



<b>SUBJECT</b>	Climate Action Plan 2030: UBC Vancouver and UBC Okanagan
<b>SUBMITTED TO</b>	Sustainability and Climate Action Committee
<b>MEETING DATE</b>	November 22, 2021
<b>SESSION CLASSIFICATION</b>	Recommended session criteria from Board Meetings Policy: OPEN
<b>REQUEST</b>	ACTION REQUESTED - APPROVAL IT IS HEREBY RESOLVED that the Sustainability & Climate Action Committee recommends to the Board of Governors endorsement of the: <ul style="list-style-type: none"> <li>i. UBC Vancouver Climate Action Plan 2030; and,</li> <li>ii. UBC Okanagan Climate Action Plan 2030.</li> </ul>
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<b>SUPPORTED BY</b>	Peter Smiles, Vice-President Finance & Operations Lesley Cormack, Deputy Vice-Chancellor and Principal, UBC Okanagan Gail Murphy, Vice-President Research & Innovation Andrew Szeri, Provost & VP Academic, UBC Vancouver Michael White, AVP Campus & Community Planning John Metras, AVP Facilities Rob Einarson, AVP Finance and Operations, UBC Okanagan John Madden, Director of Sustainability and Engineering, Campus and Community Planning

#### PRIOR SUBMISSIONS

The subject matter of this submission was considered by the Sustainability and Climate Action Committee most recently in [February 2021](#).

The following Executive Summary provides a status update from the most recent submission.

#### EXECUTIVE SUMMARY

The latest [report from the Intergovernmental Panel on Climate Change \(IPCC\)](#) concluded that climate change is widespread, rapid and intensifying, and the UN Secretary-General has declared a ‘Code Red’ for humanity. It is imperative that we address and adapt to climate change to avoid the worst impacts of the climate crisis. There is a renewed urgency given the severe impacts that we experienced this summer in BC, with the climate-change-induced heat wave and associated wildfires, causing significant harm to the people and unique biodiversity within our region.

In response to the advocacy of students and community members, UBC’s 2019 [Climate Emergency Declaration](#) recognized the severity, complexity, disproportionate impacts of, and responsibilities for, the climate crisis. It committed UBC to develop a collective response that embeds climate justice throughout its activities and priorities. With endorsement in principle of the Climate Emergency Task Force [Report and Recommendations](#), the UBC Board of Governors emphasized that climate action continues to be a top strategic priority for the University, providing direction and accountability for UBC to update plans to address the climate crisis with the urgency it requires.

#### Climate Action Plan 2030

CAP 2030 addresses and accelerates GHG reductions in operational emissions (buildings, energy supply and fleet), and extended emissions (commuting, food, business air travel, embodied carbon, waste and materials) that are considerably larger and are now being included to align with the intent of UBC’s Climate Emergency Declaration.

This Plan outlines an ambitious path of deep GHG emission reductions for each campus, with bold actions including district energy decarbonization and building retrofits, while also providing opportunities for teaching, learning and research through Campus as Living Lab initiatives that address the climate imperative.

The UBCV and UBCO campuses have already achieved significant success at reducing operational GHG emissions, while at the same time experiencing significant growth.

- For the 2020 year, UBC Vancouver achieved a 29% GHG reduction (from a 2007 baseline). This 2020 GHG value was lower than other recent years (i.e. 2018 saw a 38% GHG reduction) due to the temporary shutdown of the bio-energy facility during expansion upgrades.
- For the 2020 year, UBC Okanagan achieved a 41% GHG reduction (from a 2013 baseline).

CAP 2030 will further decarbonize the institution while considering the inequitable impacts of climate change and subsequent responses on marginalized communities, including an understanding that the ability to partake in sustainable actions can be constrained by a lack of privilege and inequality.

CAP 2030 targets include:

- **Operational emissions reductions:**
  - UBC Vancouver: 85% GHG reduction (from a 2007 baseline) and reaching net-zero by 2035
  - UBC Okanagan: 65% GHG reduction (from a 2013 baseline) and reaching net-zero by 2050
- **Extended emissions reductions:**
  - UBC Vancouver & UBC Okanagan: 45% GHG reduction (from a 2010 baseline)

## RISK MITIGATION

Achieving the CAP 2030 targets will mitigate a number of key institutional risks:

- **Financial risk:** Investments in decarbonizing UBC's energy supply and buildings will mitigate risks from increasing external carbon pricing legislation (i.e. Provincial carbon offset, carbon tax, and the announced Federal escalating carbon price). UBC currently pays overall carbon liabilities of around \$3m per year from the application of carbon taxes on fossil fuel purchases (primarily natural gas) and the carbon offset associated with BC's Climate Change Accountability Act. This carbon liability will increase in the future if UBC does not continue to decrease carbon emissions. UBC's expected future carbon liability is estimated to accumulate to over \$100 million in the next 20 years<sup>1</sup> if no further actions are taken to reduce carbon emissions. Without UBC's past GHG reduction successes across both campuses, this liability would have been more than double this amount.
- **Reputational risk:** UBC's sustainability leadership attracts top students, faculty, staff and research – without setting and achieving CAP 2030 targets, UBC risks losing this leadership position and the many associated benefits.
- **Operational risk:** Investments in future-proofing buildings will enable UBC to maintain increased operational resiliency during climate events, such as heat waves and wildfires.
- **Investment Risk:** Implementing CAP 2030 actions will require UBC staff to manage the risks associated with deploying innovative and emerging technologies, federal and provincial policy uncertainty around the business case for low carbon capital investments, and addressing extended emissions areas where UBC does not always have direct or jurisdictional control. These risks will be carefully addressed as actions are implemented and

<sup>1</sup> Estimate based on multiplying UBC's remaining emissions by the Federal Government's proposal of an [escalating carbon price](#), increasing by \$15/year from 2023 and reaching \$170/tonne in 2030.

will require detailed feasibility analysis to be applied before advancing major capital projects forward for consideration for budgetary approval. Each investment decision will go through UBC’s capital review and approval processes, and operating decisions will go through the annual operating budgets.

## RESOURCING & BUDGETING

CAP 2030 represents a significant UBC-wide effort across both the Vancouver and Okanagan campuses. The implementation horizon is 10 years and will require sustained leadership, increased resourcing, and cross-campus engagement with the academy and collaboration from many units across both campuses. Partnership opportunities will be pursued with utilities, industry and government to leverage funding and investments in low carbon solutions. Financial mechanisms and price signals will continue to be identified that support behavioral change while helping to fund emission reductions.

## NEXT STEPS

- Pending Board endorsement of CAP 2030, staff will continue to advance detailed feasibility studies of capital projects and operating program requirements for reducing GHGs in operational and extended emission areas.
- Staff will return to the committee with updates on a regular basis including mid 2022 with the results of the key operational studies and recommended actions, including business case analysis, to move towards the CAP targets.
- Key quick start actions and related implementation initiatives include:
  - UBC system wide (UBC Vancouver & UBC Okanagan campuses)
    - Resourcing of climate-friendly food and sustainable travel projects
    - Piloting of internal carbon pricing
    - Incorporating new building energy and carbon intensity performance reduction targets
    - Finalizing the UBC LEED V4.1 Implementation Guide update
    - Developing and launching new climate engagement campaigns for extended impact areas
  - UBCV
    - Completing consultant study to evaluate options for further decarbonization of the Academic District Energy System (ADES)
    - Scoping and developing building decarbonization retrofit strategy
  - UBCO
    - Transportation Plan and Sustainable Energy Management Plan
    - Finalize Low Carbon Energy Strategy to decarbonize the District Energy System and address reductions of remaining natural gas loads.

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## APPENDICES

1. UBC Vancouver Campus Climate Action Plan 2030
2. UBC Okanagan Campus Climate Action Plan 2030

## PRESENTATIONS

1. UBC Climate Action Plan 2030 – Vancouver & Okanagan



**The University of British Columbia Vancouver Campus**

# **Climate Action Plan 2030**

## Acknowledgements

*We begin by acknowledging that UBC's Vancouver-Point Grey campus is located on the traditional, ancestral and unceded territories of the xʷməθkʷəy̓əm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam, who for millennia have passed on their culture, history, and traditions from one generation to the next on this site.*

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## Executive Summary

Building on two previous Climate Action Plans and significant GHG reductions already achieved, UBC Vancouver's CAP 2030 sets a bold vision and accelerated pathway for a broader scope of emission reductions in response to UBC's 2019 Declaration on the Climate Emergency:

*CAP 2030 will position UBC as a model of how universities can mobilize to address the climate emergency and Paris targets through bold, impactful actions to accelerate and deepen GHG reductions across operations, and expanded action to reduce extended emissions.*

UBC's Climate Emergency Declaration recognizes the severity, complexity, disproportionate impacts of, and responsibilities for, the climate crisis. It commits UBC to develop a collective response that embeds climate justice throughout its activities and priorities. With this endorsement, the UBC Board of Governor's emphasized that climate action continues to be a top strategic priority for the University. Specifically, the Declaration gives impetus for UBC to update plans to address the climate crisis with the urgency it requires.

