

Planning for Organics: A California Case Study

While it was challenging for Placer County to design, develop and implement an organics management program in less than four months, getting started on the proper research and developing an Organics Management Plan is critical to creating a clear path on what is needed to move forward in a realistic and cost effective manner.

■ By Tracie Onstad Bills

According to a 2013 U.S. EPA survey, there are more than 214 source-separated organics collection programs operating in the U.S. and the effort is gaining traction. In 2005, only 20 programs existed. High interest in organic materials management is being driven by emerging state regulations for diversion of organics from disposal facilities. The organic fraction of the municipal waste stream, which includes food scraps, yard waste, wood waste and compostable paper, is about 30 to 40 percent by weight. Many communities are evaluating options to handle organics beyond the traditional approach of just supplying information about the benefits of backyard composting. Further, California adopted Assembly Bill 1826 in 2015, a mandatory organics recycling law, which requires businesses and multi-family complexes to recycle their organics. This legislation increases the need for programs and facilities to collect and process the organics portion of the waste stream.

Many communities in California are working with developers, consultants, haulers and processors to establish a game plan on how they will meet these mandates and seek compliance from businesses and multi-family complexes. Working with Placer County, located in the Sierra Nevada region, SCS Engineers conducted the research and analyzed potential feedstock volumes, identified organics processing technologies, assessed local siting of technology possibilities, identified

economic impact and costs to implement, as well as any permitting requirements needed. Placer County had unique aspects, which included seasonality for when businesses are open, a high number of vacation rental properties, a low volume of organic material (specifically yard trimmings and food scraps), significant space constraints for additional containers, wildlife such as bears that make the collection and processing a challenge, and a cold climate that adds a barrier for hauling and processing of organic material. The resulting report recommended the most optimal organics processing technology, the best placement of the site and provided an Organics Management Plan (OMP). The OMP was developed to provide direction and a timeline for next steps to help the County achieve compliance with AB 1826. The following provides details on the information found and the direction taken. The research that was performed was managed in five components.

Potential Organics Feedstock

To plan for the collection and processing of food waste, an estimate must be made of the types and quantities of materials that are presently available and may be available in the future. There were two components to this research:

Organics siting option at the Placer County closed landfill. Images courtesy of SCS Engineers.



	TTSD Estimated Commercial Tonnage	Estimated Total Organics Tonnage	Total Annual Food Scraps	Total Annual Yard Trimmings	Total Annual Lumber
Entire Community	24,531.81	12,744.46	6,310.40	1,109.86	1,129.27
Area 1	190.68	95.26	47.11	6.43	11.79
Area 2	612.36	305.08	120.40	28.76	10.44
Area 3	689.94	338.68	147.53	36.98	24.22
Area 4	14,136.55	7,382.09	3,694.47	632.64	797.35
Area 5	8,902.28	4,623.34	2,300.89	405.05	375.48

Table 1: Estimated annual organics tonnage.
Tables courtesy of SCS Engineers.

1. To identify the volumes of organic material by business to understand who would need to comply with the new California organics legislation
2. To calculate the total volumes of organic material for the commercial stream to estimate the amount of organic material that would be used in the organics processing method chosen

Understanding the entire commercial stream is important for projecting future volumes and participation of the program regardless of the technology. To do this, a full analysis of the commercial waste stream was performed by conducting a desktop modeling of the commercial waste stream. The analysis was performed to understand the total generation of material for each business, by business sector



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Left: Organics siting option and current green waste operations.
 Right: Bear-proof container. Image courtesy of Tahoe Truckee Sierra Disposal.

(NAICS codes), and identify the percentage of material on a weekly and annual basis. The CalRecycle 2008 waste characterization generator study was used, along with the material densities from the EPA standard volume-to-weight conversation factors and the businesses service levels and frequency, to provide estimates on the businesses material composition and annual generation. Table 1, page 29 shows the estimated commercial tonnage, which was extrapolated by using the total tonnage reported by the garbage hauler and their estimated commercial waste percentage. For this study, the focus was on the amount of food scraps generated. There were five communities serviced by the garbage hauler with the potential of their organics sent to the new organics processing facility. Their tonnage numbers are included in Table 1.

According to this analysis, it was noted that the total amount of food scraps that could potentially be generated from the commercial sector is 6,310 annual tons. This assumes that the CalRecycle 2008 generator study is similar to the area dynamics and assuming a 100 percent participation rate, which is unlikely. With these variables in mind, and to take a more realistic approach to the actual tonnage, the study bases its results on approximately 3,000 tons of food scrap material being processed.

