# Waste

*Solutions for waste management and waste reduction*

# Centralized Waste Bins

*Increase recycling by replacing personal waste bins with larger waste receptacles*


**The Impact**

Replacing personal waste bins with centralized waste bins in an office encourages recycling, reduces landfill waste and cuts recycling-stream contamination. This change can alter or subtly reshape personal habits and may translate into general behavior shifts.

**Description**

It is common for employees working in an office to have their own wastebasket at their desk. Many employees use it to discard all items that are no longer needed, mixing waste that could be recycled or composted with that which must be disposed of in the landfill. In most communities, neither offices nor municipal waste services sort waste, so mixed waste requires that all contents be disposed of in the landfill.

Offices that transition to a centralized disposal system with separate bins for compost, recycling and trash can reduce the volume of waste that goes to the landfill, increase the percentage of waste that gets recycled, and decrease contamination of the recycling waste stream. In certain situations, the landfill bin can be eliminated, and although contamination of recycling may increase, diversion rates for the business may increase dramatically.

**Where It's Been Implemented**

A number of businesses have already implemented centralized waste bins to reduce their waste stream. One example is Oracle's former headquarters in Redwood Shores. In these offices, personal bins were removed and replaced with central bins for recycling and composting. Oracle even eliminated bins for landfill, which greatly increased its diversion rate. The company provides only compostable and

recyclable items at its offices and cafes, eliminating the need for landfill bins. This also increases employee awareness and reinforces sustainable habits. Many other companies and organizations, especially larger ones like Genentech, Google and Stanford, have made significant progress in the implementation of centralized waste bins.

**Key Drivers**

Personal bins don't require people to properly sort waste, which prevents sustainable habits from forming. Making the act of throwing away garbage a conscious decision is an incredibly important part of the process. Walking from a desk to a bin results in a more conscious decision about how to sort waste, and these behaviors then have a bigger chance of being used outside of the office.

**Key Factors for Success**

Correctly marketing this initiative is key. At first, employees may react negatively to removing personal waste bins. Making this change uniform throughout the business is important. The rollout of the new policy should be paired with impactful and attention-grabbing flyers or posters that advertise the reasoning behind the change, and include statistics about the expected reduction in waste and improvements in efficiency. Highlighting the positive impact on the environment will add an "emotional component" that might further motivate employees to pay attention and make a concerted effort to "do the right thing."

Depending on the size of the office, there may need to be multiple centralized bin locations. In crafting the plan, it is important to begin with less rather than more. After a week or two, the waste can be audited, and if another bin location is necessary, it may be added. It is better to add a bin later rather than remove it once people have become accustomed to it.

**Key Obstacles**

Aside from some initial resistance from a few employees, there aren't many obstacles to adding centralized waste bins. Removing personal bins and replacing them with central ones is a simple process. It reduces the time and expense of maintaining and servicing multiple personal bins.

Eliminating landfill bins from your office may be a possibility. A facility as large as Oracle's former headquarters was able to successfully do so because it offers only compostable or recyclable items at its cafes and break rooms. The small amount of landfill contamination that will make it into the recycling bins will likely fall under the local contamination threshold for certain recyclers. Plentiful and effective advertising and continuous education via targeted campaigns (for example, posters in high-traffic places like cafeterias) will help with the transition.

**References and Resources**

Diana Vasileva, Oracle Facilities Manager and Bay Area Sustainability Department Process Owner, diana.vasileva@oracle.com

Alec Cooley, Senior Advisor and TRUE Advisor, alecc@buschsystems.com, 843-530-7582

RTS. Ditch the Deskside Bins: A case study proving the value of centralized waste bins

Busch Systems. Centralized Waste Bins vs. Individual Waste Bins – Which Is Better?

Road Runner. The Benefits of Using Centralized Collection Points at Businesses

Busch Systems. Revolutionizing Deskside Waste Collection

Here is Oracle's Centralized Waste Guide.

# Centralized Waste Program

This program aims at lowering waste generated and maintaining commitment to sustainability through improving contamination rates.

## Contents



## Goal

Centralized Waste strives to reduce waste production and cross-stream contamination through replacing all individual waste bins in offices and cubes with large waste bins centrally placed across the floor.

