

UC San Diego

Zero Waste Plan



As of September 2019

zerowaste.ucsd.edu

Executive Summary

University of California (UC) campuses have had zero waste goals in place since 2008. But as a growing campus, UC San Diego has encountered a number of obstacles in trying to meet these goals. The campus's waste diversion rate has dropped from a high of 55% (without construction and demolition waste) in Fiscal Year 2010 (July 1, 2009 through June 30, 2010) to a low of 35% by Fiscal Year 2018 (July 1, 2017 through June 30, 2018). (The UC's diversion goal is 90% by 2020.) Expanding on-campus populations, competition for space, staff turnover, and a lack of regional infrastructure for post-consumer composting or anaerobic digestion have made reaching zero waste challenging.

In 2018, UC San Diego formed a Zero Waste Working Group of students and staff to tackle these issues head on. In addition, in August/September 2019, the main La Jolla campus transitioned to a new hauler of its municipal solid waste, comingled recyclables, and organic recyclables (food and green waste, animal bedding, etc.) This plan contains university-wide strategies for the main La Jolla campus recommended by both the working group and the new hauler to promote reduction, reuse, recycling, anaerobic digestion, and composting -- in that order of priority -- across all aspects of the campus community. Recommendations range from expanded student and employee outreach to new partnerships with suppliers and retail tenants to improved data collection and reporting. This plan excludes the UC San Diego Health System (East Campus and Hillcrest), which is setting its own zero waste goals by 2020.

This zero waste plan is a living document and will be continually updated to reflect new programs with the university's hauler; changes in regional infrastructure and partnerships; new technologies for zero waste; new city, regional, state and UC-wide policies and regulations; and the transformation of the campus as outlined in the UC San Diego 2018 La Jolla Long Range Development Plan update.

Home to a cutting-edge microgrid, renewable energy options, and one of the largest electric vehicle infrastructures on any campus, UC San Diego has proven its leadership in carbon neutrality. It's time to extend that innovative and collaborative spirit to zero waste. This plan will guide the university towards doing just that.

Please direct questions or comments to:

UC San Diego Sustainability
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This plan was reviewed and agreed upon by members of the UC San Diego Zero Waste Working Group listed below. The working group would like to thank UC San Diego Chancellor Gary C. Matthews and Associate Vice Chancellor Steve Jackson, UC Office of the President Sustainability Associate Director Ryan Bell, UC Systemwide Zero Waste Working Group Co-Chairs Anne Kriegoff (UC Irvine) and Matt O’Carroll (UC Santa Barbara) and all working group members, UC San Diego Health System colleagues Barbara Hamilton and Carl Solomon, City of San Diego Recycling Program Manager Ken Prue, and Republic Services and EDCO Disposal for their continued feedback and support.

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Table of Contents

EXECUTIVE SUMMARY	1
SITE OVERVIEW	4
Waste Reporting Boundaries and Facilities Inclusions	4
Weighted Campus User	5
Context	5
UC Zero Waste Policy	8
San Diego and California Policies	9
CURRENT SITUATION	12
History of Waste Diversion at UC San Diego	12
Progress to Date	27
Challenges	29
Waste costs and project funding	31
RECOMMENDATIONS	33
Overall	35
Reduction	37
Reuse	38
Diversion (Recycling, Composting, and Digestion)	40
Communications: Education and Outreach	48
Ongoing Monitoring, Verification and Testing	51
SUMMARY OF ZERO WASTE RECOMMENDATIONS	52
FUTURE GOALS	55
Appendix A: Definitions	56

SITE OVERVIEW

Waste Reporting Boundaries and Facilities Inclusions

To date, the University of California, San Diego (UC San Diego) has followed a blended land ownership and operational control model of reporting for zero waste: if a facility is on campus-owned land and the university has control over the operations of the building space, the facility is subject to UC zero waste policies and its reduction, reuse, and diversion data are collected and reported as part of the university's total. As a result, past waste diversion plans and data reporting have covered the following areas of the La Jolla UC San Diego campus:

- Main Campus (state-funded academic buildings)
- Housing, Dining & Hospitality (HDH)
- University Center (UCEN)
- Recreation and Athletics
- University Extension (UNEX)
- Camp Elliott
- Scripps Institution of Oceanography (SIO)
- School of Medicine (SOM)

The UC San Diego Health System (including the Hillcrest campus) manages and reports on its own waste. Following UC Sustainable Practices Policy and best practices set by Practice Green Health, UC San Diego Health will be setting its own zero waste goals, metrics and reporting requirements by 2020. The Health System and main La Jolla campus work in close collaboration to align and partner where feasible to streamline processes, share best practices, and save resources.

Starting in 2020 and going forward, UC San Diego will be following the boundaries set by the UC Zero Waste Working Group, reporting on all properties on its owned land, even if operational control of a property's waste services is not under its purview. These areas include but aren't limited to the following:

- Birch Aquarium
- The Sanford Consortium
- The Salk Institute
- Torrey Pines Center North and Torrey Pines Court

Weighted Campus User

UC San Diego follows the “weighted campus user” definition supplied in the latest version of the Association for the Advancement of Sustainability in Higher Education (AASHE) [STARS Technical Manual](#) and referenced in the [UC Sustainable Practices Policy](#):

“Weighted campus user” is a measurement of an institution’s population that is adjusted to accommodate how intensively certain community members use the campus. This figure is used to normalize resource consumption and environmental impact figures in order to accommodate the varied impacts of different population groups. For example, an institution where a high percentage of students live on campus would witness higher greenhouse gas emissions, waste generation, and water consumption figures than otherwise comparable non-residential institution since students’ residential impacts and consumption would be included in the institution’s totals. STARS calculates the figure according to the following formula:

Weighted campus users = $(A+B+C) + 0.75[(D-A)+(E-B)-F]$

A= Number of students resident on-site

B= Number of employees resident on-site

C= Number of other individuals resident on-site and/or staffed hospital beds

D= Total full-time equivalent student enrollment

E= Full-time equivalent of employees (staff + faculty)

F= Full-time equivalent of students enrolled exclusively in distance education

Using this definition, UC San Diego main campus (minus the East Campus Health System and Hillcrest) has the following WCU numbers:

- Baseline (2015/16): 36,885
- Current (2018/19): 36,582

Context

The [University of California, San Diego \(UC San Diego\)](#) is a student-centered, research-focused, service-oriented public institution that provides opportunity for all. Recognized as one of the top 15 research universities worldwide, a culture of collaboration sparks discoveries that advance society and drive economic impact. According to the university’s [2018 Long Range Development Plan](#), “the 1,158-acre UC San Diego campus is located within the La Jolla and University City communities of the City of San Diego approximately 12 miles from downtown. Currently 793 acres (68%) of the campus are developed with over 630 buildings totaling 15.7 million gross square feet (GSF), seven parking structures (6,325 spaces), surface parking lots (9,175 spaces), courtyards and plazas, recreational fields, paved areas, walkways, and roadways. The remaining acreage consists of Open Space Preserve (335 acres; 28%) and other undeveloped lands (41 acres; 4%).” Another 3.3 million GSF is currently under construction or has been approved for design and construction (in addition to new parking facilities).

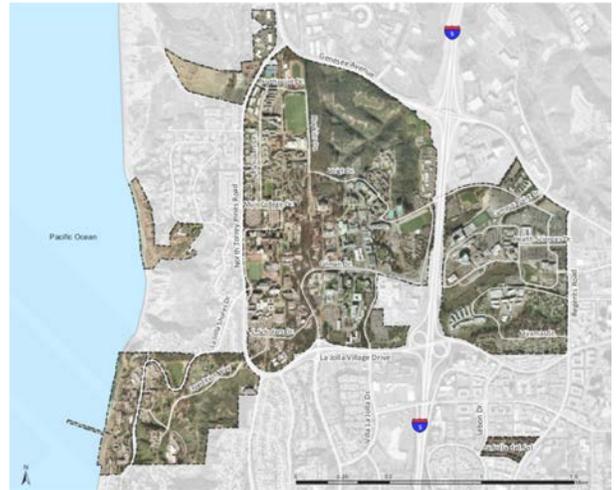
As of Fall 2018, UC San Diego had 37,887 students enrolled. Given mandates by the UC Regents and UC President, UC San Diego is increasing student enrollment, on-campus student housing, and associated academic and other facilities to support increased student enrollment.

The 2018 LRDP anticipates the following growth by 2035-2036:

- 42,400 students will be enrolled
- 65,600 students, faculty and staff
- 27,886,300 GSF of development
- 26,000 residential beds for students

Sustainability is not just a catch-phrase here: it is a way of life, part of the institutional DNA imparted to us by Roger Revelle, one of the university's founders and a pioneer of climate

change research. Since our founding more than half a century ago, we have built upon that visionary legacy to become a living laboratory of sustainable solutions that benefit UC San Diego as well as our local and global community. From what we study to how we work, the principles of sustainability influence what we do and how we do it. More information can be found at sustain.ucsd.edu.



Recycling

Recycling, composting and other zero waste Infrastructure in southern California -- whether managed by government agencies or by private businesses -- is limited at present but should improve over time to meet statewide laws and regulations. Three major material recycling facilities are capable of processing single-stream recyclables, and several recyclers accept source separated materials. The three facilities listed below are viable options for UC San Diego's large recycling needs. Currently, no "dirty" material recycling facilities in San Diego County separate recyclables from trash, though EDCO is discussing building this type of facility in the near future. Residue amounts at these local facilities are typically below 10%.

1. [EDCO Lemon Grove](#), 6670 Federal Blvd., Lemon Grove, CA 91945
2. [EDCO Escondido Recovery Facility](#), 1044 W Washington Avenue, Escondido, CA. EDCO's ERR replaced the SANCO facility in 2017 after 15 years of operation.
3. [IMS Recycling](#), 2740 Boston Avenue, San Diego, CA 92113
4. [Allan Company](#), 6733 Consolidated Way, San Diego, CA 92121

Since 2012, UC San Diego has contracted with Republic Services to haul recyclables to an EDCO recycling facility and municipal solid waste to Sycamore or Otay landfills. The contract is managed by Facilities Management (FM). In 2019, UC San Diego opened a request for proposals (RFP) for hauling services and by September 16, 2019 is bringing EDCO on board as the university's new hauler. EDCO's recycling facility in Lemon Grove has been operating since 1989 and processes over 500 tons of recyclables a day. EDCO continues to upgrade its recycling technology, including building a new municipal recycling facility that will sort recyclables out of trash loads. Several regional vendors provide source-separated recycling services for materials like electronic waste, universal waste, metal (ferrous and non-ferrous), carpet, drywall, wood, concrete, asphalt, Styrofoam, etc.

Composting and Anaerobic Digestion (also called Organics Recycling)

Multiple outlets in the San Diego region accept green waste and pre and/or post-consumer food scraps for composting. Commercial facilities close to campus include:

1. [Miramar Greenery](#): landscape/green and pre-consumer food scraps
2. [Sycamore Landfill](#): landscape/green waste only
3. [Otay Landfill](#): Mainly landscape/green and with limited food composting through the City of Chula Vista and Republic Services. Post-consumer food waste must have a 1% or less contamination rate.
4. [Oceanside's El Corazon Compost Facility](#) (City of Oceanside and AgriServices, Inc.)
5. [Evergreen Nursery](#): landscape/green waste only
6. [Agromin](#): landscape/green waste only
7. [San Pasqual Valley Soils](#): landscape/green waste only

Since 2012, Republic Services has hauled both green waste and pre-consumer food waste from Housing, Dining and Hospitality (HDH) restaurants and markets to Miramar Greenery. Operated by the City of San Diego, this facility accepts pre-consumer food scraps diverted from the campus waste stream along with some paper products from kitchen operations (e.g., coffee filters, parchment paper, kitchen paper towels, etc.). While initially the Greenery was open to accepting compostable serviceware, this was stopped over time as many "compostable" food service items were not breaking down quickly enough.

UC San Diego's new hauler, EDCO, is building anaerobic digestors in Escondido. Two digesters will become operational in 2021, taking about 325 tons per day, 24-hours a day and seven days a week. Phase two will increase digestion capacity up to 650 tons a day. Along with servicing several San Diego-region municipalities, EDCO's digesters could service the university.

Construction and Demolition (C+D) Recycling

All new campus construction must meet a minimum diversion level of 75% of construction and demolition (C+D) waste. Compliance by contractors working on new construction and major renovations on campus is overseen by Capital Program Management (CPM). The City of San Diego certifies that that all sites accepting and processing C+D recycling and waste meet city and state diversion requirements; it assigns a certified diversion percentage to all regional mixed construction and demolition facilities on a quarterly basis¹.

Diversion rates (as of July 2019) for the three facilities closest to campus are listed below:

1. Otay Construction and Demolition (72%)
2. Escondido Resource Recovery (ERR) Facility (68%)
3. SANCO Resource Recovery & Buy Back Center (75%)

¹ https://www.sandiego.gov/sites/default/files/2018_certified_construction_demolition_recycling_facility_directory.pdf

UC Zero Waste Policy

UC San Diego strives to meet the following zero waste policy as part of the [UC Sustainable Practices Policy](#), which is a UC-wide policy for all campuses excluding their health systems. (UC Health Systems will be setting their own zero waste goals and policy by 2020.) Updated in 2018-2019, the zero waste section of the UC Sustainable Practices Policy emphasizes the CalRecycle zero waste pyramid: reduction and reuse first, then recycling, composting, and anaerobic digestion, with landfill as last resort.² The overall emphasis is on moving campuses away from a “throw away” mentality. As a result, it’s important to note that the per capita waste reduction goal looks to lower the total amount that individuals throw away -- even if items are going to recycling, composting or anaerobic digestion. The per capita goal focuses on reduction, redesign, and reuse, while the diversion goal focuses on all types of recycling (comingled and specialized -- called inorganics) and composting and anaerobic digestion -- called organics).



1. The University prioritizes waste reduction in the following order: reduce, reuse, and then recycle and compost.
2. The University supports the integration of waste, climate and other sustainability goals, including the reduction of embodied carbon in the supply chain through the promotion of a circular economy and the management of organic waste to promote atmospheric carbon reduction. In support of this goal, waste reporting will include tracking estimated scope 3 greenhouse gas emissions.
3. The University will reduce per capita waste generation at all locations other than health locations as follows:
 - a. Reduce waste generation per capita to FY2015/16 levels by 2020;
 - b. Reduce waste generation by 25% per capita from FY2015/16 levels by 2025;
 - c. Reduce waste generation by 50% per capita from FY2015/16 levels by 2030.
4. The University will achieve zero waste by 2020 at all locations other than health locations. Minimum compliance for zero waste is 90% diversion of municipal solid waste from landfill.
5. By 2020, the University will prohibit the sale, procurement or distribution of Expanded Polystyrene (EPS) other than that utilized for laboratory supply or medical packaging and products.
 - a. By 2018, no EPS shall be used in food service facilities for takeaway containers.
 - b. The University seeks to reduce, reuse and find alternatives for EPS and laboratory and medical packaging products.

There are also parts of the University’s updated sustainable procurement policy that will help UC San Diego meet its per capita waste reduction goals, including:

- Sustainable procurement will look to reduce unnecessary purchasing first, then prioritize purchase of surplus or multiple use products, before looking at recyclable or compostable products.
- Targeting sustainable products and services for volume-discounted pricing to make less competitive or emerging sustainable products and services cost- competitive with conventional products and services.

² <https://www.calrecycle.ca.gov/zerowaste>

- Leveraging its purchasing power and market presence to develop sustainable product and service options where not already available.
- Requiring packaging for all products procured by the University be designed, produced, and distributed to the end user in a sustainable manner.
- Contracting with suppliers of products (e.g., electronics, furniture, lab consumables) that have established (preferably non-manufacturer specific) end-of-life reuse, recycling, and/or take back programs at no extra cost to the University, and in compliance with applicable federal, state, and University regulations regarding waste disposal.
- Requiring sustainability related purchasing claims to be supported with UC- recognized certifications and/or detailed information on proven benefits, durability, recycled content, and recyclability properties, in accordance with the Federal Trade Commission’s (FTC) Green Guides for the use of environmental marketing claims.

San Diego and California Policies

The UC San Diego campus is located in the City of San Diego, which has two separate mandatory recycling ordinances, the Commercial Recycling Ordinance and the Construction and Demolition Debris Deposit Ordinance. While UC San Diego is a self-permitting institution and not directly subject to City or State ordinances and regulations, the university collaborates with both and strives to meet their zero waste goals in addition to our own. In its [2015 Zero Waste Plan](#), the City of San Diego’s goals are to:

- Target 75% diversion by 2020;
- 90% diversion by 2035;
- And “zero” by 2040; and
- Increase the diversion requirement for construction and demolition (C&D) to 65%.

