



The True Cost of Recycling: How California Communities are Financing and Siting Recycling Infrastructure



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ILG Recycling Resource Center

www.ca-ilg.org/recycling-resource-center

The ILG Recycling Resource Center includes resources, webinars and case examples to help local government finance and site recycling projects and programs in their communities. The commercial recycling section includes resources to help local officials increase commercial recycling in their communities.

Key resources include:

- *Connecting the Dots: Recycling, Climate and Economic Development* offers an explanation of the connections between recycling, climate and economic development.
- *Financing Recycling Programs and Facilities: Understanding Options and Resources* offers an overview of the current methods that local agencies use to fund their recycling programs and how the public and private sectors are financing recycling facilities.
- *A Primer on Recycling Facilities* offers a basic description of recycling collection and processing systems, the types of recycling facilities and the potential benefits to the communities where they are located.

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Financing Recycling Programs and Infrastructure

The exciting news is that California residents and businesses are recycling more, due to a combination of customer education, environmental awareness, local and state mandates and pricing incentives. The health, economic and climate benefits of increased recycling rates are great, but the risks to the revenues that pay for the service are also real. As more people recycle more material and reduce the size of their garbage containers, revenues to support recycling services and basic solid waste systems have and will continue to decline. Over the past 20 years, as a way to encourage recycling, many agencies and solid waste and recycling service providers have not charged separately for recycling services or charged a lower rate than the actual cost to provide the service. In addition, in some situations, largely related to conservation incentives in pricing strategies, revenue from larger volume solid waste users have subsidized the recycling services provided to lower volume customers.

As participation in recycling programs expands and users make commensurate reductions in garbage service levels, the revenue from refuse collection services will no longer be sufficient to support “free” or below-cost recycling services without significant increases in garbage rates. The most common way that “free” recycling service is provided in California is by having the charges for collection and processing of recyclables (including organic wastes) included in one overall sanitation or solid waste charge. This has the effect of masking the true cost of the elements, causing some customers to believe that recycling is “free”. Those communities that use a bill that show all services and costs/fees for each may have more options to address this problem than those whose residents pay a flat “garbage bill” rate.

In the future it will be important for jurisdictions and solid waste agencies to balance their rate setting. Rates will need to cover the costs of services, encourage diversion from both the ratepayers and contracted haulers, comply with local and state requirements, promote revenue reliability and reduce rate volatility.

Annual average rate increases do not always cover the change in actual revenue received as residents and businesses become better recyclers. These gaps may become more prevalent and the magnitude of the gaps will increase with the increased focus on multi-family, commercial recycling and organics. In many cases recycling and organics processing costs exceed landfill tip fees. A worthy conceptual approach to rate setting includes determining revenue requirements, allocating costs both by sector (cart customers, bin customers, roll-off customers) and then by service (garbage, recycling, organics), evaluating pricing strategy (i.e. how much incentive/subsidy is required to maintain participation in recycling programs), and assessing customer-specific impacts. This may include fixed and variable rate components and rebalancing rates between sectors and/or services to present a more equitable and less volatile pricing strategy to ratepayers.

The magnitude of the impact of the decline in revenue (and the implications of hidden recycling costs) will vary among agencies, as will options to consider for responding. Consumer education, long term rate stabilization policies, charging the true cost of all service and identifying all elements of the “garbage bill” are some options illustrated in the following case stories.

City of Clovis

The City of Clovis implemented a residential curbside recycling and yard trimmings collection program in 1995 with services provided through a contract with BFI (later Allied Waste and Republic Services). In 2013, Clovis added food scraps to its yard trimmings collection to allow residential customers to divert their food from the landfill to a composter. In Fiscal Year 2013/14 the program recovered 6,357 tons of recyclables and 18,311 tons of mixed residential organics. Each week an average of 76 percent and 70 percent of residents would set out their recycling and organics respectively.

The city provides the garbage collection service and bills the customers for all services. They itemize the per household per month cost of recycling (\$6.74/month), greenwaste (\$9.88/month) and refuse (\$44.48 for a 48 gallon bin) collection on the customers' bill. This allows the city to communicate the cost of all of the services provided to customers and avoids the common misconception among residents that "recycling is free." In addition, this allows the city to relay specific changes in the cost of those services over time to customers. Ultimately, this sort of funding structure for programs ensures the long-term sustainability of funding for the program. Residential customers are not allowed to turn off or unsubscribe to recycling or greenwaste services. The city periodically receives some calls requesting to do so however, these calls are few and far between.



