

# Zero Waste Action Plan 2030

Towards a Circular Economy



THE UNIVERSITY OF BRITISH COLUMBIA  
sustainability

MAY 2023



## ACKNOWLEDGMENT

*We acknowledge that the Vancouver campus is situated on the traditional, ancestral, and unceded territory of the xʷməθkʷəy̓əm (Musqueam) people.*

..... sʔi:łqəy̓ qeqən (Double-Headed Serpent Post)  
Brent Sparrow Jr., Musqueam

..... **PHOTOGRAPHER:** UBC BRAND & MARKETING  
/HOVER COLLECTIVE





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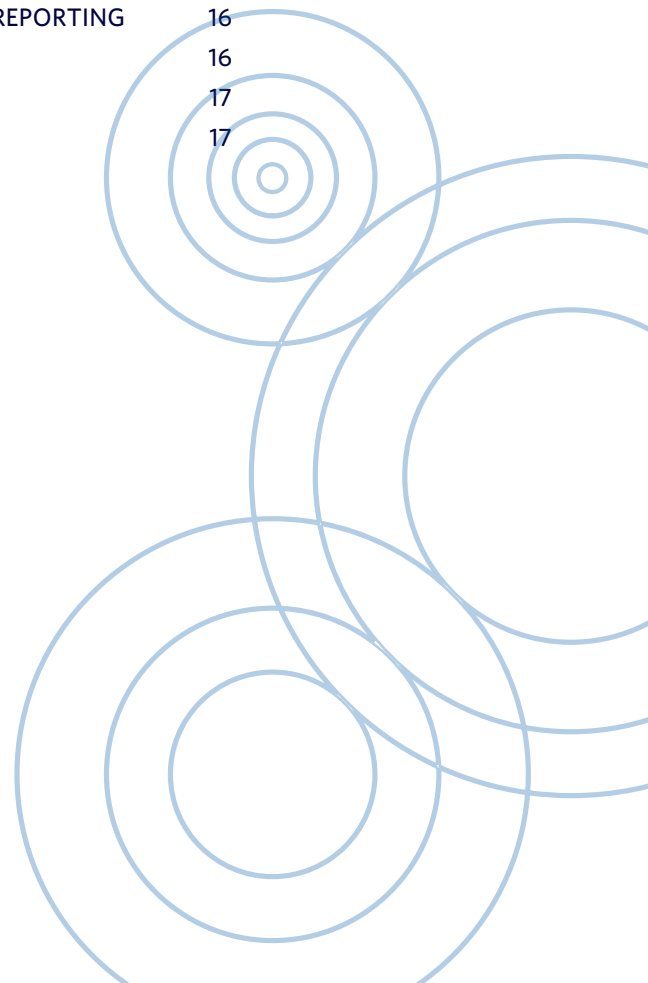
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## UBC Zero Waste Action Plan 2030: Towards a Circular Economy



Building on UBC's first Zero Waste Action Plan (2014), the new ZWAP2030 sets out actions to achieve a 50% reduction in operational<sup>1</sup> waste disposal for the Vancouver academic campus by 2030 relative to 2019. This major update to the ZWAP responds to several key driving factors including:

- Reducing waste and materials related green house gas emissions with a stronger focus on building the circular economy<sup>2</sup>, as per the Climate Action Plan 2030;
- Emergent sustainability priorities, government policies and industry trends, including Sustainable Development Goal 12 "Ensure Sustainable Consumption and Production Patterns," and the impacts of plastic pollution in marine and land ecosystems;
- Gaps in the implementation of important actions from the 2014 ZWAP;
- Planned growth and changes to the campus as envisioned in the emerging Campus Vision 2050.

# Part 1: Context

UBC's first Zero Waste Action Plan (ZWAP) was endorsed by the UBC Board of Governors in 2014, setting out a vision, targets, and actions.

## 2014 Zero Waste Action Plan

### VISION:

UBC's Vancouver campus will be transformed into a zero waste community by advancing innovative solutions to conserve, reuse, recycle, and redesign materials and resources.

### TARGETS:

- 70% overall waste diversion by 2016
- 80% overall waste diversion by 2020
- Decrease operational waste to landfill steadily

<sup>1</sup> Operational waste is the food scraps, recycling and garbage collected across the academic campus on a regular basis. It does not include materials from major construction, renovation and demolition projects.

<sup>2</sup> In contrast to a conventional linear economy ("take, make and dispose"), a circular economy increases the focus on reuse and recycling of goods and materials back into the economy to avoid and eliminate waste and generate economic value.