Siting of Technology

The first step in identifying a viable location for organics processing

was to define the project constraints and criteria for a consistent and equitable screening system. The constraints included site boundary and surrounding uses, winter weather site access, existing scale, landfill gas, other recycling operations, and storm water runoff and capturing liquids. The project criteria included Facility Location Criteria (land use and location, access and transportation, site size and space availability, site ownership and acquisition options, aesthetics and permitting), Technology Criteria (utilities, waste generation, air emissions and odors, operating facilities, environmental issues, marketability of products and technical feasibility) and County Criteria (economic feasibility, cost-effectiveness and ability to generate revenue). The criteria was used to develop a scoring methodology to objectively evaluate the suitability of a technology and prospective sites, and to assess whether the site can accommodate the development of the proposed facility.

There are many important steps to take when deciding on the most appropriate approach for a new organics recycling program, not the least of which is analyzing potential conditions, which may impact the long-term viability of the program. A list of potential sites was generated and evaluated according to suitability for organics processing. Key factors during this analysis included land use, location, access, proximity to waste generators, adequate space for proposed operations, property ownership and availability of infrastructure. Site visits were performed and a matrix was developed, including scoring

Criteria	TECHNOLOGY SCORE						TECHNOLOGY A	TECHNOLOGY B
	WINDROW COMPOSTING	ASP COMPOSTING	IN-VESSEL COMPOSTING	DRY ANAEROBIC DIGESTION	WET ANAEROBIC DIGESTION			
A. TECHNOLOGICAL	54	54	57	53	52	54	31	
B. COUNTY CRITERIA	20	20	13	16	13	17	23	
TOTAL	74	74	70	69	65	71	54	

Table 2: Organics technology review.



Clean food scraps from pilot program. Image courtesy of Tahoe Truckee Sierra Disposal.

and ranking, to better understand and determine the viability of each site. The scoring included an evaluation of the weighted score (using the identified criteria).

For this study, five sites were researched with a single location identified as the most optimal: the regional landfill. The landfill was operated from 1973 to 1995 and is a closed Class III solid waste management unit on a 292-acre site, of which 65 acres were permitted for landfilling. The remaining acreage includes buffer areas to the west, north and east, which are native forestlands.

Organic Processing Technology Review

To identify a viable organics processing technology, the project constraints and criteria were used to evaluate technologies that appeared most suitable for the area, including:

- Composting (windrow, aerated static pile and aerobic in-vessel)
- Digestion (wet anaerobic digestion and dry anaerobic digestion)
- Mechanical/Thermal (autoclave and masher/dryer)

A comparison of the technologies in each of the critical areas was performed and then a scoring system was used to evaluate seven technology solutions and their viability for use in this project. **Table 2** shows the combined scores for technology and County Criteria.

Cost Model

Using the financial data and background information gathered from the hauler, the organics processing technology companies and the hauling/processing scenarios, a cost model was developed to provide a comprehensive analysis of the financial requirements for each scenario analyzed. The cost model compares the costs by account on an annual and monthly basis (picked-up once a week) for the nine processing/haul scenarios (six potential technologies and two existing compost facilities). Each scenario included two collection options: source separated bin collection and yellow bag in current trash collection. The cost model took into account specific assumptions, cost estimates and projected revenues (as appropriate) for the particular collection option, processing and haul scenarios.

The cost analysis found that the yellow bag collection option (compared to source separation) was the most cost effective. It did not require any additional capital with the bags placed in the current trash container and serviced by the same garbage driver. This option, however, is not well supported by the community because they already have a blue bag (recycling) and green bag (yard waste) program. The cost each month to businesses would depend on if it was a yellow bag or source separated program. If using the yellow bag program, the compost facility option is the least expensive at \$79 per pick up each month. If source separated organics is used, the in-vessel option would be the least expensive at \$206 per pick up each month.

