service GSIG Data

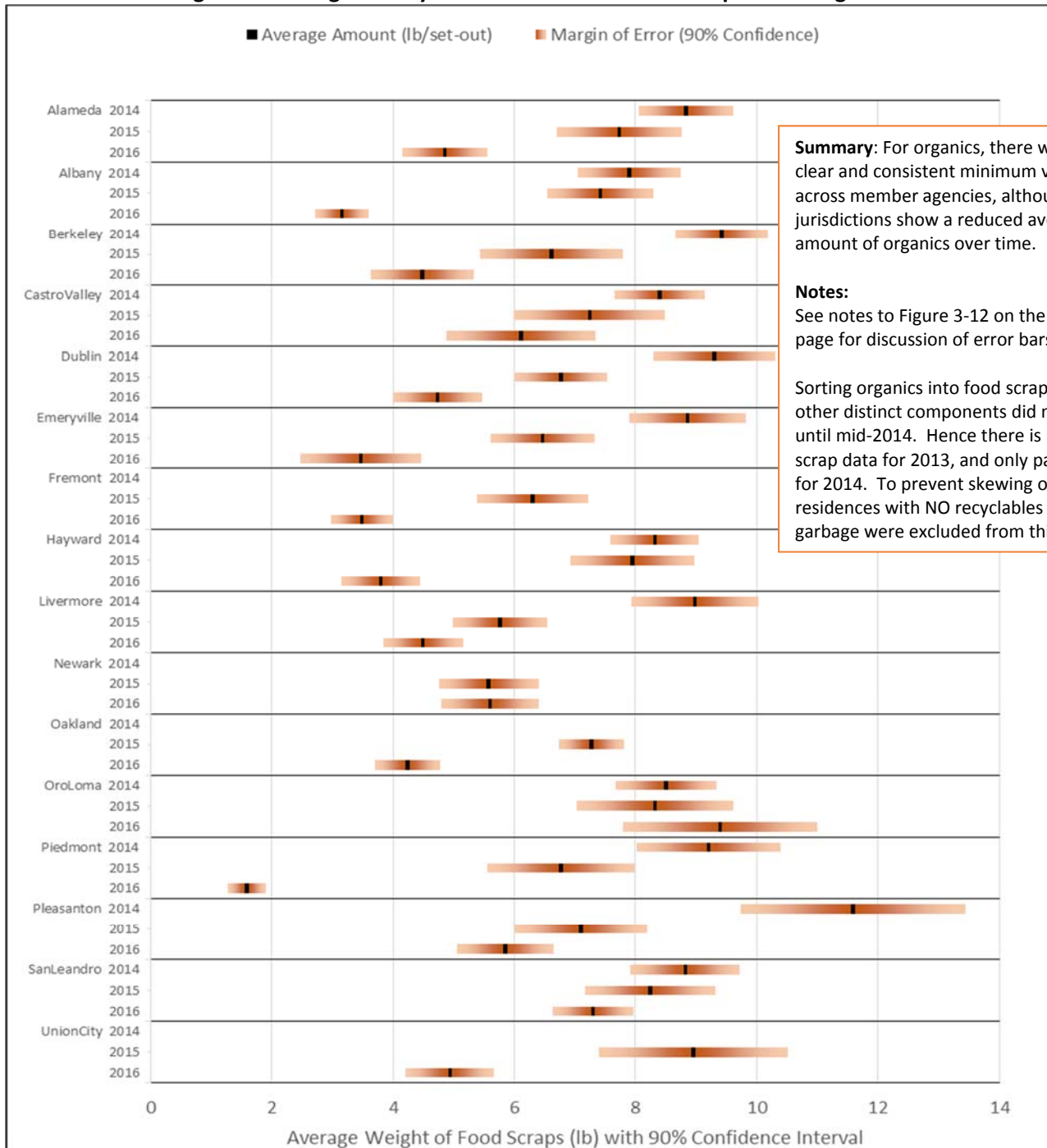
The Review Team computed the average weights, in pounds, of recyclables and food scraps (excluding food-soiled paper) found in garbage set-outs for each member agency. For recyclables, as shown in Figure ES-6, for households with GSIG, a year-by-year trend analysis did not identify distinct trends but did find a clear and consistent lower bound across the member agencies. Single-family residents that put recyclables in their trash tend to dispose of at least two pounds of recyclables. StopWaste might consider setting a goal of, for example, "one pound or less."

Figure ES-6: Single Family Households with Recyclables in Garbage



For food scraps, Figure ES-7 indicates a very clear declining trend from 2014 through 2016 in the weight of food scraps in the garbage for nearly all jurisdictions. However, unlike for recyclables, there was no clear and consistent minimum value across member agencies, which suggests that there is significant opportunity for continued improvement. The Review Team recommends setting a weight-based goal of (for example) two pounds or less, that would allow for a more concrete measurement of progress towards the interim goals of less than 20 percent food in the GSIG, and less than 10 percent GSIG overall.

Figure ES-7: Single Family – Households with Food Scraps in Garbage



Summary: For organics, there was no clear and consistent minimum value across member agencies, although most jurisdictions show a reduced average amount of organics over time.