## HOW HAVE WE DONE ON ACHIEVING ZWAP TARGETS?

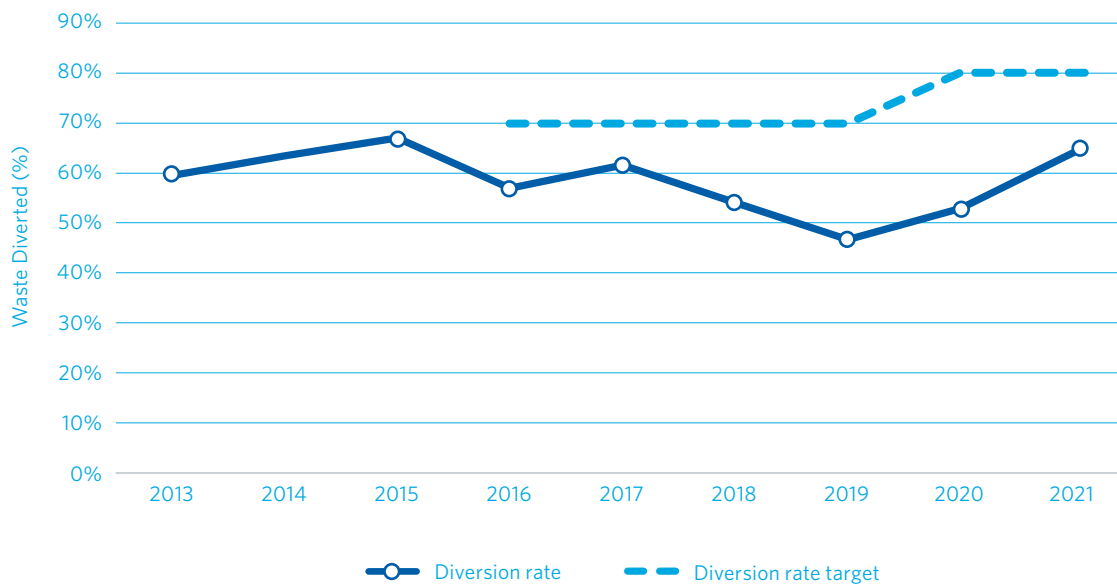
From 2017 to 2020, between 47-64% of campus waste (operational and construction) was diverted from landfills. This fell short of the 80% target that was set out in the 2014 ZWAP.

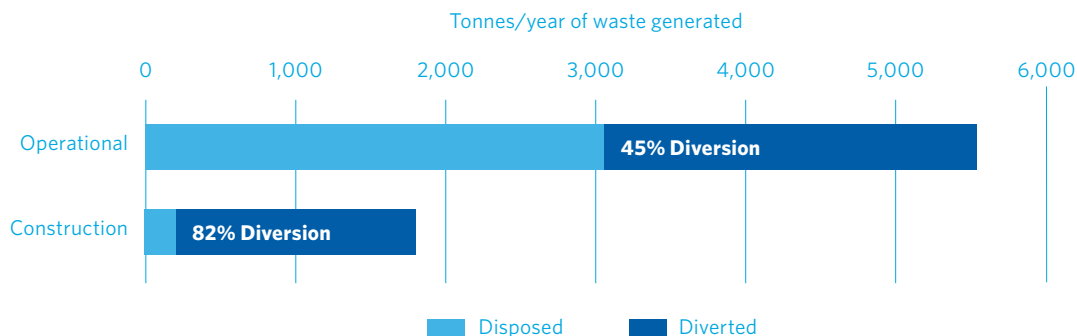
Approximately three quarters of campus waste is operational, which is less likely to be diverted from landfills.