In February 2019, the City of San Diego passed a [“Polystyrene Foam and Single Use Plastics Ordinance.”](#) Under the ordinance:

- A food vendor may only distribute plastic straws upon request of the customer (sit down or takeout). Plastic straws may be offered to customers or provided at self-service stations.
- A food vendor may only distribute plastic utensils upon request of the customer (takeout only). Plastic utensils may be offered to customers or provided at self-service stations.
- All polystyrene food service ware, food trays, egg cartons, coolers, ice chests, and pool or beach toys are prohibited from City facilities (including special events) at parks, recreation centers, beaches, lakes, offices and other City owned or leased facilities.
- No person may distribute egg cartons, food trays, or food service ware made in whole or in part from polystyrene foam.
- Food serviceware include: bowls, plates, trays, cups, lids, and other similar items designed for one-time use for prepared foods, including containers for eating in, takeout food, or leftovers.

The State of California has several pieces of legislation guiding waste management and recycling, outlined below.

[Assembly Bill \(AB\) 939 \(California Integrated Waste Management Act\)](#)

The California Integrated Waste Management Act of 1989 (AB 939) established the current organization, structure, and mission of CalRecycle with an integrated waste management hierarchy that consists of the following (in order of importance): source, reduction, recycling, composting, and land disposal of solid waste.

AB 939 requires counties to develop an Integrated Waste Management Plan (IWMP) that describes local waste diversion and disposal conditions and lays out programs to achieve waste diversion goals. Cities and counties were required to divert 50% of all solid waste out of the landfill by January 1, 2000, through source reduction, recycling, and composting activities.

[Assembly Bill \(AB\) 341](#)

In 2011, the state legislature enacted AB 341 (PRC Section 42649.2), increasing the diversion target to 75% statewide. AB 341 also requires the provision of recycling services to commercial facilities that generate four cubic yards or more of solid waste per week, and multi-family facilities with five or more units.

[Assembly Bill \(AB\) 1826](#)

In October 2014, Governor Brown signed AB 1826 Chesbro (Chapter 727, Statutes of 2014), which requires businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste they generate per week. Organic waste means food waste, green waste, landscape and pruning waste, non-hazardous wood waste, and food-soiled paper waste that is mixed with food waste. For businesses that generate eight or more cubic yards of organic waste per week, this requirement began on April 1, 2016, while those that generate four cubic yards of organic waste per week needed to have an organic waste recycling program in place beginning January 1, 2017. The requirement becomes more stringent in following years. Multi-family properties are regulated but are only required to divert green waste and non-hazardous wood waste.

[Senate Bill \(SB\) 1383](#)

“In 2016, Governor Brown signed SB 1383 (Lara, Chapter 395, Statutes of 2016), establishing methane emissions reduction targets that will aid the state in reducing greenhouse gas emissions to below 1990 levels as prescribed in AB 32 (Núñez, Chapter 488, Statutes of 2006). As it pertains to CalRecycle, SB 1383 establishes targets to achieve a 50 percent reduction in the level of statewide disposal of organic waste from the 2014 level by 2020 and a 75 percent reduction by 2025.”³ CalRecycle will begin to enforce organics recycling and edible food recovery targets by January 1, 2022. While CalRecycle is still undergoing formal rulemaking for SB 1383, as of the writing of this plan they were considering making UC campuses beholden to following the bill.

[Senate Bill \(SB\) 1335: Sustainable Packaging for the State of California Act of 2018](#)

Senate Bill (SB) 1335 (Allen, Chapter 610, Statutes of 2018) was signed into law by Governor Brown. This law prohibits foodservice facilities located in a state-owned facility, operating on or acting as a concessionaire on state-owned property, or under contract to provide food service to a state agency from dispensing prepared food using food service packaging unless it is either recyclable, reusable, or compostable. CalRecycle must adopt regulations by January 1, 2021, that clarify terms, specify criteria, and outline a process for determining the types of food service packaging that are reusable, recyclable, or compostable. CalRecycle will publish a list of approved food service packaging types on its website by March 2021 (within 90 days of the regulations being adopted). As of the writing of this plan, CalRecycle was still undergoing rulemaking for SB 1335.

[Senate Bill \(SB\) 54/Assembly Bill \(AB\) 1080 California Circular Economy and Plastic Pollution Reduction Act](#)

Passed in 2019, SB 54/AB 1080 establishes a comprehensive framework to address the pollution and waste crisis and sets a statewide goal of ensuring that manufacturers reduce the waste generated by single-use

³ CalRecycle. (April 29, 2019). *SB 1383 Infrastructure and Market Analysis. Contractor’s Report Produced Under Contract by: Integrated Waste Management Consulting, LLC, Nevada City, California.* Publication #DRRRR-2019-1652.

packaging and products by 75% by 2030. Specifically, the bill requires CalRecycle to conduct a robust stakeholder process to develop regulations that:

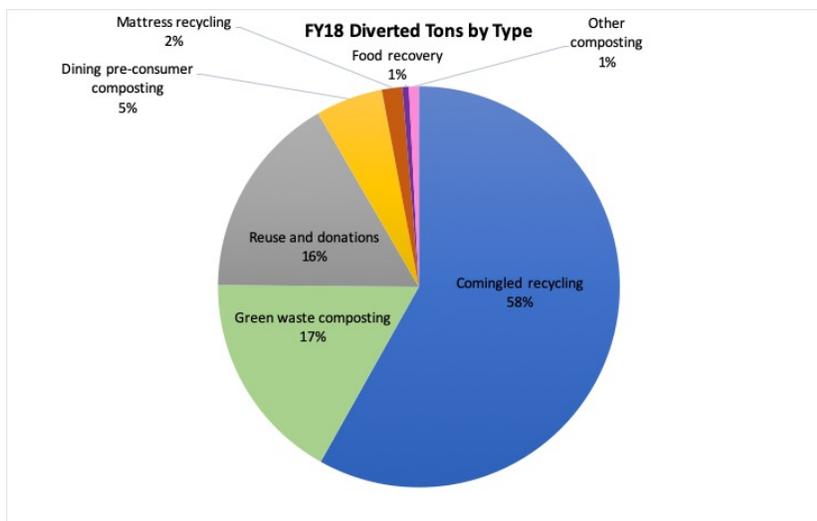
- Require manufacturers and retailers to design their packaging to reduce unnecessary waste and improve the recyclability or compostability of the packaging. Require all single-use packaging to be effectively reusable, recyclable or compostable after 2030.
- Identify the top ten most littered single use plastic products and require these to be manufactured with only recyclable or compostable material.
- Develop incentives and policies to encourage in-state manufacturing using recycled material generated in California.

CURRENT SITUATION

History of Waste Diversion at UC San Diego

To date, UC San Diego has not undertaken a large-scale waste audit or characterization study of campus. A small waste audit of campus was conducted in 2011, though detailed results are no longer available. Republic Services conducted a waste and recycling characterization study of Preuss High School in December 2014 and worked with the university’s Green Labs Program to do a small waste audit of two laboratory buildings in spring 2018. Based on these less detailed audits of parts of campus, along with qualitative reports from those departments that deal directly with campus buildings, campus waste is composed of municipal solid waste, landscaping or “green” waste, recyclables, surplus equipment, regulated laboratory waste (hazardous, biological, radioactive, medical), electronic waste, and food waste. (Information regarding how the main La Jolla campus handles regulated wastes can be obtained by contacting [UC San Diego Environment, Health and Safety](#).) EDCO will be conducting a more thorough waste audit of campus in Fall 2019, with updates at least every two years.

A number of reduction, reuse, recycling and composting programs have been in place since 2003 and are outlined below. The university diverts most of its waste from the landfill or incineration through comingled recycling (mixed paper, cardboard, glass, and #1-7 plastics), followed by composting of green waste like landscaping debris and clippings, wood and animal bedding. Reuse and donation programs include the sale of furniture, electronics, and other goods through Surplus Sales, spring student move-out donation of usable items to the Disabled Veterans of America, and pallet, cooler, and other supplier take-back and reuse programs set up through IPPS. Food recovery began in 2017 and continues to grow, preventing edible food from going to composting or the landfill. The student organization the Food Recovery Network leads these efforts in partnership with the campus Basic Needs Center and Triton Food Pantry. Finally, organics recycling takes care of pre-consumer food scraps from all restaurants and markets run by HDH, some pre-consumer food scraps and coffee grounds from a growing number of on-campus vendors, and post-consumer composting from certain locations on campus (like the Scripps Institution of Oceanography and the Sustainability Resource Center) and at a growing number of campus events. Most of this organics recycling is composting with a small amount of anaerobic digestion. The university’s hauler takes HDH’s pre-consumer composting to Miramar Greenery, while limited post-consumer composting happens in on-campus gardens.



Reporting and Logistics

While reporting of recycling, composting and municipal solid waste tonnages were done by Facilities Management staff and students before 2003, no actual weights were recorded after Republic Services was awarded the university's waste hauling contract from 2008 to 2019. Records of university-wide municipal solid waste, recycling and pre-consumer composting tonnages are only available from 2015 on. Until September 16, 2019, when EDCO will take over services as the university's hauler, Republic Services provided the university with annual volume to weight waste, recycling and pre-consumer composting/green waste conversions based on how often they picked up waste and recycling from campus. They had to assume each bin they emptied was full, which wasn't always the case. The company was unable to weigh actual amounts of waste, recyclables or compost leaving the campus due to unreliable and hard to calibrate truck scales. In addition, at the landfill, recycling facility, or greenery to which Republic hauled the items, UC San Diego waste, recyclables and compost/organic waste were combined with waste coming from their other customers, making it impossible to distinguish UC San Diego-generated waste.

Reduction

Reduction entails preventing waste from occurring through redesign of products and processes, prohibitions on material types allowed on campus, changes in purchasing decisions, and the like.

Expanded Polystyrene (EPS) Foam Ban

UC Sustainable Practices Policy requires that by 2020 the university prohibit the sale, procurement or distribution of Expanded Polystyrene (EPS) other than that utilized for laboratory supply or medical packaging and products. This includes a ban starting in 2018 on the use of EPS in food service facilities for takeaway containers. System-wide, campuses are seeking to reduce, reuse and find alternatives for EPS and laboratory and medical packaging products. While UC San Diego had a "Styrofoam" ban in place prior to 2018, it was not consistently communicated to the campus community nor enforced.

Food Preparation Waste Prevention

UC San Diego Dining has used Foodpro from Aurora Inc. to measure food waste from production in order to improve production accuracy and decrease waste. Similarly, in early 2019 UC San Diego Health began using Leanpath at both Hillcrest and the East Campus La Jolla Medical Centers to do the same.

Going digital

UC San Diego has promoted going paperless for over 10 years. Undergraduate and graduate student catalogs are online and no longer printed. Employees are encouraged to use direct deposit instead of receiving paper checks. Requests for Proposals (RFP) from suppliers are requested electronically, and many buyers across the university use electronic signatures to avoid printing contracts and agreements.

Sustainability Requirements in RFP's and Contracts

Integrated Procure-to-Pay Solutions (IPPS) works with departments to ensure that sustainability requirements are placed into all requests for proposals (RFP's). Examples of zero waste-related RFP language include asking suppliers and manufacturers for take-back and reuse program options, requiring paper shred suppliers to recycle all paper, and working with suppliers to consolidate package deliveries.

Reuse

Reuse entails turning what would be discarded materials into usable items, often for a purpose different than the materials' original purposes.

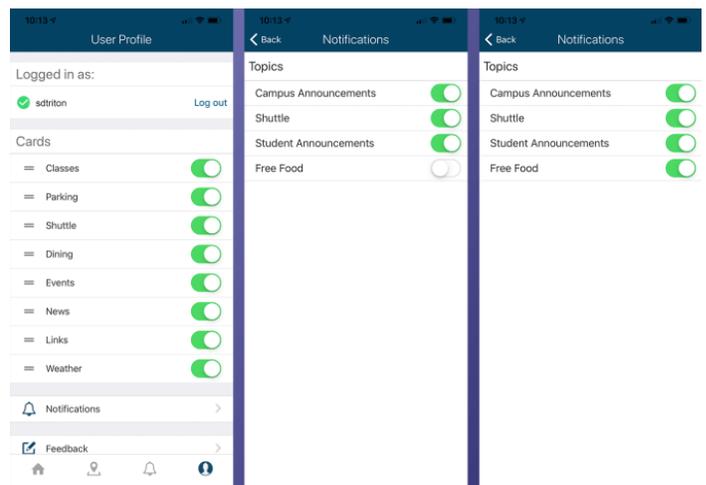
ChemCycle

In 2017, the [UC San Diego Green Labs program](#) took on the challenge of reinvigorating a program overseen and managed by EH&S that had been inactive for a few years – [ChemCycle](#). Through ChemCycle, researchers are able to donate and order unopened chemicals for free. Chemicals for distribution are stored in a safe stock room maintained by EH&S. ChemCycle saves labs money through not having to buy new chemicals and saves campus money through lowered hazardous waste disposal costs.

Food Recovery

Food recovery is an important component of zero waste efforts: food diverted from the landfill not only feeds those facing food insecurity, but also reduces methane and other greenhouse gas emissions released in landfills. Currently 44% of undergraduate and 26% of University of California graduate students have reported skipping meals to save money ([UCUES 2016 and Graduate Student Well-being Survey 2016](#)). To address this challenge, UC San Diego Dining increases access to healthy food by accepting CalFresh electronic benefit transfer (EBT) at two UC San Diego Marketplaces (Roger's and The Village Marketplace) and will be expanding to two more locations (Goody's and Earl's) soon followed by the Sunshine Market. To divert recovered edible foods from landfills, UC San Diego's Fresh and Full Food Transportation program (3FT) is a collaboration between the student organization the [Food Recovery Network \(FRN\)](#), [The Hub Basic Needs Center \(BNC\)](#), and the [Center for Student Involvement \(CSI\)](#). The program diverts edible food waste to the university's [Triton Food Pantry](#) and to Urban Street Angels (USA), a local community-based organization that serves transitional aged youth facing homelessness. In Fiscal Year 2018, FRN recovered almost three tons of food, including unsold, prepared food from Dining. The Triton Food Pantry receives frequent donations of a variety of fresh and non-perishable food of which they have distributed more than 15.5 tons to address food security challenges on campus. During university breaks and shutdowns (and where otherwise possible), UC San Diego Dining has donated more than 11.6 tons of recovered food to the San Diego Rescue Mission. UC San Diego Health has also expanded its food recovery and donation efforts.

To assist with getting food to students in need, in 2018-2019 UC San Diego Associated Students created a new food alert system as part of the university mobile application. Departments can [register](#) to send notifications to students when they have leftover food from events. The [UC San Diego app](#) is available as a download via the Apple Application Store and the Google Play store. Any registered undergraduate, graduate, or professional studies student can receive notifications. As of August 2019, approximately 950 students signed up to receive notifications through the app and 27 users have access to send the notifications.



Reusable water bottles, coffee mugs, to-go containers, dishware and utensils

Multiple programs exist across campus to promote the use of reusable water bottles, coffee mugs, dishware, utensils and to-go containers, including:

- In Academic Year 2018-2019, Dining moved back to using reusable dishware, cups and cutlery in on-campus restaurants. In addition, they moved to paper straws only given out upon request.
- Several departments and locations have reusable dishware programs for faculty, staff and student use, including the Sustainability Resource Center (through the Student Sustainability Collective), the Scripps Institution of Oceanography (SIO), and colleges like Eleanor Roosevelt College. Reusable dishware programs need to comply with Environment, Health and Safety (EH&S) food handling safety requirements.
- HDH provides discounts in campus restaurants and markets if reusable cups are used: if students or other customers bring their own reusable cup or mug when purchasing fountain beverages or coffee, they will receive a \$0.20 discount. If they bring a canvas or other reusable shopping bag to use in HDH Markets, they receive a \$0.10 discount. Reusable bags, cutlery, mugs and water bottles are frequently given away at special events and are available in all markets. In Academic Year 2018-2019, HDH did a large [“Choose to Reuse” marketing program](#) targeting students and guests, encouraging them to use and return all in-house china, cups, and cutlery, and promoting the use of reusable water bottles, bags, and straws.
- HDH piloted a new [reusable to-go container program](#) in Winter and Spring 2019 in their John Muir College facilities so that employees or students could opt to have their food served in a reusable to-go box and exchange their container for a new one on their next visit, at no cost to them. More than 500 participants started using G.E.T. Eco-Takeout Containers to take their meals to go at Pines and Roots, reducing food waste and limiting the amount of single-use plastics used. This program did experience some challenges, especially with getting students to reuse or return their to-go containers. In order to rework this program for an effective campus rollout in 2020, this program is being put on hold while options for its future management are considered.
- In 2018, the Office of the Vice Chancellor for Resource Management and Planning funded the installation of 10 new water refill stations across the university. Water refill stations can easily be found on the [online campus map](#) under “Services” and then “Hydration.”



