

California State University Dominguez Hills

2020 Zero Waste Strategic Plan

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Introduction

As part of a strategic push to become a net zero waste campus before 2045, the Office of Sustainability is proposing that California State University Dominguez Hills (CSUDH) reach a goal of 90% diversion from the landfill in its waste streams by or before that date. According to the Zero Waste International Alliance (ZWIA), “Zero Waste is a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use. Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them. Implementing Zero Waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health.”¹

Although adopting this principle will challenge campus users’ basic day-to-day behavior, making this decision aligns CSUDH with other leading CSU’s sustainability practices, will help the campus save on waste hauling costs, and reduce CSUDH’s negative impact on the environment as well as the regional community.

I. Current Waste Hauling Services & Volumes

CSUDH provides waste hauling services to the campus for the following types of materials via the following commercial providers:

- *Republic Services:*
 - Trash
 - Mixed commercial recycling
 - Cardboard
 - Commercial organics (food scraps)
- *CWS:*
 - Green waste (for Grounds staff operations)
 - Construction & Demolition Waste (C&D for Trades staff operations)
- *Independent Contractor:*
 - Scrap Metal (for Trades staff operations)
- *North State Environmental:*
 - Battery recycling
 - Chemical disposal (laboratory users only)

¹ <http://zwia.org/zero-waste-definition/>

- *Recycle International:*
 - E-waste

Only volumes from Republic Services and CWS are currently tracked by the Office of Sustainability for the purposes of internal and state recycling reporting. As these other services are for recycling/diverting these materials, they are left out of the scope as they do not contribute negatively to the diversion rate, and weights are not easily tracked (or otherwise not provided by the hauler).

Based on the available data, in the 2019 calendar year, CSUDH generated the following tonnages:

	Republic Services (tons)	CWS (tons)	Annual Tonnages
Trash (Landfill)² & Disposed C&D³	1185.8	56.3	1242.1
Mixed Recycling⁴ & Recycled C&D	1869.4	244.3	2113.7
Organics Recycling	7.02 (food scraps)	65 (green waste)	72.02
% Diversion Rate from Landfill			64%

In order to achieve a 90% diversion rate assuming similar waste generation volumes year by year, CSUDH would need to identify solutions that would divert or avoid 1208.56 tons of trash from ending up in the landfill.

Some reductions are possible simply through better tracking and assessment on actual volumes as these numbers are based solely on service levels, not true weights. Additional reductions can result from a variety of infrastructure and behavior-based

² Based on Republic Services-provided waste factor of 107 lbs/cubic yard for landfill.

³ C&D tonnage weights provided directly by CWS.

⁴ All other weights based on EPA waste factors for Campus Recyclables, corrugated containers, uncompacted mixed yard waste, and commercial organics. (https://www.epa.gov/sites/production/files/2016-04/documents/volume_to_weight_conversion_factors_memorandum_04192016_508fnl.pdf)

strategies as detailed later in this plan.

II. Current User Services & Challenges



The Office of Sustainability provides several user services for campus students, staff, and faculty designed to prevent waste from entering the landfill. However, there are some challenges associated with delivery of these services.

Bin Types

To ensure users are supported in choosing recycling streams over landfill streams when disposing of waste, receptacles must be clearly designated and easily accessible. Currently, CSUDH struggles with having a wide variety of bins ranging in material from round stone to square plastic, and very little correlation between where trash receptacles are located versus where recycling receptacles are located.

Due to limited staffing, (currently all campus recycling bins are serviced by one dedicated Recycling Coordinator while campus trash bins are serviced by all custodians for offices and interior spaces as well as Grounds for outdoor receptacles), interior recycling receptacles have been consolidated to 64 centralized “zero waste station” locations that are serviced regularly. On-demand services for recycling receptacles located in personal offices and copy rooms are available through the Work Order system.

Where possible, interior receptacles are being upgraded to metal bins with built in photo-based graphics providing mixed recycling guidance per the campus standard. In non-retrofitted buildings, 32 gallon blue slim jim receptacles with standardized Recycle Across America mixed recycling guidance (also photo-based) can be found at these stations.