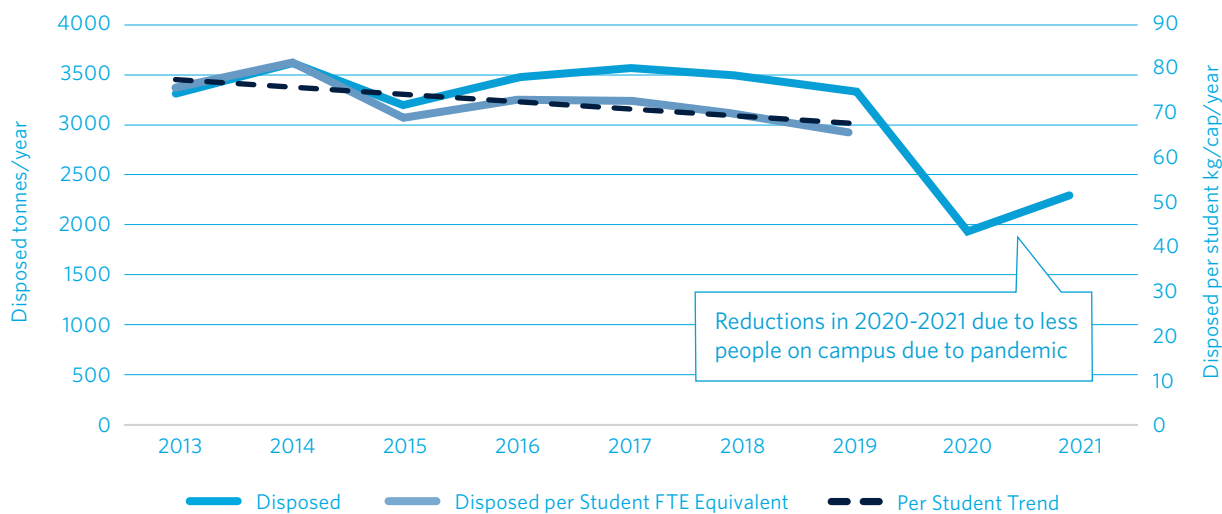
Operational waste includes recycling and food scraps

**FIGURE 1:** The percentage of overall waste diverted from landfill fell short of targets

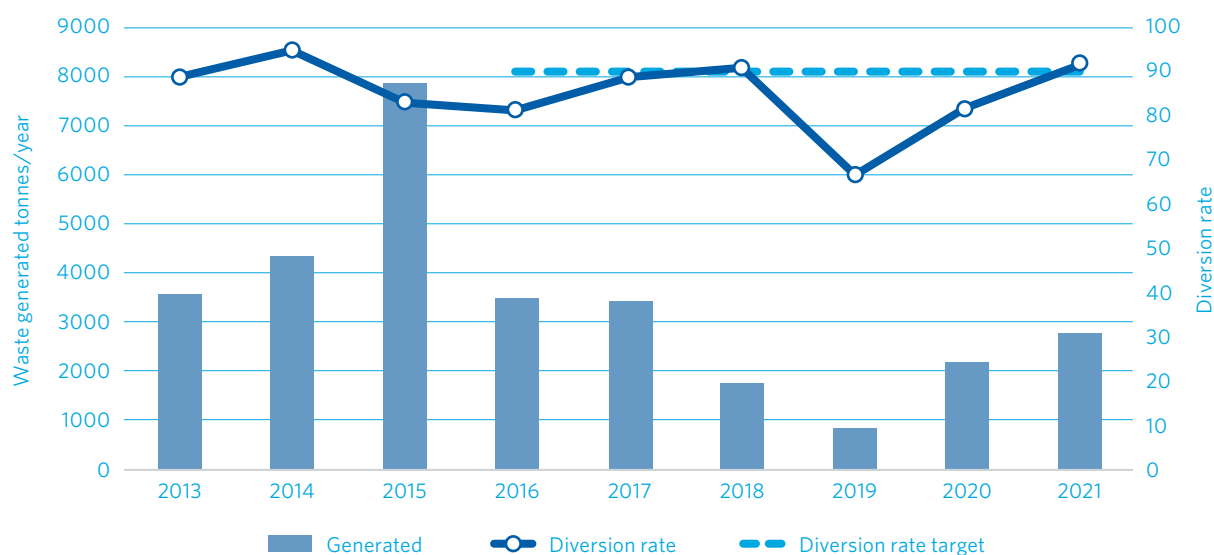


**FIGURE 2:** Overall Diversion rates are driven by operational waste (2017-2020 average)

Despite the limited diversion rate in operational waste, there was some progress in reducing operational waste disposal on a per-capita basis.

**FIGURE 3:** Per Capita Disposal of Operational Waste Decreased About 14% from 2013 to 2019

For major construction, renovation and demolition projects, tracked data shows a relatively high rate of waste diversion has been achieved over the previous nine years, with the amount of waste varying greatly each year due to the variable nature of construction projects.