Notes:
See notes to Figure 3-12 on the previous page for discussion of error bars.

Sorting organics into food scraps and other distinct components did not begin until mid-2014. Hence there is no food scrap data for 2013, and only partial data for 2014. To prevent skewing of the data, residences with NO recyclables in their garbage were excluded from this analysis.

General Recommendations for Downstream Metrics

Two Types of Metrics

The Review Team recommends use of two broad types of metrics:

1. Weight per-capita measures such as pounds per-resident or per-household.
2. Volume measures such as changes in subscribed service, and related density measures such as pounds per-volume of subscribed service.

Weight per-capita and volume-based metrics utilize data from the annual Measure D Forms and overall best meet the criteria for useful metrics in that they are relatively simple, necessary data is available, they require minimal calculation, and are replicable. The Review outlines logical steps for developing member agency and countywide metrics using the two approaches described above, progressing from the general to the specific. Use of multiple metrics provides different information that can lead to more nuanced understanding. Use of multiple metrics can also provide a useful cross-check, helping to identify inconsistencies in the underlying data.

Use of Weight in Measuring Progress towards Reduced GSIG

There is benefit to using weight in addition to, or rather than, percentages to set goals for reducing GSIG. As further discussed in the Review, weight is an absolute measure that does not mask changes in the composition of each of the streams, and in particular due to the "Evolving Ton." This is especially true for recyclables, for which a reduced percentage of GSIG by weight may be the result of changes in recyclables composition that reduce density, rather than reflecting changes in behavior.

Estimates of Edible Food

Based on review of data from a variety of sources, the Review Team concludes that:

1. "Edible food" is probably a little less than half of all food wastes in the single-family, multi-family or commercial streams.
2. As a first approximation, "edible food" in the Alameda County residential disposal stream (single-family and multi-family combined) is likely in the range of 8 to 12 percent of the total disposal stream.

Review of Waste Characterization Data from Other Jurisdictions

The waste characterization analysis is intended to provide a means of comparing the new GSIG data from the Characterization Study, once available, to data from previous StopWaste waste characterizations, from the Benchmark Service audits, and from other jurisdictions in the U.S and Canada with high-performing programs and comparable levels of success in achieving relatively high diversion goals. The Review Team:

- Developed summary profiles identifying key policies, programs and characteristics for six selected jurisdictions, with a focus on the factors that are most likely key to driving diversion and discard practices within each jurisdiction.
- Constructed a "Tool" in Microsoft Excel for StopWaste use containing thousands of data points from 11 studies for the six selected jurisdictions, as well as StopWaste data from the 2013-2017 Benchmark Service audits and waste characterization data from StopWaste studies from 2000 and 2008.
- Prepared a sampling of graphic comparisons, using the data contained in the Tool, to illustrate how the Tool can be used to assess possible associations between waste characterization data and key program features for specific jurisdictions, as well as identify possible larger patterns across data from multiple jurisdictions.

Figure ES-8 summarizes key policy and program features for the six jurisdictions, providing a high-level snapshot of key factors that can play the largest role, all else being equal, in driving discard behavior.³

Figure ES-8: Summary Policies and Programs for Selected Jurisdictions

Location	EPR	Diversion Goal	Mandatory Separation	Disposal Ban(s)	"Bottle Bill"	Low Volume Garbage Option(s)
California State	✓	✓		✓	✓	
King County, Washington		✓	✓	✓		✓
Lane County, Oregon	✓	✓		✓	✓	✓
San Francisco, California	✓	✓	✓		✓	✓
Vancouver, British Columbia	✓	✓			✓	
Washington State		✓		✓		

Figures ES-9 and ES-10 illustrate use of the Tool. Figure ES-9 shows the percentage of GSIG in single-family garbage, for waste characterization data from Alameda County, as well as from San Francisco, California state, King County (Seattle), Washington, and Vancouver, British Columbia.

³ Of course, many other factors also influence discard behavior, such as reduced collection rates for commercial recycling and organics relative to those for garbage. Note that the availability of low generator garbage options can result in added contamination of the recycling or organics streams. Such shifts in material can be detected only if data is simultaneously collected for all three streams.