## What is Binless

With Centralized Waste, all individual waste bins in offices and cubicles are replaced with large waste bins placed at central locations across the floor. Small waste bins remain in all huddle and conference rooms.

## Why Go Binless

Offices go Binless for the following reasons:

- Sustainability
  - Centralized Waste has been proven to reduce waste and lower contamination
- Cost Savings
  - Waste reduction will lower waste collection costs
  - Potential reduction in janitorial costs since they will no longer have to take out individual waste bins
- Employee Benefits
  - Promotes coworker engagement
  - Increases workplace cleanliness
  - Encourages movement
  - Improves awareness surrounding waste

## Implementation

1. Pre – Implementation Audit
   a. Audit each waste stream prior to implementation to establish baseline
      i. Collect waste over two days for a specific stream
      ii. Open each bag over a tarp and separate contaminants
      iii. Weigh total waste and contaminants to gather contamination percentage

2. Email Space Admins
    a. Send **Employee Communication** PPT explaining the program specific to your Oracle campus, with a floor plan showing the new locations of each bin
    b. Briefly explain Centralized Waste in the body of the email. Example email below

*I am reaching out regarding a new program Real Estate and Facilities is implementing: Centralized Waste. This means that large waste bins will be positioned at central locations across the floor, in place of the individual waste bins at each desk. Centralized Waste allows each employee more space at their individual work stations, as well as improves awareness surrounding sustainability. Waste bins will stay in all conference and huddle rooms.*

*I have attached more information regarding Centralized Waste and what it will look like at OPL so feel free to share it with any/all employees. Please do not hesitate to reach out if there are any questions or concerns regarding this program.*

3. Remove individual waste bins from cubes and offices
    a. Small waste bins stay in conference + huddle rooms
4. Place large waste bins at central locations across the floor
    b. Install signage above each bin
        1. Signage should have words and pictures of each item to ensure proper sorting
    c. Estimated about *30 – 35 employees* per Centralized Waste Station.
    d. Review the **Centralized Waste Implementation** PPT for potential bin spec and placement
5. **Tent cards** at each desk
    a. Temporary signage at each desk to inform employees of the new program
6. Post – Implementation Audit
    a. Conduct an audit 3 – 6 months after the program has been implemented, ideally on the *same day* of the week as the first audit
    b. Monitor percent of waste and contamination levels

## Pilot

### Lessons Learned

- Employees asking to keep their bins or bring in their own
    - The janitorial staff will not be providing this service, so employees will be responsible for dumping the contents of their individual bins to the main waste stations

    Example response:

    *Thank you for reaching out to Facilities. A recycling bin will be delivered today. As servicing individual bins are no longer included in our janitorial services, you will be responsible for bringing the contents of your bin to the main waste stations. Thank you for your understanding, as Oracle works to be more sustainable.*

### Pre and Post Audit Results

| % Contamination Reduction from 3.21.19 - 7.18.19 | | |
|---|---|---|
| Recycling | Kitchenettes | 28% |
| | Office | 6% |
| Compost | Kitchenettes | 7% |
| | Office | 0% |

| % Waste Reduction from 3.21.19 - 7.18.19 | | |
|---|---|---|
| Recycling | Kitchenettes | 66% |
| | Office | 67% |
| Compost | Kitchenettes | 44% |
| | Office | 43% |

*See excel sheet for details

## Conclusion

This guide is meant to be a resource for other campus's to adopt similar programs, and is not intended to dictate future program details. Please refer to this document as a guideline or template, making necessary modifications based on the needs and desires of the campus in your region.

Please share if your campus implements Centralized Waste or a similar program, allowing us to track our progress globally. Email Kelsey.morgan@oracle.com with any details or questions.

# Deconstruction Waste Management

*Reduce waste and increase salvaged materials for reuse*

**The Impact**

The County of San Mateo Office of Sustainability stated in 2022 that nearly 30 percent of waste sent to the landfill is from construction and demolition debris. Deconstruction offers a significant form of waste reduction. Additionally, deconstruction reduces the necessity for some new manufacturing and provides the opportunity for new markets selling salvaged materials at discount rates.