The Climate Emergency Declaration and Climate Emergency Community Engagement process reaffirmed UBC's commitment to accelerate emissions reductions in alignment with the Paris Agreement of limiting global warming to 1.5°C. Meeting the 1.5°C Paris Target (IPCC pathway) requires a global net anthropogenic GHG reduction of 45% from 2010 to 2030 and reaching net zero around 2050.

This Plan sets targets that will accelerate and broaden UBC's climate action with a 2030 GHG reduction target of 85% on operational emissions (2007 baseline year) and 45% on extended emissions (2010 baseline year), in addition to advancing UBC's target for net-zero operational emissions to 2035—15 years ahead of the original 2050 target. This Plan helps to advance many facets of UBC's strategic plan goals by creating platforms for climate informed teaching, learning and research, and leverages multiple Campus as a Living Laboratory opportunities to maintain UBC's reputation and leadership position in climate action and sustainability.

CAP 2030 addresses operational emissions (buildings, energy and fleet), which are within existing CAP reduction targets, and extended emissions (commuting, food, business air travel, embodied carbon, waste and materials, and paper), which are considerably larger and are now being included to align with the intent of UBC's Declaration on the Climate Emergency.

Without further commitment to accelerate action across all areas, UBC's GHG emissions will continue to increase substantially, risking UBC's reputation and the many associated benefits, and exposing the institution to considerable energy and carbon liabilities in the future.

In 2022, UBC will pay a carbon price of \$75 for each tonne of carbon dioxide (tCO<sub>2e</sub>) emitted (\$50/tCO<sub>2e</sub> for BC Carbon Tax and \$25/tCO<sub>2e</sub> for public sector offset requirements). UBC Vancouver currently pays overall carbon costs of around \$3 million per year. This will increase in the future if UBC does not continue to decrease scope 1 and 2 carbon emissions, and as carbon pricing escalates as part of government climate policy. Given that equipment and infrastructure exist for many years, UBC's expected future carbon liability would accumulate to approximately \$100 million over the next 20 years if no further actions are taken to reduce carbon emissions. Without UBC's past action, this liability would have been more than double this amount.

Over 130 staff, faculty and students from across both campuses were engaged to develop CAP 2030 targets, actions and implementation pathways across all goal areas. Through an online survey and virtual public engagement events, we heard from 764 participants from the Vancouver Campus about the emerging CAP 2030, and the barriers and opportunities for climate action on campus. This Plan puts forward UBC Vancouver-led and system-wide actions that, if all actions, strategies and plans articulated in this Plan are implemented will achieve the 2030 GHG targets.

CAP 2030 is a UBC-wide effort across both the Vancouver and Okanagan campuses, and will require continued leadership, increased resourcing, and cross-campus engagement with the academy and collaboration from many units across both campuses. The CAP is accompanied by an accountability framework that outlines responsibilities for implementation, monitoring progress, and governance for decision making over time.

# 1 Introduction

## 1.1 A Call to Urgent Action

UBC has established a clear Vision Statement for climate action that guides accelerated action in the Climate Action Plan 2030 (CAP 2030) for both the Vancouver and Okanagan campus:

*CAP 2030 will position UBC as a model of how universities can mobilize to address the climate emergency and Paris targets through bold, impactful actions to accelerate and deepen GHG reductions across operations, and expanded action to reduce extended emissions.*

Three objectives for the UBC Vancouver Climate Action Plan are reflected in UBC's Climate Emergency Declaration mandate.

1. Setting new targets that accelerate UBC's path toward achieving net zero emissions target prior to 2050;
2. Applying a climate justice lens to the policies and actions developed in CAP2030;
3. Expanding CAP scope to include areas of influence extending beyond UBC's operations, such as commuting, air travel, food systems, materials and waste.

These objectives provide direction to help achieve the Vision while considering the inequitable impacts (i.e. human and nature's justice) of climate change and subsequent responses on marginalized communities, including an understanding that the ability to partake in sustainable actions may be constrained by lack of privilege and inequality.

### **Infobox: UBC's Climate Emergency Declaration**

The UBC Climate Emergency Declaration was prompted by a student-mobilized open letter signed by over 1,600 students, staff, faculty and campus organizations and participation of over 5,000 UBC students, faculty and staff in the September 27th, 2019 Global Climate Strike.

UBC's Board of Governors unanimously endorsed a [Declaration on the Climate Emergency in December 2019](#), joining over 1,700 jurisdictions around the world making similar declarations around this time.

In February 2020, UBC launched a climate emergency community engagement process, overseen by a task force of students, staff and faculty, with support and input from the UBC Climate Hub. This process resulted in the UBC Climate Emergency Engagement Final Report and Recommendations identifying nine overarching strategic priorities to advance climate action, including "supporting the forthcoming

recommendations and new interim emissions targets emerging from the Climate Action Plan 2030 process”.

The Climate Emergency Declaration and Climate Emergency Community Engagement process reaffirm UBC’s commitment to accelerate emissions reductions in alignment with the Paris Agreement of limiting global warming to 1.5°C<sup>1</sup>. Meeting the 1.5°C Paris Target (IPCC pathway) requires a global net anthropogenic GHG reduction of 45% from 2010 to 2030 and reaching net zero around 2050.

UBC’s declaration recognizes the severity, complexity, disproportionate impacts of, and responsibilities for, the climate crisis. It commits UBC to develop a collective response that embeds climate justice throughout its activities and priorities. With endorsement in principle of the [Report and Recommendations](#) from UBC’s Climate Emergency Task Force, the UBC Board of Governors emphasized that climate action continues to be a top strategic priority for the University, providing direction for UBC staff to update plans to address the climate crisis with the urgency it requires..

CAP2030 represents a significant step as the third CAP for the Vancouver Campus, building on existing climate achievements guided by CAP 2010 and CAP 2020. Informed by the Vision Statement and Objectives, this Plan provides UBC Vancouver-specific greenhouse gas (GHG) emission reduction targets and actions, as well as cross-campus (Vancouver and Okanagan) actions that support UBC system-wide GHG emission reduction targets across all action areas.

## 1.2 Purpose of the UBC CAP 2030

This Plan provides the overarching campus climate policy direction to make informed and strategic policy decisions to reduce GHG emissions, to increase climate adaptation, which is the process of adjustment to actual or expected climate and its effects to live with and minimize destruction and suffering, and increase climate resiliency, which can generally be thought of as an ongoing process of diverse, interconnected relationships and processes that activate and build up resilience-enhancing capacities within and across a community.

Implementing the Plan will reduce medium to longer term operational costs associated with increased carbon pricing, increase the future resiliency of the campus to withstand the impacts of acute climate shocks and events resulting from climate change, and to

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<sup>1</sup> <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>, accessed 13<sup>th</sup> August 2021

continue to demonstrate UBC's commitment and leadership to address climate change through a climate justice lens.

Some actions in this Plan are already underway, or set to begin, while others will require further study to advance. Through strategic investment decisions in high impact climate action areas over the next 10 years, UBC Vancouver is setting a course to leverage institutional, operational and intellectual capacities to chart a leadership path for other similar post-secondary institutions to emulate. These investments will help support research, attract and retain faculty, staff and students, and be a role model for other universities to follow.

Further, the anticipated advancement in campus de-carbonization and energy efficient technologies will provide a platform to enhance teaching, learning, and research, by partnering with faculty researchers devoted to help advance innovation in these areas and promote Campus as a Living Laboratory, positioning the University as a testbed of innovation.

### **1.3 Climate Action: A Long Running Priority for UBC**

Climate action has been a priority for UBC for the past two decades, especially with regards to operational emissions (scope 1 and 2). UBC achieved its Kyoto Protocol targets for academic buildings five years ahead of schedule through major energy efficiency upgrades, including the ECOTrek project, which formed part of UBC's first Sustainability Strategy.

UBC's first Climate Action Plan in 2010 set a decarbonization pathway to a 100% GHG reduction by 2050 (net zero), with interim targets for a 33% GHG reductions for 2015 and 67% for 2020. These targets guided multiple new projects and initiatives including the introduction of bio-energy, energy conservation and advancing high performance green buildings. For example, the Bio-energy Research and Demonstration Facility (BRDF), represented one of the major projects that helped UBC achieve operational GHG savings of over 35% from 2007. The forthcoming completion of the BRDF expansion project in late 2021 will help achieve a total reduction in campus operational emissions of approximately 60% compared to 2007. This represents a major achievement and will move UBC significantly closer to its target of a 67% reduction in GHG emissions.