Figure ES-9: Percent of GSIG for Single-Family

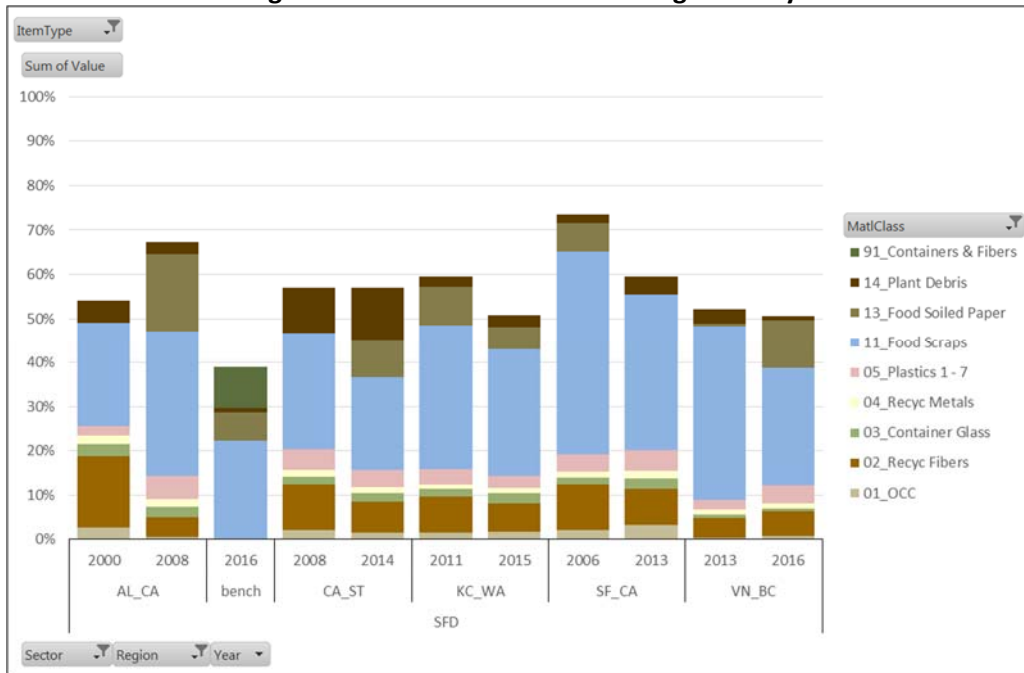
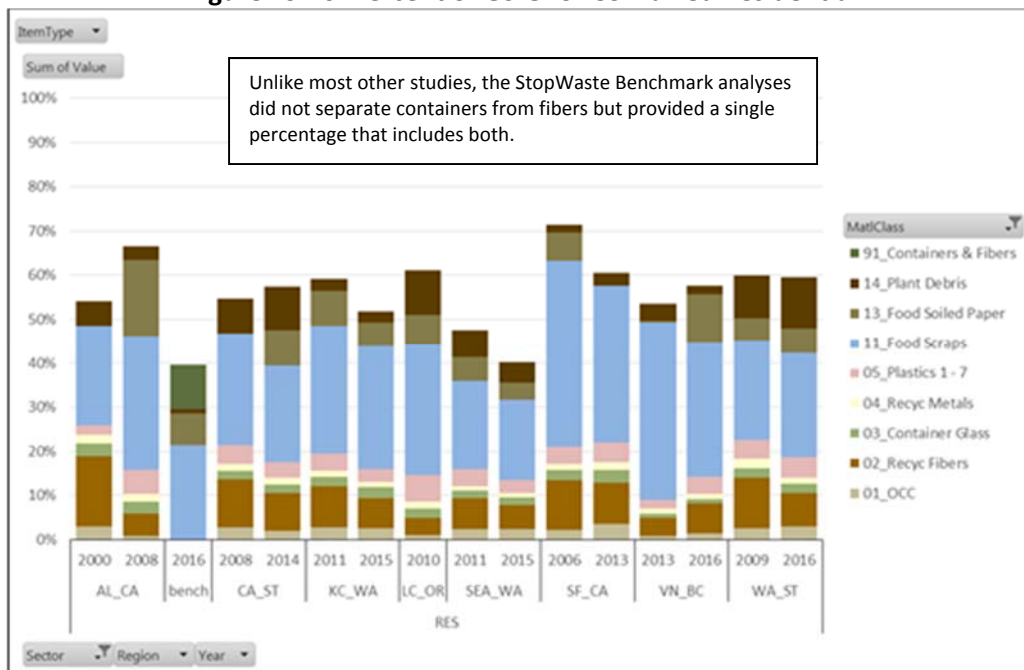


Figure ES-10 shows information for all of the studies, combining single-family and multi-family as a single residential sector, total GSIG is generally in the 40% to 60% range.

With regard to residential GSIG, Alameda County is as successful as other jurisdictions in reducing GSIG. Note also that none of the jurisdictions are close to reaching a goal such as 10 percent for residential GSIG.

Figure ES-10: Percent of GSIG for Combined Residential



"Ultimate Disposition" of Discards: from Collection to New Products

Ultimate disposition can be thought of as: "What happens to collected discards (recyclables, organics or C&D) once they are delivered for initial processing?" The key related question is, "Do diversion rates reported by processors tell the full story, or is there additional unreported residue associated with additional stages of processing?" Discarded recyclables and organics are generally processed in multiple steps, often at different facilities operated by different entities. Agency and member agency value in understanding "secondary" processing is heightened by the recent issues related to the Chinese recyclables markets.

The Review discusses use of franchise agreements to require processing and marketing planning, jurisdiction-specific residue rates that reflect additional steps in processing, and certifications of end-use. The Review Team concludes that franchise agreements are not adequate tools for monitoring, reporting, and providing a useful understanding of the ultimate disposition of most materials. The Review's primary recommendation is to encourage third party certification and market self-policing for both organics and recyclables and, ideally, facility-wide residue reporting. In addition, submittal of annual processing and marketing plans should be required; member agency staff should discuss market issues with haulers on a regular basis.