Organics Disposal Alternatives in Sonoma County

AB 939 Local Task Force
Organics Diversion Subcommittee Report
April 15, 2010

Introduction:

The Organics Diversion Subcommittee is a subcommittee of the Sonoma County AB 939 Local Task Force (LTF) created to examine:

- the potential for diversion,
- the greenhouse gas generation impacts, and
- the barriers to diversion

of the organic discards currently transported out of Sonoma County for landfill disposal.

The subcommittee's work was based on the 2007 Sonoma County Waste Management Agency's (SCWMA) Waste Characterization Study (WCS) and USEPA data for greenhouse gas (GHG) generation potential. The WCS data was examined with a focus on the organic (bio-degradable or compostable) components. These were assembled into the following discard categories: food, paper, recyclable wood, yard debris, compostable paper, as well as the special waste categories of textiles, treated wood, and gypsum (although not an organic, it was decided that it has recycling potential with organics). The subcommittee evaluated each of these categories in terms of their sources (residential, self-haul, and various commercial sources), the discard tonnages, GHG potential, and future management options. A summary of this examination is presented in Table 1.

Category Descriptions:

Table 1 below describes the annual weight, greenhouse gas generation potential, additional capacity needed, future management systems, and estimated implementation timeline for each of these categories. Each of the material categories is also described in further detail below.

Table 1: Discard Category Summary

Category	Annual Tonnage [1]		GHG Generation Potential (MTCE/year) [2]		Additional Capacity Needed (tons)	Future Management Systems	Implementation Timeline
Food	59,920		26,664		50,000	Anaerobic Digestion, new composting site, WWTP Existing Digesters	3+ years
Paper	28,028		18,246		0	Additional diversion to existing facilities	Now
Recyclable Wood	19,040		6,759		0	Reuse, wood chips, energy production	Now
Yard Debris	17,080		4,509		0	Compost, energy production	Now
Compostable Paper	12,320		8,020		12,320	Non-organic compost line	3+ years
Textile	12,040		?		12,040	?	?
Treated Wood	15,400		?		15,400	EPR, landfill	?
Gypsum	4,760		?		0	Additional diversion to existing facilities	Now
	Now	3+ Years	Now	3+ years	3+ years		
Total	68,908	72,240	29,515	34,685	62,320		

[1] Proportionally reduced based on 280,000 tons (250,000 from County system and 30,000 from Petaluma) instead of 374,305 tons from the 2007 Waste Characterization Study

[2] Based on the U.S. EPA's Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks, 3rd Edition, September 2006

Food

This category includes discarded food materials resulting from processing, storage, preparation, cooking, handling, or consumption. Food waste includes materials self-hauled to a disposal site by the generators directly as well as that collected by refuse haulers (residential curbside and various commercial generators such as cafeterias, food processors, restaurants, grocery stores, and special events). While this category is the single largest category reviewed in terms of diversion and GHG generation potential, the ability to divert this waste type is currently limited. Diverting this material for compost and renewable energy will require several years and significant capital investment. Fortunately, the SCWMA is nearing completion of the CEQA documents for new potential compost sites. This is a significant milestone on the path towards establishing the infrastructure to handle this material. Other available local facilities for making beneficial use of portions of this material are digesters at existing wastewater treatment plants.

Paper

This category includes uncoated corrugated cardboard, newspaper, brown wrapping paper, computer/copy paper, magazines, catalogues, books, and other recyclable paper. It represents the second largest diversion potential as well as GHG generation potential. However, unlike food, infrastructure within Sonoma County exists to collect and process this material for recycling. The primary implementation barrier in the case of this material appears to be consumer behavior change.

Recyclable Wood

This category includes unpainted, unstained, or untreated wood used for building, manufacturing, landscaping, and packaging. The category ranks third for diversion tonnage reduction and fourth for GHG generation potential. Like paper, facilities within Sonoma County exist which could readily absorb this material, although collection systems are not as convenient.

Yard Debris

This category includes leaves, grass, prunings, trimmings, branches, and stumps from public or private landscapes. While the category ranks fourth for diversion potential, the GHG generation potential ranks fifth. Existing facilities within Sonoma County could handle the quantity of material currently being sent to landfill, although some changes to operations would be required. The SCWMA's new compost site is being designed to accommodate this additional material.

Treated Wood

This category includes wood that has received an external coating, has been pressure treated, chemically treated, or treated with creosote to protect against decomposition due to weather exposure or ingestion from pests. This material is a hazardous waste and must be disposed of in a hazardous waste landfill when discarded. This material ranks fifth in material weight, although there are no diversion options available. Though it is assumed the GHG potential for treated wood is similar to that of untreated wood, it is uncertain how the protective treatment affects this potential.

While there were no local diversion options identified, this product is a candidate for extended producer responsibility. Treated wood is banned from traditional landfill disposal so it must be

delivered to special landfills, yet it is currently offered for sale, required by building codes in some situations and is still commonly used. The product is designed for long term use, but there is no comprehensive plan for its end-of-life disposal. The subcommittee believes the producers and sellers of these products should have a greater role and responsibility in the disposal process.