**Description**

Common construction practices involve demolishing an existing structure and disposing of the debris in a landfill. Deconstruction, also referred to as salvage or soft demolition, is a cost-effective and environmentally responsible alternative to conventional building demolition. Deconstruction is the systematic disassembly of a building or structure, often performed in the reverse order of construction, and is a sustainable alternative to demolition. Deconstruction can result in up to 95 percent of materials being recovered for reuse or recycling.

Deconstruction ordinances mandate or strongly encourage the adoption of this careful disassembling of buildings. CalRecycle offers resources on developing a Model Construction and Demolition (C&D) Diversion Ordinance, and the County of San Mateo Office of Sustainability updated its Construction, Deconstruction, and Demolition Guide for San Mateo County in 2022. (Links to both are provided below in the Resources section.)

**Where It's Been Implemented**

Palo Alto, Calif., has an ordinance effectively banning contractors from demolishing entire buildings, which went into effect in July 2020. Other cities such as Portland, Ore., and Milwaukee, Wisc., have similar laws in place. In San Mateo County, several cities require that 100 percent of inert materials be recycled (Brisbane, Redwood City and South San Francisco) or have enacted ordinances that are more stringent than California law requires.

Business owners such as Chris Garrett of Devil's Canyon Brewing Co. in San Carlos, Calif., have already incorporated reuse and deconstruction salvage into their “business as usual” practices. His

brewery is almost entirely constructed from recycled and repurposed materials, including equipment from large businesses.

**Key Drivers**

Waste reduction is a principal tenet of sustainability. San Mateo County has taken action toward achieving zero waste status, but much of the focus so far has been placed on items such as single-use plastic bags and straws — and lately on food waste. Addressing the process of construction and demolition has the potential for great impact. Action is even more urgent now for the county because its only landfill, Ox Mountain, is expected to reach capacity in 2039.

The City of Palo Alto estimates that more than 40 percent of its landfill debris is construction or demolition materials. About 19,000 pounds of waste are created annually from these projects, so better management practices are a priority.

Several cities throughout San Mateo County already have ordinances in place for recycling construction and demolition materials. However, Palo Alto's 2020 ordinance bans the practice of demolition (only allowing for deconstruction), estimating that up to 95 percent of the materials can be recovered for reuse or recycle with deconstruction techniques.

**Key Factors for Success**

Because demolition is faster and cheaper than deconstruction, incentives will help encourage contractors and builders to spend the extra time to effectively salvage materials for reuse. Deconstruction may cut future costs for building companies and contractors by increasing their access to viable and cost-effective salvage materials or by decreasing disposal costs after the project. Additionally, the donation or sale of salvaged material can offset the additional cost of deconstruction through tax deductions and income. Deconstruction for renovations should be considered, as smaller internal projects still present an opportunity for deconstruction and material recovery. Another key factor for success is including someone, preferably a supervisor or project manager, on the job who has deconstruction experience and can identify and help solve problems as they occur. It is also important to provide workers with education about the deconstruction process and how to handle any hazardous or toxic materials they may encounter.

**Key Obstacles**

Deconstruction takes more time than demolition and is more expensive. Pilot studies in Palo Alto showed that deconstruction of two buildings took between 10 and 15 days with a crew of four to eight workers, and the cost ranged from $22 to $34 per square foot. In comparison, demolition of a building takes a few days and a crew of two to three, and costs between $8 and $12 per square foot to complete.

Current ordinances in some cities in San Mateo County already require salvaging materials, thus lengthening the demolition process. Some cities, such as Burlingame, even require builders to wait a few days prior to demolition to allow for materials to be salvaged.

Tax deductions can more than make up for the initial cost of deconstruction. Markets in place for the salvaged materials can also help mitigate deconstruction costs.

**Timeline to Implementation**

The City of Palo Alto adopted its deconstruction ordinance in July 2019. The ordinance went into effect on July 1, 2020, for total demolitions of commercial and residential projects. The timing and scope of expanding the ordinance to cover all projects and different value increments is still under consideration and will be dependent on lessons learned from the initial phase.

