



OFFICE OF THE CITY MANAGER

SUSTAINABILITY DIVISION

CITY HALL

10300 TORRE AVENUE • CUPERTINO, CA 95014-3255

TELEPHONE: (408) 777-7603 www.cupertino.org

SUSTAINABILITY COMMISSION MEMO

Meeting: January 19, 2017

Subject

Sustainable Strategies for Recycling and Waste Management.

Recommended Action

Receive information, evaluate strategies, provide comments to staff as specific sustainable strategies are implemented.

Description

Waste disposal creates emissions when organic waste (e.g., food scraps, yard trimmings, paper and wood products) is buried in landfills and anaerobic digestion takes place, emitting methane. Additionally, extracting and processing raw materials for consumer products, distributing them to consumers and disposing them creates greenhouse gas emissions (GHG). In Cupertino, approximately 2% of GHG emissions are associated with solid waste generation and disposal in landfills.

Recent efforts to reduce long-term waste generation have incorporated the principle of zero waste, with the goal of being able to reuse, recycle, or compost all disposed products. Implementation programs to achieve zero waste may include community-wide recycling, organics collection (e.g., food scraps, compostable paper), and green design to minimize construction-related waste. Business procurement policies can also be developed to give preference to materials that support a zero waste goal. Paperless policies can incorporate technological hardware and software to minimize office paper waste. Manufacturing processes can be designed to eliminate supply stream waste and reduce operating expenses. A combination of these practices can potentially lead to lower landfill-related emissions, and help to extend the useful operating life of local landfills. The measures included within the CAP Solid Waste Strategy provide total GHG emission reduction potential of 275 metric tons CO₂e/year in 2020, and 1,300 metric tons CO₂e/year in 2035.

This represents approximately 2% of total local CAP measure reductions. Measures identified in the CAP for the reduction of solid waste are:

Measure	Goal
C-SW-1 Zero Waste	Maximize solid waste diversion community-wide through preparation of a zero waste strategic plan.
C-SW-2 Food Scrap and Compostable Paper Diversion	Continue to promote the collection of food scraps and compostable paper through the City's organics collection program.
C-SW-3 Construction & Demolition Waste Diversion Program	Continue to enforce diversion requirements in City's Construction & Demolition Debris Diversion and Green Building Ordinances.

Discussion

The Franchise Agreement provides the Franchisee (Recology) the exclusive privilege (with some exceptions) to collect and process recyclable materials, compostable materials, construction and demolition debris, and garbage. Diversion of waste from landfills is specified in the Franchise Agreement and targets include:

1. 75% waste diversion rate by population (set by CalRecycle) for calendar year 2015, and;
2. 75% waste diversion rate by employment (set by CalRecycle) for calendar year 2015, and;
3. 60% diversion of commercial waste managed by Recology by November 1, 2016.

To date only the second target has been met. This is despite the implementation of the first two tiers of the City's mandatory commercial organics recycling ordinance in September 2015 and January 2016 that required large and medium food-generating businesses to separate organic materials. Commercial waste diversion is currently averaging 45% per month (up from 41% in 2014). CalRecycle reported that the City achieved a 75% diversion rate by employment and a 65% diversion rate by population, respectively for 2015.¹

For Cupertino recycling and waste management to become more sustainable (and meet diversion goals), staff has concluded that significant program changes are needed.

¹AB939, regulated by CalRecycle requires 50% diversion. AB341 sets a statewide goal of 75 percent recycling, composting or source reduction of solid waste by 2020. Cupertino is exceeding this requirement.