Student Move-out Donation Program

Each year during move-in (fall) and move-out (spring), HDH orders approximately 25 roll-off recycling and/or trash containers to be staged at strategic housing locations around campus in order to deal with recyclables and waste generated when residential students come to and leave campus. To help keep reusable and recyclable items out of the landfill, each spring HDH runs a student move-out donation program in partnership with the Disabled Veterans of America (DAV) and on-campus Triton Food Pantry.

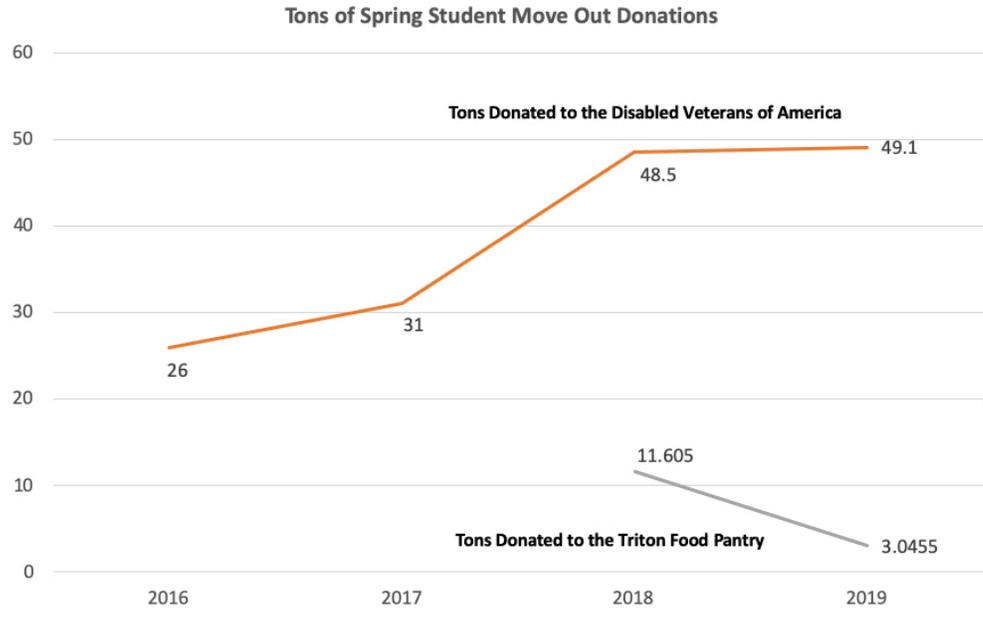
Table 1: Housing, Dining and Hospitality Student Move-out Donation Program Spring 2019

	Dates	Accepted Items	Changes to Program in FY19
Disabled Veterans of America (DAV) Donation Drive	May 20 - June 16 30 red/white/blue donation bins across campus in key locations	Accepts any donations except mattresses and food items	<ul style="list-style-type: none"> • Additional bins. • Relocated bins closer to the "decision points" like parking lots, loading areas, and the 40 yard trash and recycling roll-offs brought to campus for move-outs. • Education events in each college May 20-May 31 with HDH Sustainability Manager, EcoReps, and DAV reps. Explain the donation program, what is and isn't accepted (e-waste is accepted), and ask students to pledge to donate during move outs.
Triton Food Pantry Food Drive	June 3 - 16	Accepts any unopened, non-perishable food items	

New marketing approaches taken in Spring 2019 included:

- Connecting to the cause and act of donating - more attainable and relatable for residents.
- Separate messages for move-outs, awareness events, DAV, TFP, etc. - as opposed to one single message trying to capture everything
- Highlighting the impact of donating
- Working with ResLife and RAs to spread the word directly to their residents through social media, newsletters, bulletin boards, and face to face interactions
- Directing students to the website instead of crowding our signage with all necessary info. Created formal A-Frames for both recycling and landfill roll-offs directing people to donate their items first.

As graduate students move out of the course of the summer quarter, HDH places and collects from donation bins in graduate student housing July through August.



Surplus Sales

Reusable furniture and equipment are diverted through UC San Diego’s Surplus Sales facility. Materials unsuitable for sale are often recycled. In Fiscal Year 2018, Surplus Sales sold over 267 tons of items, keeping them out of landfills. The following items are warehoused and exchanged through the program:

- Audio/Visual equipment
- Clinical and medical equipment
- Computer and data processing equipment
- Electronic testing equipment
- Food preparation equipment
- Furniture
- Office equipment
- Laboratory and research equipment
- Machine shop and fabrication equipment
- Motor vehicles
- Musical instruments

Supplier Take Back Programs

IPPS continues to work with suppliers to encourage them to take back and reuse items. For example, in 2018 Facilities Management replaced 1,700 battery-operated paper towel dispensers with manual dispensers. The old dispensers were returned to the manufacturer for reuse. Other examples of take back programs include lab suppliers taking back and reusing coolers for lab supply shipments and pallets stored at the university’s warehouse at Trade Street. For example, in Fiscal Year 2018, slightly more than 84 tons of pallets were taken back and reused by Fisher, VWR, Office Depot, Frito Lay, and Sysco, keeping them out of the landfill. Finally, HDH buys all of its mattresses from Dormlife, giving old mattresses back to the company to be donated or recycled.

Diversion: Recycling, Composting and Digestion

Diversion entails finding ways to dispose of materials outside of landfills or incineration. The main forms of diversion are recycling, composting and anaerobic digestion.

Animal Bedding Boxes

Two campus locations were identified where a significant amount of animal bedding is generated. A blower system and receiver boxes were implemented at the Leichtag and Pharmaceutical buildings for the collection and diversion of wood-based animal bedding. The university's MSW, recycling and composting hauler takes the animal bedding for composting.

Comingled Recycling

Before 2003, UC San Diego operated a source-separated recycling program on campus. Due to an increased demand for space and a push to divert as much volume as possible, Facilities Management transitioned to a single-stream program with no onsite sorting. (A waste audit performed in 2011 determined that an additional 17% of the then-current waste stream could be diverted through a single-stream program.) Indoor and outdoor collection systems were designed to maximize the capture of single-stream recyclable commodities. As of spring 2019, the university had approximately:

- 187 trash and 196 recycling bins (mostly 4 yard, front load-load), about 12 trash compactors and 2 recycling compactors around campus serviced multiple times per week
- 13 open top roll-offs across campus
- 78 32-gallon totes for pre-consumer organic waste
- Each year during student move-in (fall) and move-out (spring), the university orders about 25 roll-off recycling and/or trash containers to strategic housing locations around campus.

Inside of buildings, recyclables are collected by Facilities Management or auxiliary custodial staff using blue desk-side recycling bins, blue "Slim Jim" bins, and blue totes. In the past, HDH provided on-campus residents with reusable collection bags in housing facilities so they could transport recyclables from dorm rooms to common area recycling collection containers. The bags were collapsible, washable, and had a description of recyclable items on them. That program ended before 2014.

Trash and recycling dumpsters are paired behind every campus building or other dumpster location on campus. Compactors are ordered in pairs, one for trash and one for recycling. Roll-off containers are used during residence hall move-ins and move-outs and for special projects. In 2012, a standardized color scheme was agreed upon while drafting the campus's waste hauling agreement with Republic Services. Campus trash dumpsters are black and recycling dumpsters are blue; all were consistently labeled in English and Spanish with full-color text and graphics describing the acceptable contents. By 2019, most labels and posters near bins were lost or removed. New labels will be installed over summer and fall 2019 in partnership with the university's new hauler, EDCO.

In 2012, Big Bellies became the standard outdoor landfill and recycling bins for the main La Jolla campus. Facilities Management owns the bins through a purchase agreement with Big Belly. Big Bellies have improved labor efficiency (savings costs) while increasing the campus diversion rate. Challenges include needing to clean the bins frequently, technical maintenance, and trouble-shooting. Although some concrete waste and recycling receptacles remain on campus, when budgets allow they are replaced with Big Bellies. Facilities Management staff gather materials from Big Bellies and deposit items in nearby dumpsters and compactors or returned to a yard operated by Facilities Management that houses roll-off containers for collected materials.

Until 2019, Republic Services hauled all recyclables to EDCO for sorting and selling as commodities. Starting in September 2019, EDCO will take over hauling the university’s MSW, comingled recyclables, and organics recycling. The following materials are accepted by EDCO. Food and beverage containers do not require rinsing as long as they are empty and free of food and liquids. All containers are accepted with caps and lids on. At this time bubble wrap, latex/nitrile gloves and paper towels are not accepted in the single stream recycling program. This information is available on Sustainability Office website (recycle.ucsd.edu) and is updated as program changes occur. The FM Waste Diversion, Recycling and Sustainability Manager, in partnership with EDCO’s onsite Environmental coordinator, will be the first points of contact on all things recyclable for the campus.

Table 2: Items Accepted via EDCO’s Single-Stream Recycling Program

Aluminum, steel and tin cans, such as food and beverage cans for soda, soup, beer, beans, fruit, and vegetables	
Dry and empty pain and aerosol cans	
Small scrap metal, such as metal coat hangers, pots and pans (without handles)	
Clean aluminum foil, clean aluminum trays, and pie tin	
Glass containers including food jars and beverage bottles	
Mixed paper, including junk mail, catalogs, telephone books, magazines, sticky notes newspaper, and paper used for computer printing	
Paperboard boxes such as cereal boxes, tissue boxes, refrigerated food boxes, boxes from toiletries, soda/beer cases	
Shredded paper (placed in a sealed, clear plastic bag for easier handling)	
Aseptic cartons, including milk cartons and juice boxes, half gallon juice cartons, soup/broth cartons, and wine cartons	
Cardboard, including boxes used for moving and shipping or any other box or packaging made of corrugated cardboard	
All plastic containers, lids, and packaging with a resin code of #1-7 (all containers accepted with caps and lids):	<ul style="list-style-type: none"> • #1: PETE OR PET - Polyethylene terephthalate, including water and soda bottles, peanut butter and other food jars, mouthwash bottles, vegetable oil containers, ovenable food trays; • #2: HDPE - High density polyethylene, including milk jugs, juice bottles, shampoo and conditioner bottles, detergent and bleach containers; • #3: PVC - Vinyl or PVC including containers storing cleaners and detergents; • #4: LDPE - Low density polyethylene, including film plastic – shopping bags, sandwich bags, cling wrap, dry cleaning bags (All clean film plastic placed in one bag for easier handling); • #5: PP – Polypropylene, including condiment bottles, medicine bottles, stadium cups, bottle caps, butter and yogurt tubs, reagent boxes, pipette tip boxes, weigh boats and pipette tips made out of #5PP; • #6: PS – Polystyrene, including clean expanded polystyrene such as: foam cups, meat trays, plates, egg cartons, carry-out containers, block packaging, rigid polystyrene, sucas plastic cups, carry-out containers and CD cases; and, • #7: Miscellaneous – Made of a combination of materials 1-6, including baby bottles, 3-gallon water bottles, CDs, medical storage containers, and rigid plastics such as 5 gallon buckets.

Construction and Demolition (C+D) Recycling

While construction and demolition (C+D) waste minimization and recycling are not part of the UC’s zero waste goals, C+D waste and recycling tons for all new construction and major renovations must be reported to UCOP as part of campus all sustainability reporting. All new campus construction overseen by Capital Program Management and its contractors must meet a minimum diversion level of 75%. The City of San Diego is the certifying entity throughout San Diego County; it assigns a certified diversion percentage to all regional mixed construction and demolition facilities on a quarterly basis. To date, recycling associated with smaller project construction and renovation projects managed by Facilities Management, University Centers, or others have not been tracked as doing so it not required by city, state or UC policies or regulations.

Food Waste Composting

In 2010, UC San Diego was accepted as a participant in Miramar Greenery's composting program for pre-consumer compost and green waste. [Miramar Greenery](#) is currently the only local facility permitted to compost food waste, which is operated by the City of San Diego. This facility accepts clean food scraps diverted from the campus waste stream, but no post-consumer food waste or other compostables like paper towels, paper napkins, or compostable plastics. HDH staff use 32-gallon totes to gather kitchen and market food waste to be consolidated in a centrally located self-contained compactor. Each participating facility receives the number of totes needed for each day; totes are exchanged on a daily basis and hauled to the compactor. The campus's main waste and recycling hauler takes the compacted waste weekly to Miramar Greenery. Totes are washed and returned to participants, and the compactor is cleaned each service day. The following campus facilities are participating:

1. 64 Degrees
2. The Bistro
3. Café Ventanas
4. Club Med
5. Food Worx
6. Goody's Market
7. Goody's Place
8. John's Market
9. Oceanview
10. Pines
11. UC San Diego Catering
12. Roger's Market
13. Roots
14. Sixth Market
15. Sixty-Four North
16. The Village Market
17. Warren Food Trucks
18. Canyon Vista Marketplace

Dining's pre-consumer compost program with Miramar Landfill diverted over 172 tons of pre-consumer waste in Fiscal Year 2018, contributing approximately 5% to the university's overall diversion rate.

A few areas on campus have begun using new business partners to do pre-consumer composting. Resource Management Group (RMG), a San Diego vendor, is working with UCEN and the Health System on pre-consumer composting. Recreation has purchased at least one Earth Cube to do on-site composting near RIMAC.

Several on-campus, student-run gardens accept post-consumer waste for composting or anaerobic digestion. Over the course of 2017-2018, faculty, students, staff, and volunteers set up a trial system at Roger's Urban Farmlab to take up to 500 pounds of food waste a week from six university restaurants and on-campus events. Over a six-month period, the system composted over 1.35 tons of waste and generated 10 cubic meters of methane fuel used to supply renewable energy for the garden's nanogrid and aquaponics system. The system has been sustaining a small grove of citrus trees and other produce, sequestering over 2,000 pounds of carbon dioxide equivalents over a 6-month period. Over a dozen students from four different student organizations with majors from six disciplines continue to work on the system and have already brought over \$50,000 in grants for its set up and maintenance. In winter and spring 2019 quarters, Roger's Urban Farmlab expanded to accept post-consumer food waste from SIO (including Caroline's Café and departmental events and kitchens) and a pilot in HDH's 64 Degrees restaurant, diverting over 120 pounds per week of post-consumer compost. Additional programs were piloted at Roots and UC San Diego Catering. Roger's also began accepting post-consumer compost from several on-campus events, including HDH's annual Wellfest for students and Wellness Fair for university employees and the annual summer Staff Association picnic. Small scale composting also exists at Ellie's Garden.⁴



Hazardous Wastes

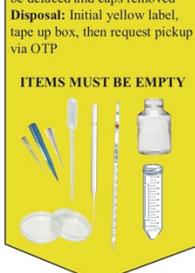
Regulated wastes like hazardous, biological, radiological, electronic, and universal waste are not covered by this plan as these are not part of UC zero waste goals. However, a San Diego county audit in 2018 found that members of laboratories were not sorting their regulated wastes (including the containers in which products were contained), MSW, and recycling properly. As a result, [EH&S](#) worked with FM, Sustainability, and other departments to change the processes and training laboratories receive in order to promote correct disposal and sorting. EH&S has also begun partnering with HDH and Sustainability on training for students regarding proper disposal of electronic waste and batteries. The next image shows EH&S procedures for laboratory disposal of chemical containers.

⁴ <http://sustain.ucsd.edu/involve/gardens.html>

Biohazardous Waste Disposal:
<https://blink.ucsd.edu/safety/research-lab/hazardous-waste/medical/dispose.html>
Radioactive Waste Disposal:
<https://blink.ucsd.edu/safety/research-lab/hazardous-waste/radioactive.html>

Research Waste Disposal Guidelines

Universal & Electronic Waste Disposal:
<https://blink.ucsd.edu/safety/research-lab/hazardous-waste/electronics.html>
UC San Diego
 Environment, Health and Safety
 Questions? Contact your Research Assistance Program Specialist or contact ehsrap@ucsd.edu.