**References and Resources**


Chris Garrett, Owner, Devil's Canyon Brewing Co., chris@devilscanyon.com, 650-400-0650

City of Palo Alto, Construction & Demolition, CD@CityofPaloAlto.org, 650-838-2828 or zerowaste@cityofpaloalto.org, 650-496-5910

Office of Sustainability, San Mateo County. "Construction, Deconstruction, and Demolition Guide for San Mateo County," 2022

CalRecycle. Model Construction and Demolition Ordinance

"How to Start Deconstructing and Stop Demolishing Your City's Buildings," C40 Cities Climate Leadership Group, Implementation Guides January 2021

"Palo Alto Takes Aim at Demolition," Palo Alto Weekly, July 9, 2019

Build Reuse

https://www.smcsustainability.org/wp-content/uploads/Ox-Landfill-Capacity.pdf

# Environmentally Preferable Purchasing

*Prioritizing the consumption of products and services that reduce impact on climate*

**The Impact**

Environmentally preferable purchasing (EPP) programs work to promote both community health and sustainable conservation of resources. In turn, they aim to reduce man-made emissions, prevent pollution and increase sustainable industry competitiveness.

**Background**

EPP policies began gaining more widespread traction around 2008, when they were primarily focused on buying recyclable paper and sustainable office supplies. Now these policies encompass many more products, including a preference for electric vehicles, energy-efficient equipment, water-saving fixtures and even environmentally preferable road construction materials.

**Where It's Been Implemented**

The federal EPP program has generated significant financial and environmental benefits to the government. Environmentally preferable electronic products saved the government $1 billion in 2020. Globally, the 355 million EPP tech products purchased worldwide during 2020 will result in the reduction of 23.6 million metric tons of greenhouse gasses (the equivalent of taking 5 million average passenger cars off the road for a year) and 13,000 million metric tons of toxic substances (equivalent to the weight of 5.8 million bricks).

In California, Public Contract Code 12400-1404 calls for the purchasing of goods and services whose production, manufacturing and distribution ensure a lesser or reduced effect on human and environmental health. The Department of General Services leads the state's effort to purchase sustainably through its Buying Green Guide.

CalRecycle cites StopWaste in Alameda County as a model EPP policy. StopWaste's model template for EPP, created in 2009, includes strategies for source reduction, recycled content products,

energy and water efficient products, green building practices, landscaping practices, toxic pollution prevention and bio-based products.

The City of San Carlos, Calif., drafted an EPP proposal in 2015 that requires buyers to maintain a log to track items purchased, purchase prices, vendors and frequency of environmentally preferred purchases. The logs are used to audit purchasing trends and adherence to the policy annually.

**Description**

Environmentally preferable purchasing policies prioritize procuring goods and services with a reduced impact on human health and the environment in comparison to other products serving the same purpose. These sustainable purchases take into consideration post-consumer recycled content, energy efficiency, air emissions, hazardous substances, water efficiency, responsible production and other factors. In California, these policies include a wide range of purchases, from paper for copiers to travel expenses, in an effort to reduce the quantity and toxicity of waste in California.

California law requires public entities to purchase environmentally preferable products that are repairable, durable, made with recycled content, and able to be recycled again. For instance, Alameda County's model EPP policy rewards manufacturers and vendors that reduce environmental impacts in their production and distribution systems or services, and encourages the use of agricultural fibers, chlorine-free manufacturing processes, wood from sustainably harvested forests, and other environmentally friendly practices that conserve natural resources and reduce community hazards.

**Key Drivers**

In California and around the world, wasteful practices often harm both the natural world and community health. In California alone during 2019, 42.2 million tons of material were disposed of in landfills, with an estimated recycling rate of only 37 percent. Landfills emit hazardous air pollutants that can impact the health of nearby residents. Incinerators spew toxic chemicals known to cause cancer, respiratory problems and disrupt the endocrine system. EPP policies can ensure that waste produced by our cities and businesses ends up recycled or disposed of sustainably instead of potentially harming community health.

**Key Factors for Success**

The threat of climate change is driving greater interest in sustainable practices. New products and ones that are becoming more popular, such as electric vehicles, are causing cities and businesses to examine their EPP policies.

