

The Curb To The Landfill: The Evolution Of Waste Diversion In Long Beach

Largest Landfill To Close In 2013



A city trash hauler dumps waste at the Southeast Resource Recovery Facility (SERRF) at 120 Pier S Ave. at the Port of Long Beach. The facility, which opened in the late 1980s, has been converting a significant amount of Long Beach trash into energy by incinerating the waste. For more information on SERRF, visit www.lacsd.org/about/solid_waste_facilities/serrf. (Photograph by the Business Journal's Thomas McConville)

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Long Beach businesses and residents produce 1,494 pounds of waste per person per year on average – about the same as an average American. However, while Americans represent 5 percent of the world population, we also produce 30 percent of the world's trash.

Long Beach has an extensive refuse collection and recycling program through its environmental services bureau (ESB), housed under the department of public works. The bureau was formed in 1989 as a direct result of AB 939, a measure that mandated every county and city throughout California to increase recycling or reduce the solid waste dumped into landfills by diverting it to a trash-to-energy facility. According to the measure, this diversion process had to reach a rate of 50 percent by 2000.

In 2007, the Long Beach City Council enacted an ordinance requiring some construction and demolition projects to recycle at least 60 percent of the waste or debris generated. This action, along with other diversion processes, helped Long Beach achieve an overall waste diversion rate today of about 70 percent, accord-

ing to ESB Manager Jim Kuhl. Legislation is currently circulating that could increase the minimum diversion rate from 50 to 75 percent, which Kuhl said is very achievable for the city.

The bureau is in charge of solid waste collection, disposal and recycling. Haulers collect residential and commercial refuse, as well as bulky items, illegally dumped items, appliances, electronic waste and refuse from special events in the city. This refuse collection program, a self-supporting enterprise, cost about \$28.8 million in fiscal year 2010 and generated an estimated \$29.7 million in the same year. The estimated revenue for fiscal year 2011 is \$34.5 million and expenditures are \$29.3 million.

City services provided through the bureau include the collection of 194,000 tons of refuse and 27,000 tons of recycling from 117,000 residences annually. Refuse haulers also pick up from 5,600 businesses citywide. (For more information on Long Beach trash and recycling processes, visit www.longbeach-recycles.org.)

ESB vehicles – from street sweepers to trash trucks – are monitored through a program called Zonar, which started this fiscal year. As a means of working to reduce its own carbon footprint while keeping the city green and clean, the bureau hired the Web-



The Southeast Resource Recovery Facility (SERRF) is owned by the City of Long Beach and the L.A. County Sanitation District, with the city owning the majority of the facility. SERRF is operated by Covanta Energy, which acquired the facility in August 2009. (Photograph by the Business Journal's Thomas McConville)

based commercial vehicle management program to provide a global positioning system (GPS) to track the vehicles. The system helps the bureau locate and reroute vehicles according to customer service requests as well as monitor vehicle idle times in an effort to reduce greenhouse gases.

"It helps us optimize our routing. We're working on getting it set just right so we can get a good measure of our carbon footprint and see how policies and adjustments in routes will help us reduce that carbon footprint," Diko Melkonian, general superintendent with the ESB, said. "It basically measures the emissions through travel times and idle times."

Waste Management trucks, which are contracted for recycling pickup in the city, are not equipped with a monitoring system. Contracted haulers pay a business fee to the city equal to 8 percent of their gross receipts. This fee generates \$1.2 million annually for the city's General Fund. The bureau worked with the city attorney's office to strengthen requirements of these haulers for the upcoming fiscal year, including the implementation of a 10-year hauling permit.

Most of the recyclables collected are shipped to a processing plant overseas to be deconstructed, with some taken to a post-consumer facility here in Long Beach owned by Talco Plastics. According to Kuhl, the local plant takes plastic milk jugs and the like and turns them into plastic pellets that are in turn used to make other plastic goods, such as the recycling bins used in the city. Kuhl said the facility is a local success story because one of the city's biggest challenges is that it does not have a strong market for commodities being recycled.

"I'm going to say that probably 90 percent of everything that is captured for recycling is shipped overseas for remanufacturing," Kuhl said. "Very little of it's done here. That's a challenge to create local markets and local economic development activity out of the recycling mandates. What I think has fallen behind in recycling is the market development aspect; so that when you recycle the container it actually helps create jobs locally rather than overseas."