Non-Hazardous Waste			Hazardous (Chemical) Waste			
<p>Trash & Recycling</p> <p>Container: Trash or recycling bin Required labeling: None Contents: Non-contaminated trash or recycling Disposal: Picked up by custodial staff *For recycling options, see zerowaste.ucsd.edu</p> 	<p>Non-Hazardous Glass & Plastic</p> <p>Container: 2 cubic foot glass box (30lb weight limit) with a clear liner (>2mm) or 15gal drum Required labeling: Yellow Label and Non-Hazardous online tag in unmarked holder Contents: Visibly clean/empty glass and plastic; labels should be defaced and caps removed Disposal: Initial yellow label, tape up box, then request pickup via OTP</p> <p>ITEMS MUST BE EMPTY</p> 	<p>Non-Hazardous Plastic</p> <p>Container: Unmarked cardboard box with a clear liner (>2mm) Required labeling: Green Label Contents: Visibly clean/empty plastic tips and pipettes Disposal: Initial green label, tape up box and custodial will pick up</p> 	<p>Hazardous Lab Trash</p> <p>Container: Plastic bucket (5gal) or drum (15gal or 30gal) with a clear liner (>2mm) Required labeling: Hazardous online tag; "Lab Trash Contaminated with Chemicals", Toxic Contents: Glass, plastic, and solids contaminated with toxic chemicals; no pourable liquids Disposal: Seal container and request pickup via OTP</p> 	<p>Vials, Tubes, & Samples</p> <p>Container: Plastic bucket (5 gal) or drum (15gal or 30gal) with a clear liner (>2mm) Required labeling: Hazardous online tag; "Flammable/Toxic Loosepack (Vials)" Contents: Sealed vials, conicals, and tubes with <100mL flammable or toxic liquid ONLY Disposal: Seal container and request pickup via OTP</p> <p>NO CORROSIVES NO REACTIVES</p> 	<p>Non-Empty Container</p> <p>Container: Manufacturer's container, or storage container Required labeling: Hazardous online tag with constituents Contents: Solid or liquid chemicals Disposal: Seal container and request pickup via OTP</p> <p>CONTAINERS MUST HAVE OTP TAG</p> 	<p>Chemically Contaminated & Non-Hazardous Sharps</p> <p>Container: Sharps container Required labeling: Hazardous online tag; "Chemically Contaminated Sharps" Contents: Needles, blades, needleless syringes, and other sharps contaminated with chemicals or non-contaminated sharps Disposal: Seal container and request pickup via OTP</p> 
						

Landscaping Debris

All landscaping waste is either mulched onsite or collected in two permanent roll-off containers for hauling to a green waste facility. Yard waste services are ordered instead of waste services for projects anticipated to generate greenery exceeding campus mulching needs. In addition to landscaping debris, pallets that are unsuitable for reuse, other untreated wood, and animal bedding are carried by the campus's hauler for composting offsite.

Specialty Recycling

For items that cannot be recycled through EDCO, several programs have been established to work with industries that do specialized recycling.

- Several locations across campus collect food foil wrappers (e.g., chip bags, energy and candy bar wrappers, etc.) and mail them to the company TerraCycle through their [Candy and Snack Wrappers Zero Waste Box program](#).
- The Sustainability Office pays for a TerraCycle pallet each year to be housed at Trade Street for collection of used writing instruments (pens, markers, plastic-based pencils, etc.). The campus community can send used writing instruments via campus mail to Trade Street for recycling. Once full, the pallet is shipped back to TerraCycle through their [Pens, Pencils and Markers Zero Waste Program](#). Until 2018, pallet and shipping costs were covered by IPPS. When they stopped funding the program, Sustainability took it over.
- The Sustainability Resource Center manager and student interns, along with volunteers, have been collecting plastic film (air cushions, bubble wrap, plastic envelopes, etc.) since 2017 in response to offices and labs asking for such services. In January 2019, the SRC manager enrolled their program in Trex University, a 6-month program where if campuses recycle a 500 pounds of plastic film, they earn a free bench made of such recycled plastic. The SRC manager, the SIO safety and sustainability coordinator, student interns, and volunteers take plastic film to the Vons grocery store on Regents Road in La Jolla 1-3 times a week. White plastic collection bins are located at:
 - The Sustainability Resource Center
 - Biological Sciences Building (BSB)
 - Central Research Services Facility (CRSF)
 - Geisel Library
 - Bonner Hall
 - SIO (various locations)



Several regional vendors provide source-separated recycling services for the campus and many others are available. These recycled materials include electronic waste, universal waste, metal (ferrous and non-ferrous), carpet, drywall, wood, concrete, asphalt, Styrofoam, etc. To date, the university has not explored doing source separation of recyclables to use these regional vendors outside of recycling done as part of new construction or major renovations.

Education and Outreach

Over the years, several departments have provided waste diversion, recycling and composting information to the campus community. Most information has come from the Sustainability Programs Office, Facilities Management, and HDH. Education and outreach efforts have included:

Bin Buddies

In January 2019, UC San Diego Facilities Management began switching all offices and cubicles in state-funded buildings to [Bin Buddies](#): small black waste bins that attach to the side of a larger blue recycling bin. The campus switched to Bin Buddies to help building occupants reuse and recycle more. In addition, FM stopped using liners in the Bin Buddies and recycling bins, saving further resources. Many organizations have implemented mini-bin programs, resulting in increased recycling and reduced waste and waste management costs, including UC Berkeley, Tufts University, Dartmouth College and others. A [2014 study of 34 offices across the United States](#) found that mini-bins reduced the amount of recyclables in the trash by 16%, increased the amount of recyclables collected by 20%, and nearly eliminated office paper from the waste stream. Occupants were given a handout on how to use their Bin Buddy, along with recycling signage. Information about Bin Buddies was put on the Sustainability website and in an edition of the RMP Focus newsletter, along with emails being sent to all building occupants two weeks prior to the swap.



Earth Month Events

Each year, UC San Diego hosts a week of environmental and sustainability events to celebrate Earth Day. Featured waste reduction and recycling related activities include clothing and book exchanges, electronics recycling and trash sorts. In 2011, Facilities Management partnered with Allied Waste, a contracted vendor, to erect Mt. Trashmore. One day's worth of trash collected from campus – roughly two trash truck loads – was deposited in the center of campus. The exhibit required the cooperation of numerous stakeholders. While the odor may have been offensive, the demonstration sent a powerful message that regardless of our diligent recycling efforts, we need to decrease campus waste.



EcoNauts

Since 2009, HDH has employed students known as the EcoNauts. Under supervision from HDH's Sustainability Manager, they educate residential students about sustainability best practices, including how to recycle and be zero waste. Examples of EcoNaut programming including annual trash sorts in front of Geisel Library, engaging students and others passing by in learning about what is and isn't recyclable.

My Last Trash Events

In 2018, the Sustainability Office worked with the InterSustainability Council, the Student Sustainability Collective, the EcoNauts, and others to do a number of outreach events on zero waste. From tabling on Library Walk with free recycling signage and reusable straws to tabling at events like Sustainable Food Day or Triton Day, the Sustainability Office worked with partners like the Staff Sustainability Network and several student organizations to get recycling and other zero waste information out to the campus community.



Online Resources

- The Sustainability Programs Office redid outdated recycling signs in 2017. Detailed signs were created for on-campus residents, offices and laboratories. Printed signs were distributed to offices going through the Green Office Certification program, laboratories going through the Green Labs Certification program, and to students, faculty, and staff at a variety of on-campus events, from college orientations to zero waste specific outreach on Library Walk, during Earth Month, and at the Sustainability Resource Center.
- The Sustainability Programs Office maintains web pages on both [recycling](#) and [zero waste](#). Facilities Management maintains information on Blink regarding building and office trash and recycling pickup schedules. IPPS provides information on its Blink pages and in Marketplace on products made of recyclable materials, supplier take-back programs, etc.

Print Signage

In addition to customized signs designed for loading docks near collection dumpsters to educate building occupants and maintenance staff about what is recyclable, the Sustainability Office worked with FM to create signs specific to offices, laboratories, and on-campus residence halls and apartments showing what is and isn't recyclable. Signs are given to those who complete Green Office or Green Labs Certification, handed out at events, and shared online at recycle.ucsd.edu.

RecycleMania

Since 2005, UC San Diego has participated in RecycleMania. This year the campus competed against 605 schools nationwide to emphasize waste reduction and recycling and ranked 29th in the Gorilla Prize category. Participation in this competition provides an opportunity to bolster recycling activity on campus by leveraging the competitive nature of campus life. Competition is promoted through signage in buildings and on campus shuttles and waste and recycling collection vehicles. RecycleMania website: <http://recyclemania.org>.



Student Sustainability Guide

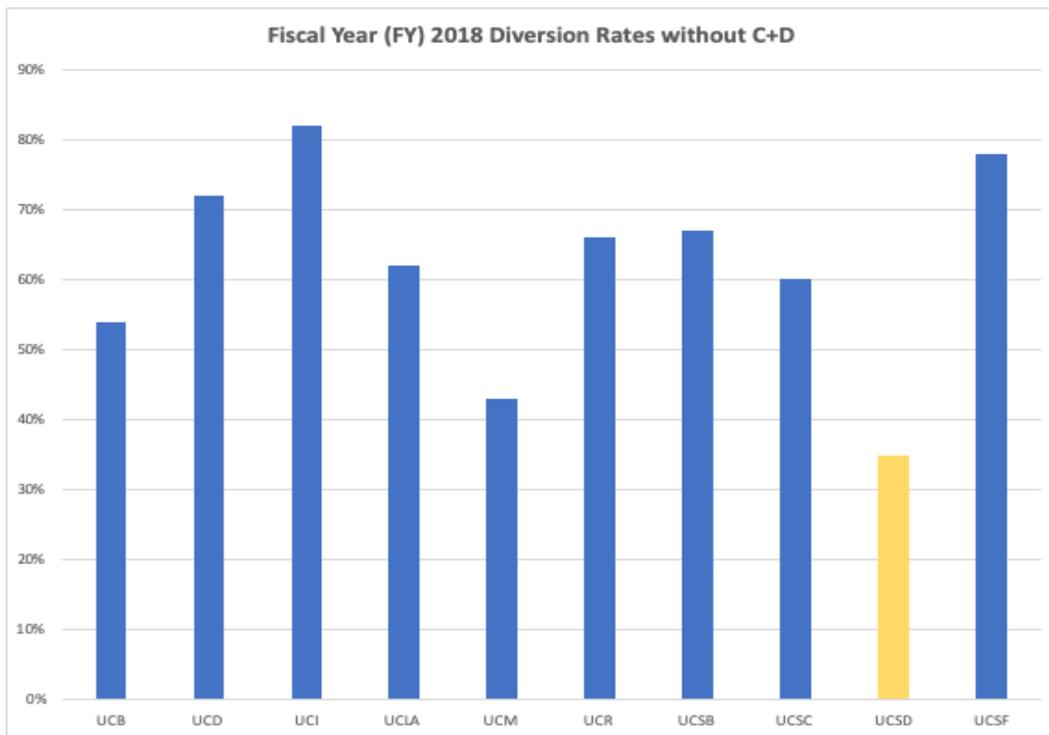
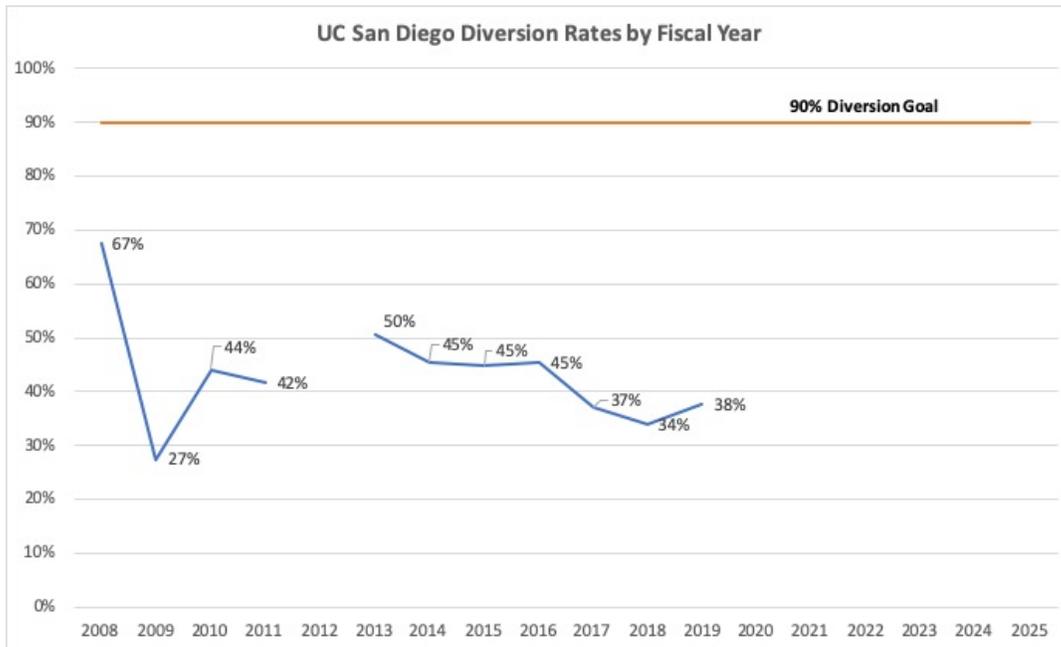
HDH provides all students living on-campus with an [online guide](#) on how to live sustainably while at UC San Diego.

Sustainability Resource Center

The UC San Diego Sustainability Resource Center serves as a hub for materials and initiatives related to local, national and global sustainability, including waste reduction and recycling on campus. The center is operated as a partnership between the Sustainability Program Office and the Student Sustainability Collective dedicated to balancing environmental, social and economic stewardship. The center is housed in a LEED Gold certified facility open to students, faculty, staff, alumni, and visitors weekdays during academic quarters.

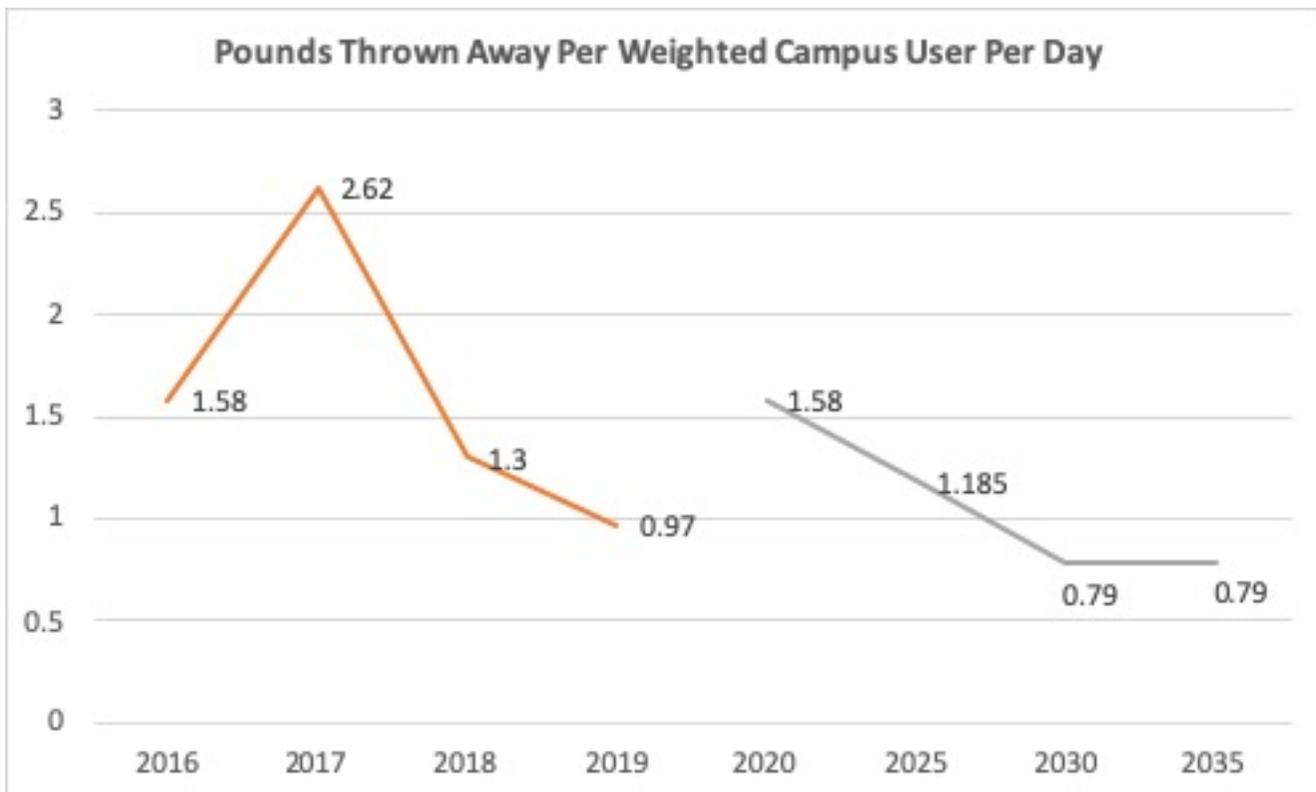
Progress to Date

To date, UC San Diego has not met prior UC-wide waste diversion goals of 50% waste diversion prior to 2012 and 75% waste diversion in 2012. In addition, the university is not on track to reach 90% diversion by 2020. In Fiscal Year 2012, the university reported its highest diversion rate of 55% without construction and demolition waste, 66% diversion with C+D. Post 2012, the diversion rate continued to drop to a low of 35% in Fiscal Year 2018.