**Key Obstacles**

In order for environmentally preferable purchasing policies to be successful, cities and businesses need to be willing to revitalize and reinvest in these programs. They also must be fiscally responsible and timely in overseeing sustainable purchasing.

**References and Resources**

Adam Lokar, Senior Sustainability Analyst, City of San Carlos, Calif., ALokar@cityofsancarlos.org, 650-802-4220

California Department of General Services' Buying Green Guide

StopWaste's Model Environmentally Preferable Purchasing Policy

City of San Carlos' (Calif.) EPP policy

Alameda County's (Calif.) model EPP policy

Responsible Purchasing Network's list of green purchasing policies

Responsible Purchasing Network's Model EPP policy
U.S. Environmental Protection Agency's EPP program
San Mateo County's (Calif.) Environmental Procurement Policy
California's EPP
California's EPP training program for EPP purchases

# Food Waste Tracking

*Data on food waste empowers culinary workers to make preparation and serving more efficient, more environmentally friendly and less costly.*

**The Impact**

Food waste tracking can drastically reduce food waste from items and dishes that were not served by closing time. Not only will it have a positive environmental impact, but it will also help businesses and organizations save money on production and food costs.

**Where It's Been Implemented**

There are many food waste tracking technology vendors that offer tools to track and analyze food waste. One is Leanpath, which has partnered with major food providers like Aramark and smaller ones in a variety of sectors. Google currently uses Leanpath at almost 130 Google cafes in 11 countries, and since 2014 the company has saved 3 million pounds of food waste. Hotels, including the Hilton San Diego Bayfront, Marriott's Hotel Alfonso XII and Novotel Brisbane, have also had positive experiences with Leanpath.

Like Leanpath, Winnow Solutions provides camera products and software that automatically track food waste. It offers two models: Winnow Sense, which measures how much plate waste is being thrown away, and Winnow Vision, which utilizes AI cameras to pinpoint waste, cut costs and improve performance.

Waste Harmonics takes a different approach with its iWaste camera system, which monitors how full trash or recycling dumpsters are, as well as when the waste haulers pick up. The device provides

data that allows customers to identify unsustainable behaviors. For example, if dumpsters aren't full when they are emptied, customers might save money by lowering the frequency of dumpster service.

Another company working to address excess food waste is Spoiler Alert, which works with stakeholders before food even enters a kitchen, focusing on more efficiently distributing unpurchased food to vendors before food spoils. Its software aggregates suppliers' inventory data and connects buyers to ensure that little food goes to waste.

**Description**

Technology can help kitchen staff account for food waste on the buffet line or in the kitchen at the end of each day. By measuring the specific dishes wasted, the culinary team can work to create an optimal menu and prepare the proper amount of each food each night. Kitchen staffers can do this themselves or they can use technological tools that streamline the process.

Leanpath invented automated food waste tracking technology in 2004. The company offers tools for data collection such as scales and cloud-based analytics, as well as specifically tailored coaching for culinary teams. The goal is to decrease excess prepared food at the end of the day. Often, this food is not donated to local shelters because of concerns around liability and, instead, is discarded. In an attempt to prevent this, California Senate Bill 1383 will require 20 percent of edible food to be recovered for human consumption by 2025 instead of going into the garbage or compost. Food waste tracking technology vendors provide services that aim to prevent this needless waste.

Leanpath offers a number of services for different needs and industries. For example, one of its most detailed products includes a built-in scale, camera and touchscreen interface for kitchens wanting highly detailed pre-consumer food tracking. Leanpath also provides a floor scale smart meter that can weigh waste from garbage and compost bins. Products as simple as online tracking and data analysis tools can give culinary staff the basic tools necessary for efficient tracking and efficient meal planning.

**Key Drivers**

Food waste is costly to both the environment and the wallet. On top of contributing to landfill mass and greenhouse gas emissions, companies are losing money for every bite that is wasted. California's SB 1383 promises to become a key driver for increasing food waste tracking as restaurants will be required to save 20 percent of food waste for human consumption. In order to meet these goals, companies like Leanpath, Winnow Solutions and others will be vital for informed, data-driven decisions.