**FIGURE 4:** Construction waste diversion was close to the target, but amount of waste generated each year varies greatly

### A range of limitations and implementation gaps impacted achievement of targets

Limitations and factors that contributed to the shortfall in meeting waste diversion targets include:

- In student residences, a high growth rate of resident population combined with lower diversion rates;
- Lack of data on types and quantities of waste disposed from dumpsters and compactors that fall outside the Sort it Out<sup>3</sup> recycling stations and other recycling initiatives, such as waste from labs, businesses, and surplus furniture;
- Incorrect waste sorting by the campus community, due to complex factors including convenience and effectiveness of infrastructure systems, behaviours, and difficult to recycle materials, many of which are largely outside of UBC's control;
- Lack of waste generation and diversion data at a building scale. This data is needed to inform actions to reduce waste and achieve targets;
- Lack of human and financial resources needed to execute some high impact actions, such as enhanced data collection, addressing composting facility issues, development of sustainable procurement programs, and waste reduction strategies in student housing;
- Many waste-generating small and large events on campus, along with many transient campus visitors.

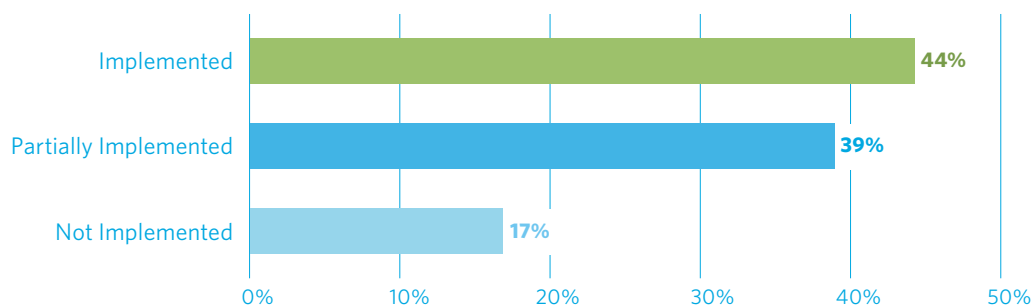
3 "Sort it Out" is a branding of UBC's Zero Waste Action Plan campaign and supporting infrastructure to divert waste from the landfill.

### Plan implementation resulted in many successes

Despite these limitations, there have been substantial successes resulting from ZWAP implementation:

- Rollout of hundreds of multi-stream recycling stations across campus buildings and public realm, greatly enhancing access to recycling and composting;
- Doubling of food scraps composting volume, diverting thousands of tons of organic waste from landfill;
- Beginning to address data needs through a newly installed garbage truck weigh scale;
- Expansion of specialty recycling and pilot projects including Styrofoam, soft plastics, disposable gloves, amber lab glass, and paper towels, opening doors to increased waste diversion;
- Creation of the Sort it Out program, resulting in the UBC community embracing zero waste goals;
- Achieving and tracking high levels of waste diversion in major construction projects, most of which have been certified under the LEED green building rating system;
- Installing a Return-it Express & Go beverage container recycling depot on campus;
- Revamping the UBC Reuse-it online exchange platform, increasing usage by a factor of four in the first year and launching a furniture reuse program - diverting more surplus goods from landfill and enabling financial savings for participants and departments.
- Implementation of the Food Ware Strategy and Choose to Reuse campaign, reducing single-use item disposal and contamination of food scraps composting.

**FIGURE 4:** Most actions in the existing plan have been fully or partially implemented. Some important actions were not implemented.



ZWAP2030 aims to address many of the implementation gaps and limitations identified earlier.





There are Sort it Out recycling stations located throughout the academic campus and in the student residences.



In 2021, UBC partnered with Return-It to bring an Express & GO recycling station to campus. This fills a gap for consumers who previously had to travel over ten kilometers to recycle their empty beverage containers for deposit refunds.

## WHY IS A NEW PLAN NEEDED?

### Climate Action Plan 2030 calls for an update to the Zero Waste Action Plan

UBC's Climate Action Plan 2030 (CAP 2030) identified a key action under the "extended impacts" greenhouse gas (GHG) emissions category to update the existing Zero Waste Action Plan, that will prioritize emissions reductions and circular economy opportunities, including sustainable procurement and reuse.

While UBC's reported GHG emissions from waste disposal are a small fraction of overall emissions, waste-related emissions are much higher when considering life cycle emissions that include production of goods and materials – analogous to what is included in embodied carbon calculations for construction.

### Circular economy is important in reducing GHG emissions

In 2019, the Ellen MacArthur Foundation reported that 45% of 2050 global emissions reductions will need to address production of goods and materials, and circular economy strategies could eliminate almost half of these emissions<sup>4</sup>.