In 2015, the city conducted a competitive RFP process for these services for the first time in 20 years. As a result, the city is experiencing a reduction of approximately five percent in the cost per household per month and benefiting from increased revenue via the revenue sharing agreement with the contractor. The RFP can be found here: www.ca-ilg.org/document/city-clovis.

The city passed a municipal code ordinance in May 2015 that makes it "mandatory for every occupied property with the city to receive at least the city-provided basic service capacity and billing therefor." This ordinance affects all commercial, industrial and residential and can be found here: www.codepublishing.com/CA/Clovis/ see 6.3.05.

For additional information contact the City of Clovis Solid Waste Division at: (559) 324-2600

City of Fresno

In 2010 and 2011 the City of Fresno designed and implemented significant changes to the way the city collects multi-family and commercial solid waste, recycling and organics (both green waste and food waste). Through this process, the city and consultants competitively procured and implemented a number of programs and services to support the city's financial and zero waste goals. Among those new programs was the expansion of recycling to all multi-family and commercial customers in a variety of service levels and service frequencies, the implementation of a commercial mixed organics collection program, and the addition of dedicated recycling staff to provide hands-on technical assistance to businesses on how best to maximize their recycling and composting opportunities.

The city continues to service residential recycling while the commercial customers are now served by private operators under franchise contract with the city. The city owned commercial solid waste assets were sold to generate revenue and the commercial haulers pay a fee to the city. Under this system, contracted private haulers are required to collect organics.

Along with the new service providers and programs the process created a more sustainable funding system to create incentives for both the service providers and the customers to fully implement the recycling and organics collection programs. Under this new funding system, customers would have separate charges on their invoices for the recycling and composting services based on their service need. This would eliminate the revenue loss to the service provider that is typically seen in "free" recycling systems when haulers sell "free" recycling service and reduce the service level for trash (where they do get to charge a fee). At the same time, the charges for recycling and



organics maintain discounts for the customers, relative to the same level of trash service, so that customers would experience some rate savings by reducing trash volume and adding recycling and composting services. Recycling service is offered at a 50 percent discount and composting is offered at a 20 percent discount (relative to the same volume and frequency of trash service).

In the two years following the implementation of the new system, service providers approached and educated more than 7,000 potential sites for expansion, which dramatically increased the implementation of recycling and/or composting programs for thousands of commercial and multi-family customers in the city.

Despite the wide variety of acceptable green waste materials allowed (fruit and vegetables in addition to yard waste and wood) the amount of green waste has reduced over recent years due in large part to changes in landscaping / drought adaptations. The city is monitoring what the implications are to its finances and the statewide 75 percent diversion goal.

For additional information contact the City of Fresno Department of Public Utilities Solid Waste Division at: (559) 621-1452

Kern County

Kern County operates seven landfills, eight transfer stations and three special waste facilities serving the 11 cities and all unincorporated areas of the county. The county has a contract with a hauler for the collection of waste and recycling in unincorporated areas and each city provides trash and recycling pickup within its city limits. Prior to 1987 Kern County did not charge an entrance fee (“gate fee”) at its landfills. The county’s general fund paid for the cost of landfill operations and residents could dump at no charge. Realizing this was no longer cost effective, the county decided to collect money via a fee on the property tax bill - called a land use fee.

The land use fee covers the cost of all dumping at the landfill for residents (commercial entities pay a separate collection and gate fee). When a resident hauls their own trash and recycling to a landfill they pay no fees. Similarly, trash haulers that pick up residential waste do not pay a dumping fee, as the resident has already paid the fee through their property taxes.



The haulers only charge residents for the trash and recycling carts and the actual cost of picking up and transporting the waste. In addition to waste disposal, the land use fee covers the costs of recycling at the landfill and transfer stations, the county household hazardous waste program, public education and other services that the county offers to all residents. The land use fee system provides a predictable income stream for Kern County to operate these various programs year to year.

The innovative hybrid system has served the county well for over 21 years. Commercial users are satisfied with a per-visit fee structure and the county has a steady and predictable revenue stream to operate waste disposal, recycling and other programs for residents. Ultimately, illegal dumping in the county has been kept to a minimum.

For additional information contact Kern County Waste Management Department at: (661) 862-8900

City of Chula Vista



Chula Vista has some of the lowest garbage rates in San Diego County. However, the city is still able to fund successful programs that address illegal dumping, hazardous waste, food waste, back yard composting and sustainability efforts of local businesses with money raised through a state authorized fee. The city's AB939 fee, a five percent fee that is applied consistently to all waste services, raises \$1.5 million annually and contributes significantly to achieving its waste reduction goals.