Improperly sorted materials at the point of collection and improved recycling of food scraps are the best opportunities to affect change. Future efforts need to be focused on two specific improvements. The first is containers that better assist businesses and homes with recycling. The second is a refined food scrap collection and processing program. Desired program characteristics will include:

- Simplified collection of commercial recycling
 - Decrease materials going to landfill
 - Convenience to businesses
- Improved cart configuration of residential recycling and solid waste containers
 - Split carts similar to the City of Sunnyvale
 - Encourages more recycling
 - Increases value of what is being recycled
- Processing of garbage to collect improperly disposed recyclables
- Maximum diversion of organics and food scraps
 - End product finished to highest beneficial use
- Minimize GHG emissions by
 - Reducing travel distance to processing sites
 - Utilizing process treatments that make the highest and best use of all organics collected.
- Minimize collection costs and impacts by considering
 - Pilot programs for commercial and residential customers
 - Partnering with neighboring public agencies
- Delivery of garbage (anything that is not being recycled or reused) to Newby Island until November 2023 (end of the contract term).

Staff has met with Recology to discuss resources available to develop these desired program collection and processing characteristics. Recology has informed staff they will support the City with any program to increase diversion by providing collection services and maintaining existing processing services only. Recology is not interested in expanding processing services.

Staff and the City's waste diversion consultant (For Sustainability Too) have identified a minimum of three preferable processing options to best meet the measures of the CAP and the complimentary program characteristics described above. Another option, while not preferable, is to continue processing of various materials as currently provided by Recology.

1. SMaRT (Sunnyvale Materials Recovery and Transfer Station)

The SMaRT Station serves the City of Sunnyvale and the SMaRT Station agency partners, Mountain View and Palo Alto. Cupertino has the opportunity to become an agency partner of the SMaRT Station. This material recovery facility processes all streams of materials including recyclables, yard trimmings and food scraps. It is located at 301 Carl Road in Sunnyvale, approximately 6.2 miles from Cupertino. This facility is approximately 23 years old, but underwent renovation in 2016 to modernize processing equipment. Recycled materials that are received at the SMaRT station are sorted by type and sold as commodities. Green wastes are pre-processed on site and then transported 46 miles to the Z-Best Composting Facility (a Zanker facility) located at 980 CA-25, Southeast of Gilroy, to complete the composting process. New equipment is being installed the SMaRT Station to pre-process food scraps on-site with plans for the processed mash to be hauled to Sustainable Alternative Feed Enterprises (SAFE) located 6.3 miles away from the SMaRT Station. Any contaminants in the collected materials are removed in the pre-processing stage at the SMaRT Station, so only clean mash is shipped to SAFE.

The SAFE facility in Santa Clara is located at 1060 Walsh Avenue near Scott Boulevard, approximately 7.5 miles from Cupertino. This facility is 2 years old and produces an end product that is rated preferable to energy produced by recovering methane from an anaerobic digester. Food scraps processed at SAFE meet USDA feed requirements for animals such as pigs, chickens and fish. The nutrient-rich finished product of SAFE is high on the EPA's food recovery hierarchy (Attachment A). The SAFE process does not generate methane gas, is not land intensive and conserves virgin resources that would otherwise have been expended to produce animal feed. Only food scraps, not recyclables, green waste and/or garbage, are processed at this facility.

The SAFE process utilizes a "spoke and hub" system. Food scraps are collected, contaminants removed, and the food is reduced to a liquid mash at the "spoke." At the "hub," the mash is converted to the finished animal feed product. Presently, the only "hub" of the system is at the SAFE facility in Santa Clara. The only "spoke" is at the Mission Trail corporation yard (also in Santa Clara) where food wastes collected from residents in the City of San José and businesses in the City of Sunnyvale are processed and delivered to the "hub." The Mission Trail spoke currently does not have the capacity to accept Cupertino food wastes. To increase capacity, additional "spokes" at added locations are planned by SAFE. The City of Sunnyvale has approved the installation of a "spoke" at the SMaRT Station to accept both residential and commercial food scraps.

If included in a future Cupertino program, the SAFE facility system would reduce GHG emissions of processed organics and the end product would have a higher use than compost. Diversion of materials away from landfill would be unchanged. Contaminants

removed from the food scraps at the SMaRT Station are landfilled at the Kirby Canyon Landfill in San José. If included in a future Cupertino program as an agency partner of the SMaRT Station, it is estimated that commercial recycling and food scraps diversion from the landfill would increase substantially while transportation costs and environmental impacts would be significantly reduced.