Compostable Paper

This category includes paper products soiled with food or water during use that are not fit for traditional paper recycling. It is ranked sixth in diversion potential but fourth in GHG potential. The potential quantity of material diverted for collection and processing could be accommodated by existing facilities, through adjustments such as development of non-Organic compost products. While possible, this would a significant investment in time and effort to realize.

Textiles

This category includes items made of thread, yarn, fabric, or cloth, as well as carpet and carpet padding. It ranks sixth in diversion potential, but its GHG potential is unknown. This is a difficult category, as determining the item's composition as natural, synthetic, or blended is not always obvious, and while some items can be reused, badly damaged or mistreated items have little reuse potential. However, cotton, linen and other natural textiles, when free of non-compostable parts, could be included in the compost feedstock.

Carpeting and carpet padding, a subset of this category, is another candidate for extended producer responsibility. The product is designed for long term use, but there is no comprehensive plan for its end-of-life disposal. The subcommittee believes the producers and sellers of this product should have a greater role and responsibility in the disposal process.

Gypsum

The final category discussed in this report is gypsum, commonly found in sheetrock, drywall, and plasterboard. It ranks seventh in diversion potential with just under 5,000 tons per year currently destined for landfill disposal. It has diversion potential in an existing facility in Sonoma County, and potential future use as a soil additive to a non-Organic compost line.

Conclusions about Diversion and Greenhouse Gas Impacts of the Organics in Sonoma County:

A major and significant conclusion of the subcommittee's research is that about **half of the GHG reductions possible from the organic fraction of the waste stream can be served by existing management programs** as they currently operate with little or no additional permitting or capital investment.

The fastest, easiest, least expensive actions to divert these materials and reduce GHGs is to focus on the source - the household or business generating the recyclable and compostable materials.

As can be seen in Table 1, redirecting all the paper, recyclable wood, and yard debris to existing facilities could reduce landfill disposal by nearly 70,000 metric tons per year (25% of the waste

stream now going to landfill) and impact the GHG generation of nearly 30,000 metric tons[1] of CO_2 equivalent annually, about half of the GHG potential in the organics sent to landfill.

Increasing diversion of paper, recyclable wood, yard debris, and gypsum does not require the siting or construction of new processing facilities. The main barriers to increased diversion for these materials are current behaviors at homes and workplaces in Sonoma County. These behaviors can be changed using various social marketing and economic tools.

Increasing diversion of food waste and compostable paper, while not available for immediate implementation, will also significantly reduce the need for landfill disposal capacity and has the potential for additional substantial GHG reductions. The SCWMA is currently in the CEQA-review stage for a new organics management (compost) facility, which will take two to three more years to be operational, but is intended to be able to handle these additional organic materials. This facility will be able to more than double the diversion and impact on the GHG generation potential to a cumulative total of over 140,000 metric tons of landfill disposal reduction annually and nearly 65,000 metric tons[2] of CO_2 equivalent. The new compost site being developed by the SCWMA is intended to provide the infrastructure necessary to make beneficial use of this material. The subcommittee believes that it is critical for the LTF to support the SCWMA's efforts to find a new, permanent compost location and get it operational.

As noted previously, treated wood and carpet/carpet padding are materials that are in our waste stream in relatively large quantities, have significant diversion challenges and would be most efficiently managed through an approach that includes participation of the producers and retailers of these products, in an effort separate from implementation of the new organics management program.

As stated in the introduction, this report was created to inform the LTF of the diversion potential of organic materials currently landfilled. As can be seen from the information presented above, this material is not insignificant from the perspectives of tonnage or GHG generating potential. This report highlights potential solutions, but is not a comprehensive list nor is it a given that the reductions in quantity and GHG emissions will reach the levels shown in Table 1.

Recommended Actions:

The subcommittee recommends that the LTF forward this report to the Board of Supervisors, the Sonoma County Waste Management Agency, and the Sonoma County/City Solid Waste Advisory Group. The subcommittee believes the information presented in this report should be considered when making decisions related to our solid waste management system and reducing GHG emissions in Sonoma County. The subcommittee recommends an immediate effort by the SCWMA to address the materials in the waste stream that can be recycled and composted now, as diversion of these materials can be done quickly and will have a significant impact on outhaul costs in the short term, as well as future waste disposal options in the future. Future

[1] GHG potential is not actual reductions and should not be compared to the GHG reductions quantified in the Sonoma County Community Climate Protection Plan, as the final GHG impacts will vary by management system and diversion effectiveness. The GHG potential value is useful for evaluating relative GHG impacts of various discarded materials.

[2] Ibid

work should also include an analysis of the GHG reduction, as well as the cost, for each management option considered (e.g. anaerobic digestion would reduce the food GHG impacts by X tons while aerobically composting that same material would reduce GHG by Y tons). The subcommittee recommends further research on non-destructive energy production from food materials such as using digesters at existing wastewater treatment plants or a new anaerobic digestion facility.

The subcommittee recommends that the LTF include treated wood and carpet/carpet padding as materials to be managed using an approach that includes participation and more responsibility from the manufacturers and retailers of these products.