



RESILIENCE

Keeping Food Scraps Out of Landfills Is a Bigger Problem Than You Think

Organic waste in landfills is a major source of methane emissions. Orange County, Calif., is making progress in diverting it.

April 25, 2024 • **Carl Smith**



Capistrano Greenery at Prima Deshecha landfill in San Juan Capistrano, Calif. (OCWR)

In Brief:

In 38 states, landfills are the largest source of methane emissions. Reducing atmospheric concentrations of this powerful greenhouse gas is a

top priority for climate action.

- California has set the nation’s most ambitious targets for diverting organic waste from landfills — 75 percent below 2014 levels by 2025 — but progress toward them has been difficult.
- Orange County, Calif., is developing capacity to make this viable.

In 2016, California set the nation’s most ambitious targets for diversion, setting Tom Koutroulis, director of Orange County Waste and Recycling (OCWR), on a path to find ways to recycle organic material.

California SB 1383 called for organic waste disposal to be reduced to 50 percent of 2014 levels by 2020, and 75 percent by 2025. It allowed several years for rulemaking; regulations were adopted in 2020 with state enforcement beginning in January 2022. Since that time, 75 percent of California communities have reported to CalRecycle that they are collecting residential organic waste. Diversion rates are another matter.

ADVERTISEMENT

A tracker from ReFED, a nonprofit that aggregates food waste data from public and proprietary data sets, shows that over 300,000 more tons of food waste went to California landfills in 2022 than in the year SB 1383 was enacted.

CalRecycle hasn’t published its own data regarding 2023 diversion, but at this point no one expects the 2025 target to be met. “I don’t know when we will reach our 75 percent goal, but we will reach it,” said CalRecycle Director Rachel Machi Wagoner.

OCWR isn’t on track to meet this target either, but it has been steadily increasing


the amount of organic waste that it recycles. Partnerships with haulers and a robust composting program are helping things move in the right direction.

ADVERTISEMENT

“Right now, we’re establishing the foundation,” says Koutroulis. “We’re looking to compost more and divert more organics away from disposal.”

Unloading trash at the Frank R. Bowerman Landfill in Irvine, Calif. (OCWR)

From Pilot to Permit

In 2017, OCWR began to make plans for pilot composting projects, to understand what it would take to do this on a scale that matched the state’s mandate. This included a look at the market for compost products, the regulations around them  visits to composting facilities.

The next year, pilot projects were launched at three landfill sites. It might seem that it would be simple to compost on top of a landfill, says Koutroulis, but there were big challenges involved in putting these operations in place. “I’m thankful for a lot of the support that we received from a few of our regulatory agencies,” he says.

The pilots continued in 2019, with attention to permitting and compliance requirements. By the end of the year, OCWR determined it was ready to operate commercial-scale composting. In 2020, it received its first composting permit and began to roll out its program in earnest.

OCWR provides service to 34 cities and 3.2 million residents. The general idea was that residents would put food scraps, coffee grounds, paper towels and other compostable material in the bins they used for grass clippings, garden trimmings and other green waste. Individual haulers might have more specific instructions, from simply tossing scraps in with other material to placing it in a bag.

Even with all this in place, engaging residents and fostering consistent behavior was a major challenge — as it has been for previous recycling efforts. Recycling streams contaminated by material that doesn’t belong in them have made sorting so difficult and expensive that many recycling processors have gone out of business. On a larger scale, this was enough to cause China to decide it would no longer accept “recyclable” material from the U.S.

As one approach to behavior change, OCWR worked with the county’s education department to develop K-12 curriculum materials for use in classroom lessons and family activities related to its diversion efforts. This is supported by community outreach and education efforts.

Waste haulers in the county contribute to the efficiency of OCWR’s composting operations. Before the organic diversion mandate, it had been their practice to chip and grind green waste and deliver it to landfills to cover trash that had been dumped. They are continuing to do this with the mixed organic waste, delivering instead to be composted. “It makes the process at our sites much simpler,” says Koutroulis.

In 2023, more than 2,500 tons of compost and nearly 5,000 tons of mulch were distributed at no cost to residents, public works projects, landscapers and nonprofits involved in habitat preservation.

Cities are required to report waste diversion rates to CalRecycle, but at present they don't report them to the county. According to CalRecycle, countywide diversion increased 13 percent between 2020 and 2022, including non-organic recycling or reuse.

The county does receive reports from haulers in unincorporated areas, and residential green waste collection in them increased 39 percent in the past three years, suggesting that less organic material is going to landfills.

A compost turner in Bee Canyon Greenery at Orange County's Frank R. Bowerman landfill. (OCWR)

Methane doesn't stay in the atmosphere as long as CO₂, but its warming effect is 80 times greater during the first two decades it is present. Estimates for emissions from landfills have been largely based on extrapolation from what is known about organic waste decay and tonnage sent to landfills. Some data comes from methane detectors that workers carry across the surface of landfills, a hit-or-miss approach limited further by the fact that some areas are unsafe to walk over.