UBC has built a strong global reputation on climate action; in 2019, Times Higher Education ranked UBC as the top university globally in addressing the climate crisis. UBC has also played an important role in elevating this issue across the global university network, including through the University Climate Change Coalition (UC3), the University Alliance for Sustainability (UAS), the International Sustainable Campus Network (ISCN) and the U7+ Alliance that help ensure higher learning institutions across the globe are effective agents of change.

## 1.4 Key Drivers for this Plan

In 2018, the Intergovernmental Panel on Climate Change (IPCC) released a special report on the impacts of global warming. It determined the impacts of climate change would likely be worse than previously expected, and the previously assumed safe limit of a 2°C increase would result in irreparable damages, and an increased chance of runaway climate change. The Report found that limiting warming to 1.5°C would help protect against the worst changes. It is commonly understood that the 1.5°C limit should be seen as the maximum safe level. Limiting climate change to this level will require global net anthropogenic GHG reductions of 45% by 2030 (below a 2010 baseline), and to net zero by 2050. Global climate models are warning of an alarming 3-4°C increase in temperatures by the end of the century.

### Infobox: 2021 IPCC Report

With the latest IPCC Report (Climate Change 2021: The Physical Science Basis<sup>2</sup>) comes a renewed urgency to act to limit severe climate change. Based on this report, **“only rapid and drastic reductions in greenhouse gases in this decade can prevent such climate breakdown, with every fraction of a degree of further heating likely to compound the accelerating effects.”**

Key highlights from the IPCC Report include:

- A3—Increased extremes in heatwaves, heavy precipitation, droughts, tropical cyclones, and their connection to human influence, has strengthened.
- B1—Global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions CO<sub>2</sub> and other greenhouse gas emissions occur in the coming decades.
- D1—Limiting human-induced global warming to a specific level requires limiting cumulative CO<sub>2</sub> emissions and rapid and sustained reductions in CH<sub>4</sub> emissions to limit the warming effect and improve air quality.

In September 2019, millions of people around the world participated in peaceful marches in the lead up to the United Nations Climate Summit. The marches, initiated by the youth-led climate movement Fridays For Future, built on the environmental activism of Indigenous Peoples, who have historically and continue to be on the front lines of both the impacts of climate change and the activism required to progress towards a more sustainable and just future for generations to come.

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<sup>2</sup> <https://www.ipcc.ch/report/sixth-assessment-report-working-group-i/>, accessed 13<sup>th</sup> August 2021



*Figure 1: UBC Climate Strike, September 2019<sup>3</sup>*

A purpose of these student led marches and strikes was to raise awareness of the disproportionate impact climate change is having and will continue to have on the future of today's youth. Expanded through student activism to include allies of all ages, the September 2019 climate marches became some of the largest protest movements in the world, and were a catalyst for a series of Climate Emergency Declarations to be made globally, including by UBC.

**Infobox: Summer 2021 Heat Wave**

The heat wave and subsequent wild fires experienced in Summer 2021 provided a renewed focus on the urgency of climate action, through mitigation, adaptation and resiliency lenses. Climate scientists<sup>4</sup> noted that the

**“extreme heat was virtually impossible without human-caused climate change”.**

Similarly, wildfires driven by the hotter climate are becoming more and more common in our province, releasing huge quantities of GHG emissions and smoke pollution, impacting our unique biodiversity, displacing communities and magnifying mental health and wellbeing risks across BC and beyond.

This has presented significant challenges to human health and the biodiverse ecosystems that sustain us. Critical impacts include the unprecedented displacement of people and wildlife, and hazardous air-quality and heat waves across BC and beyond, leading to health complications and deaths, and affecting the ability for thousands of people to work and live comfortably across the province. Severe and increasingly common events such as these represent an opportunity to leverage nature-based solutions for heat stress, through the

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<sup>3</sup> Photo credit: Joachim Zens

<sup>4</sup> <https://www.worldweatherattribution.org/western-north-american-extreme-heat-virtually-impossible-without-human-caused-climate-change/>, accessed 13<sup>th</sup> August 2021

shading provided by the urban tree canopy and rainwater management provided by vegetation and green spaces.

### 1.4.1 Internal Policy Drivers

CAP 2030 is informed by and supports the implementation of several important UBC Plans, including [UBC's Strategic Plan: Shaping UBC's Next Century](#), which asserts UBC's climate leadership as a key priority. It states,

*“The challenges around climate change are high. We need to intensify our academic and operational efforts on our campuses, in affiliated communities around the world. We must go beyond minimizing harm to becoming net contributors to human and ecological health.”*

The UBC CAP 2030 will help define how sustainability and climate change will support UBC's efforts to shape the next century. CAP 2030 also helps to advance two of the nine strategic priority areas identified by UBC's Climate Emergency Task Force Report that was endorsed in principle by the UBC Board of Governors. These include accelerating UBC's emissions reductions in response to the Climate Emergency and supporting community wellbeing in the face of the climate crisis.

CAP 2030 additionally aligns with the values and visions set forth in many of UBC's existing plans and initiatives, including the [Inclusion Action Plan](#), the [Indigenous Strategic Plan](#) the [Wellbeing Strategic Framework](#); wellbeing also represents a guiding priority with multiple co-benefits across many of the emissions themes contained within CAP 2030, particularly those related to extended emissions.

## 1.4.2 External Policy Drivers

Many rapidly-changing external policy drivers have influenced the direction of CAP 2030, and will continue to inform this Plan's direction as it is implemented.

<b>Transportation &amp; land use</b>	<ol style="list-style-type: none"><li>1. BC Government's <i>Zero-Emission Vehicle Act</i>: 100% of new vehicle sales to be zero-emission vehicles by 2040, including 10% by 2025 and 30% by 2030</li><li>2. BC Government's <i>Renewable &amp; Low Carbon Fuel Requirements Regulation</i>: reduce lifecycle carbon intensity of fuel by 20% by 2030</li></ol>
<b>Buildings</b>	<ol style="list-style-type: none"><li>3. BC Building Step Code: 20% more energy efficient by 2022 and 80% more efficient by 2032 (net zero energy ready standard)</li><li>4. Federal Government's escalation of carbon price on fuels to \$170 tCO<sub>2e</sub> by 2030. Public sector offset requirements add an additional \$25.00 / tCO<sub>2e</sub> to this cost<sup>5</sup></li><li>5. <a href="#">BC Government's amendment</a> for increased supply of clean fuel sources to support transition to renewable fuel economy</li><li>6. BC Government's updated GHG emission intensity factors for electricity use in BC integrated grid-connected entities</li><li>7. BC Government's requirement for post-secondary capital project submissions to reduce GHG emissions by 50% (relative to LEED Gold)</li></ol>
<b>Waste</b>	<ol style="list-style-type: none"><li>8. BC Government organic waste: 95% of organic waste diverted from landfills and turned into other products by 2030</li></ol>

As the provincial and federal governments continue to increase the carbon tax associated with fossil fuel purchases, and with the continued mandate to purchase carbon offsets to maintain a carbon neutral public sector in BC, UBC's carbon liability will continue to grow over time without further climate action.

In 2022, UBC will pay a carbon price of \$75/tCO<sub>2e</sub> emitted (\$50/tCO<sub>2e</sub> for BC Carbon Tax and \$25/tCO<sub>2e</sub> for public sector offset requirements). UBC Vancouver currently pays overall carbon costs of around \$3 million per year. This will increase in the future if UBC does not continue to decrease scope 1 and 2 carbon emissions, and as carbon pricing escalates as part of government climate policy. Given that equipment and infrastructure exist for many years, UBC's expected future carbon liability would accumulate to approximately \$100 million over the next 20 years if no further actions

<sup>5</sup> To support these reductions by discouraging pollution-intensive investments and increasing affordability of cleaner options, the federal government is also proposing to increase the carbon price by \$15/ tCO<sub>2e</sub> per year, starting in 2023, rising to \$170 per tonne of carbon pollution in 2030. Existing carbon offsets as part of BC's Climate Change Accountability Act add another \$25/ tCO<sub>2e</sub> to this price. The CleanBC Renewable Gas Mandate is estimated to add an additional \$45/ tCO<sub>2e</sub> to this price by 2030.

are taken to reduce carbon emissions. Without UBC's past action, this liability would have been more than double this amount.

## 2 CAP 2030 Approach

### 2.1 Beyond Mitigation: Increasing Adaptation and Resiliency

While this Plan focuses on the development of mitigation strategies to reduce fossil fuel impacts, responding to climate change will also require the development of just, equitable and accessible adaptation strategies to reduce the impacts associated with the increasing frequency and severity of climate change events. Foundational climate adaptation and resiliency strategies have already been integrated into a number of campus plans and guidelines. Specific examples include the [Integrated Stormwater Management Plan](#) (ISMP), [Water Action Plan](#) (WAP), and the [Green Building Action Plan](#) (GBAP); these adaptation and resiliency strategies will also be integrated into future planning, including the upcoming Campus Vision 2050 Plan. A future Climate Adaptation Resiliency and Biodiversity Strategy will act as a hub for this work and link to other existing and future plans, policies, and initiatives across UBC.