	
<p align="center">Interior Non-Retrofitted Standard Receptacle</p>	<p align="center">Campus Standard Interior Receptacle</p>

However, exterior recycling bins consist of the same round stone bins also used for landfill. While lids for recycling receptacles are blue to delineate it from trash, additional signage has not been successful in being applied due to the type of lid material used. There is one example of the new campus standard for exterior recycling bins on the East Walkway which will be expanded (funding permitted).

	
<p align="center">Current Exterior Recycling Receptacle</p>	<p align="center">Campus Standard Exterior Receptacle</p>

Both in interior and exterior spaces, trash receptacles far outnumber recycling receptacles and are placed erratically in comparison to the zero waste stations which

are strategically located at crossroads and intersections at regular points on walkways and buildings to ensure equal access.

Commercial Compost Services

The commercial organics service CSUDH provides accepts organics in the form of fruits, vegetables, meats, bones (cooked or raw). Currently, organics pick up from user receptacles is handled by student assistants from the Office of Sustainability based on a schedule of twice a week for all seven buildings/outdoor receptacles. Due to the limited amount of available compost bins (one per building) and lack of signage drawing attention to these limited locations, this collected compost is generally very low in volume and 99% contaminated every week.

The chart below highlights actual volumes collected during the first half of the 2020 spring semester. All buildings with a 0 weight indicate that the compost bin was more than 70% contaminated and considered trash, or simply not utilized by users. CSUDH currently spends about \$860 a month for a 2 cubic yard dumpster to be emptied twice a week regardless of volume which is not a sustainable approach based on the volumes actually being generated by the campus.

Signage updates and employee training on the proper disposal of organics must be implemented to fully benefit from this service.

Location	2/19/20	2/25/20	3/4/20
SBS	0	0	0
NSM	0	0	0
Library	0	0	0
East Walkway	Low	0	0
COE	0	0	0

Welch	0	0	27.5 lbs
LaCorte Hall	0	0	0

Battery Recycling

Information on battery recycling is posted on the Office of Sustainability website and periodically e-mailed out to the campus. Currently this system offers free battery collection buckets to any offices that would like one, with directives to contact the Recycling Coordinator for pick-up when the bucket is full for hand-off to EHOS for recycling.

Additionally, the Office of Sustainability has established voluntary relationships with staff in certain buildings to allow all campus users to drop off batteries for their respective collection buckets for recycling including the Visitors Information Center (WH 2nd Floor), COE mailroom (COE 1403), LCH E303, and the Office of Sustainability itself.

However, promoting this service and expanding the number of locations could help to make battery recycling more prevalent on campus as many users are still unaware of this protocol and the availability of public battery recycling locations.

III. Current User Education: Resources & Past Events

In the 2018 and 2019 academic years, the Office of Sustainability tabled weekly every Monday from 11am to 2pm on the East Walkway. Students passing by were encouraged to play an educational waste sorting game for a prize. The game consists of a waste sorting game where slots in the box are used to mimic the three bin system on campus. Students are also given physical items or photos featuring common compost, recycle, and landfill items. The goal of the game is for students to place these items in their appropriate bins.

Through tabling, students have also been encouraged to pledge to a number of other sustainability behaviors they may incorporate in their everyday lives including some reduce and reuse behaviors (like bringing a reusable water bottle to campus). While these tabling-based outreach activities are impressive, reaching 1,500+ people during the 2019-20 academic year, this is still a small proportion of CSUDH's 17,000 students and 1,000+ staff and faculty. Since these organic methods of outreach only reaches a

fraction of the population on campus, student assistants from the Office of Sustainability also started presenting in classrooms on this topic per professors' requests

Additionally, other class activities the Office of Sustainability has participated in in order to further user education was involvement in the Natural Resources and Urban Planning classes in the Earth Science and Geography department. In the 2018-19 academic year, this included having Rubbermaid perform a waste audit in the LSU loading dock to show students what we throw away to measure the potential diversion rate from non-recycled and compostable items found in the trash. In the 2019-20 academic year, Office of Sustainability interns teamed up with students in the Urban Planning class to help them create research projects on sustainability and waste reduction measures for their final projects in that class.