2. GreenWaste Recovery

The GreenWaste Recovery facility is located at 651 Charles Street in San José. The GreenWaste Materials Recovery Yard incorporates three distinct processing facilities, each designed with specific material types in mind to maximize chances of not missing anything. The largest facility is the Commingled Recyclables Processing Facility. This facility takes in single stream residential and mixed commercial recyclables and separates them into individual commodities, including cardboard, glass, aluminum and different plastics. These materials are baled and sent to processors to produce new products. Processing material at over 45 tons per hour, this plant will recover over 95% of the material it processes.

The MSW Processing Facility, or “Dirty MRF,” designed to take municipal solid waste (garbage) and remove recyclables and organic materials prior to sending the residue to the landfill. Two lines handle the vastly different wastes, those from single family homes and those from multi-family complexes. Almost 70% of the incoming municipal solid waste processed in this facility is sent to Z-Best for composting.

The Green Waste Processing Facility is designed to process the yard waste collected by GreenWaste’s San Jose collection fleet. Materials here are divided by size, with smaller materials sent to Z-Best to be transformed into organic compost, while larger materials are ground up and sent to cogeneration plants for fuel. Over 99% of the material processed in this facility will be made into a new product.

Organic material processed from this facility can be transported to the Zero Waste Energy Development (ZWED) facility at 685 Los Esteros Rd in San José, located approximately 15.5 miles from Cupertino, but only 7.8 miles from the GreenWaste MRF on Charles Street. The ZWED facility utilizes anaerobic digestion to biologically break down organic materials and generate methane gas during the digestion process. The methane is collected and converted to electricity. This facility is approximately 3 years old and to be effective, requires the incoming organic materials to be relatively free of contaminants (e.g. glass, plastics and batteries). At the current time, this facility does not have additional capacity to accommodate Cupertino’s food scraps. In late 2017, Phase 2 of ZWED is expected to be complete and additional capacity to accommodate Cupertino may become available. To determine if Cupertino’s organics stream is appropriate for

ZWED, a waste characterization study was needed to identify potential issues and if these issues could be resolved with education or enforcement. A recent audit of the compactor for organics and garbage at the Oaks shopping center, which serves several restaurants, resulted in findings of 80% clean organics and 20% residual. The audit demonstrated that Cupertino's organics stream is well-suited for ZWED, should capacity become available. Contamination removed from ZWED is taken to the landfill. Only food scraps and yard trimmings, not recyclables or garbage, are processed at this facility. If included in a future Cupertino program, this facility would reduce GHG emissions of processed organics. Diversion of materials from landfill would be unchanged.

3. Newby Island Resource Recovery Park and Landfill

The City of Cupertino is under contract, until November 2023, to take all of its municipal solid waste (MSW) aka "garbage" to Newby Island Landfill, which is located at 1601 Dixon Landing Road in San José. The Newby Island Resource Recovery Park provides comprehensive recycling for its franchised commercial hauling customers. The Newby Island materials recovery facility (MRF) receives all of the commercial organics and recyclables Republic Services (owner of Newby Island) collects in San José, roughly 225,000 tons per year, in three streams: commercial organics, mixed recyclable materials and source separated recyclable materials. Each of these streams is processed on a separate line. The Recyclery at Newby Island is an 80,000 square foot recycling facility, constructed in 1991, and remodeled in 2012 at the start of Republic's commercial wet/dry (no garbage) collection contract with the City of San José. It is one of the largest recycling operations in the nation. The Newby Island Composting Facility maintains approximately 9,500 cubic yards on site to provide a consistent compost source for customers. Newby Island operates a Construction and Demolition (C&D) material processing facility that is capable of diverting approximately 90 percent of C&D material from the landfill. The facility can process wood, concrete, metals, soil, and asphalt.