Given the severity and increased frequency of climate change events, UBC is integrating a number of adaptive responses as part of our mitigation efforts now - e.g. assessing cooling capacities, nature based solutions, and access to address increased heat wave events, the GBAP is updating the Climate Ready Building Requirements that advance implementation of adaptive responses immediately, and introducing new criteria for building retrofits that also consider passive and active cooling measures such as those used in the UBC Macleod Building.

### 2.2 An Integrated University Initiative

Realizing the vision and ambition of CAP 2030 will require UBC to activate all institutional, intellectual, operational and community capacities. Some of the most innovative research into demonstratable climate solutions is happening right here at UBC. The CAP 2030 process is an opportunity for the University's operations and research communities to work together through applied research to solve our climate challenges (i.e. projects such as UBC's new \$23m [Renewable Energy Hub](#) will be a testbed for low carbon innovation). UBC's Campus as a Living Laboratory programs are driven by the University's operational and sustainability commitments, and have a well-established track record of success to develop, pilot and scale innovative processes and solutions. Key examples focusing on innovative low carbon solutions, include the BRDF and its current expansion.

The [SEEDS Sustainability Program](#) creates applied student-led research and interdisciplinary collaborations that utilize the Campus as Living Laboratory. Examples

include creating robust interdisciplinary partnerships and research clusters between UBC's students, staff and faculty. These Campus as a Living Laboratory programs were key to informing the development and implementation of the original CAP 2010 and the CAP 2020, and will continue to be leveraged for the CAP 2030. Collaboration is ongoing to determine the next breakthrough clean energy and climate solutions at UBC. Continuing to leverage this strength in the future will be key to meeting UBC's aggressive climate targets and to accelerate the uptake of UBC-created solutions beyond our campus.

In addition to institution-level change, successful delivery of UBC's climate action will require the full breadth of the UBC community to be engaged and participate to achieve collective impact. This is especially true for addressing UBC's extended impact emissions sources, such as commuting, air travel, food and waste. Supported by UBC's existing and emerging policies, programs, infrastructure, tools and resources, UBC students, faculty and staff, through choices and as a community, have an opportunity to take relevant actions and contribute to these emissions reduction areas.



*Figure 2: UBC operations and research collaboration at the Bioenergy Research Demonstration Facility (BRDF)*

**Note:** The BRDF is a collaboration between UBC Energy and Water Services and UBC Applied Science.

## 2.3 Lessons from the COVID-19 Pandemic

The Plan was initiated during the COVID-19 pandemic and racial justice protests of 2020. The impacts of COVID-19 heightened public awareness of the historical and ongoing systemic, structural and institutional inequities and racism against Indigenous, Black, and People of Colour communities. These events deeply shaped what was heard from the community, and have been articulated in the recommendations. This work recognizes that climate justice must be advanced in conjunction with institutional responses to today's multiple intersecting crises - the pandemic, an opioid crisis, intense racial injustice and an economic recession/affordability crisis - which compound inequalities faced by marginalized populations. Some reflections triggering further policy development include leveraging learning from remote working and online class delivery, ensuring flexibility and accommodations remain in place to support student, staff, and faculty well-being, and optimizing the use of space to reduce energy, GHG emissions, and associated costs. Specific lessons and actions emerging from the COVID-19 pandemic are referenced in the relevant sections below.

With classes moved online and a significant reduction in on-campus activities during 2020 and 2021, the pandemic also had an impact on UBC's operational and extended emissions. Despite this, the pandemic has had little impact on the analysis presented in this plan as most findings are based on the data collected in pre-pandemic periods. Moving forward, the impacts of the COVID-19 pandemic on campus travel patterns, air travel, and the other issues and opportunities it presents for the near future will be monitored through the CAP 2030 implementation process.

## 2.4 A Climate Justice Lens

The application of a climate justice lens will ensure equity, inclusion, diversity, and accountability are upheld and advanced while accelerating climate action as marginalized and vulnerable populations are often disproportionately impacted by climate change.

### **Infobox: Climate Justice**

Climate change and environmental harms are known to disproportionately affect the marginalized and the underprivileged, and to compound and magnify those existing inequalities; 'climate justice' addresses this by tying social justice lenses into a climate action approach. Climate justice frameworks have evolved out of past and ongoing activism driven by Indigenous peoples, Black communities, people of colour, gender inequity, and grassroots movements mobilizing to resist persistent impacts of environmental racism and systemic oppression. Climate justice also addresses preventable health and wellbeing impacts, and protecting human rights. It does so through acting on distributive justice, procedural justice, and restorative justice, in order to form a more holistic approach to recognizing and addressing the ways in which underprivileged populations are differently affected by climate change and its consequences.

A climate justice lens recognizes responsibility and accountability for causes of climate change, the inequitable burdens of climate change impacts and an awareness of intersecting vulnerabilities, systemic and structural injustices. Climate justice might generally be thought of as advocating for what is right, fair, appropriate or deserved in relation to climate change drivers and impacts.

Throughout the development of the CAP 2030 actions, working groups have reflected on how to advance climate action in a way that considers the needs of those with fewer resources and those who use too many. Engaging principles of climate justice are particularly relevant when developing climate actions related to food systems, commuting and business air travel. This Plan's actions are designed to align with embedding wellbeing, community resilience, equity and diversity across university systems and structures – foundational to the UBC Wellbeing Strategic Framework, Inclusion Action Plan and Indigenous Strategic Plan. This approach is ongoing and achieves significant co-benefits across many of this Plan's emission themes, particularly those related to extended emissions.

## **2.5 Co-benefits to Climate Action and Risk Management**

Taking strong action on climate change is critical to improving UBC's contribution to reducing globally harmful GHG emissions, however, this is far from the only benefit. Advancing an ambitious CAP 2030 will further many other UBC interests, including:

- Protecting UBC against the increasing costs of carbon taxes and pricing at the provincial and federal level;
- Mitigating UBC's exposure to future volatility in conventional energy costs and supply chains;
- Increasing resiliency, capacity, and diversification of UBC's energy infrastructure and green infrastructure in the face of climate change;
- Future-proofing UBC's buildings to the impacts of climate change, through the use of a passive measures first approach, while integrating whole systems infrastructure considerations regarding active cooling strategies;
- Leveraging student and faculty-led applied research to utilize the Campus as Living Laboratory;
- Sharing and amplifying UBC's place-based climate research and solutions that help accelerate climate action at a local, regional and global scale;
- Leveraging technology innovation, research, and development at UBC with Industry and utility partners;
- Leveraging external funding and partnerships to advance key research and innovation priorities by UBC;
- Pursuing external funding and investments into University infrastructure priorities;
- Supporting sustainability challenges within the institution and capitalizing on teaching, learning, and research opportunities;
- Bolstering UBC's internationally recognized reputation and leadership in climate action and sustainability in operations and research;

- Strengthening the UBC community's resilience and sense of individual and collective agency by equipping/supporting community members to take action on climate change; and
- Increasing UBC's overall community resilience, mental health and wellbeing.

These co-benefits will be considered alongside technical and financial risks, and other criteria when assessing future investments in CAP 2030 priorities.

## 3 Plan Development

### 3.1 Planning Process

In April 2020, the Board of Governors endorsed climate action as a key sustainability focus area for UBC campuses. Following this leadership endorsement, the CAP 2030 process launched in May 2020. The process was led by Campus and Community Planning, with strategic oversight and direction provided by the Operational Sustainability Steering Committee with representation from faculty and administrative leadership.

The CAP 2030 planning process built upon the significant success that UBC has had to date for campus operations. It also leveraged recommendations from the climate emergency engagement process as well as expertise across UBC through topic-based working groups and technical committees.

UBC working groups were established to develop targets and actions for all CAP topic areas. Actions in areas that apply to both Vancouver and Okanagan campuses, such as business air travel, food systems, and embodied carbon, were identified. Targeted staff, faculty, students, and external subject matter experts were engaged to develop the CAP recommendations based on the following themes:

- Energy Supply and Buildings
- Fleet
- Commuting
- Business Air Travel
- Embodied Carbon
- Food Systems
- Engagement and Outreach Programs
- Waste, Materials and Paper
- Financial Tools

Emerging directions and draft targets for CAP 2030 – Vancouver and Okanagan Campuses - were presented to the Board of Governors in February 2021. The CAP

2030 process, Figure 3, illustrates the overall timeline and key stages in the planning process.

