

Report



**Organic Materials from
Commercial Establishments:
A Supply Assessment**

Executive Summary

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**Ramsey/Washington County Resource Recovery
Project Board
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Organic Materials from Commercial Establishments: A Supply Assessment

Executive Summary

This assessment contains preliminary estimates of quantities of commercial organic materials that may be available as a potential feedstock supply for an anaerobic digester (AD) facility. This assessment also characterizes the types of commercial establishments that may be most likely sources for larger volumes of the targeted organic materials such as food scraps and non-recyclable paper. A preliminary supply specification was developed focused on these types of materials. Finally, this assessment highlights some of the potential issues that should be considered while securing a new supply of commercial, source separated organic materials (SSOM).

This primary focus of this assessment was on characterizing food waste and other organic materials that are currently not recovered by other programs. The initial intent was to examine opportunities for further recovery of organics that are currently disposed in mixed municipal solid waste (MSW). Existing food rescue and recovery are described to help characterize the food scraps that are already treated as reusable or recyclable commodities.

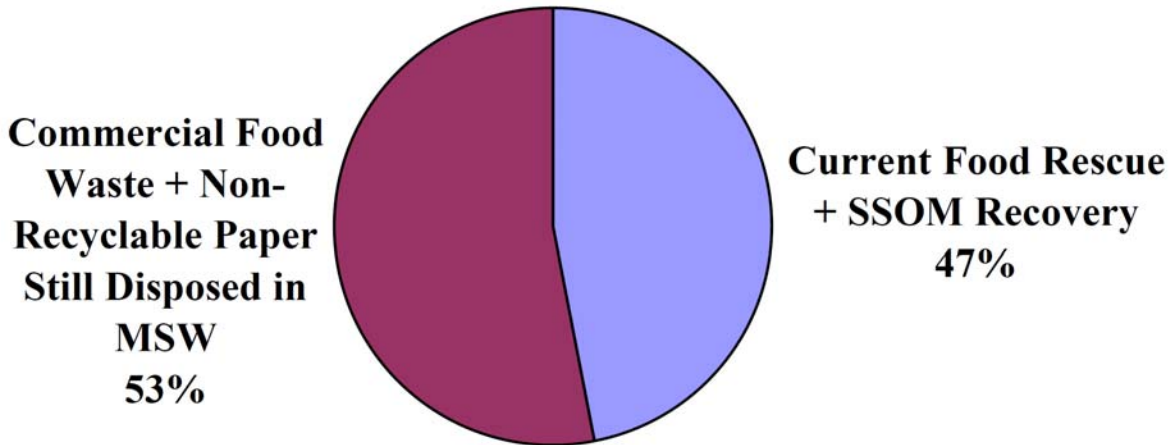
Table ES-1 displays a summary of the estimates of organic discards in 2009 from both Ramsey and Washington Counties compared to the six-county SWMCB region as a whole. The first line indicates the estimates of current food rescue and SSOM recovery rates based on county SCORE reports to MPCA. The second line itemizes Foth’s estimate of the amount of SSOM currently discarded in mixed MSW. These SSOM discard estimates are based on SCORE – reported MSW disposal data, composition data (including food waste and non-recyclable paper), and the assumption that commercial waste makes up about 48 percent of the total MSW. The third line simply is a 25 percent additional recovery scenario based on results of other ongoing programs in the region.

Table ES-1 Commercial Organics Discards and Potential Capture Rates
(Tons per year – 2009 estimates. Rounded to nearest thousand tons.)

	<u>R + W</u>	<u>SWMCB TOTAL</u>
Total Food Rescued + SSOM Recovered (excluding YW) =	39,000	102,000
Commercial SSOM Currently Discarded in Mixed MSW =	43,000	168,000
Additional Commercial SSOM that could be captured (at a 25 percent capture rate) =	11,000	42,000

Figure ES – 1 is a simplified graphic display of the first two items in Table ES-1 for Ramsey and Washington Counties. The current food rescue + organics recovery rate totals about 47 percent of the total discards (rescued + recovered + disposed in mixed MSW).

Figure ES-1 Summary of Current Organics Discards in Ramsey and Washington Counties



The total amount of food rescued and recovered from Ramsey and Washington Counties in 2009 was about 38,640 tons estimated as follows:

Rescued (i.e., food to people):	810 tons
Recovered via:	
Food to hogs (direct)	22,380 tons
Food to animal feed manufacturers	15,410 ton
SSOM to compost	40 tons
<hr/>	
TOTAL =	38,640 tons

There are no residential SSOM recovery programs yet in Ramsey or Washington Counties. Therefore, all food and SSOM comes from the commercial sector. The potential for residential SSOM is significant but beyond the scope of this commercial assessment.