While UC San Diego had a “Styrofoam” ban in place prior to the foam ban put into the UC Sustainable Practices Policy in 2018, it is hard to say if the university community has been complying with the policy as data are not collected, nor was the policy consistently communicated to the campus community or enforced. Over the course of 2017-2019, the Sustainability Office has worked with members of the Zero Waste Working Group to approach on-campus vendors, leasees, student organizations, and departments who have been found to be using foam foodservice ware (e.g., cups, plates, to-go containers, etc.), letting them know about the ban and connecting them to other paper, plastic or biodegradable options. In 2019, University Centers added a requirement in its reservation policies and online system reminding users of the EPS ban.

As the per capita waste reduction goal is new to the UC Sustainable Practices Policy, progress towards meeting this goal is yet to be tracked. Campuses will need to begin reporting on progress starting with Fiscal Year 2020 data. Target pounds thrown away per weighted campus user (WCU) per day from 2020 onward have been calculated based on Fiscal Year 2015-2016 tonnage numbers from then-hauler Republic Services.



Challenges

The university has faced a number of challenges in trying to meet its zero waste goals.

Competition for space

The opportunities to develop on-campus sorting to reduce contamination rates or on-campus composting and anaerobic digestion are limited given other physical space needs of the campus. Priority is given to academic and research buildings, on-campus housing, and mixed space that includes retail for revenue generation.

While FM had space prior to 2008 for self-hauling and onsite sorting, such space is no longer available.

Sustainability is working with Campus Planning and Urban Studies and Planning to find more permanent space for on-campus gardens in order to increase their infrastructure and staffing to compost or anaerobically digest organic waste onsite.

Contamination of Recycling and MSW bins

The threshold for commingled recyclable contamination with our previous MSW, recycling and pre-consumer composting hauler Republic Services was 30%. The university is working with new hauler EDCO to determine a new threshold. In partnership with EDCO, FM's Landscape Services Recycle and Waste Management team will be implementing several measures to reduce and ensure recycling containers stay within this threshold. These measures include having EDCO conduct recurring waste stream audits to help identify those locations where contamination problems as well as opportunities exist for increased recycling and diversion. Second, FM and EDCO will work to ensure that every trash container is accompanied by a recycling container. Finally, FM and EDCO will work together to target education in those locations where it is needed to ensure the campus population clearly understands what materials can and cannot be recycled. Through this partnership, FM will work to minimize this recycling contamination risk given the increasing number of faculty, staff, students and visitors to the campus each day.

China's Green Sword Ban

According to EDCO, the company to which the university's waste and recycling hauler has taken its recyclables since 2012, they have not had to landfill or stockpile recyclables due to [China's Green Sword program](#) banning most imports of recyclables from the United States into China. EDCO has been able to still sell its recyclables like mixed paper, plastics, cardboard, etc., by:

- Finding some domestic markets. For example, #5 plastics are being shipped domestically to KW Plastics to turn into paint cans.
- Adding labor to their sorting lines and slowing down the lines' speed to make sure 100% of its recyclable commodities are clean with 0% contamination. In 2018, EDCO states they added 40-50% to their workforce and moved from sorting 25 tons an hour with 20 people in a line to sorting 4 tons an hour with 40 people on a line. As a result, to date they have still been able to find Asian markets for commodities like mixed paper.
- Finding separate outlets for items like Tetrapack or septic containers, milk cartons, etc.

These costs have been passed on to the university through monthly invoices from its prior hauler, Republic Services. Starting in September 2018, Republic Services increased its costs to haul MSW and recyclables. In addition, the university stopped receiving rebates from the sale of its comingled recyclables.

Lack of accurate and timely tonnage data by location

Since the university stopped its source-separated, onsite recycling program in 2003 and moved to off-site hauling services, no actual weight data have been available for campus MSW, recycling or pre-consumer posting. Tonnages are reported to the university by its MSW, recycling, and pre-consumer composting hauler on an annual basis or as needed for certain time periods, like RecycleMania, based on volume to weight conversions. (The hauler has said that scales and other technology would need to be calibrated to frequently to be accurate. Combined with their picking up MSW, recycling and composting from other clients, they were unable to provide the university with actual weights.) Invoicing by the hauler was done by number of pickup's on campus, not by how full containers were or how heavy they weighed. As a result, the quality of the university's MSW, recycling and organics recycling data from 2003 - 2019 is questionable. Without accurate weight tonnages, especially at the building level where informed behavior change programming can be implemented, it has been difficult to see the impacts of zero waste programming.

Lack of regional organics recycling infrastructure

As the City of San Diego admits in its 2015 zero waste plan, "there is currently insufficient infrastructure in the City of San Diego to process all of the organics that will need to be diverted to meet the AB 1826 mandate and the 75% diversion goal. The expectation is for the City's franchised haulers to develop the infrastructure they need to achieve the diversion requirements for their customers, and the requirements that will be incorporated into their franchise agreements as a result of the AB 1826 mandates."⁵ While Miramar Greenerly is the only permitted facility taking pre-consumer organics, to date no regional infrastructure exists that can take the university's post-consumer organics.

Staff turnover

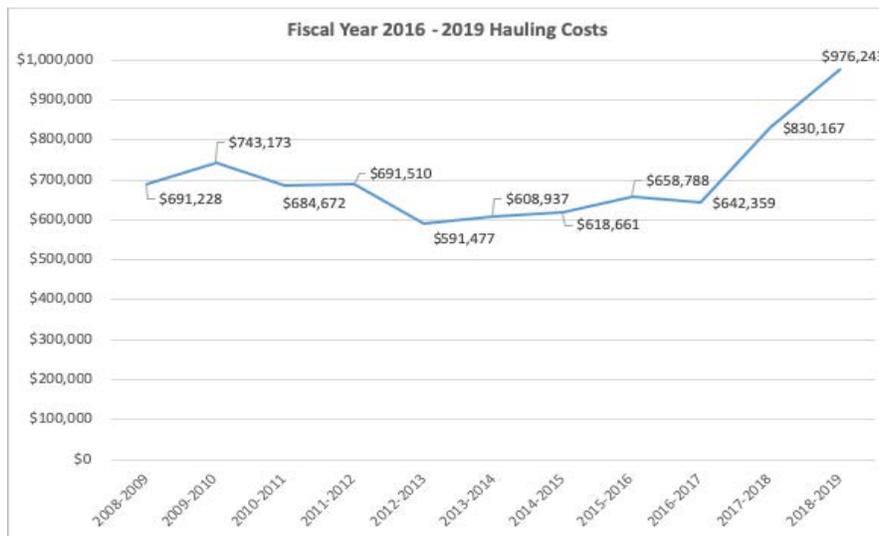
Between January 2015, when the former FM staff person overseeing waste diversion and recycling (in addition to other landscaping duties) retired, and June 2019, FM had a staff person in the role of waste diversion and recycling manager for only nine months. FM's new Waste Diversion, Recycling and Sustainability Manager started in late July 2019, and this staff person will be able to hire at least one other staff person to assist in this work.

⁵ <https://www.sandiego.gov/sites/default/files/legacy/mayor/pdf/2015/ZeroWastePlan.pdf>

Waste costs and project funding

Hauling costs

As of September 2018, Republic Services was charging approximately \$102 per ton of MSW, recyclables or organics hauled -- a sharp increase from a low of nearly \$37 per ton the year prior. In addition, until September 2018 recyclables were credited back to the university as a rebate of at least \$30,000/year. Due to the collapse of recycling markets in summer 2018 following implementation of China's Green Sword, Republic was no longer able to provide the university with a rebate for recyclables collected and sold, even though the recycling facility to which they were hauled (EDCO) was still able to find new markets for all the recycle commodities it sorts. While the cost per ton of waste and recyclables hauled has varied year to year, Republic Services increased their hauling fees most significantly starting in Fiscal Year 2017. Hauling costs rose 52% from Fiscal Year 2017 to Fiscal Year 2019 alone.⁶



⁶ FY 2019 hauling costs exclude June 2019 payments made as they were not available at the time of this report.

Maintenance and operations costs

In addition to hauling costs, the university pays for the following related to zero waste:

- Staff time: FM Building Services custodians, a full-time FM waste diversion, recycling and sustainability manager, and part of the time of sustainability office staff and student interns.
- Large equipment like compactors.
- Indoor and outdoor landfill, recycling and compost bins, including outdoor Big Bellies.
- Landfill, recycling and compost signage, including labels, posters, wall signs, etc.
- Education and outreach to employees and staff on zero waste, including through the Sustainability Resource Center. Costs include printing, space and catering for events, supplies, and more.

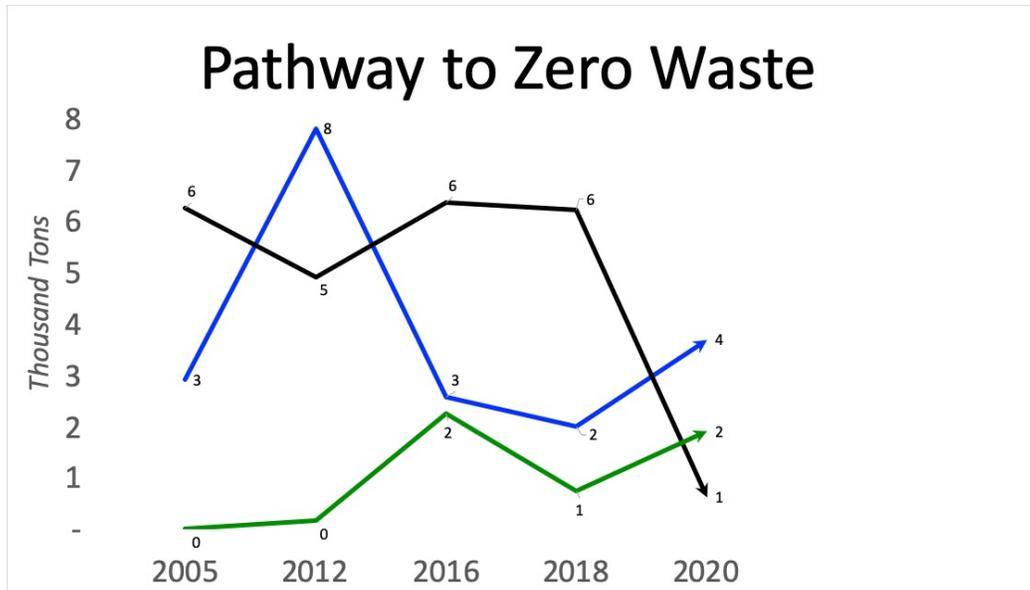
Survey of grants, incentive programs and financing opportunities, inside and outside system

The Sustainable Office, IPPS, FM and others represented on the university's Zero Waste Working Group continually search and apply for funding to support efforts on campus. For example:

- The Sustainable Office received three UC Office of the President "My Last Trash" grants in 2017-2018 for:
 - Printing and distributing Green Office and Green Lab recycling signage (\$3,000).
 - One student intern's time to create green event standards for student organization-sponsored events (\$1,000).
 - One student intern's time to research and recommend marketing and logistical improvements to HDH's spring student move-out donation program (\$1,000).
- IPPS received a Coca Cola Recycling Grant in 2018 to provide FM with 150 new Slim Jim recycling bins for state-funded buildings.
- \$9,330 gift from the PepsiCo Zero Impact fund for a second anaerobic digester at Roger's Garden to process post-consumer food and organic waste.
- UC San Diego applied for two CalRecycle Food Waste Prevention and Rescue Grants in early 2019: one to improve food recovery through the Basic Needs Center and FRN, the second to expand Dining's EcoContainer reusable to-go ware program. While neither application was funded, the staff who worked on the grants now have information and experience to reapply next year.

RECOMMENDATIONS

From July to October 2018, the UC San Diego Zero Waste Working Group brainstormed recommendations for how the university could meet its per capita reduction and waste diversion goals. We took the overarching view that we should strive to landfill only 10% of what we “throw away.” Knowing that food waste tends to make up roughly 34% of a school’s waste sent to landfill⁷, we estimated that removing these organics from the waste stream through food recovery, composting and anaerobic digestion would increase our diversion rate to 68%. Assuming we could implement and track up to 10% worth of reduction and reuse activities, that would leave 12% remaining for recycling. Our overall path to zero waste, then, would look like the following graph.



The following recommendations can be integrated with the university’s existing zero waste practices. They purposely cover the full spectrum of the zero waste pyramid (reduce, reuse, redesign, recycle and compost) and, combined with improved and expanded education and outreach, can move the university towards zero waste. The Zero Waste Working Group will work with the university’s new hauler, EDCO, to estimate the diversion potential of each recommendation. As part of its contract with the university, EDCO has agreed to:

- Weigh individual containers at the point of collection with a LOADMAN brand on-board fork scale that interfaces with Soft-Pak weight tracking software that will produce a daily weight report by locations serviced and will be transmitted electronically to UC San Diego.
- Provide weight reports for all streams, including trash, recycling, construction and demolition materials, landscape materials, and food waste. These reports will include all compactors and roll-off boxes as well. Container scales on the truck will be calibrated semi-annually.
- Provide certified weight tickets on all dedicated university loads on all charged streams to determine actual gross weight charges and then, in turn, allocate these total certified weight charges among the six different colleges that comprise UC San Diego.

⁷ CalRecycle. (2015). “2014 Generator-Based Characterization of Commercial Sector Disposal and Diversion in California (DRRR-2015-1543).” <https://www2.calrecycle.ca.gov/Publications/Details/1543>.

EDCO's regular electronic reporting of weights by location will allow the university to tailor its zero waste programs, education and outreach around waste streams the campus is producing, ensuring that funding and staff time are used efficiently. This reporting will also allow the university to do digital dashboards of waste streams by location for behavioral change campaigns. Finally, a team of staff and students are creating a sustainable building policy, guidelines, and metrics to track progress. The policy, guidelines and metrics will focus on new construction and major building renovations, but also include tiered requirements for minor renovations. EDCO's data will allow the team to include important zero waste metrics like pounds of MSW per square foot as a way to assess if building design, construction, operations and maintenance are helping or hindering the university in meeting its zero waste goals.

In addition to improved reporting, EDCO has agreed to:

- Provide UC San Diego with results from an initial audit of equipment and analysis of the waste stream within the first 90 days of operation.
- Provide the results of a follow-up audit every two years on the anniversary of the initial audit.
- Provide waste stream audits hauled from the campus and collection data that will help identify opportunities for increased recycling and diversion.

The audits will provide detailed information on the types of materials found in trash, recycling and composting containers (waste characterization), contamination rates of each type of container, and weights. Containers outside of buildings and outdoor Big Bellies can be audited to determine indoor versus outdoor waste types and contamination rates. These audits will guide the campus in prioritizing resources, staffing and educational programming to correct issues. In addition to its initial waste audit, in Fall 2019 EDCO develop a diversion capacity report to help guide the university's zero waste efforts.

As a result of EDCO's improved weight reporting, waste audit and diversion capacity report, this zero waste plan will be updated by late 2019/early 2020 to estimate diversion potentials of the following recommendations.

Overall

The following overall recommendations can help the university in all areas of zero waste (reduction, reuse, recycling, and composting/digestion).

Recommendation #1: Set and enforce minimum zero waste standards in all leases, including details on what UC San Diego will supply and cover and what the vendor/leasee will supply and cover.

Diversion potential: To be determined based on Fall 2019 EDCO waste audit, in partnership with Real Estate and campus auxiliaries.

All vendors and leasees on campus -- from restaurants to retail like Amazon and Target, food trucks to vendors selling on Library Walk -- need to understand and comply with the university's zero waste policies. As part of creating new sustainable building design guidelines that ensure design and construction on all levels (from major new projects to smaller renovations) embody the university's carbon neutrality, zero waste, potable water and health goals, a team of UC San Diego staff is already working with Real Estate to develop a sustainability questionnaire that will help assess the knowledge and experience of vendors and leasees with sustainability. The goal is to assess their knowledge and abilities around sustainability, then assist and guide as needed. In addition, the goal is to provide extra assistance to those businesses less familiar with or able to invest resources in sustainability, especially businesses that are local, small and/or minority-owned. Vendors and leasees could be asked to do any of the following:

- Refrain from using foam of any type or single use plastics.
- Provide incentives or penalties to guide customer choices: i.e. charging 10 cents extra for the use of non-reusable bags or cups, giving discounts to customers who use reusables bags and cups, etc.
- Provide paper straws only upon customer request.
- Use standardized university recycling, composting and trash bins and signage.
- Use only university-approved, BPI-certified compostable foodservice ware.