SERRF Provides Waste Diversion For Beachside Community

Long Beach waste is mostly diverted to a facility near the Port of Long Beach called the Southeast Resource Recovery Facility (SERRF). SERRF operations began in 1988 using trash-to-energy technology that produces enough electricity to power 35,000 homes. Since then the facility has processed more than 10 million tons of

refuse, keeping a significant amount of trash out of landfills.

Here's how the trash-to-energy process at SERRF works: the facility receives waste from city haulers and transfer stations throughout the county. The trash is dumped onto the tipping floor, where it is then pushed through the refuse storage area and fluffed by cranes in preparation for incineration. The cranes fill the boiler hoppers with the mixed, damp trash, which flows down a grade via gravity to where it's combusted. The fire is continuously fueled by trash while the mechanism pumps air to maintain the flame.

Charlie Tripp, the manager of the city's electric generation bureau, explained that a room was built to house this combustion technology. The walls of the room contain tubes full of water that is brought to a boil. The steam produced travels through the pipes and into a turbine. The steam propels the turbine, which powers a generator. In a day, this process produces 36 megawatts of electricity. A small part of that electricity is used to power SERRF, with the rest being sold to Southern California Edison (SCE). The facility has a contract with SCE through 2018.

"What the City of Long Beach has done is take the responsibility for the waste its citizens generate instead of shipping it to distant landfills or somebody else's backyard, whether it be the desert or other places, going with out-of-sight, out-of-mind," Tripp said.

The City of Long Beach and the Los Angeles County Sanitation Districts (LACSD) co-own SERRF through a joint powers authority agreement. Long Beach is the majority owner with 68 percent. The funds generated by SERRF are split between the districts and the city only after the facility pays for its employees, maintenance costs and other bills. Long Beach funnels its share into the General Fund. According to Tripp, SERRF has transferred a total of about \$60 million into the General Fund since operations began.

In August 2009, the operations contract for SERRF was given to Covanta Energy, a national organization that acquired six energy facilities from the previous operator, Veolia Environmental Services. According to Jeff Lustgarten, Covanta director of environmental science and community affairs, the transition process was pretty seamless other than the expected daily operational adjustments, and most former Veolia staff now work as Covanta employees.

In the first year with Covanta, Tripp said the company ran the plant better than expected and resulted in more trash-to-energy conversion through efficiencies.

Last year, SERRF generated more than projected, according to Tripp, and he attributes part of that success to Covanta. An extra \$1.1 million was transferred into the Long Beach General Fund in

fiscal year 2010 on top of the predicted \$2 million in revenue. Lustgarten said improvements to the SERRF system and its overall productivity in part contributed to that additional revenue.

"I can definitely say that the partnership that we have with the city and with the county sanitation districts has been strong – very productive, and we've enjoyed working with them over the last year to make the facility more productive than it was when we first took over the operations last year," Lustgarten said.

Tripp agreed. "The new contractor has brought in some corporate people and that's infused new blood and better ways of doing things. They operate so many plants. A lot of the things we've been battling operationally, pieces of equipment that might be modified to make it run better or more efficiently, that kind of stuff, they were able to bring in and reenergize everybody. I think that, overall, they've been here a year and they've definitely made a positive change in the operations."

Close to 100 cities have used SERRF, and most Long Beach trash is incinerated there. Operations include front-end and back-end recycling by collecting goods before incineration and recovering leftover metals from the boilers after incineration. About 825 tons of metals are recycled at SERRF each month.

About 10 percent of the waste by volume is leftover from the incineration process. Aside from the recyclable metal debris, that waste is used as road aggregate to help maintain the roads to the landfills in the area, according to Tripp.

Tripp also attributes price control for refuse and recycling collections in the City of Long Beach to SERRF by comparing how much a Long Beach customer pays on average for refuse and recycling pickup per month to surrounding cities. According to the ESB, residents of the City of Los Angeles pay an average of \$36.32 for trash and recycling pick-up, Santa Monica residents \$39.90, Pasadena residents \$36.43 and Anaheim residents \$31.96. In contrast, Long Beach residents pay an average of \$21.96 per month.