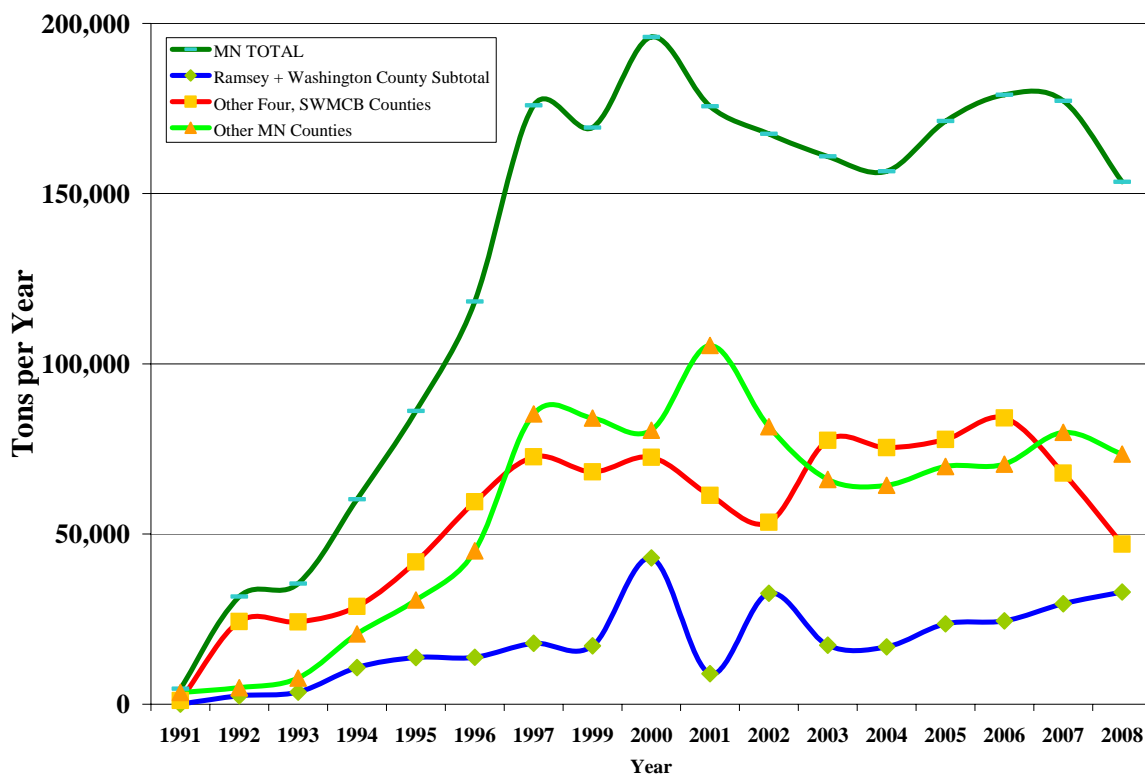
As a comparison, the total amount of residential yard waste and brush collected from Ramsey County alone in 2008 was estimated at 58,400 tons. This is comprised of about 68 percent grass and leaves, and about 32 percent brush (e.g., less than 4-inches in diameter).

The preliminary specification, however, does not target yard waste or brush as a priority feedstock for the proposed AD facility because of low biogas yield, significant seasonal fluctuations, and very mature yard waste collection and composting infrastructure. While combining SSOM with yard waste may be feasible, this option was out of the scope of work for this assessment.

There are mature, public and private systems for recovering SSOM in the Twin Cities Metropolitan Area. Private for-profit companies have developed competitive systems, including sourcing programs, for securing food waste supplies. Figure ES-2 displays the Minnesota organic materials rescue and recovery data from County SCORE reports as published by MPCA. The trend lines indicate the long history of private food rescue and organics recovery and the growth, in part due to increased awareness, during the initial years since county SCORE reports first started recording organics recovery in 1991.

Figure ES-2 History of Organic Materials Rescue and Recovery Data

(From SCORE Reports)



Another means of assessing the priority organic discards is to base estimates on disposal rates of food scraps as reported in relevant literature and apply them to employee counts. Foth developed a database of selected commercial establishments in Ramsey and Washington Counties based on the searchable Dun and Bradstreet (D&B) publication. The D&B database was sorted by Standard Industrial Classification (SIC) code categories and employee counts. Using this alternative method, this assessment estimates about 45,000 tons of food waste is disposed each year from commercial establishments. Table ES-2 display the summary results of these food waste disposal estimates by SIC category.