New data suggests that the scale of the problem has been significantly underestimated. A team of scientists recently published findings from measurements of landfill emissions taken between 2016 and 2022 using airborne imaging spectrometers.

The project surveyed over 200 landfills in 18 states. The landfills it monitored are thought to be responsible for 67 percent of methane emissions, says Dan Cusworth, project scientist for Carbon Mapper and lead author of the paper.

Horizontal and vertical pipes can be buried in landfills to capture methane. It may be burned in flares, which causes CO₂ emissions, or treated to be used to fuel vehicles or generate energy. (OCWR generates power for its municipal utility.) But these systems can leak, and not every landfill has one.

The data researchers collected suggests that emissions may be 1.5 times greater than previously thought, increasing the urgency for diversion. "That's not for all landfills," says Cusworth. "This is if you take the sector as a whole."

Carbon Mapper's coalition of partners includes the satellite imaging company Planet, NASA's Jet Propulsion Laboratory (JPL), the state of California, the University of Arizona, Arizona State University and RMI. In an earlier project, it worked with the California Air Resources Board (CARB) to locate methane plumes at oil and gas facilities and landfills and then alert operators so they could take action to mitigate them.

In some cases, problems were fixed within days of observation. "If you could get same results for the rest of the world, if you had this information on a daily basis, you might be able to do quite a bit of what's needed," say CARB's Jorn

Herner. “It’s not a silver bullet, but it’s a huge slice of the pie.”

Carbon Mapper is working with Planet, JPL and RMI to build satellites that could provide a constant stream of precise information about where methane is escaping from every landfill in the country. The first is scheduled to launch this year, Cusworth says.

Methane emissions continue to rise despite international focus on reducing them. (NOAA)

Overlooked

A waste stream is a living, breathing entity, Koutroulis says, and OCWR is developing its own approach to generating real-time data to manage its landfills. The county is hoping to secure funding from the EPA’s \$4.6 billion Climate Pollution Reduction Grant program to advance this work.

Many state and local governments are including organic waste management in proposals for this funding, says Katherine Blauvelt, circular economy director for the nonprofit Industrious Labs. The issue has been overlooked as a contributor to the climate crisis, she says, but interest is spreading in large and small towns and cities.

Remote sensing and geospatial data collection can help jurisdictions identify methane plumes in landfills, increasing the success of that piece of mitigation, but source reduction is also critical. Six in 10 Americans think the harm that climate change causes to people will get worse in their lifetimes. It is an open question of how quickly governments and their partners can help them connect this threat to what goes in their trash bins, and convince them to change their habits.

Tags: Food Security, California, Emissions, Environmental Policy, Local Government



Carl Smith

Carl Smith is a senior staff writer for *Governing* and covers a broad range of issues affecting states and localities. He can be reached at carl.smith@governing.com or on Twitter at [@governingwriter](https://twitter.com/governingwriter).

SEE MORE STORIES BY CARL SMITH





Latest News

TRANSPORTATION

Nashville's \$3B Transportation Plan Has 'Something for Everybody'

April 26, 2024

POLICY

Avoiding the Tyranny of Federal 'Guidance'

OPINION | April 25, 2024

POLITICS

Lt. Gov. Dan Patrick Wants Control Over Texas House, Too

April 26, 2024

WORKFORCE

Oversaturated Tech Industry Grapples With Layoffs

April 25, 2024

INFRASTRUCTURE

Texas Power Company Warns of Catastrophic Failure if Storage Issues Go Unresolved

April 25, 2024



WHO SAID THAT

“If you try that at a Florida university, you are going to be expelled.”

April 25, 2024

[More News](#)

ADVERTISEMENT

Most Read

POLITICS

Lt. Gov. Dan Patrick Wants Control Over Texas House, Too

April 26, 2024

TRANSPORTATION

Nashville's \$3B Transportation Plan Has 'Something for Everybody'

April 26, 2024

INFRASTRUCTURE

Texas Power Company Warns of Catastrophic Failure if Storage Issues Go Unresolved

April 25, 2024

WORKFORCE

Oversaturated Tech Industry Grapples With Layoffs

April 25, 2024

POLICY

Avoiding the Tyranny of Federal 'Guidance'

OPINION | April 25, 2024

FUTURE IN CONTEXT

Resisting the Campaign for Safer Streets

April 25, 2024



Stay on top of the latest state & local government news.

Sign up for Governing Daily. Delivered each morning to your inbox.

Email Address*

FREE NEWSLETTER SIGN UP


From Our Partners

SPONSORED

AT&T Helping Local Governments Improve their Cyber Resilience for Operations and Services



SPONSORED

Salesforce is Earning the Trust of Residents by Elevating the Customer Experience

SPONSORED

Does Amazon Connect Modernize the Customer Experience?



Papers

Webinars

Podcasts

About

Privacy & AI

Contact

Sponsored Articles

Advertise

Stay Up To Date

Get smart with Governing. Where government is going in states & localities.

[SIGN UP FOR NEWSLETTERS](#)

©2024 All rights reserved. e.Republic LLC
California Residents - Do Not Sell My Personal Information