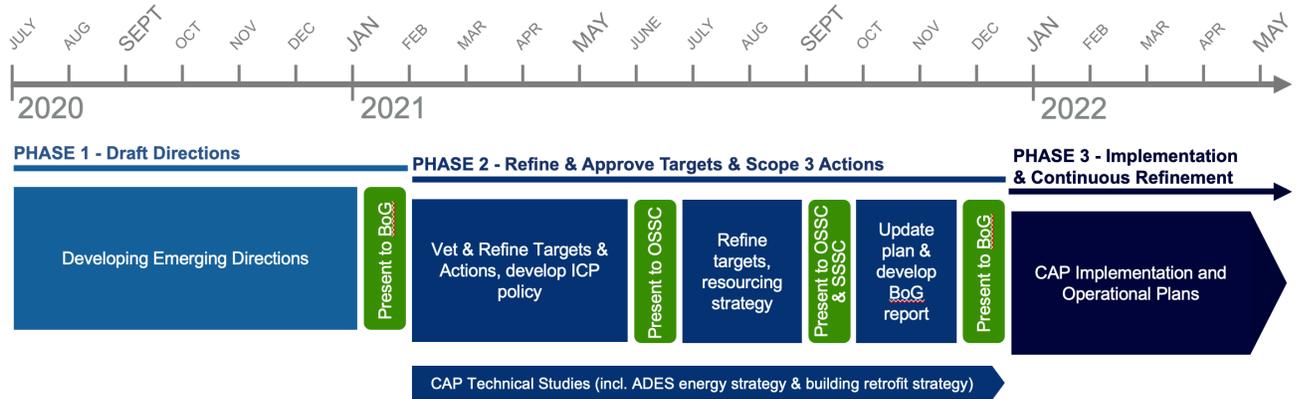


Figure 3: CAP 2030 Process Overview

CAP 2030 working group members were instructed to consider key elements from the Climate Emergency Declaration, with a specific focus on including a climate justice lens to help evaluate priority actions. Engagement and vetting of working group actions was conducted at the director’s level for many units across UBC to define ownership, alignment, support and responsibility for actions as part of an overall CAP Accountability Framework (Appendix B) through a distributed approach to CAP implementation.

As actions were developed and refined, targeted stakeholder meetings were held with key staff from the units responsible for leading or supporting specific campus actions. The intent of these meetings was to gather support for implementation, identify resources currently being mobilized, identify where additional resources are needed, and to confirm roles and responsibilities moving forward.

## 3.2 Public Engagement Process

From March 29 to April 16, 2021, the Campus and Community Planning team led an engagement process for the entire university community. This was an opportunity for staff, students and faculty to learn about the emerging CAP 2030 themes, ask questions, and share perspectives.

Through an online survey and virtual events, we heard from 764 participants from the Vancouver Campus about the emerging CAP 2030, and the barriers and opportunities for climate action on campus. Figure 4 presents a snapshot of the main themes that we heard from the UBC community during the public engagement period.



*Figure 4: CAP 2030 Public Engagement - Key Messages Received*

Further information on the main themes heard during the UBC CAP 2030 public engagement process can be found in the Engagement Summary Report (Appendix D).

## 4 Addressing Climate Change

### 4.1 UBC GHG Emission Sources

The GHG emissions for UBC's Vancouver campus are generated from various sources, as illustrated in Figure 5 below.



Figure 5: UBC's Operational and Extended Emissions

*Note:* Extended emissions are estimated and less accurate than campus operations GHG values which are reported more rigorously as part of UBC's annual carbon reporting under BC's Climate Change Accountability Act. For the Waste and Materials category, emissions shown only include those from disposal and do not include life cycle emissions, which are much larger.

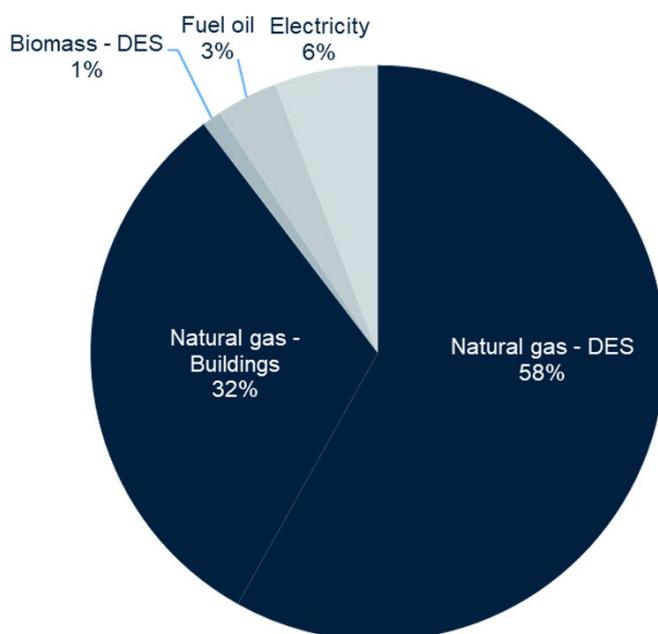
#### 4.1.1 Campus Operations (Scope 1 and 2)

Campus operations emissions are those over which UBC has direct control and on which UBC pays carbon offset taxes through the provincial carbon neutral legislative requirements for public sector organizations in BC. Sources include emissions from buildings, campus energy facilities, and fleet vehicles. Reducing these emissions requires infrastructure change and capital investments. To date, these emissions have been successfully reduced by enhancing the energy performance of buildings and district energy supply.

Heating and operating buildings account for approximately 97% of UBC total campus operations emissions, and the vast majority of these come from burning natural gas

(86%), as this fossil fuel (mostly composed of methane, CH<sub>4</sub>) has significantly higher GHG emissions than BC's clean electricity (primarily sourced from clean and renewable hydropower). Emissions generated through campus operations are defined as emissions from sources directly controlled and operated by UBC, including combustion of natural gas on campus (scope 1), and from upstream emissions from electricity consumed on campus (scope 2).

Figure 6 illustrates the dominant role of natural gas in UBC's buildings and District Energy System (DES) emissions. Electricity emissions only accounted for 6% of total Campus Operations emissions in 2019. However, the relative importance of these emissions will increase in the future as electricity use increases to help displace fossil fuel use to meet climate targets.



*Figure 6: UBC Campus Operations Emissions by Energy Source (2019)*

GHG emissions from electricity are calculated using electricity emissions factors for BC have become somewhat volatile due to a change in emissions factor approach. Analysis for CAP 2030 targets and actions has been based on recent provider-based electricity emissions factors and this area will be monitored as these factors continue to evolve in the future.

The University is on track to reduce operational emissions by approximately 60% below 2007 levels, with the first full year of the bio-energy expansion project operating in 2022, outperforming the Paris Agreement 1.5°C target of 45% reduction. However, even more aggressive targets are required to maintain UBC's sustainability and climate action

leadership position and meet the intent of UBC's Climate Emergency Declaration. The CAP targets address emissions from institutional buildings including core infrastructure, academic, and student housing; excluded are off campus buildings and UBC's neighborhood developments. Neighbourhood emissions will be addressed by a future update to the Community Energy and Emissions Plan (CEEP), the Residential Environmental Assessment Program (REAP) and the Neighbourhood Low Carbon Energy Strategy.

#### **4.1.2 Extended Impact emissions (Scope 3)**

Extended impact emissions occur from activities that are not always fully controlled by UBC, but that the institution impacts and influences through purchasing decisions, plans, policies, guidelines, behavioral change programs, and others. These emissions are generally referred to as scope 3 emissions and include sources such as commuting to and from campus, business air travel, food consumed on campus, waste, and the embodied carbon associated with the construction of new buildings and retrofits. While UBC has influence on these emissions the University is not currently responsible for carbon offset payments associated with them under the provincial carbon neutral legislation. These extended impact emissions are almost 2.5 times larger than campus operations emissions as illustrated in Figure 5. CAP 2030 is the first time UBC has made an explicit mandate to set reduction targets for extended impact emissions.

### **4.2 CAP 2030 Plan – Targets**

The global climate crisis is accelerating, and strong collective action must be taken to avoid the worst impacts. With CAP 2030, UBC is committing to build upon past successes to achieve deep carbon reductions for campus operations and extended impacts emissions by 2030, with a future goal to go beyond net zero (see Figure 7). Through strategic investments in climate action, UBC will be leveraging its institutional, operational and intellectual capacities to chart a leadership path for other post-secondary institutions to follow.