**Key Obstacles**

Food waste tracking technology is a service that comes at a cost, and some businesses may not think the additional cost is necessary. Besides, services like Leanpath can be expensive and hard to use, causing frustration to kitchen staff. Businesses and organizations with food service establishments can implement their own version of food waste tracking, accounting for food waste at the end of each day. Then kitchen staff can make their own decisions in terms of how to modify food preparation and ingredient purchasing to minimize food waste and optimize their efficiency.

**References and Resources**

Kristin Rainey, led Leanpath implementation at Google from 2013 to 2020, kmrainey@gmail.com

EPA's Sustainable Management of Food website

EPA's Tools for Preventing and Diverting Food WasteWaste Tracking and Analytics by ReFED, a multi-stakeholder nonprofit

Leanpath's case studies
Winnow Solutions
Waste Harmonics iWaste System
Spoiler Alert

# Responsible Recycling of e-Waste

*Make sure dangerous components are recycled properly.*

**The Impact**

Ordinances that mandate the responsible recycling of electronic waste (e-waste) will reduce the amount of waste sent to landfills and ensure these materials won't be sent to processing sites overseas that employ child labor, have poor working conditions and present significant environmental hazards.

**Where It's Been Implemented**

The San Mateo County (Calif.) Board of Supervisors adopted an e-waste ordinance on October 31, 2017. It is similar to one approved by Santa Cruz County, Calif., which went into effect on January 24, 2013.

**Description**

San Mateo County's ordinance requires organizations hosting electronic waste recycling events to dispose of e-waste collected with a certified e-waste recycler that has been approved by the county. The e-waste collector's name and contact information must be submitted to the county at least 10 days prior to the event and must be posted prominently at the e-waste event. Fines for infractions are modest: up to $100 for the first offense, $200 for the second offense and $500 for each additional violation within one year.

**Key Drivers**

Electronic waste recycling recovers valuable materials from discarded electronics that can be reused to make new products. It keeps materials out of landfills, reuses already extracted resources and thereby reduces the demand for extraction of raw resources, and reduces pollution and greenhouse gas emissions. Responsible electronic recycling also protects people from exposure to toxics. It prevents

irresponsible e-waste recycling by those companies that transport these goods to countries where regulations are less stringent and workers' protection is nonexistent or poorly enforced. In addition, it creates local jobs for U.S. workers.

**Key Factors for Success**

Both the cities that sponsor e-waste recycling events and the organizations that run the events must be aware of the ordinance and how to comply. Cities should publicize the ordinance via multiple media channels.

Enforcement will be easier and consumer and vendor confusion avoided if all the cities in the same county adopt the same ordinance. If the county later determines that a change must be made, it will notify cities of that change so they can easily and rapidly update their ordinances, too.

**Key Obstacles**

This is a straightforward ordinance that has not encountered any opposition.

**Next Steps**

California's electronics recycling program, which was approved in 2003 and is the oldest in the U.S., charges consumers fees of $4, $5 or $6 when they purchase certain types of new devices, with the fee dependent on the screen size. Ideally, California would require manufacturers of electronic products to build in a recycling fee with the purchase price, known as the extended producer responsibility (EPR) approach. To begin building support for this idea, advocates might work with the California Product Stewardship Council, which consists of local governments, nongovernmental organizations, businesses and individuals that work together to advocate for policies and projects where producers share in the responsibility for managing products throughout their entire life cycles.

**References and Resources**

Kevin Lu, Sustainability Specialist, San Mateo County Office of Sustainability, khlu@smcgov.org, 650-363-4698

Tim Goncharoff, former Zero Waste Programs Manager, County of Santa Cruz, timgonch@yahoo.com

Doug Kobold, Executive Director, California Product Stewardship Council, doug@calpsc.org, 916-413-5262

San Mateo County's electronic waste ordinance

Santa Cruz County's electronic waste ordinance

"Why Does Europe Have Stronger E-Waste Recycling Than the U.S.?" by Great Lakes Electronic Association

"Electronic Waste: New EU Rules Target Throwaway Culture" by EcoWatch

# Single-Use Plastic Foodware Ban

*Reduce waste by replacing plastic foodware with natural, fiber-based, compostable options*

**The Impact**

Plastic waste will be reduced dramatically, reducing greenhouse gas emissions, terrestrial and marine pollution, and needed landfill space for end-of-life disposal.