The fees were authorized by California's Waste Management Act of 1989 (AB939), which required local agencies to divert 50 percent of waste from landfill disposal by 2000. In order to fund compliance, the California Public Resources Code was amended to authorize cities or counties to "impose fees in amounts sufficient to pay the costs of preparing, adopting and implementing an integrated waste management plan." Chula Vista's city council adopted a 5 percent AB939 Fee on all services in 2007.

What makes Chula Vista's fee unique is that Chula Vista's five percent fee is applied consistently to all services, including recycling and yard waste and hasn't been changed since it was adopted in 2007. The way in which Chula Vista has set up their fee structure has created a consistent and sustainable funding stream which allows the city to implement innovative programs that support its waste management goals. Lynn

France, the Environmental Services Program Manager for the City of Chula Vista says "by making the AB 939 fee a percentage rather than a set dollar amount, the fee adjusts with the CPI adjustment the hauler receives and allows the city the flexibility to adjust our programs accordingly."

With the money raised from the AB 939 Fee, Chula Vista is able to employ a team of four recycling specialists and one office specialist to implement the outreach and education programs that make the city one of the leaders in waste reduction. The City of Chula Vista has recently launched a 600 home pilot food waste program and has enrolled 170 local businesses in its Clean Business Program. In addition, the city is able to offer a free bulky item pick up on a weekly basis. Residents can call a hotline to request a free at home pick up of items such as sofas or mattresses. For commercial businesses, the service costs just \$4 per item. In 2014, haulers collected 55,869 items, some of which may have ended up abandoned on local streets.

The passing of Proposition 218 (1997), has added complexity to the process of imposing AB939 Fees in some cities and counties. Prop 218, or the "Right to Vote Act" details situations in which the public is required to be consulted, or participate in, decisions about a variety of fees and taxes. There is widespread disagreement about when and how Proposition 218 applies to AB939 fees. As a result, each city's attorney must evaluate the language of the California Constitution amended by Proposition 218 and interpret how it may apply for a given proposal. To learn more about proposition 218 watch ILG's webinar on [Financing Recycling Programs: Applying Existing California Law](#).

For additional information contact the City of Chula Vista, Environmental Services Division at: (619) 585-5790

Alameda County

The question of how to dispose of hazardous household waste is a concern every jurisdiction faces. The Alameda County Waste Management Authority (Authority) has addressed this through the use of solid waste disposal fees. In 1991 the Authority established a local facility fee of \$1.50 per ton of solid waste disposed, increasing it to \$2.00 per ton in 2008 and \$4.34 in 2010.

Disposal revenues decreased steadily, as landfill diversion efforts continued to reduce the amount of solid waste disposed in landfills. In response, the Authority sought out new funding sources.

The Waste Management Authority board directed staff to hold a series of community meetings and hire a consultant to evaluate revenue options. Several public stakeholder meetings were held in October 2013 to gather feedback from single-family and multi-family property owners about the fee. After months of dialogue the board adopted a new \$9.55 per home fee for the disposal of household hazardous waste in May of 2014.



Revenue from the fee is used to support the countywide household hazardous waste program, which provides safe, legal, environmentally sound collection and disposal services for residential household hazardous waste such as paint, solvents and pesticides. The fee will support expanded services to all residents of Alameda County. The Authority was concerned that without these services, most household hazardous waste would be illegally and improperly disposed of (e.g., abandoned on streets, poured down drains, placed in garbage or recycling carts). Improper disposal is often dangerous, litters streets and sidewalks, and can detract from residential property values.

The fee was structured to be reduced if program revenues or cost offsets from other sources are greater than projected. The fee does not go up with inflation or for any other reason, and will end on June 30, 2024.

For additional information contact Alameda County Waste Management Authority at: (510) 891-6500

City of Santa Monica

The City of Santa Monica prides itself on being an environmental leader. The city's state-of-the-art waste diversion strategies contributed to the city reaching a 74 percent diversion rate in 2009. Always looking for ways to improve, the city is now working towards implementing a Zero Waste Strategic Operations Plan. The city defines zero waste as a per capita disposal rate of 1.1 pounds per person per day by 2030. The goal in 2030 is to divert 95 percent of all waste generated within Santa Monica from landfills.