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**"KEEPING MATERIALS CIRCULATING AND FUNCTIONING AT THEIR HIGHEST POTENTIAL VALUE HELPS REDUCE EMBODIED EMISSIONS, WHICH ARE THE GREENHOUSE GAS EMISSIONS ASSOCIATED WITH RESOURCE EXTRACTION, MANUFACTURING AND THE DISTRIBUTION OF NEW PRODUCTS IN THE GLOBAL MARKETPLACE."**<sup>5</sup>

- Metro Vancouver

### Responding to emergent sustainability priorities, government policies and industry trends

The new plan supports UN Sustainable Development Goal (SDG) 12, "Ensure Sustainable Consumption and Production Patterns," as one of UBC's four prioritized SDGs.

In recent years, the impacts of plastic pollution in marine and land ecosystems globally have become increasingly evident, and new federal, provincial and local government policies are being implemented to address plastic waste and single-use items. Nationally and internationally, multiple industry, research, and collaborative groups have been launched to advance circular economy models and businesses. In addition to ensuring UBC's policies align with regional waste management bylaws, bans, and guidelines, this plan will help to continue UBC's leadership on climate, sustainability, and zero-waste through research, policy, and project implementation.

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4 Completing the picture: How the circular economy tackles climate change.

<https://ellenmacarthurfoundation.org/completing-the-picture>

5 Metro Vancouver Waste Management Discussion Paper.

[http://www.metrovancouver.org/services/air-quality/AirQualityPublications/CAP-C2050\\_-\\_discussion\\_paper.pdf](http://www.metrovancouver.org/services/air-quality/AirQualityPublications/CAP-C2050_-_discussion_paper.pdf)



### Supporting teaching, learning and research (TLR) and university growth

The new plan leverages UBC's TLR capacity through collaborations, partnerships, and support by:

- Accelerating student research and interdisciplinary partnerships through SEEDS program collaboration, informing campus climate, biodiversity, food security, and wellbeing initiatives;
- Engaging with academic researchers to help identify, test, and advance innovation opportunities in circular economy and meeting targets, including Campus as a Living Lab projects;
- Continuing engagement with student organizations such as Common Energy, Engineers for a Sustainable World, and others, as well as with the Zero Waste Squad and Catalyst volunteer programs.

Waste management infrastructure and programs must also evolve to ensure the needs of the growing UBC community are met, in accordance with the emerging Campus Vision 2050.



The Zero Waste Squad is a volunteer program open to all UBC Students, aimed at educating the campus community about recycling and composting, and helping reduce waste from events and activities.

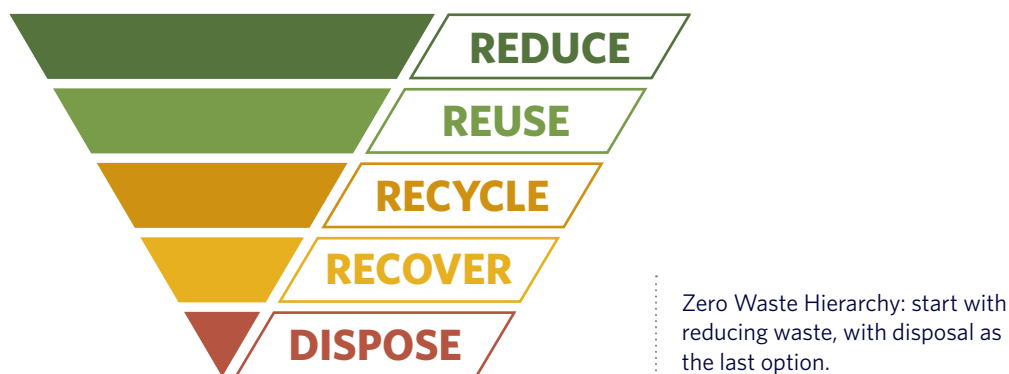
## ZWAP 2023: FOCUSING ON WASTE REDUCTION, NOT JUST DIVERSION

### ZWAP 2030 TARGET:

By 2030, UBC will apply a circular economy lens to enable a 50% reduction in operational waste disposal (relative to 2019), progressing toward a zero-waste community.

This target is intended to align with a 50% reduction in waste-related emissions, meeting or exceeding the Paris agreement reductions required to limit global temperature rise by 1.5 degrees C, as per CAP 2030 targets.