Tripp said this provides an excellent example of how doing the 'right thing' can be more economically lucrative than not. "The City of Long Beach has taken responsibility for the waste its citizens generate rather than taking it to landfill or other places," Tripp said. "[This] has made [economic] sense for the city."

Not all refuse is SERRF-compatible, though. Bulky items that can't be recycled or incinerated – like un-reusable furniture or street sweeping debris – are taken to the Bel Art Transfer Station in North Long Beach and then routed to regional landfills.

A company the city contracts with for tree trimming debris needs, EDCO Inc., is slated to open a transfer station facility in the City of Signal Hill. According to Melkonian, Long Beach could theoretically contract with them to take refuse not accepted by SERRF to dumpsites, such as the Puente Hills landfill.

Puente Hills, located in the City of Industry, is the largest dumpsite in the state. It opened as a private landfill in the 1950s and was acquired by the LACSD in 1970. The 1,365-acre dump takes in about a third of Los Angeles County's trash, excluding the City of Los Angeles. (To learn more about landfills and waste management in the County of Los Angeles, visit www.lacsd.org.)

According to Covanta's Lustgarten, landfills are one of the largest producers of methane gas – 25 times more potent than CO₂. "When you think about that and that we have diverted 10 million tons of waste that would have gone to the landfill and ultimately produced methane, that in and of itself is a huge contributor to reducing greenhouse gas emissions in the [Los Angeles] Basin," he said.

Future Needs For Further Waste Reduction Not So Distant

With the Puente Hills landfill slated to close in 2013, another system will need to take effect since SERRF alone cannot dispose of all the refuse for the entire county. Los Angeles County currently disposes of 80 percent of its trash within the county and transports the rest to outside facilities. One third of the county's trash is taken to the Puente Hills landfill.

The LACSD has a best- and worst-case scenario for what might happen after the Puente Hills landfill reaches capacity. The best-case scenario assumes all in-county landfill expansions are approved and 9,000 tons of trash are processed daily through conversion technologies with 38 percent of the county's trash being exported. Its worst-case scenario is that no landfills expand and no conversion technologies are developed, leaving up to 80 percent of the trash needing to be transported out.

The current waste-by-rail system that takes trash to far-away landfills and dumps will not alleviate the burden of the Puente Hills site closing. Competition for rail usage is increasing as the system can only handle a maximum 8,000 tons daily. Only half of that can come from the Puente Hills Materials Recovery Facility, located adjacent to the landfill. That waste diversion facility sorts through trash for recycling and serves as a transfer station. This competition is also driving up costs.

The Los Angeles County Board of Supervisors voted on April 20 to approve a plan for the development of three conversion technology projects. The plan is spearheaded by the county to bring thermal, chemical, mechanical and biological processes capable of converting solid waste into energy to Southern California.

Plans for three trash-to-energy incineration facilities are also in the works for Orange and Riverside Counties. The projects are public-private partnerships between each county, a conversion technology supplier and a materials recovery facility. These projects include:

- Arrow Ecology and Engineering has partnered with developer CR&R Inc. for a facility in the City of Perris that could convert between 150 to 1,000 tons per day.

- International Environmental Solutions, a developer, has partnered with Burrtec Waste Industries, Inc. for a facility in an unincorporated area of Riverside County that could convert 184 to 1,000 tons per day.

- Entech Renewable Energy Solutions has partnered with Rainbow Disposal Company, a developer, for a facility in Huntington Beach that could convert 360 to 1,000 tons per day.

Conversion technology information can be found at <http://dwp.lacounty.gov/epd/ef>.

According to recent reports, the next step in trash diversion is the creation of biorefineries, which are similar to the petroleum refinery concept. They combine biomass conversion processes with technical equipment to produce energy and chemicals from biological matter (waste). Today, there are no biorefineries in California, yet according to the Environmental Protection Agency (EPA) there are about 100 potential sites for such facilities statewide.

The EPA requirements for a biorefinery include a 50-acre-plus property with distance to graded roads of three miles or less and distance to rail lines of eight miles or less. The EPA tracked sites in the state for biorefineries must have cumulative crop residues of 330,000 metric tons per year or more within 50 miles. These residues can come from crops, forests, mills and urban wood waste. More information on biorefineries can be found at www.nrel.gov/biomass/biorefinery. ■