# CAP2030 PAST SUCCESSES & FUTURE MILESTONES

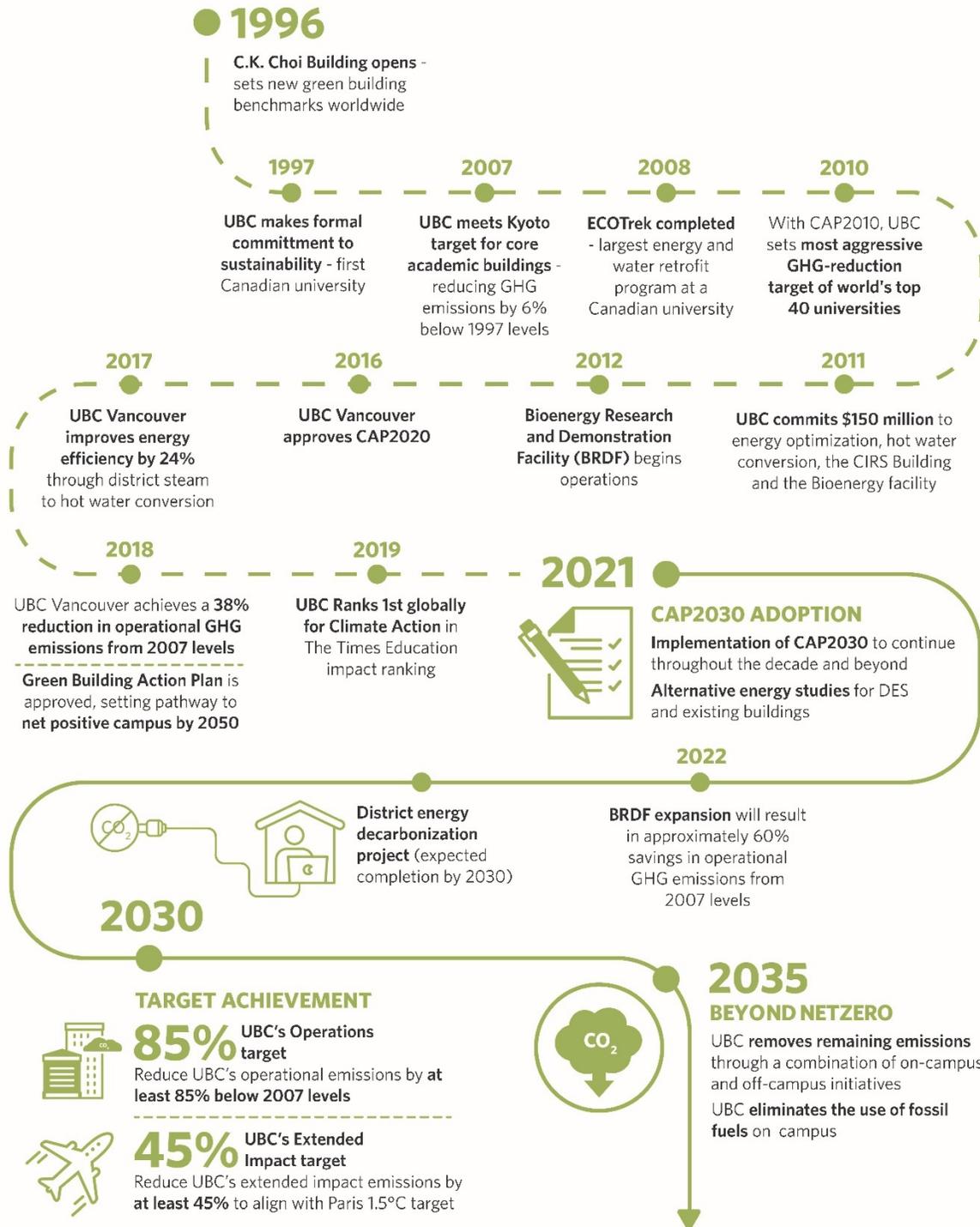


Figure 7: UBC's Climate Action – Past Successes and Future Milestones

## 4.2.1 Reduce Campus Operations Emissions by 85% by 2030

The existing CAP 2020 target for operations was for a 67% GHG reduction by 2020, and UBC will be close to achieving this reduction with the BRDF expansion. With CAP 2030, UBC is setting a target of 85% GHG emission reduction below 2007, significantly exceeding the 1.5°C Paris Agreement emissions targets. Reducing emissions by 85% translates to eliminating virtually all conventional fossil fuel<sup>6</sup> use from campus operations.

## 4.2.2 Net Zero Campus Operations Emissions by 2035

The previous campus operations net zero target, or 100% GHG reduction, was set at 2050. CAP 2030 sets a new accelerated target of net zero by 2035, which will address the remaining emissions from low carbon energy that remain after most fossil fuels are eliminated. The technology solutions for this, such as carbon capture, are still emerging and have not been proven at a wide scale, which will provide an opportunity for partnering with faculty researchers who are advancing innovation in this area. Figure 8 shows the historical operations emissions, plus the impact of actions that can cumulatively reduce emissions by 100%, or net zero.

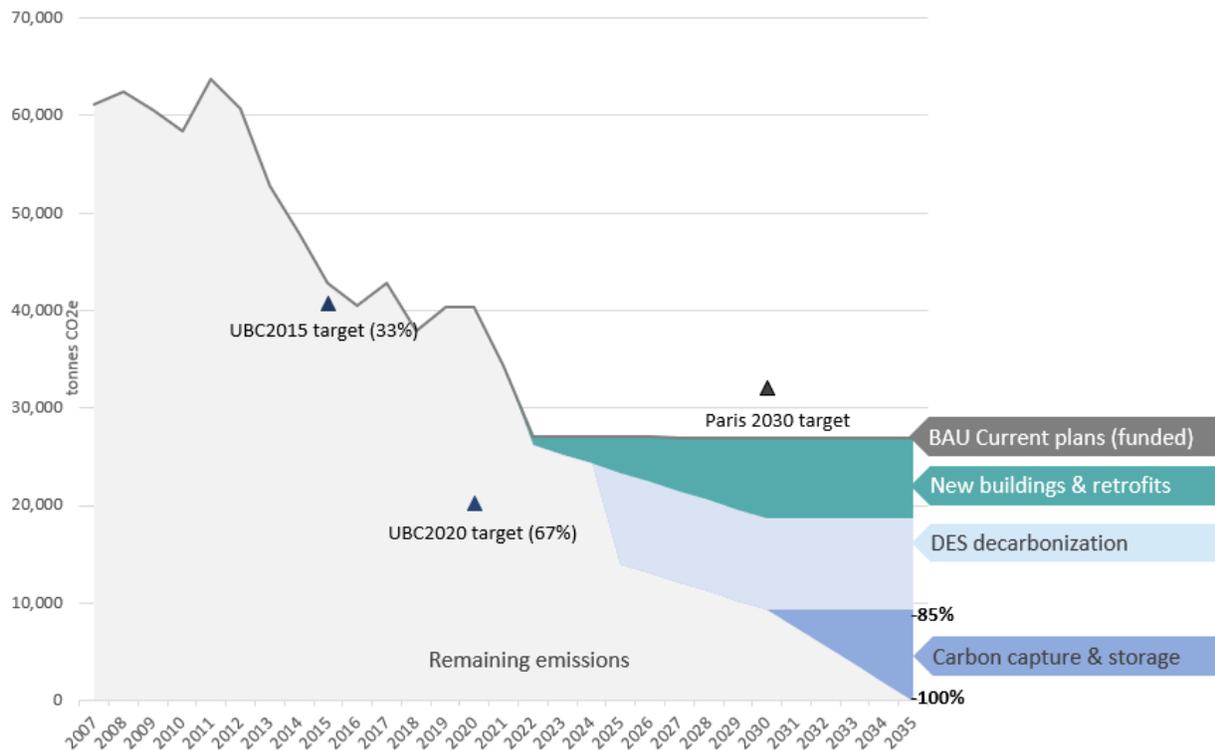


Figure 8: UBC Campus Operations Emissions Reductions Targets

<sup>6</sup> Some fossil fuels may still be required for specialized purposes or uses that don't have viable alternatives.

UBC is well-positioned to achieve deep carbon reductions and accelerate decarbonization of its core operations to meet targets. A combination of factors including UBC’s history of successfully reducing emissions, accelerating technology innovation, and increasing community support for action will help to advance UBC’s climate ambition. Given the size of UBC’s Vancouver Campus, this can serve as an invaluable demonstration for how other campuses and neighbourhoods could achieve decarbonized energy use. A hierarchy of decarbonization principles has been developed to create a clear pathway for UBC to achieve net zero operational emissions, as shown in Figure 9 below.