Table ES-2 Summary of Food Waste Disposed *
By SIC Category
(* As disposed in mixed MSW)

Primary SIC Code	Category	Number of R/W Total Establishments	R/W Food Waste as Disposed (tons/year)	Percent of Total Tons
20	Food and Kindred Products	90	941	2%
51	Wholesale Trade - non-durable Goods	578	3,236	7%
54	Food Stores	549	9,105	20%
58	Eating and Drinking Places	982	22,774	51%
70	Hotels, Rooming Houses, Camps, and Other Lodging Places	156	672	2%
79	Amusement and Recreation Services	22	13	0.03%
80	Health Services	2,135	1,636	4%
82	Educational Services	602	3,925	9%
	Public Administration	502	2,408	5%
	TOTALS	5,616	44,711	100%

Eighty percent of the total tons are disposed from three categories as highlighted: food stores such as grocery stores (SIC code 54); eating and drinking places (SIC code 58) such as restaurants; and educational services (SIC code 82). Most grocery stores and restaurants are not recovering their organic discards. The desktop analysis estimates that about 51 percent of the total food waste disposal is from restaurants and 20 percent is disposed by grocery stores (see Table ES-2). Therefore, these two specific categories of businesses should be likely targets for additional SSOM recovery. While most restaurants and grocery stores do not have SSOM recovery programs, there are notable exceptions and “early adopters”. Colleges, universities and other educational institutions should continue to be a priority as examples of large kitchen facilities with higher volumes of available food scraps. There are many urban retail establishments that have made the investment in food scraps recovery programs in part because of customer demand for the additional recycling services.

Many of the commercial establishments with larger-volumes of clean food scraps (e.g., wholesale produce companies; bakeries) that were surveyed as a part of this assessment are already serviced by the existing food waste recovery operations.

Several notable government agencies (e.g., Ramsey County and MPCA) and educational institutions (e.g., elementary schools, U of M) have also adopted SSOM recovery programs. There are a significant number of such institutions that do not yet have food scraps collection programs and therefore could be targeted for new recovery systems. Educational institutions dispose about 9 percent of the total available food waste and public administration agencies (i.e., government agencies) dispose only about 5 percent of the total food waste.

Existing service fees for SSOM collection and recovery are priced to compete with the comparable mixed MSW removal charges. Some of the larger commercial establishments with the highest value food by-products (e.g., from bakeries, wholesale produce processors) enjoy SSOM collections services at very low prices, even down to “free” removal. Planners of new SSOM programs and facilities should assume that these types of larger commercial establishments will not be available without a substantial discount for the product.

It is important to note that SSOM service is normally an added cost and does not totally replace the need for MSW services. The largest economic savings from instituting a new SSOM program should come from downsizing trash service levels (e.g., size of dumpster, frequency of pulls). However, this downsizing relationship is not always direct, especially if the establishment has different collection service providers for SSOM and trash. Effort by the establishment must be expended to monitor recycling and trash needs and try to adjust the service levels accordingly to optimize cost savings opportunities.

Restaurants as a category are the largest potential suppliers of SSOM. This is a significant challenge given the wide diversity of establishments, decentralized ownerships/management structure, and high staff turnover rates. There is risk of contamination of the SSOM with prohibited materials (e.g., glass, metal, non-biodegradable plastic, etc.) that must be anticipated. Also, small, frequent loads from multiple generators must be serviced on a very regular schedule. The downsizing/rightsizing adjustments to recycling and trash services are not part of normal restaurant operations. The market for this type of recycling service to restaurants is in the initial stages of development. Thus, route densities are not yet economical for most haulers to consider getting into the business of serving restaurants with SSOM recycling. Despite these challenges, given the significant volume of eligible organic material disposed, restaurants should be carefully considered in any new SSOM recovery initiative. Also, a different supply quality specification (e.g., mixed loads of organics and other materials) may result in different collection economics and market dynamics.

The quality and consistency of SSOM from the pre-consumer (i.e., “back of the store”) will be significantly higher and more reliable than post-consumer (i.e., “front of the store”) material from customers. In general, fruits and vegetables comprise the majority of pre-consumer SSOM from full service restaurants. Additional materials of significance include bakery, dairy and sugar-based / starch-based products.

The data used in this assessment are primarily derived from desktop analysis, SCORE reports by Counties to MPCA, phone interviews, and anecdotal field observations. No independent waste sampling or weighing study was conducted.