The new waste disposal target builds on conventional waste diversion targets to encompass elements of waste reduction and circular economy, such as reuse.



## ZWAP 2023: CONSTRUCTION WASTE TARGET

UBC's major construction, renovation, and demolition projects drive the generation of construction waste on the academic campus.

### ZWAP 2030 TARGET:

By 2024, all major capital construction projects will achieve a 90% waste diversion rate, and by 2030, all projects generating over two tonnes of waste will achieve a 90% waste diversion rate.

A diversion rate target will continue to be used due to the high variability of construction projects from year to year, making it challenging to assess waste disposal changes over time. However, to address waste reduction in addition to waste diversion, additional data will be collected from projects to measure "waste intensity" metrics (e.g., waste generated per unit floor space) and develop new waste intensity targets prior to 2030.



# Part 2: Actions

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Plan actions are organized into nine theme areas to align with the distributed implementation strategy, described later under Implementation.

## 1. GOODS AND SERVICES

Purchasing of goods and services is critical to circular economy goals – every item purchased has impacts and ultimately can become waste. Important purchasing decision criteria include used or refurbished instead of new, recyclability, repairability, and recycled content, while services can include provision of recycling and reuse services, and corporate responsibility. For UBC, this area includes central (via Financial Operations), and decentralized (via departments) purchasing and procurement.

### Priority Actions:

- Scope and develop a sustainable/circular purchasing strategy and program that could include vendor and product sustainability criteria, packaging requirements, updated procurement guidelines and processes, and integration with Workday, and other procurement processes.
- Scale up UBC's reuse programs across multiple item categories and expand the user base to continually increase the reuse of UBC assets.

## 2. WASTE OPERATIONS

Campus waste operations are the foundation of successful waste management practices in achieving zero waste targets. In 2021, UBC's in-vessel composting facility ceased operation due to end-of-service life, while regional organic waste processing options have decreased - emphasizing the need for a secure future solution. Campus growth and the need for expanded recycling services are also driving the demand for updated waste management infrastructure and services.

### Priority Actions:

- Fund, develop, and implement the Waste Operations Strategy, which will provide critical waste management infrastructure and business process updates needed to reach zero waste targets and accommodate growth. This will include replacing the decommissioned in-vessel composting facility to integrate multiple waste streams including food, compostable food packaging, and green waste, to support an increased range of acceptable materials, and modernize the waste operations facilities at South Campus.
- Assess impact and feasibility of aligning bin and signage colours with regional standards, in order to improve user waste sorting.
- Investigate end-to-end waste and recycling collection processes and infrastructure to increase operational efficiencies with an ergonomic lens.

### 3. STUDENT HOUSING

With over 13,000 residents, waste generated from Student Housing accounts for around half of all waste disposal at UBC. The transitory nature of student residents and the prevalence of large residential towers presents challenges to achieving zero waste goals in this building portfolio, and yet there remain many opportunities to optimize infrastructure and more effectively engage residents. Reducing waste disposal from residences by 50% by 2030 will be challenging - this is an aspirational target that will require new solutions to be developed, tested, funded, and implemented.

#### Priority Actions:

- Update residence recycling infrastructure and waste collection processes to provide convenience, consistency, and ease of use for residents, to achieve high waste diversion rates.
- Develop and implement effective outreach and engagement initiatives for staff, residents, and volunteers, to support achievement of the waste disposal target and foster a culture of everyday sustainability.
- Expand residential reuse processes and programming to all applicable residences to create a circular economy for move in/out cycles, reduce waste generation, and provide low-cost items to incoming residents.
- Establish metrics, auditing, and data collection processes to assess performance seasonally and annually, to inform waste reduction and diversion actions.

### 4. FOOD

Food waste, including compostable packaging, makes up a significant portion of all waste generated on campus. As organic material, it has a high intensity of GHG generation when disposed to landfill, and significant “upstream” emissions from production, transportation, and other lifecycle stages. Reducing food waste and diverting it from landfill are therefore critical to mitigating waste related GHG emissions; opportunities for food recovery can also help to reduce campus food waste and promote food security.

#### Priority Actions:

- Continue to update and roll out the Zero Waste Food Ware Strategy, facilitating and supporting the transition to a reusables-based food service model across campus. As part of this, UBC and AMS food operations are targeting full alignment with food ware procurement guidelines by end 2023, reducing food waste by 50%, and single-use coffee cups by 80% by 2030 .
- Develop a Food Waste Prevention, Reduction and Recovery Strategy for campus food outlets and operations.
- Develop and implement practical and cost-effective food waste metrics and measurement tools that support and inform food waste reduction actions in campus food operations.
- Review and update waste recycling infrastructure and bins in food service locations across campus to maximize waste diversion rates.