**Description**

An ordinance adopted by San Mateo County, Calif., that affects all food service establishments (FSEs) in cities and unincorporated areas of the county bans plastic for most disposable foodware. It allows use of natural fiber-based, compostable materials (such as paper, sugarcane and bamboo) for disposable plates, bowls, cups, food trays/boats, clamshells, boxes and other containers. These fiber items must not contain per- and polyfluorinated substances (PFAS). Compostable plastic lining (only) is acceptable for these items but must be approved by Biodegradable Products Institute, Compost Manufacturing Alliance or another third party approved by the county.

These materials requirements also apply to disposable side items (accessories) and their packaging, such as straw, stirrers, utensils and cocktail toothpicks. These accessories must be distributed only upon request and/or at dispensers that dispense one item at a time.

**Background**

California Gov. Jerry Brown signed AB 1826 in 2014, requiring all businesses to recycle their organic waste after 2016. As of September 2020, businesses that generate two or more cubic yards of organic waste per week were required to compost their waste. This increased scope of affected businesses was triggered because statewide organic waste was not reduced by 50 percent from 2014 levels.

Stakeholder surveys in Palo Alto, Calif., showed that one-third of FSEs were already providing some form of compostable foodware in 2018. Additionally, 52 percent of FSE respondents stated it would

be simple to transition to using compostable foodware. Palo Alto adopted a Zero Waste Plan in 2018, attempting to reach 95 percent diversion from landfills by 2030 to reduce greenhouse gas (GHG) emissions. Other cities throughout California have similar goals.

**Where It's Been Implemented**

As of June 2022, nearly all cities in San Mateo County had adopted the county's ordinance, with most taking effect October 1, 2022. Similar ordinances have been approved and implemented in other California cities, including Palo Alto, Berkeley and Santa Monica.

**Key Drivers**

Plastic pollution is one of the most serious environmental issues facing the planet today. Plastic can take centuries to decompose, causing harm to both terrestrial and marine ecosystems. Chemicals from both the manufacturing and disposal processes also have negative impacts on human health. Single-use plastics make up 40 percent of the plastic produced annually. Although there are plastic recycling options, foodware is typically contaminated by food waste and not economically viable for repurposing. In the U.S., only 8.7 percent of plastics were ultimately recycled in 2018.

Composting offers many additional environmental benefits, such as improving soil health, reducing the need for chemical fertilizers and reducing GHG emissions from landfills. Mandatory recycling of organic waste is a critical next step toward achieving California's aggressive recycling and greenhouse gas emission goals. Indeed, GHG emissions (especially methane) resulting from the decomposition of organic wastes in landfills have been identified as a significant source of emissions contributing to global climate change. Significantly reducing the amount of organic materials sent to landfills and increasing the production of compost and mulch are part of the AB 32 (California Global Warming Solutions Act of 2006) Scoping Plan.

**Key Factors for Success**

Local food service establishments will need to support the ordinance and comply with its requirements. Compostable foodware is slightly more expensive than its plastic counterpart. Palo Alto's staff has estimated that compostable utensils cost 1 to 2 cents more per item on average. This cost is expected to be passed on to the customer.

**Key Obstacles**

Getting businesses on board may present a challenge. Finding a trustworthy and reasonably priced compostable foodware vendor will be on the agenda for local food service establishments.

Surveys of stakeholders have shown heavy support and cooperation with the new measure. The ordinance is very straightforward and has been successful in other cities.

**Timeline to implementation**

San Mateo County's ordinance went into effect in March 2020 and was supposed to be enforced in March 2021 in the unincorporated areas of San Mateo County. Due to the pandemic and supply chain issues, enforcement was postponed until October 2022. This lag time allowed food service establishments to use up existing noncompliant stock and switch to compliant goods.

**Next Steps**

Cities throughout San Mateo County are invited to adopt the county ordinance. If updates are needed, the county will notify everyone of the recommended changes so that the ordinance remains uniform throughout the county. State legislators might urge a similar statewide resolution.