Recommendation #2: Quantify all packaging material reuse on campus so as to find opportunities to reduce and reuse packaging materials in partnership with suppliers, including right-sizing packaging for what's being shipped, enforcing the ban on foam, creating new supplier take-back programs, and more.

Diversion potential: To be determined based on Fall 2019 EDCO waste audit, in partnership with IPPS.

Led by IPPS, an audit of all major packaging materials used by suppliers and received on campus could provide opportunities for partnering with suppliers to identify new take-back and reuse programs beyond the current, small-scale pallet and cooler reuse efforts led by Core BioServices and IPPS. Changes in supplier packaging types, combined with reuse and take-back programs, could lower MSW tonnages significantly.

Recommendation #3: Green event standards for events.

Diversion potential: To be determined by EDCO waste audit, in partnership with selected campus partners putting on large events (HDH, Special Events and Protocols, etc.)

Following the success of the Sustainability Office's and Staff Sustainability Network's efforts at the 2019 Staff Picnic (which achieved over 97% diversion) and of HDH staff and students at their 2018-2019 health and wellness events (which achieved over 98% diversion), the Sustainability Office is leading the development of three types of Green Event Standards for events that occur on campus:

- Special Events and Protocol-run events
- Departmental-sponsored events
- Student organization-sponsored events

While certain requirements will be similar no matter who sponsors the event (from working upfront with vendors and organizations participating to specify what types of giveaways and disposable items can and cannot be brought to campus, to composting and recycling at the event, to working with Catering on providing local, plant-based, and third-party certified (e.g. organic, Fair Trade, etc.) food), some requirements will vary by funding source.

The Staff Sustainability Network and Sustainability Office released zero waste guidelines for departmental events in September 2019: <https://blink.ucsd.edu/files/ssn/ssn-guide-hosting-zero-waste-event.pdf>. These guidelines will be amended and expanded over time due to stakeholder feedback and expanded options for composting, catering, etc.

The InterSustainability Council and the Student Sustainability Collective have already worked with the Sustainability Office to pilot guidelines for student organization-funded events. These guidelines should be completed in Fall 2019.

Every department on campus that books space for meetings, events, or other use, should enforce the university's green event standards and zero waste policies in its reservation requirements and booking systems. For example, in June 2019 University Centers added the following to its room and outdoor location reservation requirements: "The use of disposable polystyrene foam (Styrofoam) and other disposable polystyrene plastic products is prohibited unless no reasonable replacements are available." Doing so will reinforce these goals and standards as policy across all event venues on campus.

Recommendation #4: Pilot TRUE zero waste certification in one new building by end of FY21.

Diversion potential: TBD depending on building undergoing certification.

The university should consider piloting the US Green Building Council's [TRUE Zero Waste certification](#) on one campus building by 2025. TRUE requires tracking of reduction, reuse, recycling and composting efforts at the building level. The certification could be tested on any existing or new building and would be best suited to a non-laboratory building with limited retail and foodservice, such as an academic building. For example, UC Berkeley is pursuing TRUE certification for its [Haas School of Business's Chu Hall](#), which houses one food service area, classrooms, and a top-floor event space with a kitchen.

Reduction

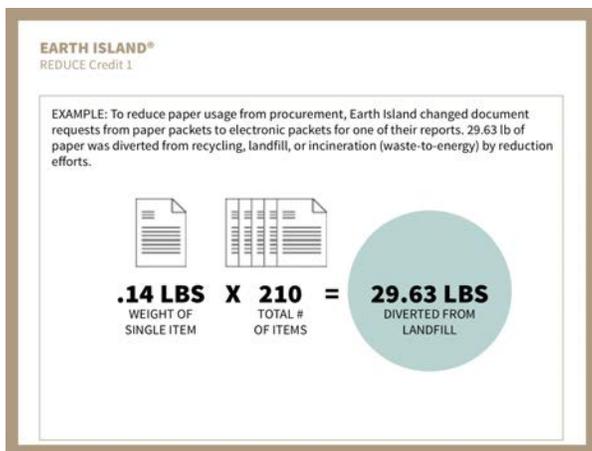
Recommendation #5: Work with the UC system to ban single use plastics on campus.

Diversion potential: To be determined based on Fall 2019 EDCO waste audit.

Following the success of California's restrictions on single use plastic bags and straws, and the passage of SB 54/AB 1080 phasing out single use plastics statewide by 2030, the system-wide UC Zero Waste Working Group is considering adding a ban on single use plastics to the UC Sustainable Practices Policy in 2020 or later. The ban can be phased in over time and focus on foodservice ware (cups, stirrers, plates, utensils, to-go ware, etc.), as the [City of Berkeley](#) has done, giving departments, suppliers and leasees time to transition to reusable and/or BPI-certified compostable alternatives. While politically sensitive given revenues generated from the sale of items like bottled water, there is strong student support for such a ban. SIO has already self-imposed a single use plastics ban. Paper or other reusable, recyclable or compostable straws can be provided for those individuals who need them.

Recommendation #6: Track tons avoided to capture reduction activities in zero waste reporting.

Diversion potential: To be determined based on research and surveys done in partnership with IPPS.



Reduction activities occur across campus that currently are not captured in the university's zero waste reporting: from paper not purchased as processes go digital to installation of water refill stations preventing the disposal of plastic bottles. Similar to the [UC Sustainable Procurement Guidelines](#) for calculating the dollar not spent from reducing amounts of goods bought by campuses, UC San Diego should calculate avoided tons needing to be recycled, composted, digested, or landfilled through its reduction and reuse efforts. The US Green Building Council's TRUE Zero Waste certification program for buildings also has guidance on how to calculate tons avoided: namely multiplying number of items not bought by weight of items not bought and including the number in the numerator of the

university's diversion rate. (See explanatory graphic below.) The Sustainability Office can work with campus partners to calculate the tons avoided from existing or new reduction efforts, such as:

- Paper not bought compared to prior year as procedures are digitized or printers are centralized.
- Disposable food service ware (containers, plates, cups, cutlery, straws, etc.) not bought as units move to reusables or no longer give out as many items (like straws).
- Bottled water not purchased as units have access to water refill stations.
- Equipment not purchased as departments share instead of buying their own.
- Waste avoided by vendors and tablers at campus events as they follow green event standards (i.e., give-aways not bought, paper flyers not printed, packaging waste not created, etc.)

Recommendation #7: Continue to install more water refill stations across campus.

Diversion potential: To be determined based on Fall 2019 EDCO waste audit.

FM, Sustainability, HDH, UCEN, Recreation and Athletics, and others on campus should continue to install more water refill stations inside and outside of buildings in order to promote the use of reusable water bottles on campus, thus lowering the amount of plastic water bottles that must be recycled. Most refill stations (including those from Elkay, which UC San Diego uses) have bottled water counters on them that students or staff can track to calculate plastic water bottles avoided. These numbers can then be included in the university’s zero waste reporting.

Reuse

Recommendation #8: Track tons avoided through reuse activities not currently tracked in zero waste reporting.

Diversion potential: To be determined based on research and surveys done in partnership with IPPS.

As with reduction, reuse activities occur across campus that currently are not captured in the university’s zero waste reporting. The Sustainability Office can work with campus partners to calculate the tons reused from existing or new reduction efforts, such as:

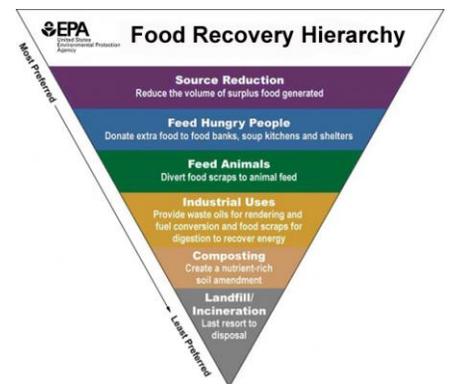
- Bicycles collected and then donated after spring quarter ends.
- Suppliers take-back and reuse programs for items like coolers, pallets, shipping containers, and the like.
- Departmental donations of items outside of items brought to Surplus Sales (i.e., donation of office supplies or equipment to schools or small businesses).
- Reusable mug, bag and to-go containers offerings from non-HDH restaurants and food vendors.
- Office supplies or equipment shared from one department to another.

Recommendation #9: Expand food recovery efforts on campus.

Diversion potential: To be determined based on Fall 2019 EDCO waste audit.

Per the EPA’s Food Recovery pyramid, food recovery is an important component of zero waste programs.⁸

- Grant funding and other support should be found to expand the work of the Food Recovery Network, the Basic Needs Center, and the Triton Food Pantry.
- The university’s food alert system for students should be rolled out to more department across campus as part of green event standards development. While the department running the system only wants events with food leftover for more than 50 people to use the system, not all departments across campus are signed up for its use. The Sustainability Office can work with Associated Students to market the system to departments as part of Green Office Certification along with the forthcoming green event standards.



⁸ <https://www.epa.gov/sustainable-management-food/food-recovery-hierarchy>

- EDCO is in the process of developing an animal feed partnership with Frank Konyn Dairy, a sister company of San Pasqual Valley Soils, located at 16111 Old Milky Way in Escondido. San Pasqual Valley Soils is a 13-acre composting facility on adjacent land that supports the dairy and composts its manure. The dairy accepts brewery grains to feed its herd of about 880 milking cows, as well as food scraps, fruits, fruit pulp, vegetables and discarded bakery materials. More than 1,000 tons a month of this material, most of which was being landfilled, is now feeding cows and supporting a local, family-owned business. Once the partnership has developed, EDCO will provide the necessary containers and hauling to the facility.

Recommendation #10: Prioritized use of Surplus Sales in Marketplace and for all renovations.

Diversion potential: To be determined by Sustainability Office, Capital Program Management, and IPPS.

Capital Program Management and FM should encourage all building occupants to purchase furniture, electronics, and other supplies for Surplus Sales instead of defaulting to buying new. In addition, IPPS should better market Surplus Sales in Marketplace and to its customers.

Recommendation #11: Improvements to on-campus student housing donation program, including year-round donation bins across campus and increased staffing and bins at move-in and move-out.

Diversion potential: To be determined based on Fall 2019 student move-in.

Fall move-in and spring move-out of students results in a lot of MSW and contamination of MSW with recycling and e-waste. The success HDH has experienced in increasing student donations and recycling during student move-out should be expanded to:

- Provide donation bins and recycling roll-offs at key locations during fall move-in. Bins should be supervised by staff and students, with improved signage. Separate electronic waste containers should be included so no e-waste ends up in the trash or recycling.
- DAV donation bins and e-waste collection bins could be placed in residential areas year-round for student use.
- Donation, e-waste, recycling, and MSW bins and roll-offs should also be staffed during spring student move-out weekend, with improved signage.

The onsite EDCO environmental coordinator will be on site for eight hours per day for two days during move in and four days during move out, as well as four hours of training to be provided to student volunteers in preparation for each event. EDCO will provide support at multiple housing sites, answer student volunteer questions, ensure containers are adequate, and work with HDH, FM, Sustainability, and student organizations to create education materials for move in and move out days.

Recommendation #12: On-campus restaurants, markets and foodservice vendors charging customers for use of disposable food service ware, starting with cups.

Diversion potential: To be determined based on Fall 2019 EDCO waste audit.

In January 2019, the city of Berkeley imposed a 25-cent fee on restaurant and coffee shop patrons who need to use a disposable cup instead of bringing their own reusable mug.⁹ The effort is similar to the California state-wide plastic bag ban which requires customers to pay for plastic or paper bags at major stores like grocery stores. Researchers at the University of Cardiff in the United Kingdom found that charging customers for disposable cups, combined with offering free reusables and providing environmental messaging, increased reusable mug use anywhere from 5-17%.¹⁰ UC campuses like UC Berkeley and UCLA are considering asking their dining services and on-campus vendors and leasees to impose similar fees. HDH, along with vendors and leasees on campus, could use the fees collected to invest back into programs that help them move towards zero waste. Depending on the success of a disposable cup fee, fees could also be imposed over time on disposable cutlery and to-go containers, provided all food safety and EH&S regulations are still met.

Diversion (Recycling, Composting, and Digestion)

Recommendation #13: Work with a new recycling, composting/organics recycling, and municipal solid waste hauler to right size all building dumpsters and indoor bin systems.

Diversion potential: To be determined based on EDCO and FM collaboration during initial transition.

EDCO has agreed in its contract that after transitioning to full service by September 2019, “conduct thorough container fullness studies. [These] data will be used in conjunction with waste characterization studies to provide departmental waste flow and diversion analysis and ultimately reduce costs by making timely service level adjustments and or right sizing of service levels.” Right-sizing of large bins behind buildings has the potential to also increase diversion by making sure recycling bins are large enough and MSW bins just big enough but not too big to encourage recycling and discourage landfilling. If recycling bins aren’t large enough nor emptied regularly, building occupants and custodians often put recyclables in the MSW bin. In visiting campus to prepare its proposal to become the university’s hauler, EDCO performed visual inspections on the trash bins and recycling carts located around residence halls. They observed that “the recycling carts had some participation and very little contamination; however, the trash bins were contaminated with recyclable items,” in large part because recycling bins were not located next to trash chutes on each floor. Right-sizing bins ensures efficiency, resource savings, less contamination, and increased diversion.

Recommendation #14: Require certain zero waste standards in all new construction and major renovations of buildings as part of the university’s forthcoming Sustainable Building Guidelines.

Diversion potential: To be determined based on Fall 2019 EDCO waste audit.

New construction and major renovations on campus should be required to include more zero waste elements than the [Leadership in Energy and Environmental Design \(LEED\) v.1 Materials and Resources credits](#) prerequisite of collection and storage of recyclables. The team developing a Sustainable Building Policy, Guidelines, Metrics and LCA model for the university could include other zero waste elements like:

⁹ <https://www.apnews.com/f82219d346d346e1b4ab2a7342d66999>

¹⁰ <https://www.bbc.com/news/uk-wales-39436400>

- Standardized locations for hallway and other common area (kitchens, break rooms, lounges, etc.) MSW, recycling and compost bins such that placement meets fire, EH&S and other safety and environmental regulations while still being visible and accessible for all building occupants. Standardized locations -- such as in main building entry lobbies or standardized hallway locations in all buildings will also help occupants find and use bins more easily, instead of getting frustrated and throwing items into whatever bins they happen to find first.
- EDCO researched different options to retrofit existing trash chutes in HDH residence calls, and technology like [DuraSorter Recycling Sorters](#) could become standard in all new residence halls and apartments. Recycling sorters located under trash chutes. Using a control panel located at each trash chute door, the user selects the appropriate waste stream they are disposing. Based on this selection, the sorter system automatically positions one or more deflector plates that direct the waste to the appropriate container.
- Digital displays in high traffic lobbies and hallways could display zero waste and other sustainability real-time data to help building occupants adjust their behaviors accordingly.

Recommendation #15 : Contract for off-site anaerobic digestion.

Diversion Potential: At least 30%, to be updated by Fall 2019 EDCO waste audit.

CalRecycle estimates that up to 30% of what most California schools throw away is food waste that could be composted or digested -- not to mention other streams like paper towels, paper napkins, etc., that end up in landfills when they could be anaerobically digested on large scales.¹¹ That means that in Fiscal Year 2018, the university could have diverted at least an additional 1,866 tons via composting or anaerobic digestion had outlets been available to process that much post-consumer organic waste. Instead, these tons were landfilled because to date the San Diego region has lacked large-scale composting or anaerobic digestion to handle post-consumer organic waste. SIO and events like the annual Staff Picnic and HDH wellness fairs have been able to process post-consumer organic waste through composting and anaerobic digestion at on-campus, student-run gardens. But the capacity of on-campus gardens, while growing, is limited. (See Recommendation #20.) To address this regional issue, the City of San Diego is exploring options to increase what Miramar Greenery accepts, along with developing a possible new organics processing facility and food processing and/or composting area. In addition, EDCO is building a series of anaerobic digestors in Escondido that when completed will be able to process up to 650 tons a day, 24/7, at 131 Fahrenheit. The first two digestors are now under construction and will run at half capacity (around 325 tons a day) with service to multiple communities in the San Diego region. EDCO may add up to two more digestors to the project, which they anticipate being fully completed in early 2021. The university should look to partner with both EDCO and the City of San Diego, along with exploring other business partnerships or technologies as they arise, in order to send less organic waste to the landfill.