The increase in outreach and engagement (informally, through signage, and formal class engagement) significantly improved the percent of recyclables ending up in the landfill. Based on 2019 and 2018 waste audits conducted by the Office of Sustainability interns, potential recyclables went from making up 84-88% of trash weight in fall 2018 to 28-48% in fall 2019 (a 56-40% difference).

IV. Current Source Reduction Efforts

In summer and fall of 2019, the Office of Sustainability partnered with Campus Dining to pilot a reusable container initiative called the "Toro Token" program at their Toro Fresh to-go eatery. This program allows students to receive food in a reusable container as opposed to single-use clamshell containers and exchange their dirty containers for a bronze token when they are done. Campus Dining then cleans the dirty container so the user does not have to carry a used container around all day. The user can then cash in the lightweight token for a fresh container on their next visit, ensuring a continuous reduce and reuse option for dining customers. This program also extends to reusable soup containers which are small enough for users to take them home and exchange for a fresh one on their next visit.

The program is highly popular and successful enough that Campus Dining is interested in expanding locations and reach for this program to encompass additional eateries.

The CSU system passed a Single Use Plastics Policy in 2019 that aims to eliminate single use plastic water bottle purchasing on all CSU campuses by 2023 and bans single use plastic straw and bag distribution.⁵ CSUDH proactively addressed the policy

⁵ <https://www2.calstate.edu/csu-system/news/Pages/CSU-Says-Goodbye-to-Single-Use-Plastics.aspx>

by committing to a 100% retrofit of all campus water fountains to include bottle fillers (hydration stations) to make reusable water bottle usage more convenient. Facilities Services also ordered and received a 10,000 reusable aluminum water bottle order of CSUDH co-branded Pathwaters which come pre-filled with reverse osmosis water, but can be reused indefinitely after consumption. This order replaces the single use plastic water bottle stock that used to be provided on-demand via chargeback to campus departments for staff and visitor consumption. Pathwater usage has been extremely well-received, with new student orientation purchasing them for incoming students for the fall 2020 semester.

Campus Dining was also provided with a water bar to enable rental for events where additional water service beyond what can be supplied by campus water fountains is required.

The Sustainability Club is also registered as an official campus chapter of the National Food Recovery Network, and has recovered over 2,000 pounds of edible food from Campus Dining since establishing in December 2018. This food is donated directly to campus food pantries to feed food-insecure students. Due to the positive publicity around this initiative, as well as increased campus-wide awareness of students' basic needs, food waste has dramatically decreased with many campus departments opting to donate their leftover food after events (via the Food Recovery Network or the CSUDH Eats App developed by IT which directly notifies students of leftover food) instead of throwing it away. Based on 2019 waste audits conducted by Office of Sustainability interns, food waste decreased from making up 22-42% of landfill weight in fall 2018 to only 6-22% of landfill weight in fall 2019 (a 16-20% reduction).

V. Proposed Measures for Achieving Zero Waste

To achieve a 90% diversion from landfill rate for the campus, CSUDH must look to further implement best practices and engage campus users. This includes prioritizing reduce and reuse measures in addition to supporting recycling behavior and infrastructure.

Improved Bin Infrastructure & Monitoring

The campus needs improved bins and infrastructure, with uniformity and consistency in mind. We propose ensuring all interior bins be upgraded to meet the campus standard as already exhibited in Welch Hall. Uniformity is important when it comes to having people sort their waste properly.

Additionally, these interior bins should be co-located with trash receptacles, so all users know to report to a zero waste station in order to dispose of their waste. Additionally, AB 827 will begin requiring compost receptacles in addition to recycling receptacles to be co-located next to all trash receptacles starting July 1, 2020.

To that end, we propose a dual stream interior receptacle based on the campus standard that features landfill and recycling, with a smaller side bin for compost specifically (given the low volumes and need for frequent pick-ups) to be placed at all zero waste station locations. All other receptacle bins inside of buildings should be removed to avoid confusion.

For exterior locations, all stone bin receptacles should be removed to the outer parking lots and replaced with three stream campus standard exterior bins, centralized to key locations on common walkways and entering the campus from the parking lots.