The plan splits changes into short, medium and long term goals which build upon one another until the ultimate objective is achieved. Although changes start small, they get progressively more difficult. It envisions mandatory recycling of plastic water bottles, cardboard, yard trimmings and disposal of construction debris that can be recycled or reused. The plan also requires diversion for homes and hotels. The plan commits local government to the same 95 percent diversion rate as its residents, and plans for an 80 percent diversion rate at city facilities by 2015 as well as recycling and composting at all municipal facilities by the end of 2015.

Program	Incremental Annual Program Savings		Program Tons Diverted
	Low	High	
Residential			
Weekly Organics and Recyclables Collection; Bi-Weekly Refuse Collection	\$ (157,402)	\$ (137,671)	504
Wet/Dry Collection	\$ (295,135)	\$ (252,622)	562
Multi-Family			
Weekly Organics and Recyclables Collection; Bi-Weekly Refuse Collection	\$ (229,434)	\$ (201,057)	2,694
Wet/Dry Collection	\$ (94,878)	\$ (81,319)	1,615
Commercial			
Behavior Change Marketing	\$ (101,132)	\$ (44,065)	2,831
Wet/Dry Collection	\$ (210,325)	\$ (185,492)	2,620

Getting to zero waste is more than just a percentage. It requires a change of perspective. Elements of the plan are meant to persuade residents to sort their waste rather than just throwing away items that could be reused or recycled. To help residents understand which items are recyclable and which are not the city recently developed the "My Waste" smartphone app that provides disposal instructions for more than 1800 materials.

Some policies are inherently expected to save money compared to existing ones. The bi-weekly refuse collection, expected to begin during the medium term phase (2016-2022) would cut down on pickup costs, as would the concept of wet and dry collection, which means separating out wet materials from dry ones. The most cost effective programs are those that result in net cost savings.

For additional information contact the City of Santa Monica, Resource Recovery & Recycling Division at: (310) 458-5706

Sacramento County



Sacramento County is receiving approximately \$1 million per year after getting some help machine and hand-sorting its curbside recyclables. The county has contracts with Waste Management Incorporated (WMI) and Recycling Industries (RI) in which the companies pay the county a market based rate for the commingled recyclables collected from its residential customers.

The arrangement works like this: county trucks deliver curbside comingled recyclables, also known as single stream recyclables, in amounts of about 12,000 tons to WMI and about 24,000 tons to RI's material recovery facilities (MRFs) each year.

After arriving at the sorting station which is centrally located along the truck routes, the curbside recyclables go through a series of rotating screens mounted on shafts. One set allows flat items, such as paper and cardboard, to pass through into a bin while other objects bounce back. Those items that bounce back are then run through electromagnets which pick up the metal and an "eddy current" belt which bounces the aluminum into another pile. The remaining items then go through a hand sorting process. WMI and RI sort and bale the various materials and sell them on materials markets.

The price the county receives from WMI and RI is market based, which means it can fluctuate dramatically. Prices received through this contact can range from \$15 to \$40 per ton of materials. While unpredictable, the market-based rate has benefitted the county. Since switching to a market based rate from a flat rate, the county has almost doubled the monies it received from this arrangement. By organizing the contracts with a market based rate, the county takes on some additional risk, but it is relatively low because the county did put in a floor rate. In January of 2015, the market was at its lowest point of \$10 per ton, but the county still received \$15 per ton because of its negotiated floor price.

The \$1 million dollars received through these contracts helps offset the county's \$4 million annual cost of collecting single stream recycling. The rest of the cost is incorporated into the county's garbage rates, so the county ends up cost neutral. Sacramento County runs 70 trucks each week with 35 trucks collecting garbage and another 35 trucks alternating between green waste and recyclables. This means that two trucks are going to each house, each week.

"This single-stream recycling process is a critical component to meeting our state mandated diversion requirements. More importantly, instead of going to a landfill, these materials are re-used in newly manufactured products." Paul Philleo, Director of the County's Department of Waste Management and Recycling.

If the county was not recycling the materials, it would be paying an additional \$1 million to dispose of the materials, which actually creates a cost avoidance of approximately \$2 million annually.