Recommendation #16: Require all restaurants, markets, food trucks, vendors, and departments on campus to use standardized compostable foodservice ware if reusables aren't feasible.

Diversion potential: To be determined based on Fall 2019 EDCO waste audit.

Once offsite anaerobic digestion is set up, along with expanded on-campus composting and anaerobic digestion at campus gardens (see Recommend #19), all departments, vendors and leasees on campus should

¹¹ <https://www2.calrecycle.ca.gov/WasteCharacterization/MaterialTypeStreams?cy=37&lg=0&mt=0&bg=105&mtf=0>

be directed to use university-approved compostable items (dishware, utensils, cups, to-go ware, paper towels, etc.) instead of using plastic, paper, or mixed material items that may or may not be recyclable.

The [UC Sustainable Procurement Policy and Guidelines](#) details the requirements any compostables or recyclable items bought by UC campuses must meet:

1. All products must be certified compostable by the Biodegradable Products Institute (BPI) or Green Seal GS-35, proving that the finished product meets ASTM standards D6400 or D6868 for compostability. BPI-certified products can be accessed at <http://products.bpiworld.org/>. Documentation may be required.
2. Products made 100% from paper, wood, bamboo or other obviously plant-based material, that are uncoated, unlined, or clay-coated (such as wooden stir sticks or uncoated paper plates) automatically meet this commercial compostability requirement without certification, so long as they appear on the Cedar Grove Accepted Items list for commercial compostability (<https://cedar-grove.com/compostable/accepted-items>), and the material type is disclosed.
3. Products with polyethylene liners are not compostable, and therefore do not meet the intent of these specifications.
4. Products shall not contain highly hazardous additives, including but not limited to persistent, bioaccumulative, or toxic chemicals (PBTs); carcinogens; mutagens; reproductive toxins, organohalogen-based chemicals (bromine, chlorine, fluorine or iodine); and endocrine disruptors.
5. Products shall not contain polyvinyl chloride (PVC), acrylonitrile butadiene styrene (ABS), polycarbonate (PC), polyurethane (PU), or any fluorinated chemicals. If product is fiber-based (including paper), ask for identification of the type of grease barrier or coating used.
6. Product is manufactured entirely with chlorine-free processing, meaning that no chlorine or chlorine compounds were used during manufacturing. Products may be unbleached or whitened in a chlorine-free process (if certified process chlorine-free).
7. Paper products are made from 40% post-consumer recycled content or 100% total recycled content (pre- or post- consumer), unless intended for hot beverages, in which case they are made from a minimum of 10% post-consumer recycled content. Bidder should disclose the amount and type of recycled content.
8. Non-cutlery products contain at least 90% biobased carbon content; cutlery products contain at least 70% biobased carbon content. Bidder can provide documentation demonstrating that its biobased carbon content meets the above specifications through one of the following:
 - a. ASTM Standard D6866 laboratory test data
 - b. USDA's BioPreferred Label
 - c. Products made of 100% uncoated wood, bamboo, paper or other obviously fiber-based material will automatically meet these biobased content requirements. Samples may be requested.
9. Product shall not contain added engineered nanomaterials.
10. Product materials were sustainably produced and are certified as one of the following:
 - a. Forest Stewardship Council (FSC)
 - b. Protected Harvest
 - c. Rainforest Alliance
 - d. Fair Trade USA
11. Feedstock and final product are produced in North America.
12. Product material grown without genetically modified organisms and certified to be GMO-free by one of the following:
 - a. Non-GMO Project Verified (www.nongmoproject.org)
 - b. CERT ID NonGMO
 - c. ProTerra Certifications (www.geneticid.com/services/certification)

13. Product is made from sustainably grown, non-food agricultural resources such as perennial biomass crops and sustainably harvested residues (for more information, see the Sustainable Bioplastic Guidelines: <https://healthybuilding.net/uploads/files/sustainable-bioplastic-guidelines.pdf>)
14. Product is EcoLogo or Green Seal-certified by one of the following:
 - a. EcoLogo CCD-084 (Table Napkins),
 - b. EcoLogo CCD-085 (Kitchen Towels),
 - c. EcoLogo CCD-086 (Hand Towels),
 - d. Green Seal GS-1 (Sanitary Paper Products),
 - e. Green Seal GS-9 (Paper Towels and Napkins),
15. Product meets the standard for biodegradability in the marine environment (ASTM D7081-05).
16. Inks for printing and graphics are vegetable-based and approved for use by U.S. Food and Drug Administration, where required.

The university should also follow guidance from EDCO, the City of San Diego, and on-campus gardens to ensure that whatever compostables are used fully break down in the timeframe each requires based on their composting or anaerobic digestion infrastructure and process needs. For example, EDCO's forthcoming anaerobic digestors will require that organic products break down in three weeks time.

Recommendation #17: Improve education to the campus community to foster proposal disposal of electronic, universal and other regulated waste streams.

Diversion potential: To be determined based on Fall 2019 EDCO waste audit.

Under the leadership of EH&S, efforts to train the campus community -- especially principal investigators, staff and students working in laboratories -- on how to properly dispose of hazardous, electronic, universal and other regulated wastes should be expanded to comply with state and federal regulations. Doing so will ensure that comingled recycling loads are not contaminated and possible landfilled as a result by the university's hauler, along with avoiding further fines for not meeting regulations. Expansion of training and enforcement could include mandatory online training or workshop attendance, inclusion of zero waste components in lab inspections done by EH&S staff, and language placed into contracts students and parents sign when living in on-campus housing that they will dispose of all items they no longer need properly. Starting in September 2019, EDCO, will provide an e-waste rebate based on weight of e-waste they collect and a service fee of \$145 per pick-up. An e-waste roll-off or bin will be provided at no cost.



Biohazardous Waste Disposal:
<https://blink.ucsd.edu/safety/research-lab/hazardous-waste/medical/dispose.html>
Radioactive Waste Disposal:
<https://blink.ucsd.edu/safety/research-lab/hazardous-waste/radioactive.html>

Research Waste Disposal Guidelines

Universal & Electronic Waste Disposal:
<https://blink.ucsd.edu/safety/research-lab/hazardous-waste/electronics.html>
UC San Diego
 Environment, Health and Safety
 Questions? Contact your Research Assistance Program Specialist or contact ehsrap@ucsd.edu.

Non-Hazardous Waste			Hazardous (Chemical) Waste			
<p>Trash & Recycling</p> <p>Container: Trash or recycling bin Required labeling: None Contents: Non-contaminated trash or recycling Disposal: Picked up by custodial staff *For recycling options, see zerowaste.ucsd.edu</p>	<p>Non-Hazardous Glass & Plastic</p> <p>Container: 2 cubic foot glass box (30lb weight limit) with a clear liner (>2mm) or 15gal drum Required labeling: Yellow Label and Non-Hazardous online tag in unmarked holder Contents: Visibly clean/empty glass and plastic; labels should be defaced and caps removed Disposal: Initial yellow label, tape up box, then request pickup via OTP</p> <p>ITEMS MUST BE EMPTY</p>	<p>Non-Hazardous Plastic</p> <p>Container: Unmarked cardboard box with a clear liner (>2mm) Required labeling: Green Label Contents: Visibly clean/empty plastic tips and pipettes Disposal: Initial green label, tape up box and custodial will pick up</p>	<p>Hazardous Lab Trash</p> <p>Container: Plastic bucket (5gal) or drum (15gal or 30gal) with a clear liner (>2mm) Required labeling: Hazardous online tag; "Lab Trash Contaminated with Chemicals", Toxic Contents: Glass, plastic, and solids contaminated with toxic chemicals; no pourable liquids Disposal: Seal container and request pickup via OTP</p>	<p>Vials, Tubes, & Samples</p> <p>Container: Plastic bucket (5 gal) or drum (15gal or 30gal) with a clear liner (>2mm) Required labeling: Hazardous online tag; "Flammable/Toxic Loosepack (Vials)" Contents: Sealed vials, conicals, and tubes with <100mL flammable or toxic liquid ONLY Disposal: Seal container and request pickup via OTP</p> <p>NO CORROSIVES NO REACTIVES</p>	<p>Non-Empty Container</p> <p>Container: Manufacturer's container, or storage container Required labeling: Hazardous online tag with constituents Contents: Solid or liquid chemicals Disposal: Seal container and request pickup via OTP</p> <p>CONTAINERS MUST HAVE OTP TAG</p>	<p>Chemically Contaminated & Non-Hazardous Sharps</p> <p>Container: Sharps container Required labeling: Hazardous online tag; "Chemically Contaminated Sharps" Contents: Needles, blades, needleless syringes, and other sharps contaminated with chemicals or non-contaminated sharps Disposal: Seal container and request pickup via OTP</p>
<p>NO NO</p> <p>BIOHAZARD</p>			<p>NO NO</p> <p>BIOHAZARD</p>	<p>NO NO</p> <p>BIOHAZARD</p>	<p>NO NO</p> <p>BIOHAZARD</p> <p>UNLABELED WASTE CONTAINERS</p>	<p>NO NO</p> <p>BIOHAZARD</p>

Recommendation #18: Standardize indoor and outdoor recycling, compost and landfill signage, bins, colors and liners (if needed).

Diversion potential: To be determined by FM and EDCO through data collection in one building.



Given the large size of campus and the high turnover of faculty, staff, students, and visitors, it is absolutely critical that MSW, recycling and composting signage look exactly alike across the entire university. In the past, signage has looked differently depending on who was paying for and installing it. A busy person walking across campus and moving from an academic classroom to a laboratory to a dining hall or restaurant vendor, for example, could not easily figure out what goes into what bin. In addition, bins were of different colors and sizes in different areas of campus. Bins and liners should be standardized across the university, with 32-gallon black or grey trash bins and blue Slim Jim recycling bins from WAXIE for indoor common areas; WAXIE black Bin Buddies and blue desk-side recycling bins for offices and cubicles; and Big Bellies for all outdoor bins. Areas purchasing their own bin setups should try to emulate these standards as

much as possible.

For signage, the university will be using Recycle Across America signage with its standardized colors, language and photos, on all indoor common area bins and outdoor Big Bellies. Recycle Across America is working to standardize signage across the entire United States, making it easier for everyone to recycle and compost and lowering contamination rates. State-funded buildings managed by FM will be installing the labels before Fall 2019 quarter begins, while HDH will be installing the labels over the course of summer and fall 2019. Other auxiliaries like UCEN, Recreation and Athletics, the Campus Bookstore and Sunshine Market, the Early Child Development Center, and others will transition to the new labels as their budgets allow.



To complement the new labels, Sustainability and FM are designing 8.5" X 11" and 11" X 17" laminated posters that can be hung above every common area recycling, compost and landfill bin setup. The posters will show a diverse group of UC San Diego students, faculty and staff recycling, and will include the campus's main web page for recycling information (recycle.ucsd.edu). The posters will use the same colors, wording and fonts of the Recycle Across America labels while still meeting university branding guidelines. The idea behind the posters is to use images to social norm recycling -- namely to show that a majority of people across campus

recycle. In addition, the labels and posters are meant to work together to help people place items in the right bins without much effort: they are meant to have little text, few but big images or icons, and bright colors. Finally, HDH is installing plastic sleeves on walls in all on-campus housing they manage to hold detailed recycling signage. Students asked for such signage to help them understand what goes into a blue recycling bin and what does not.



Finally, FM will continue to work with EDCO and the Sustainability office to maintain more detailed recycling signage as PDF files on the Sustainability website. (See the current signs posted under “Printable Guides” at recycle.ucsd.edu.) Anyone can download, print and use these signs to show exact images of what is and isn’t recyclable on campus. In addition, the signs will be distributed to anyone certified through the university’s [Green Office](#) and [Green Lab](#) certification programs.

Recommendation #19: Expand and institutionalize composting at student-centered gardens around the university and second anaerobic digester at Roger’s Garden, including developing a post-consumer recharge system to service events and departments on campus.

Diversion potential: To be determined based on Fall 2019 EDCO waste audit.

On-campus composting can be expanded at each of the student-run gardens on campus, especially at Roger’s Garden. Both the FM landscape staff person now dedicated to helping on-campus gardens and the new FM waste diversion, recycling and sustainability manager can work with students to oversee these efforts. FM can consider options for either direct funding or a recharge service provided to campus departments for compost-pick services in buildings and at events. The Sustainability Office already began paying for student compost interns in 2018 to increase compost pick up and transport to Roger’s Garden. In addition, the Sustainability Office secured a nearly \$10,000 grant from the PepsiCo Zero Impact Fund to build a second small-scale anaerobic digester at Roger’s Garden. Working in partnership with Campus Planning to ensure gardens



are located in the best places possible on campus, composting and anaerobic digestion capacity at Roger’s Garden could be expanded to take up to 1,000 pounds of organic waste a week. While on-campus gardens will not be able to handle the full volume of post-consumer food waste or other organic waste created on campus, expanding garden composting and anaerobic digestion aligns with the university’s goal of increasing hands-on learning opportunities for students in sustainability. In addition, the gardens provide education and outreach opportunities for the entire campus community, including visitors. Finally, as vegetables, fruit trees, and other plants are grown and supported by each garden’s closed loop system, they also provide local produce for the on-campus food pantry.

Recommendation #20: Develop specialized recycling containers, processes, storage, and shipment programs for materials that cannot be into comingled recycling.

Diversion potential: To be determined based on Fall 2019 EDCO waste audit.

During the packaging audit described in Recommendation #2), the business case should be explored to see if creating specialized recycling programs for items that cannot be put into single stream recycling is worth the labor and cost. Common items include but are not limited to:

- Air cushions
- Bubble wrap
- Food foil wrappers (e.g., chip bags, energy and candy bar wrappers, etc.)
- Gel packs used in shipping of temperature-sensitive laboratory and medical items
- Nitrile gloves
- Plastic envelopes
- Water filters
- Writing instruments (pens, markers, plastic-based pencils, etc.)

For each item, estimated volume, sizes and weights on campus should be estimated, along with the labor, storage space, shipping fees, and other costs involved in collecting, storing and shipping such items for recycling. In the case of nitrile gloves, EH&S must be involved to ensure any gloves sent for recycling are not contaminated. Programs run through companies like Trex and TerraCycle can be explored, and possible storage space may exist at the Trade Street warehouse. Where possible, Real Estate should be consulted in order to work with items generated through vendors and leasees on campus, from Target and Amazon to Starbucks and other food vendors. If such vendors and leasees cannot move to packaging or processes that prevent the creation of such waste on campus, nor take back items for reuse, their contracts with the campus could include a zero waste fee to help the university set up and maintain specialized recycling programs.

Recommendation #21: Standardize C+D reporting and hauling location for projects of all sizes.

Not included in UC diversion goals.

Although not included in UC waste diversion goals, campuses are still required to report C+D recycling and waste tonnages as part of the UC Annual Sustainability Report. To streamline processing and reporting of C+D recycling, new hauler EDCO recommends requiring that all contractors use their recently upgraded SANCO Resource Recovery facility. According to EDCO, “if the University requires construction and demolition companies to contract directly with EDCO, the University is guaranteed that C&D debris will be processed through EDCO’s state-of-the-art C&D Facility. This facility processes mixed construction loads of wood, concrete, asphalt, gypsum board, metal, carpet, rock, cardboard, and tile with a diversion rate of 78%. To further increase diversion from construction projects, the University can also require contractors to utilize source separated containers for large amounts of material. Source separated boxes have a diversion rate of 100%.” Smaller projects managed by FM should also consider collecting C+D recycling and waste tonnage data for the projects it manages so these can be added to tonnages coming from CPM-managed projects, including the university’s C+D diversion rate.

Communications: Education and Outreach

Communication and outreach to everyone on campus -- from students to campus visitors, faculty and staff to on-campus vendors -- is critical if the university is to meet its zero waste goals. The FM waste diversion, recycling and sustainability manager will coordinate with EDCO's onsite environmental coordinator and the Sustainability Office to ensure that all messaging is consistent, clear and simple.

Where feasible, additional messaging tailored to each stakeholder group on campus should be added to overall campus zero waste messages. Faculty have different interests and needs than students, for example, as do staff. Adding language and visuals tailored by audience to overall zero waste messaging can help insure each of these stakeholder groups understands and gets involved with making zero waste happen.

EDCO is preparing an initial UC San Diego specific zero waste education plan to share with those staff implementing zero waste efforts on campus. They anticipate creating brochures, posters, a newsletter, and promotional materials that are localized to UC San Diego. Specifically, EDCO anticipates creating and distributing a newsletter twice per year drafted specifically for the university. The newsletter could be distributed at or near the beginning and then in the middle of the academic year to encourage recycling and waste reduction and include any other topics the university would desire.