UBC Food Services recently launched All Access Dining in three UBC Residences. Having meals only available in the dining hall eliminates takeout packaging, plastic bottles, disposable coffee cups, and the smaller portion size (since you can go back for more food) ensures that less food is discarded.

## 5. LABS

Waste from UBC's labs and research facilities represents a significant opportunity to reduce and recycle. For example, in 2018 UBC discarded 40 million pipette tips into the landfill. Many products used in labs are challenging to recycle, however several pilot projects have been demonstrating how emerging recycling programs can be used to recycle items such as nitrile gloves and lab glass containers. Working towards purchase of lab materials that are readily recyclable is another way of supporting circular economies.

### Priority Actions:

- Develop prioritized sustainable purchasing and reuse strategies for research laboratory equipment, consumables, and chemicals at both the university level and a product/service level.
- Develop engagement strategies for research labs as part of the overarching zero waste communications and engagement strategy.
- Identify and implement strategies to reduce, eliminate and/or recycle specialized lab waste streams.
- Prioritize continuous improvement and innovation to achieve Zero Waste goals in research labs by exploring emerging technologies and supporting innovative projects..



The Green Labs program provides UBC faculty, staff and students with the opportunity to learn about wise environmental practices, exchange ideas, and access recycling and energy conservation programs.

## 6. ENGAGEMENT AND OUTREACH

CAP 2030 sets out a target: *“by 2030, three quarters (75%) of UBC faculty, staff and students will be aware of UBC’s climate action goals and participating in UBC’s evolving and expanding culture of sustainability.”* Waste is one of the CAP 2030 priority areas that directly involves members of the UBC community. In combination with supporting infrastructure, engagement and outreach are critical to support and facilitate community action on circular economy and zero waste across the campus.

### Priority Actions:

- Review and where appropriate, expand, revise, or simplify the existing campus-wide zero waste Communications and Engagement strategy and programs to support community action and systems change.
- Integrate emerging and established waste, materials, and circular economy data collection streams and repositories into community feedback loops to support and reinforce zero waste-related climate action.
- Investigate price signals and incentivization of GHG reduction behaviors relevant to waste, materials, and circular economy.



Many UBC Retailers have discontinued certain items, such as foam cups, plastic cutlery and plastic bags are encouraging the campus community to bring reusable food-ware and bags.

## 7. PERFORMANCE MONITORING

To improve performance and reach targets, we need to measure and track waste generated and recycled, to assess progress, identify opportunities and inform future actions. Historically, waste data has been available only at the campus scale, and more detailed data was only available via labour intensive, one-time waste audits. New automated technology is now available to collect and track more detailed data on an ongoing basis, which can also be used to better estimate life cycle GHG emissions associated with waste.

### Priority Actions:

- Develop a more fine-grained waste data collection, management, and reporting system to better inform waste reduction and diversion opportunities and engage the campus community.
- Continue to strategically utilize waste audits where appropriate to characterize waste at specific locations, to better identify waste reduction and diversion opportunities.
- Develop and enhance tools to identify and analyse waste related GHG emissions and reduction opportunities.



## 8. CONSTRUCTION WASTE

To improve zero waste performance and reach the 90% diversion target for all projects, we need to measure and track the waste generated and recycled by construction, renovation, and demolition projects, and use that tracking to help facilitate adoption of best practices in waste reduction and diversion. This process is relatively advanced and successful for LEED-certified major capital projects. A remaining priority is to address the many renovation projects that do not fall under LEED.

### Priority Actions:

- Track and report waste from all applicable construction, renovation, and demolition projects on campus above a minimum project size, and develop waste intensity metrics and targets.
- Use waste tracking data, stakeholder engagement, and other tools in tandem with the Green Building Action Plan, to identify and implement opportunities to reduce waste and increase diversion including reuse.
- Develop a policy and processes to ensure construction waste collection and processing complies with regional disposal/landfill bans.

## 9. CIRCULAR ECONOMY AND RESEARCH

Circular economy development is a globally emerging area, and a great research opportunity that supports delivering on UBC's targets while fostering and supporting research collaborations between students, staff and faculty. Areas to explore include methods to measure the circularity of campus operations, researching best practices for sustainable purchasing policies, and fostering innovative projects on campus.