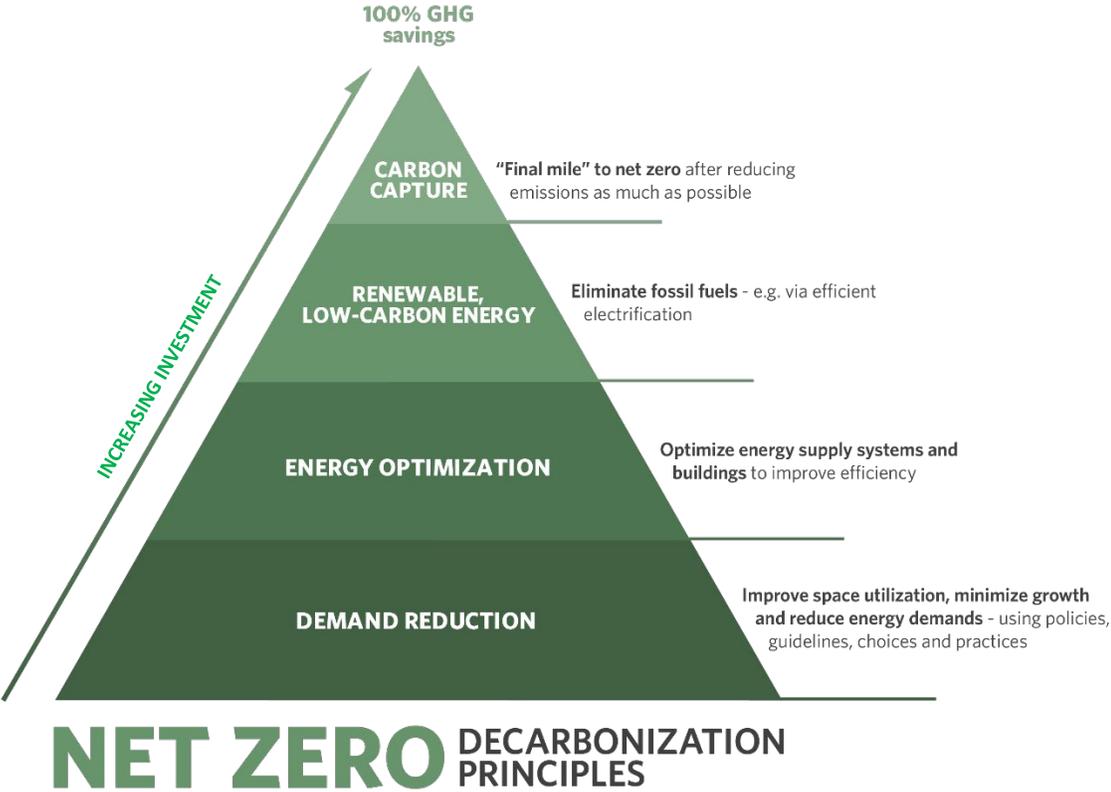


Figure 9: Net Zero Decarbonization Principles

### 4.2.3 Reduce Extended Impact Emissions by 45% by 2030

For the first time, UBC is creating reduction targets for extended impacts emissions; CAP 2030 sets a target for a 45% reduction from 2010 levels, reaching the Paris Agreement 1.5°C target by 2030 as shown in Figure 10. This is in line with the mandate given by UBC’s Climate Emergency Declaration.

Achieving this target will require institutional leadership in addition to strong buy-in and support from UBC’s students, staff and faculty, who through their own choices and activities have a strong influence over these emissions.

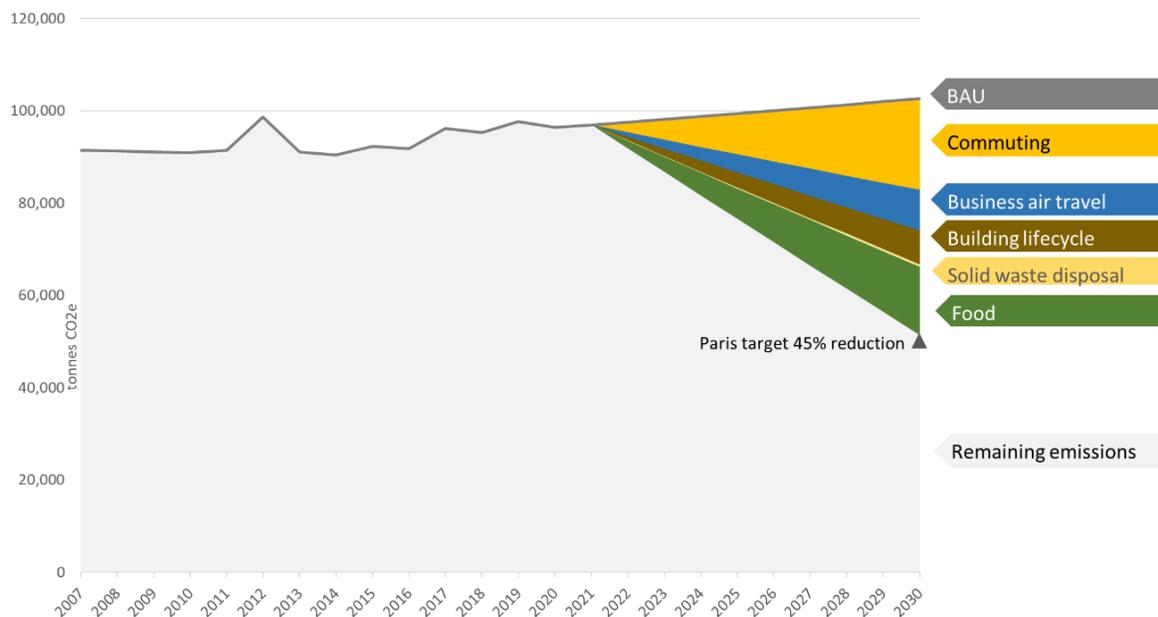


Figure 10: UBC Extended Emissions and Target

Note: the waste emissions shown above only include those from disposal and do not include life cycle emissions, which are much larger.

## 5 CAP 2030 Plan Targets, Strategies and Actions

This section contains a high-level summary of key actions identified in the CAP 2030 working group process, broken down across all action areas. It is intended to provide an overview of areas of focus, specific targets, key actions, and the overall level of ambition of CAP 2030.

## 5.1 Campus Operations

### 5.1.1 Academic District Energy System

**Target:** By 2030, 100% of the energy used by the Academic District Energy System will come from low carbon sources<sup>7</sup>.

**Rationale:** The Academic District Energy System (ADES) provides the major source of heat to campus buildings via a network of hot water pipes under campus. Heat for the ADES is provided by renewable biomass from the BRDF and fossil fuel based natural gas from the Campus Energy Centre (CEC). This district energy system has also been the single largest source of UBC's GHG reductions, with district energy specific emissions declining from approximately 50,000 tCO<sub>2</sub>e in 2007 to 24,400 tCO<sub>2</sub>e in 2019, in large part due to the steam to hot water conversion and the use of biomass to reduce natural gas consumption.



*Figure 11: UBC Campus Energy Centre<sup>8</sup>*

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<sup>7</sup> Low carbon energy sources include renewable energy such as BC Hydro grid, locally generated electricity (e.g., solar, biomass, renewable natural gas (RNG), etc.)

<sup>8</sup> Photo Source: <https://www.naturallywood.com/project/ubc-campus-energy-centre/>, accessed 13<sup>th</sup> August 2021

The bio-energy expansion that is nearing completion and will be operating this fall will achieve a 75% reduction in ADES emissions, with 70% of the energy coming from low carbon biomass and Renewable Natural Gas (RNG), while also expanding heating services to new buildings. Figure 9 illustrates how low carbon biomass energy and RNG (significant use as Cogen fuel) will meet the majority of baseload requirements, with natural gas predominantly used for shoulder and peak times during fall and winter.