4. Recology

Recology collects garbage, recyclables, yard trimmings, food scraps and construction & demolition debris in Cupertino. The table below summarizes where and how these materials are currently processed and the end product that results from the process:

Material	Process Location	Process Type	End Product
Garbage	Newby Island ⁽¹⁾ (San José)	Landfill	None
Recyclables	GreenWaste Recovery (Charles St., San José)	Sorting	Various Commodities

Green Waste & Food Waste	Rogers Avenue (San José) then transferred to Blossom Valley Organics (Tracy)	Windrow	Compost
Construction & demolition	Newby Island (San José)	Sorting	Clean dirt, concrete, asphalt, untreated wood

(1) City is contractually obligated to take garbage to Newby through November 2023

Some of these processes, particularly those related to removing contamination from recyclables and treatment of organics, can be improved. CAP measures will not be achieved and the 75% CalRecycle and 60% commercial diversion goals were not met. Costs to customers that have their materials processed by Recology would not increase.

Next Steps

The current Franchise Agreement expires in January 2019 and includes a provision that allows the Franchisee an option to negotiate a new longer term. Based on current performance of Recology as a hauler, quality of services delivered and overall value, staff will recommend to Council a new exclusive collection agreement with Recology. This recommendation may occur as early as September 2017 and will be preceded with an amendment to the current Franchise Agreement to be considered by Council the evening of March 7, 2017. Amendment terms will include:

- Residential pilot of split containers
- Multi-family waste separated from commercial waste
- Work with City to transition to a different processor
- No source separated organics are to go to landfill

The capacity, efficiency and cost to process Cupertino recyclables at potentially available processing facilities is not fully known. To determine which facility may best fit Cupertino needs, a request for qualifications w/ proposal (RFQ&P) has been drafted. The RFQ&P will be for processing only. It will solicit facility specific information on:

- Description of product streams that can be processed
- Projected diversion rates
- Sustainability benefits of processing, end use and miles driven from Cupertino
- Diversion efficiency
- Cost of processing
- Ability to minimize residuals

The RFQ&P will also include information on how proposals will be evaluated. Staff's goal is to have the RFQ&P out by the end of January 2017. Receipt date will be March 28, 2017.

The simplified collection of commercial recycling and the pilot for residential split cart collection will start approx. May 2017. The pilot will have a duration of approx. 100 days and will run to August 2017.

Council consideration of a processing agreement and separate collection only agreement with Recology may occur as early as September 2017. In April 2017, the Sustainability Commission will be asked to review RFQ&P submittals by processors. At this time, staff will also provide an implementation update of the residential pilot. In August 2017, with the findings of the residential pilot provided, the Sustainability Commission will be asked to review and recommend staff's negotiation with a potential processor to Council.

Sustainability Impacts

CalRecycle reports that of the nearly 35 million tons of waste that reach California's landfills each year, approximately 80% could be recoverable through expanded recyclables, organics and construction and demolition debris collection programs. Though Cupertino is exceeding existing state mandates for waste diversion, new technology and expected future mandates have encouraged the City to strive for improvements that will help the City achieve its zero waste targets recommended by Council in the City's Climate Action Plan, and develop a Zero Waste Policy which will be presented to City Council for approval during the first quarter of 2017.

Fiscal Impact

There will be no immediate fiscal impact. Diverting organics and recycling from the landfill lowers landfill disposal fees and postpones the purchase of new landfill space. Additional costs to implement new processing alternatives are uncertain until the RFQ&P process is complete. The sustainable benefits and added costs of new processes will be evaluated with recommendations from staff to the Sustainability Commission.

Prepared by: Roger Lee, Assistant Director of Public Works and Cheri Donnelly,
Environmental Programs Manager

Attachment A: EPA's Food Recovery Hierarchy

ATTACHMENT A – EPA’S FOOD RECOVERY HIERARCHY