On both styles of bins, signage should be picture based and slightly customized based on the location of that bin and what types of source materials are likely. For example, making sure signage incorporates Starbucks cups for the recycling receptacle and cooked food from Subway and/or Panda Express for the organics receptacle.

Further customizing background signage to include verbiage such as “Did you finish your Panda Express/Subway today? If not, put here” to cater to campus-specific user habits would help divert additional materials from the landfill.

Collaborating with auxiliaries like the Loker Student Union is essential to ensure compliance with AB 827 and other ordinances, as well as ensure consistency in user experience when dealing with waste receptacles.

Additionally, greater monitoring of both receptacle fill levels and dumpsters provided by the waste-hauler will help “right-size” pick-ups to further reduce reported landfill volumes. Currently, there is a small pilot with Clean City Networks in place that monitors eight interior zero waste locations with live fill sensors that display on a web-based monitoring system. Expanding the pilot to include all campus waste dumpster locations as well as zero waste stations could greatly revolutionize campus ability to manage waste volumes and ensure appropriate waste hauling service.

Employee & User Training

To eliminate confusion in properly disposing of organics, and which materials in general are recyclable, all facilities staff handling waste should be trained (including staff members from the Loker Student Union and Housing).

We propose an annual recycling training to be provided to all staff directly responsible for hauling waste as well as an annual user-based recycling training for students, staff, and faculty to remind them of their recycling services, and which materials go where.

Specifically for Campus Dining, we propose instituting monthly visits to the kitchen to ensure that staff are fully aware of the compost green bin/waste protocols. This can lessen the confusion on which receptacle each type of waste belongs in.

For Housing, we also propose a training for Resident Advisors specifically on dumpster locations to help incorporate recycling protocols during resident move-in.

Having returning students complete a zero-waste CSUDH video/questions so that they are up to date with the school waste management should be an annual training requirement is also essential for ensuring continuous training and behavior re-inforcement. Additionally, continuing to work with new student orientation organizers to ensure students receive information about, or perhaps directly receive, Toro Tokens and reusable Pathwater bottles along with mandatory training will help ensure the full campus community is on board with the campus' zero waste mission.

We also propose that students who want to learn more can come to a voluntary in-person training and will receive a small prize for attending. The in-person training could include a short presentation (Sustainability 101, Zero Waste 101, or Recycling 101), a demonstration or activity about zero waste led by interns (e.g. have students play a waste sorting game and then educate afterwards) and a quick tour of campus, including showing students the locations of the recycling/compost bins to further enhance this training.

Green Labs Program

Laboratory spaces generate a variety of unique waste materials that require special handling and collection, and can be a large source of specialty waste like pipettes, gloves, chemicals, etc. Implementing a green laboratory program that specifically focuses on providing lab users with recycling and take back services customized to their unique needs can specifically target this demographic for additional waste reduction measures. We propose implementing a green labs program beginning in Fall 2020 with an emphasis on integrating into operations with the new science building coming online during that time frame.

Source Reduction Measures

The Toro Token program that Campus Dining implemented in fall of 2019 was a great step to encouraging a reusable container mentality. Promoting this program further will help students and staff limit the number of to-go containers they collectively throw away while on campus which end up in the landfill. By incorporating Toro Token giveaways in New Student Orientation and new employee orientations, the campus can start educating newcomers on our sustainable zero waste efforts.

Despite the advanced infrastructure and education that has gone into supporting the CSU Single Use Plastics Policy, encouraging user behavior to ensure students and staff do not continue to bring plastic water bottles to campus remains important especially since many of these plastic water bottles ultimately end up in the landfill. Some educational measures we propose include incorporating a handout of a free reusable water bottle for every student starting their year at CSUDH. Running a regular reusable water bottle campaign in fall after students adjust will help further promote their use.

One new piece of waste that was found in almost every waste audit conducted in the 2019-20 academic year was the ubiquitous plastic Starbucks coffee cup. This piece of waste was found frequently during waste audits once a campus Starbucks location opened in the Library. By advertising reusable coffee cups (hot/cold mugs) at campus cafes and further promoting the discounts students receive when they bring their own coffee cups to school could help address this issue. This behavior of bringing reusable cups could be further enhanced by being included as part of an annual reusable cup campaign including both coffee cups and water bottles.