For additional information contact the Sacramento County, Department of Waste Management and Recycling at: (916) 875-6789

Advice and Lessons Learned Regarding Financing Recycling Facilities and Programs

- An annual land use fee must reflect the service provided. When first setting up the system, staff must do studies to establish the average annual amount of waste generated by different categories of users. An agency should also anticipate occasional surveys to adjust for changes in waste generation.
- It is extremely difficult to set a “fair” land use fee for commercial customers and therefore, these fees are not recommended for these users.
- Charging an annual fee (e.g. the land use fee and household hazardous waste fee) is a convenient way to support services that apply to all customers (like administrative functions, data collection and reporting, public education, household hazardous waste disposal, etc). This way you have a steady funding stream.
- Providing community education and awareness programs is important. Some illegal dumping still occurs despite free disposal of large items (that do not fit in standard waste bins) at landfills or collection centers, and free bulky pick-up through the waste haulers. Education and awareness programs minimize illegal dumping.
- A land use fee can be confusing for residents as they pay for disposal to the county through the fee, but pay their city or haulers for collection service.
- Some people support an annual fee, but oppose the fee being assessed on their property taxes. Initiating such a collection system can be politically difficult.
- The land use fee does not provide a clear price incentive for residents to decrease waste and increase recycling. Staff can use education and outreach to encourage customers to recycle and separate their load at a landfill or transfer station.
- Use public financing strategically; private financing is primary.
- Engage stakeholders up front, think through potential issues.
- It may be necessary to have long term exclusive franchise agreements in order to obtain financing, including interest rates, terms, and amortization schedules which minimizes city rate increases.

Siting Recycling Infrastructure

Understanding how to site recycling, processing and manufacturing facilities can help cities and counties get the full benefit of the economic development and greenhouse gas reductions recycling facilities can produce. California cities and counties determine what areas in their communities are zoned for residential, industrial and commercial uses and which conditions to impose on individual projects. All recycling facilities require land use permits from the host city or county and must comply with the California Environmental Quality Act to make sure that the environment is protected. Depending upon the type of facility, recycling facilities may also need to obtain permits from the local enforcement agency (usually the city or county), which regulates solid waste facilities on behalf of the California Department of Resources Recycling and Recovery (commonly referred to as CalRecycle), and local air quality and regional water quality boards. The following case stories illustrate some of the innovative recycling facilities being sited in cities and counties across California.

CleanWorld (Sacramento)

In 2011, the County of Sacramento found itself to be the owner of a fully permitted transfer station that wasn't really being used to its full capacity. In order to turn the unused station into a useful asset, the county initiated a solicitation for companies interested in doing a waste conversion project. Two companies, CleanWorld and Atlas Disposal submitted applications and eventually partnered to create a bio digester and fueling station on the property.

The project received grants from the California Energy Commission and \$3 million in loans from CalRecycle's Recycling Market Development Zones Program to create the digester that now has the capacity to process 40,000 tons of food waste per year from area restaurants, food processors, hospitals, international airport, elementary schools and supermarkets.

Several agencies throughout the region benefit from the 730,000 gallons of biofuel produced annually. The biofuel powers all of the natural gas trucks in the local trash and recycling collection fleet (24 of 55 trucks), as well as a portion of the city's and county's waste fleets, security cars, six California State University Sacramento commuter buses, two local catering companies and local school buses. The waste gas that is not clean enough to use for transportation fuel, is used to produce one million kilowatts (kW) of electricity which powers both the biodigester facility and the fueling station. The residual digestate is used to produce eight million gallons of organic soils and fertilizers for Sacramento area farms.

For additional information contact the CleanWorld at: (800) 325-3472



City of Oroville



Graphic Packaging International, Inc. (GPII), an international manufacturer of paperboard products is the largest manufacturer of recycled paperboard in the U.S. The company, looking to expand and center its west coast operations in California, has been working with the City of Oroville and the Federal Aviation Authority (FAA) since 2012 to purchase land to expand the capacity of its current plant. Expanding operations in Oroville will increase the amount of recycled materials GPII can process. These investments will keep manufacturing jobs in the state and help California reach its goal of increasing recycling and composting and reducing solid waste 75 percent by 2020.

In California, GPII's operations form a continuous loop. Recycled paper and paperboard (also called recovered fiber) is collected from approximately a 200-mile area around Santa Clara. The recovered fiber is taken apart and manufactured into 100 percent recycled paperboard. The paperboard is sent to Irvine and Oroville to be processed into folding cartons, which are used by local beer and tissue manufacturers in California.

As the expansion requires 200,000 square feet and a significantly large monetary investment, the company would prefer to own the land versus having a long-term lease. Mayoral

support for the project has helped facilitate meetings between various partners and maintain momentum.

Oroville was formerly located in a now-dissolved enterprise zone and is currently in a Recycling Market Development Zone (RMDZ). Designated enterprise zones provided tax incentives to businesses to encourage investment and job-creation to economically distressed areas in California. With the repeal of the Enterprise Zone Act and the dissolution of enterprise zones by the end of 2014, out-of-state locations became more attractive. In order to help level the playing field among locations in California, Nevada and Oregon, the consultant helped GPII apply for the new California Competes Tax Credit. The company was awarded the tax credit in June 2014. Additionally, to help keep companies in California, the Public Utilities Commission approved an economic development rate for power purchases by qualifying facilities – a 30 percent reduction in electricity rates over the next five years. The tax credit and the economic development rate have helped persuade GPII that staying in Oroville may be worth the wait.