### Priority Actions:

- Create a UBC Circular Economy Interdisciplinary Research Cluster that advances and supports circular economy policies, plans and practices.
- Research and develop circular economy objectives, criteria, and other elements for integration within a new sustainable purchasing strategy.
- Facilitate development of circular economy on campus by developing and integrating Circular Economy elements into other campus plans, policies, guidelines and strategies.

# Part 3: Implementation

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**A robust, decentralized and adaptive implementation process:** CAP 2030 has committed to the 50% waste reduction target as an integral component of UBC's response to the climate emergency. Based on experience, this target will be challenging to achieve; an effective and well-resourced implementation strategy will therefore be critical.

## **DECENTRALIZED UNIT LEVEL IMPLEMENTATION, MONITORING AND REPORTING**

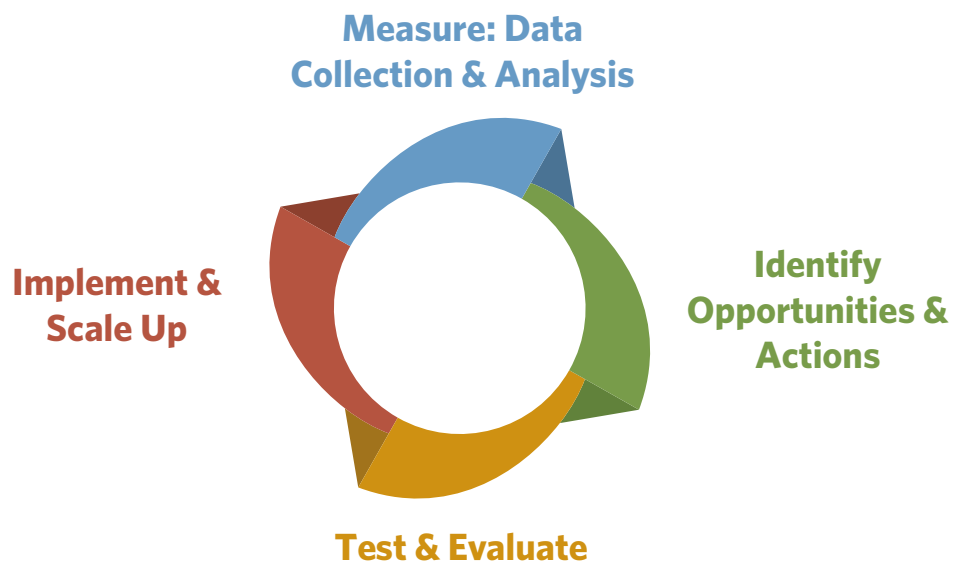
As is being utilized in CAP 2030 implementation, a decentralized implementation model will be used to engage units across UBC best positioned to lead and support those actions. Coordinated by the ZWAP project team, this model will be supported through the Zero Waste Committee, with representation from units and groups including UBC Facilities, Financial Operations, Safety and Risk Services, Student Housing and Community Services, Alma Mater Society, and the UBC Okanagan Sustainability Office. The Committee will continue to provide updates, feedback and guidance on implementation. Progress on key actions across units will be tracked, reviewed and reported annually in concert with CAP 2030 implementation and monitoring.

## **RESOURCING STRATEGY**

Plan implementation will build on and integrate with existing zero waste programs and actions wherever possible, and will leverage existing staff and other resources, including Infrastructure Impact Charge (IIC) funding for projects such as the composting facility. It will also be essential to identify and secure additional incremental funding in the future, to ensure barriers can be overcome and actions can be implemented toward meeting targets. The project team and key stakeholders will seek sustainable, self-supporting program funding models to minimize the need for additional centralized funding.

## ITERATIVE IMPROVEMENT

An iterative improvement and learning process will be utilized to guide plan implementation. The plan actions will not be static but will evolve as learning continues based on project outcomes (including pilot projects), new data, and research. Progress against plan targets will be monitored and reported out, including key sustainability metrics that are incorporated in the Annual Sustainability Report.



## CLIMATE JUSTICE AND SOCIAL RESPONSIBILITY

In accordance with CAP 2030, plan actions and implementation will consider and incorporate elements of wellbeing, community resilience, equity, and diversity across university systems and structures wherever possible. These aspects are foundational to the UBC Wellbeing Strategic Framework, Inclusion Action Plan and Indigenous Strategic Plan.





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