Despite the measures set forth by the CSU Single Use Plastics Policy, sub-contractors on existing contracts with Campus Dining have not integrated the single use straw and plastic bag ban. The Office of Sustainability will have to continue working with LSU food court vendors and Campus Dining to enforce the single-use bag ban to ensure full compliance.

Increased Specialty Recycling Services & Upcycle Outreach

In addition to promoting existing recycling services, the Office of Sustainability proposes expansion of outreach programming to feature specialty waste collection drives for items such as batteries, e-waste, and even smaller one-off items such as mascara

wands and other unique household items.

Proposed User Education

We also propose incorporating additional outreach activities that actively help students and staff upcycle commonly thrown away items as well as learn to “DIY” high-waste items such as cosmetics and toiletries to further establish a zero waste culture for the campus.

One of the many challenges the Office of Sustainability faces when it comes to outreach is incentivizing people to stop by the booth when conducting tabling events. To combat this, we propose a formalized outreach budget in order to provide incentives that can help advertise the importance of zero waste and continue rewarding students with prizes who participate.

Enhanced Disposal Technologies

While the above measures should greatly reduce waste being generated on campus, there should also be a focus on enhancing end-of-life disposal services to address certain materials that are not accepted by the hauler for commercial recycler, or could be better utilized through on-site recycling methods.

A primary example is paper towel waste. While all restrooms on campus are stocked with brown recycled fiber paper towels, this material is only acceptable as landfill by the hauler. However, this has a high compost value if the campus can identify an on-site solution that can process it.

Campus Dining has also integrated compostable food service-ware into its operations. However, the current hauler as well as its competitors have declined to accept this material due to the lack of sufficient facilities to be able to compost it. This includes single-use disposable food service ware items such as cups, bowls, plates, trays, clam shells, fork, spoons, knives and straws that are manufactured from materials that degrade rapidly and safely into a valuable soil-like material when these items are sent to a commercial or municipal composting facility along with other compostable materials such as food scraps and yard waste. Due to the lack of an outside commercial composting facility that can take these materials, CSUDH could consider procuring its own digester or composter capable of processing these materials on-site.

Similarly, combined with digesters and composters that can also process yard waste and food scraps on-site, identifying a technology solution that works for CSUDH could eventually eliminate the need for off-site hauling for these materials.

Office of Sustainability intern research has already explored several commercially viable options, and will continue exploring these options with Facilities Services as a whole to drive progress towards more on-site disposal options to maximize recycling of these materials.

Conclusion

With a combination of the above-proposed measures, and adequate administrative and financial support from the campus, CSUDH could achieve a 90%+ diversion rate from landfill streams well before 2045. Based on a five-year action plan, we propose achieving the following diversion rates in order to achieve an 80% diversion from landfill streams by 2025.

Calendar Year	Target Diversion Rate	Strategy
2020	65%	Improved monitoring/right sizing of hauling services & labeling for zero waste stations
2021	70%	Annual employee and student recycling training including green lab program & continued zero waste education initiatives
2022	75%	Expansion of formal reusable dining-ware/Toro Token program to all eateries & zero waste education
2023	80%	Increase in specialized waste services for large volume materials (e.g. paper towels) including pilot digesters/composters
2024	85%	Full-scale implementation of zero waste pilot projects & aggressive scale down in landfill waste services

2025	90%	Full integration and re-emphasis on all measures
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Information on the Office of Sustainability

California State University, Dominguez Hills and other state institutions are major consumers of energy and natural resources. The university has a responsibility to be a wise steward of scarce resources by reducing the use of non-renewable resources, increasing energy efficiency, and as part of the larger CSU system, promoting continued economic and ecological viability in California. CSU Dominguez Hills is on the cutting edge of sustainability efforts by an urban campus, and is actively providing leadership in engaging faculty, students and staff in on-campus sustainability efforts. We are looking at ways to increase partnerships and funding to support the educational, research, and public service missions of the university as they relate to sustainability.



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