For additional information contact City of Oroville at: (530) 538-2401

City of Oceanside



The City of Oceanside in northern San Diego County recognized early on that traditional methods of green waste disposal such as open burning or landfilling are inefficient and environmentally unsound. In an effort to develop a more environmentally and economically sustainable waste management approach the city partnered with Agri Service Inc, a recycling and compost facility operator, to develop an innovative public-private recycling program.

In 2013 Agri Service received a \$1.3 million Recycling Market Development Zone (RMDZ) loan from CalRecycle to expand the amount of organic material it can divert from landfills from 49,976 tons to 77,800 tons per year. The loan was used to install a state of the art aeration system to reduce odor, one the major factors affecting the ability to site a compost facility in California. The infrastructure improvements have improved efficiency and product development, allowing Agri Service to increase its workforce from 18 to 22 people.

Since its inception, the compost facility has processed over 1.5 million tons of green waste primarily from within the city into high quality soil amendments, mulch and potting mixes.

Curbside green material accounts for about a third of the feedstock that arrives at the compost facility. Additional feedstock is added when local landscapers and residents bring their yard clippings to the compost facility and pay a tipping fee for disposal. This tipping fee ranges from free (for feedstocks that can be made into high value products) to \$40 per ton, which is about 30 percent less than local landfill fees.

The compost facility staff processes the material to produce soil amendments, mulch products and engineered soils. These products are sold to homeowners, landscapers, farmers, golf courses and public works departments. In addition, Agri Service brokers material from other facilities to help build demand for locally produced organic products. Oceanside residents have free access to the products because of an agreement Agri-Service has with the city. The public-private partnership model between Agri Service and the city demonstrates that what can be good for the planet, can also be good for people, the economy and community.

For additional information contact the City of Oceanside, Solid Waste and Recycling at: (760) 435-4500

City of Perris



One of the largest anaerobic digestion facilities in the world is under construction in the City of Perris. The 52 acre project is being developed in four phases, with the first coming online in October of 2015. At full build out, the project will have the capacity to convert over 320,000 tons of organic wastes into Renewable Natural Gas (RNG), the cleanest of all transportation fuels, six times cleaner than traditional natural gas.

Subsequent phases will enable the facility to produce four million gallons of biogas each year. The company that is building the facility, CR&R, hopes to be able to clean a portion of the gas to stringent state standards so that they can inject it back into the Southern California Gas Company pipeline. If this occurs, CR&R will be the first in the state to accomplish this.

The City of Perris fully supported this project and expeditiously entitled the proposal in order to meet state grant deadlines, including providing assistance in getting approvals through the local Airport Land Use Commission. "The City of Perris is proud to have this state-of-the-art system in its city," says Clara Miramontes, Director of Development Services for the City of Perris, "This system will allow us to recover as much as 85-90 percent of the waste stream which dramatically improves our ability to meet the state's diversion mandate."

Previously residents of Perris, Costa Mesa, parts of Newport Beach and unincorporated

Orange County, serviced by the Costa Mesa Sanitary District (CMSD) disposed of their household waste in a single cart. The residential waste and recyclables (including green waste) were separated at a transfer station with most of the green waste being used as alternative daily cover at landfills. Using this process CMSD had achieved a 57 percent diversion rate.

Beginning in January 2015, residents were provided with a designated cart for food scraps and green waste for processing at a new anaerobic digester. Residents are being asked to put all food scraps, including meat, breads, produce and compostable bags in the new carts, with trash and recyclables remaining commingled in the old carts. Hauling services for commingled trash/recyclables and organics are provided by CR&R, using a separate truck for organics.

So far, rates for residents have only increased by \$1.91 per month. CR&R agreed to reduce rates for CMSD from \$125/ton to \$71.50/ton, offsetting the costs with the public funds the company received from the South Coast Air Quality Management District, CalRecycle, and a \$4.52 million grant from the California Energy Commission.

Many residents say they don't mind paying a little extra. A survey of 1,000 customers indicated that 41.4 percent of customers would be willing to pay more for collection services if it meant diverting more waste from the landfills. CMSD has engaged residents throughout this process, holding four town hall meetings and providing announcements on television, radio and through its company newsletter.