Electronic media

Electronic media -- from videos to social media and beyond -- should be used to reinforce zero waste messaging across campus. EDCO intends to work with the Visual Arts Department to create a UC San Diego specific video overviewing recycling: what's recyclable and what isn't, how the material is collected and processed, and the key role everyone on campus plays in making diversion happen. The video can be used at EDCO presentations, available at the Sustainability Resource Center, and shared on social media.

In addition, the Sustainability Office will be working with FM to add waste, recycling and composting information to EnergyCAP in order to create online, real-time dashboards showing the campus community information at the building, per capita, and/or per square foot level. The overall campus diversion rate can also be displayed and updated on a regular basis. Similar to the EnergyCAP energy and water displays already online through FM Energy and Utilities, these new waste dashboards will encourage building occupants to create less MSW per person while reusing and recycling more. They can also be used during competitions like RecycleMania to show real-time results.

Inclusion in all orientations

To date, one slide on sustainability is allowed and presented at UC San Diego Human Resources' training for all new employees. In addition, information is provided by the Sustainability Office at the FM's new employee orientation. More information is needed, however, to education employees to take zero waste seriously. Mandatory video training at new employee orientation and recurring online every two years, similar to cyber security and sexual harassment training, is recommended to help employees understand how their actions are critical to helping the university meet its zero waste and broader sustainability goals.

Continue training for custodial and landscaping staff

EDCO anticipates partnering with FM on developing zero waste training materials for custodians and landscaping staff, including having their onsite environmental coordinator conduct trainings alongside the FM waste diversion, recycling and sustainability manager. Training developed and used by the Sustainability Office in 2018-2019 can be used as a starting place from which to create new materials. The model that FM uses can then be shared with custodial and landscaper teams on other parts of campus, especially those in HDH, UCEN, and Recreation and Athletics, to ensure that non-FM custodial and landscaping teams receive similar guidance and training.

Zero waste training materials and presentations for custodians and landscaping staff should include information like:

- EH&S-approved processes, bin set up’s, signage, and procedures for hazardous materials and containers, as appropriate.
- What is and is not acceptable to go into indoor blue recycling bins and outdoor EDCO recycling dumpsters. For example, recycling cannot be placed into dumpsters in plastic bags as the bags clog machinery at recycling facilities, hindering the recycling process. Bags of material being moved by UC San Diego staff should be opened prior to discarding into recycling bins.
- How to reach Surplus Sales and/or DAV bins so donatable items can be recovered.
- Where e-waste bins are located so that anything with a plug can be kept out of MSW and recycling containers.
- What is and is not considered compostable or digestible, once campus-wide options are available.
- How to escalate difficult situations they see in their buildings to their supervisors, who can coordinate with the FM waste diversion, recycling and sustainability manager on the proper response. The Sustainability Office will work with FM and EDCO to design and print post-it notes custodians can use when they find trash, recycling and eventually compost bins contaminated. If those campus stakeholders continue to not sort properly, custodial and landscaping supervisors can then let the FM waste diversion, recycling and sustainability manager know so they can coordinate next steps.
- Where to go for more information and questions.



Continued zero waste training for those working in labs as part of EH&S Training

The work that EH&S has done to date educating faculty, staff and students in the campus’s nearly 2,000 laboratories should be included as part of mandatory lab safety training. Green Labs detailed recycling signage should be continually updated in close partnership with EH&S, the FM waste diversion, recycling and sustainability manager, and the EDCO environmental coordinator.

Print campaign across campus

A large-scale print campaign could be used across campus to visually get out the word about zero waste. Banners could be designed by the Resource Management and Planning in-house communications team to be hung off light poles across campus or even off Gilman Parking Structure. Infographics and messaging could be put on display on UCEN televisions and marquees. Mail Service vehicles could be draped in a zero waste advertising. Just as other important themes and programs on campus use these highly visible displays to get across messaging around entrepreneurship and innovation, student research, open surveys for staff, etc., zero waste could do the same.

Reinvigoration of RecycleMania participation

EDCO has extensive experience with RecycleMania as they have worked with California State University San Marcos on its participation, helping them earn the Grand Champion title seven years in a row. They have proposed providing weekly reports, weight tracking, and marketing assistance to those staff and students on campus rolling out the competition. Prior to the start of RecycleMania (usually in February or March of each year), EDCO will access and record the current level of trash and recycling services provided to the campus, according to service level and container size on a, per-yard basis. Once this has been established, EDCO will work with collection drivers, the FM waste diversion, recycling and sustainability manager, and the HDH sustainability manager to determine where refuse services may be reduced and recycling efforts increased during RecycleMania. During the competition, EDCO will visually inspect the contents of dumpsters and manually record each container's level per RecycleMania's tracking criteria. EDCO will provide university staff with up-to-date RecycleMania data for reporting and marketing to encourage increased student and staff participation.

Sharing how waste reduction fights climate change

As directed by the UC Sustainable Practices Policy, the Sustainability Office will work with EH&S and FM to estimate the greenhouse gas emissions associated with the university's zero waste practices. Greenhouse gases like methane are released from landfills as items decompose, while composting can sequester emissions. Lowering emissions associated with waste practices is not part of the university's carbon neutrality goals, nor is it required as part of regulatory reporting to the U.S. Environmental Protection Agency, the California Air Resources Board, or the Climate Registry. However, sharing with the campus community how reducing, reusing, recycling and composting can lower emissions in the fight against climate change is an important educational opportunity.

Tours of EDCO facilities

EDCO will offer tours of its nearby recycling facilities on an ongoing basis to UC San Diego staff, students and administrators. FM and the Sustainability Office will let faculty, student organizations, the Staff Sustainability Network, the HDH sustainability manager, and others know. Tours are a great hands-on way to learn about diversion, recycling, composting and anaerobic digestion firsthand. Often when people see behind the scenes, including the hard work EDCO puts in to its zero waste efforts, they recycle more and contaminate less as they are ensured their efforts are worth it.

Annual zero waste award

As an added incentive to stimulate participation, EDCO will offer an annual \$2,000 grant that will recognize new diversion activities and efforts. The award will be given at the annual UC San Diego Sustainability Awards Ceremony. Called "EDCO Zero Waste Today!," EDCO proposes to continue this effort annually through the life of its contract with the university

Ongoing Monitoring, Verification and Testing

Weekly and monthly progress towards implementing the recommendations in this plan will be monitored by the UC San Diego Zero Waste Working Group. The Waste Diversion, Recycling and Sustainability Manager in Facilities Management will oversee daily interactions with EDCO and ensure that diversion recommendations are being implemented in partnership with appropriate departments on campus. Departments on campus like Integrated Procure-to-Pay Solutions; Housing, Dining and Hospitality, University Centers, Real Estate, Recreation and Athletics, and others will ensure upfront reduction and reuse are implemented in their respective areas. Finally, education and outreach are everyone's responsibility, but efforts will be aligned and coordinated through the Zero Waste Working Group.

The Sustainability Office will facilitate the Zero Waste Working Group and ensure annual reduction, reuse, recycling, composting/digestion, allowable residential conversion, and landfill tonnages are reported every year to the UC Office of the President to be included in the UC Annual Sustainability Report¹². C+D recycling and waste tonnages for new construction and major renovation projects are also included. These data are used to calculate the university's per capita number (pounds of items recycled, composted, digested, and landfilled per weight campus user per day) and diversion rate (percentage of thrown away items reduced, reused, recycled, composted and digested versus landfilled or incinerated). The Sustainability Office will also use these data are also used as part of the university's reporting to AASHE's STARS (Sustainability Tracking, Assessment and Rating System) program at least every three years if not more frequently. The Princeton Review and the Sierra Club use these data in STARS for their annual green school rankings.

¹² <https://www.ucop.edu/sustainability/policy-areas/annual-reports.html>

Summary of Zero Waste Recommendations

TYPE	RECOMMENDATION	PER CAPITA or DIVERSION POTENTIAL	RESPONSIBLE PARTIES	TIMELINE
Overall	Zero waste standards for vendors and leasees	TBD	Real Estate	By 2021
	Packaging audit	TBD	Integrated Procure-to-Pay Solutions	2019-2020
	Green event standards	5%	Sustainability	2019-2020
	Pilot TRUE certification on a building	TBD	Capital Program Management; Facilities Management	2025
Reduction	Ban single use plastics	TBD	Sustainability; Integrated Procure-to-Pay Solutions; Housing, Dining, Hospitality; Facilities Management; Real Estate; University Centers; Recreation and Athletics	Summer 2021 pending UC systemwide approval
	Track tons avoided	TBD	Integrated Procure-to-Pay Solutions; Sustainability	2019-2020
	Install more water refill stations	TBD	Facilities Management; Housing, Dining, Hospitality; University Centers; Recreation and Athletics	On-going
Reuse	Expand food recovery efforts	TBD	Basic Needs Center; Food Recovery Network; Housing, Dining, Hospitality; Sustainability	On-going
	Prioritize and market use of Surplus Sales	TBD	Integrated Procure-to-Pay Solutions; Capital Program Management; Facilities Management	2019-2020
	Expand student donation program, esp. move-in and move-out	TBD	Housing, Dining, Hospitality; Environment, Health & Safety; Facilities Management	Summer 2020 and on-going reporting to UCOP, STARS, etc.
	Charging for disposables	TBD	Housing, Dining, Hospitality; Real Estate; University Centers; Recreation and Athletics	By 2021

TYPE	RECOMMENDATION	PER CAPITA or DIVERSION POTENTIAL	RESPONSIBLE PARTIES	TIMELINE
Diversion	Right-sizing dumpsters, containers and bins	TBD	Facilities Management	2019
	Zero waste requirements for new construction and major renovations	TBD	Capital Program Management; Sustainability; Facilities Management; Real Estate	2019-2020
	Off-site anaerobic digestion	TBD but at least 30%	Facilities Management	2021
	Standard compostables for all departments, vendors, leasees, etc.	TBD	Facilities Management; Housing, Dining, Hospitality; Real Estate; Sustainability	2021
	Enforce proper disposal of regulated wastes	TBD	Environment, Health & Safety; Facilities Management; Sustainability; Housing, Dining, Hospitality	2019-2020
	Standardize indoor and outdoor recycling, composting and landfill bins, signage, colors, etc.	10%	Facilities Management; Housing, Dining, Hospitality; University Centers; Recreation and Athletics; Real Estate; Sustainability	2019-2020
	Expand and institutionalize on-campus garden composting and anaerobic digestion	TBD	Facilities Management; Urban Studies and Planning; UCSD Grow; Sustainability	2019-2020
	Develop specialized recycle programs	TBD	Integrated Procure-to-Pay Solutions; Facilities Management	2019-2020
	Standardize C+D reporting and hauling locations	TBD	Capital Program Management; Facilities Management	2019-2020

TYPE	RECOMMENDATION	PER CAPITA or DIVERSION POTENTIAL	RESPONSIBLE PARTIES	TIMELINE
Communications	Electronic media		Facilities Management; Sustainability; RMP Communications Staff	2019-2020
	Inclusion in all orientations		Sustainability; Facilities Management	2019-2020
	Mandatory training for custodians and landscapers		Facilities Management; Housing, Dining, Hospitality; University Centers	2019-2020
	Mandatory training for all working in labs		Environment, Health & Safety; Facilities Management	2019-2020
	Print campaign across campus		Facilities Management; Sustainability; RMP Communications Staff	2020-2021
	Reinvigorate RecycleMania participation		Facilities Management; Housing, Dining, Hospitality; Sustainability; Recreation and Athletics	Winter/Spring 2020
	Sharing reduced greenhouse gas emissions		Sustainability	Summer 2020
	Tours of EDCO facilities		Facilities Management	On-going
	Annual zero waste award		Sustainability	Spring 2020

Future Goals

The system-wide UC Zero Waste Working Group is currently drafting updated zero waste policy to propose to the UC Sustainability Steering Committee for inclusion in the UC's Sustainable Practices Policy in 2020. The goal is to ensure that campuses have post-2020 diversion or other goals in place to continue to pursue zero waste. Ideas include using a materials management framework similar to that of the State of Oregon, including food recovery and organics recycling targets in line with SB 1383, and phasing in a single use plastics ban.

This plan will be updated accordingly on a regular basis to meet new policies and regulations, incorporate new technologies and best practices, and alter existing programs based on lessons learned and collaboration with sister UC campuses.

Appendix A: Definitions

The following definitions are used throughout this plan and follow those in the UC Sustainable Practices Policy.

Allowable Thermal Residual Conversion: Consistent with CalRecycle and the Southern California Conversion Technology Project, residual conversion includes: thermal, chemical, mechanical, and/or biological processes capable of converting post-recycled residual solid waste into useful products and chemicals, green fuels like ethanol and biodiesel, and clean, renewable energy. It does not include combustion. Examples include the transformation of post-recycled residual materials into usable heat or electricity through gasification, pyrolysis, distillation, or biological conversion other than composting. To count as allowable residual conversion, the process must include an integrated materials recovery facility (MRF) or equivalent sorting system to recover recyclables and compostable material prior to conversion. Materials that are otherwise landfilled or incinerated, including biomass conversion operations that exclusively incinerate organic materials, landfill-gas-to-energy (LFGTE) facilities, and other facilities that do not employ integrated materials recovery or equivalent sorting and recovery systems may not be considered to be converted residual waste.

Combustion: As defined by CalRecycle, combustion is a rapid conversion of chemical energy into thermal energy. The reaction is exothermic. Organic matter is oxidized with sufficient air (or oxygen) for reactions to go to completion. The carbon and hydrogen are oxidized to carbon dioxide and water, respectively.

Construction and Demolition Waste (C&D): Waste generated by construction projects that do not occur every year or are not a result of regular operations and maintenance. Examples include building renovations or new construction.

Diversions from Landfill: Institution diverts materials from the landfill, combustion or other non-allowable thermal conversion by recycling, composting, donating, reselling or reusing. Campuses will be able to include up to 10% of their diversion through combustion to the end of FY2021/22 after which the UC will no longer accept combustion as a form of diversion. No campus will increase the percentage of combustion reported as diversion from reported FY2015/16 levels. Up to 10 percent of total waste generated per campus may be disposed through allowable thermal residual conversion after FY2021/22. To count, (non-combustion) waste converted through thermal processes must include an integrated materials recovery facility (MRF) or equivalent sorting system to recover recyclables and compostable material prior to conversion. The total value of converted materials counted as diversion from landfill is not to exceed 10%.

Expanded Polystyrene (EPS): As defined by the City of San Francisco, blown polystyrene and expanded and extruded foams which are thermoplastic petrochemical materials utilizing a styrene monomer and processed by any number of techniques including but not limited to, fusion of polymer spheres (expanded bead polystyrene), injection molding, foam molding, and extrusion-blown molding (extruded foam polystyrene).

Municipal Solid Waste: Garbage, refuse, sludges, and other discarded solid materials resulting from residential activities, and industrial and commercial operations which are legally accepted in CalRecycle permitted landfills. Municipal Solid Waste does not include any regulated hazardous/universal waste, medical waste or other material used as Average Daily Cover (ADC); however, it does include construction and demolition waste, diverted recyclables and organic waste. Non-health location waste targets refer to municipal solid waste only.

Organic: As defined by CalRecycle, material containing carbon and hydrogen. Organic material in municipal solid waste includes the biomass components of the waste stream as well as hydrocarbons usually derived from fossil sources (e.g., most plastics, polymers, the majority of waste tire components, and petroleum residues).

Post-Consumer Waste (PCW): Waste produced by the end-user of a product. Post-consumer waste is differentiated from pre-consumer waste, which refers to waste produced in the manufacture of a product.

Takeback program: A program that allows customers to return used products or materials to either the producer or distributor for responsible re-use or recycling consistent with applicable state and federal laws. These programs encourage responsible design for disassembly and recyclability, and protect the environment by keeping bulky or toxic products and packaging out of the waste stream.

Total Solid Waste: total solid waste includes municipal solid waste as well as all forms of regulated waste, this includes but is not limited to: regulated medical waste, biohazardous waste, pharmaceutical waste, universal waste and construction and demolition waste. Unlike campus targets, UC Health Location diversion rates and reduction targets use total solid waste rather than municipal solid waste.

Zero waste: The University zero waste goal is made up of incremental waste reduction and waste diversion targets. The University recognizes the attainment of reduction goals stated in this Policy and a 90% diversion of municipal solid waste as minimum compliance standard to be defined as a zero waste for locations other than health locations.