AB1826 Organics Management Plan

For jurisdictions in California to comply with the requirements of AB 1826, they must implement an organics management program, including policies and activities, by January 2017. This new California law requires each jurisdiction's program to contain certain common elements, which include identifying businesses that meet the applicable thresholds, conducting annual education and outreach efforts, and implementing annual monitoring of activities. The plan developed included:

- Potential contractual compliance actions to provide an effective results-oriented organics program
- Existing, potential and new organic recycling facilities in the area
- Businesses and multi-family dwellings that must meet the applicable thresholds
- Annual education and outreach effort ideas
- Annual reporting data needs
- Action plan and timeline

It also included the list of multi-family and businesses that will need to comply with AB 1826. **Table 3, page 32**, shows that none of the multi-family complexes, according to the modeling waste characterization, will need to comply with the first two phases of the law. It was recommended that the garbage hauler visit each dwelling

Table 3:
Businesses and multi-family complexes AB 1826 compliance.

	Total Number of Accounts	Number of Accounts in Phase 1 (3CY or More of Organics) Effective April 1, 2016	Number of Accounts in Phase 2 (4CY or More of Organics) Effective July 1, 2017	Number of Accounts in Phase 3 (4CY or More of Trash) Effective January 1, 2019
Multi-Family Dwellings				
Area 1	13	0	0	2
Area 2	0	0	0	0
Area 3	2	0	0	0
Area 4	171	0	0	28
Area 5	40	0	0	12
MFD Account Total	226	0	0	42
Businesses				
Area 1	12	0	0	6
Area 2	32	0	4	13
Area 3	46	0	1	19
Area 4	521	8	31	258
Area 5	332	3	21	144
Business Account Total	943	11	57	440

to see if they in fact have yard trimmings or not (food scraps do not fall under compliance for the multi-family dwellings).

This plan includes actions and a timeline for the organics processing recommendations. Placer County decided to develop their organics recycling program in a phased approach. The timeline includes the steps that will be needed to establish infrastructure and get businesses in compliance with AB 1826. In early 2016, the County identified the different compliance thresholds each business fell into and when they will need to comply with AB 1826. In collaboration with their hauler, the County developed a food scrap collection pilot program that began in Spring 2016. The businesses targeted for organic material were the larger volume generators, such as restaurants. The businesses are placing food scraps in a yellow bag, then into their trash container, which is collected by the hauler and taken to the Material Recovery Facility. The yellow bags are then sorted, placed into another truck, and transported to a compost facility 60 miles away. The hauler will be taking the material to each facility for a one-month timeframe to establish costs. Currently, the food scrap recycling service is free to businesses and subsidized by the County. The County will also develop the program and cost structure over the second half of 2016 with the goal of having an organics collection program in place by January 2017. This will be an interim step during which the County will determine whether to develop organics processing at the new site.

The Next Steps

The next step will be for the County to evaluate the collection and composting program results, and depending on the volume of materials, determine whether to move forward with developing a permanent facility. The evaluation process will not begin until Spring 2017.

On an ongoing basis, the County has placed AB 1826 information on their Web site, has sent out letters to businesses, and is working with the hauler to provide outreach and education to businesses. The County will also review their objectives and long-term goals and then decide

on any different measures such as potential new policies that may be beneficial to approve.

While it is challenging for the County to design, develop and implement an organics management program in less than four months, getting started on the proper research and developing an Organics Management Plan is critical to creating a clear path on what is needed to move forward in a realistic and cost effective manner. Although this small County has a large number of barriers, it has designed a plan that takes into account the small volume of organics while considering the County needs. It will take a few more years before the final results are realized, however this County is on their way to establishing a long-term program. | **WA**

Tracie Onstad Bills is the Northern California Director of Sustainable Materials Management for SCS Engineers (Long Beach, CA). She has more than 20 years of materials management experience, including working for a hauler, a county government, a non-profit and more than 10 years with materials management consulting firms. She has provided zero waste strategies and technical expertise, which includes commercial sector material flow assessments, green events project management, climate inventory compilation and submittal, construction and demolition (C&D) research, visual and physical waste characterizations, analysis and recommendations on innovative programs to increase diversion, and recycling and waste management technical support to government agencies and businesses throughout Northern California. Tracie specializes in managing technical and outreach projects, conducting research and analysis, evaluating recycling outreach programs for municipalities, businesses and haulers throughout the Bay Area. As an expert in the regulatory environment affecting management decision-making and a strong believer in transparency, she takes pride in her ability to engage stakeholders in meaningful action-oriented ways to drive higher levels of customer service. She is a CRRA Board member and belongs to the SWANA Gold Rush Chapter, National Recycling Coalition and the Northern California Recycling Association. Tracie can be reached at (925) 426-0279 or via e-mail at tbills@scsengineers.com.