For additional information contact the City of Perris at: (951) 943-6100

Monterey Regional Waste Management District



Located just north of the City of Marina, the facilities of the Monterey Regional Waste Management District (the District) now include a new pilot project. Operational since March of 2013, this small anaerobic digestion facility boasts a 5,000 ton yearly input capacity and produces approximately 100 kW of electrical energy annually. This first-in-California “dry fermentation” anaerobic digester is fueled with a mix of 70 percent food waste from area restaurants and college campuses, and 30 percent yard trimmings.

The project is in the middle of its initial phase as a 5-year pilot project. The District explored anaerobic digestion as a method for processing the increasing volume of food waste received at the site and the desire of the local hospitality industry to keep this material out of the landfill and put it to better use. Zero Waste Energy (ZWE), LLC, was looking for an opportunity to prove the practicality of their new technology. The District agreed to host the pilot project and provide the site on land previously zoned for a

composting facility. In exchange ZWE provided the “SmartFerm” system for a five-year term without requiring the \$3 million purchase upfront. The District pays ZWE a fee of each ton of material processed and ZWE receives the revenue from electricity sales which supply the neighboring waste water treatment plant.

The gas produced by the process serves as fuel for a generator producing 100 kW of electricity. The electrical output sold “over the fence” is enough to replace 10 percent of the energy needed to run the adjacent waste water treatment plant. The digestate produced by the facility is given to a private firm who rents part of the district’s land for an on-site composting facility. This private firm is then responsible for all the marketing and sales, mostly to local vineyards, of the resulting compost.

Jeff Lindenthal, the Monterey Regional Waste Management District’s Director of Community Programs, says that the business community was instrumental in making this project a success. They were the driving force behind getting food scraps out of the landfill and into compost. The community is, “proud to know that their food waste is going to a state of the art facility where the methane is being converted into electricity for local use.” The District worked cooperatively with the hospitality industry to create an “Organics to Energy” brand and an informative website which showcases the project and the participating hospitality businesses sending their food waste to the program.

For additional information contact the Monterey Regional Waste Management District at: (831) 384-5313

The City of San Rafael

To complement its longstanding curbside recycling program, San Rafael implemented a curbside composting program in 2010. The city adopted a zero waste goal and strategic plan in 2011, which includes a recycling and reuse ordinance that requires a minimum of 70 percent of construction and demolition waste be recycled rather than disposed in a landfill. This, in part, has resulted in waste accounting for only two percent of the city's total greenhouse gas emissions.

The city is now partnering with its waste hauler, Marin Sanitary Service, and wastewater service provider, the Central Marin Sanitation Agency, on a food waste-to-energy project. Pigs and peacocks have been onsite at the Recycling and Resource Recovery Center for years, naturally composting the extra food scraps brought into the facility, but in 2014 the sanitation agency unveiled its new "big blue machine" digester which processes 50 tons of commercial and residential food waste from the city's restaurants and businesses, thus keeping it out of the landfill.

The program began in 2008 when San Rafael received a \$25,000 grant from Pacific Gas and Electric Company to study the possibility of creating a food scraps-to-energy plan. After conducting a waste study and launching a pilot program, the program is up and running. Under the program, restaurant workers place food waste in special carts that are picked up by Marin Sanitary Service drivers. The scraps are delivered to the transfer station, where they are ground into one-inch bits. The ground food is trucked to the Central Marin Sanitation Agency and dumped into a large vat, where it is combined with collected fats, oils and grease.

For additional information contact Central Marin Sanitation Agency at: (415)459-1455 or Marin Sanitary Service at: (415) 456-2601



The oily mixture is then pumped into the agency's anaerobic digesters, where bacteria break down the concoction into methane biogas and biosolids. The methane is piped through a filter that removes impurities before it is run through a generator at the wastewater treatment facility. The generated energy allows the agency to use less natural gas at the wastewater treatment facility, which results in a reduction of 1,723 metric tons of carbon dioxide greenhouse gas emissions and a fuel savings of approximately \$350,000 per year.

Currently, the economic advantages translate to ratepayers through a lower tip fee from the Central Marin Sanitation Agency - a fee which currently stands less than the landfill tip fee. The program remains financially stable because it is funded through franchise rates. To date, more than \$2.2 million has been invested into the program. The president of Marin Sanitary Service says that the program will ultimately serve about 75-percent of Marin County and save the public money because, as the program expands, Central Marin Sanitary Agency will need to purchase less energy from the grid.