**References and Resources**

Eun-Soo Lim, Senior Sustainability Specialist, County of San Mateo, Calif., eulim@smcgov.org, 650-599-1498

San Mateo County's Foodware Aware Program, foodware@smcgov.org, 888-442-2666

Paula Borges, Palo Alto, paula.borges@cityofpaloalto.org

Biodegradable Products Institute

Compost Manufacturing Alliance

San Mateo County Disposable Food Service Ware Ordinance and participating cities

San Mateo County information and purchasing guide for food service establishments

City of Burlingame's survey results visualization

Palo Alto City Council's staff report on Foodware Reduction Ordinance

# Other Solutions to Explore

## Corporate Waste Audits

*Businesses can reduce their waste by periodically checking their waste stream*

Waste audits are useful tools for any employer trying to reduce its waste. A study of 100 corporate waste audits by GreatForests.com found that 77 percent of what was thrown out as trash was actually recyclable. The missorted refuse consisted of organics (34 percent), paper (23 percent), glass/metal/plastic (19 percent), and e-waste (1 percent).

A waste audit can tell an employer what is working or not working with its current waste and recycling program. Genentech audits have revealed excessive food waste that has led to the deployment of more compost containers in specific areas. Also, waste audits can unlock missing revenue streams and potential savings. By reducing trash, an employer can reduce costs associated with waste hauling and materials management.

At Genentech, the Zero Waste Manager conducts campus-wide waste audits twice a year. Prior to the audit, Genentech employees are invited to volunteer to help examine the waste. Volunteers are assigned to audit the waste from the building in which they work, to create a sense of ownership over the waste.

The janitorial staff stages the accumulated waste in preparation for the audit. Then the volunteers sort through the waste and catalog how much has been missorted. From data and metrics that have been collected and recorded, Genentech has found that, in recent years, just 35 percent of waste in landfill bins should go to landfill, and the rest has been missorted.

Thanks to these audits, Genentech is aware that food waste is a significant area of concern. Food waste is missorted the most often at Genentech, and it causes issues for waste compactors. Genentech has used this information to implement targeted organic waste reduction strategies and track progress.

**References and Resources**


"Waste Audit Facts and Benefits: Why Every Business Needs One" GreatForest.com

"How to Plan a Waste Audit," Dumpsters.com


## Right to Repair Act

"Right to Repair" is the idea that individuals and third parties should be allowed to and able to repair electronic devices in order to avoid having to continually replace electronics, which will drastically reduce the e-waste stream. Electronic waste, also known as e-waste, poses significant problems for human and environmental health in addition to being a big contributor to the overall amount of waste in the world. Specifically, toxic materials from e-waste can enter the environment and unsafe handling of e-waste can lead to irreversible health problems for workers. The Environmental Protection Agency estimates that a large majority of e-waste is not recycled and ends up in landfills.

As of March 2023, consumer electronic appliances in the European Union were required to be repairable for a varying number of years: for example, 10 years for washing machines and seven years for refrigerators. In France, a repairability index helps consumers choose products that will be easier to repair. In the U.K., Right to Repair regulations require manufacturers to provide replacement parts to ensure that select electronic products (e.g., most appliances and TVs) are repairable for at least 10 years. While the U.S. does not have an equivalent policy, it took a step in this direction when the Federal Trade Commission adopted a policy in July 2021 in support of Right to Repair by agreeing to increase law enforcement against illegal repair restrictions.

In California, there is still no legislation about the right to repair all electronic devices. As of June 2023, Bill SB 244 had been overwhelming approved with bipartisan support by the State Senate and was stalled in the State Assembly. It would require manufacturers of electronics and appliances to make parts, tools, and documentation available to consumers and independent shops. Previous electronic right

to repair bills in California, including one that would have applied to medical devices, have not been approved, yet as of 2021, 27 states in the U.S. have considered Right to Repair legislation, indicating that the issue is garnering more support.

**References and Resources**

France's Repairability Index

France's Instruction Manual for Calculating the Repairability Index of Electrical and Electronic equipments