To continue to entice more customers to participate the partners understand that they must show the direct benefit to the community in lower waste costs. For this environmentally focused city, success is also demonstrated by an increased diversion rate and a decrease in greenhouse gas emissions.

City of El Cerrito



The City of El Cerrito has constructed a Recycling Resource Center that is showcasing the true value of recycling and environmental responsibility. The “Center,” as it’s known, not only provides residents a place to recycle a wide range of conventional and hard to recycle items, it serves as the environmental heart of the city.

The LEED Platinum expansion was completed in 2013 on the same site as the city’s original facility that was set up by volunteers back in the 1970s. The expanded, state-of-the-art facility offers a number of energy-saving and waste reducing innovations that other recycling centers do not.

The Center accepts 28 recyclable materials including Styrofoam, a material most recyclers do not want. Workers run the Styrofoam through a “densification” machine that compacts a 50-cubic-yard bin of material down to about two cubic yards. While loose Styrofoam is a potential pollutant when dumped in landfills, compacted Styrofoam can be sold for reuse to manufacturers of picture frames and crown molding at about \$80 per pallet.

The Center also accepts prescription drugs to keep them from polluting landfills and waterways under a program paid for by the East Bay Municipal Utilities District. Other partnerships include those with Goodwill, which collects clothing and other household items for reuse, the Berkeley-based Urban Ore, which takes

reusable construction material and larger household items, and the Oakland-based Universal Waste Management, which recycles the electronic equipment including TVs, microwaves and computers.

The revenue generated from these partnerships funds approximately 10-13 percent of the ongoing operating costs for the recycling center. The rest of it is covered by an Integrated Waste Management (IWM) fee that is assessed on the garbage collection bills of El Cerrito residents and businesses. The IWM fee of \$9.77- \$21.10 also covers the city’s curbside recycling collection program. The fee is set and assessed on each trash container collected by East Bay Sanitary Company and is based on trash container size. While the city is seeing many of its customers switch to smaller containers, fees are adjusted on an annual basis to ensure that the city’s recycling initiatives are sustainable.

“People have to dispose of their waste one way or another. It is important for us to encourage the most environmentally responsible and safe way of doing this,” says Maria Sanders, City of El Cerrito Environmental Analyst. “The Center emphasizes the concepts of reduce and reuse as well as recycle.”

An average of 400 customers visit the Center each day to recycle or reuse products, participate in educational classes or just to enjoy the sustainable features of the site. The Center’s sustainable elements include 10kW of solar photovoltaic panels, an 11,000 gallon rainwater cistern, native landscaping, rain gardens that filter stormwater runoff and extensive energy efficiency measures.

For additional information contact the City of El Cerrito Recycling + Environmental Resource Center at: (510) 215-4350

Advice and Lessons Learned Regarding Siting Recycling Facilities

- Many cities and counties in California have small municipal airports. Land adjacent to these airports can be good sites for manufacturers, but early work needs to be done with the FAA to make it attractive to businesses – either by releasing the land for sale or developing it as commercial or industrial space.
- A city or county should scan its community assets and work with relevant parties to make sure an asset is ready for business use. Businesses usually decide on an expansion six to twelve months before they want to be fully operational, so early work on available land (adjacent to an airport or otherwise) can make your community more competitive.
- Community assets can also include professional expertise. Given the new reality of smaller budgets and limited staff, look to your community for professionals and existing companies who can help fill in the gaps (ex. Small Business Development Corporations, Economic Development departments, Governor's Office of Business Economic Development permits staff, and Recycling Market Development Zone Administrators).
- Do not underestimate the value of a face-to-face meeting to work on past preconceived opinions and to get partners to communicate. Having the support of the mayor or an elected official for a project can be key to jump-starting collaboration.
- For a private business, it may be important to have a contact in the local community to help manage an expansion and work with a local agency counterpart, as land acquisition is not always straightforward or quick. Local contacts might include Economic Development staff, Small Business Development Corporations, and/or Recycling Market Development Zone Administrators.
- Creating a closed loop compost system in which green material is collected, processed and then used within the same geographic area results in a smaller footprint yielding the greatest benefit to not only to city residents, but to the region.
- Have a comprehensive vision but approach it incrementally. Educate and involve the regulators. Create anticipation of good things in your agency leadership and community.
- Site selection is important -- put projects in good locations; don't try to fit them into residential/commercial locations. Siting, materials, permit assistance are appropriate public assistance. If joint projects, assure buyout provisions and avoid put or pay obligations.
- Go through the public outreach and approval process before committing to purchase land or entering related agreements.



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