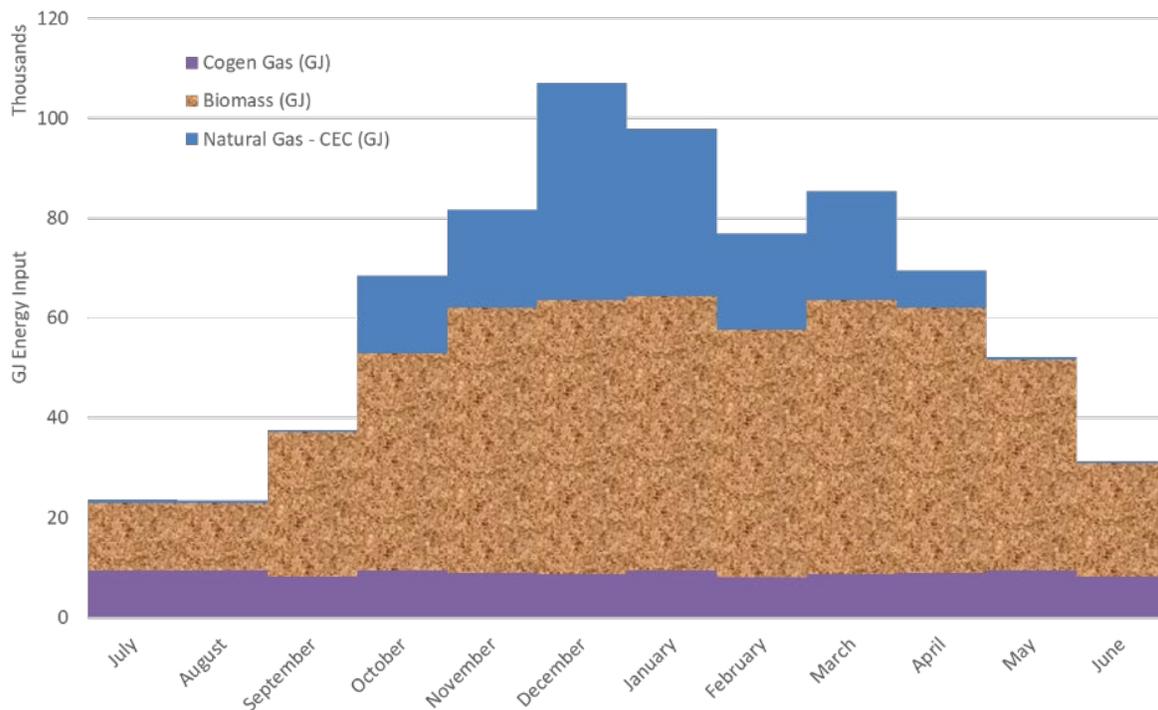


Figure 12: ADES Fuel Sources (Summer 2021 - Summer 2022)

#### 5.1.1.1 Actions - Immediate (Start F2021-22)

- Undertake a comprehensive technical and financial feasibility analysis to identify the most promising low carbon energy supply option(s) for the UBCV ADES – this study is already underway and will be completed in 2022, a number of technologies are being investigated through a detailed evaluation process against a number of key criteria – see Resourcing Strategy in Appendix A.
- Continue to prioritize energy demand side management efforts to offset all energy increases due to campus growth.
- Develop a UBC Vancouver campus energy strategy, including developing key guiding principles, to inform UBC's transition to clean energy and net zero emissions.

### 5.1.1.2 Short Term - By 2024

- Collaborate and explore strategic partnership opportunities with BC's major utilities to increase UBC's access to a diversity of low carbon energy supplies.

### 5.1.1.3 Medium Term - By 2030

- Implement low carbon ADES supply and demand solutions. Begin with initial projects by 2025, with a goal of achieving 100% low carbon energy by 2030.
- Explore and evaluate potential solutions to reach and accelerate UBC's net zero target, such as carbon capture, to address the remaining emissions from low carbon energy sources and hard to abate applications.

## 5.1.2 Buildings

**Target:** By 2030, new buildings and building renewals will target near zero operational emissions<sup>9</sup>, and existing building emissions will be reduced to reach a target developed as part of the Existing Building Decarbonization Plan.

**Rationale:** Heating and operating UBC's buildings represents 97% of total Campus Operations emissions<sup>10</sup>, and this energy currently accounts for about \$22 million in annual energy costs. Direct natural gas consumption by buildings (i.e., buildings that are not connected to the ADES) represent about 30% of the total. Ensuring new buildings are built to high performance, existing buildings are strategically retrofitted, and that energy supplied to buildings becomes increasingly low-carbon is imperative for UBC to achieve its bold GHG emission reduction ambitions, minimize energy consumption and reduce escalating carbon costs.

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<sup>9</sup> Near zero operational emissions assumes that building level, future energy and GHG intensity targets are being met and all energy supply is from low carbon ADES, BC Hydro electricity, and/or renewable natural gas.

<sup>10</sup> UBC's buildings include a lot of energy intensive laboratory space. Due to equipment such as fume hoods and steam and humidification systems, energy consumption of these buildings is materially larger than for traditional buildings, which tend to be dominated by space and water heating.



*Figure 13: UBC Nest Building with roof top garden*

#### **5.1.2.1 Actions - Immediate (Start F2021-22)**

- Eliminate fossil fuel equipment installation in new and existing buildings, unless sufficient amounts of RNG are secured for the lifetime of the equipment<sup>11</sup>.
- Develop an Existing Building Decarbonization Plan that integrates with maintenance and renewal programs, and a resourcing strategy to support incremental costs.
- Develop GHG targets and an action plan for the buildings in the UBC Properties Trust building portfolio that align with the CAP 2030 scope.

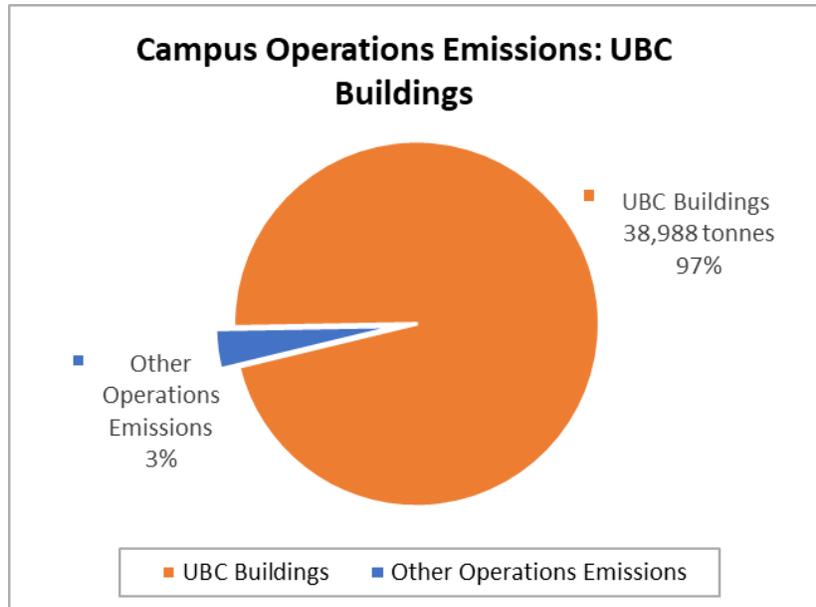
#### **5.1.2.2 Short Term – By 2024 and Medium Term - By 2030**

- All buildings on campus will connect to the ADES. If the project does not connect to the ADES it should apply for a variance. If projects cannot connect into the ADES they are required to achieve net zero carbon certification (design and operation).
- Develop and implement new building and renewal project GHG intensity targets by building type, incorporating more energy efficient designs and low carbon energy sources, and creating a life cycle costing process that deals with capital budgets to meet low carbon design requirements.

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<sup>11</sup> As a low-carbon non-fossil fuel, renewable natural gas (RNG) can replace natural gas in buildings that are not connected to the district energy system. However, historically the available supply of RNG has been limited.

- Implement building retrofits strategically as per the above plan (Existing Building Decarbonization Plan) and funding.
- Research and track building space utilization and changes due to remote activity, and explore opportunities for energy reductions through space utilization and mitigating growth of new floor space.
- Develop a process to reduce emissions from refrigerants used in buildings.



*Figure 14: Campus Operations Emissions: UBC Campus Buildings*

*Note:* This graphic includes all emissions at the building level, and includes direct natural gas use by buildings as well as by the ADES described above.

**Infobox: Marine Drive Residence heat pump project study**

Electrification of building HVAC equipment is a key opportunity to reduce UBC’s GHG emissions. UBC Student Housing and Community Services (SHCS) commissioned a study to assess replacement of natural gas fired make up air units (MUA), which provide heating and ventilation, with air source heat pumps (ASHP) at the Marine Drive student residence.

Heat pumps work by using electricity to transfer heat from the outside environment to inside the building. As such, they can be extraordinarily efficient, with the units assessed for Marine Drive about four times more efficient than existing equipment. When considering available incentives and energy savings over the project lifespan, ASHP lifecycle costs are competitive and help to significantly reduce GHG emissions.

### 5.1.3 Fleet

**Target:** UBC will only procure new vehicles and equipment that are zero emissions where feasible solutions exist.

**Rationale:** While UBC's fleet of vehicles and motorized equipment has a relatively small impact on overall GHG emissions, vehicles are a highly visible part of UBC's operations.

Between 2007 and 2018, UBC Building Operations reduced UBC fleet GHG emissions by 52% and achieved the only E3 Fleet Platinum rating in Canada. Transitioning to Zero Emissions Vehicles (ZEV) and enabling vehicle sharing among departments can realize significant co-benefits in addition to improving community wellbeing through reduced community harming GHG emissions, including greater overall financial performance and improved quality of fleet services for end users.



*Figure 15: UBC Electric Vehicle and Charging Station*

#### 5.1.3.1 Actions – immediate (Start F2021-22)

- Explore the expansion of fleet management programs across all UBC vehicles, including additional funding, in order to continue to pursue fleet optimization and increased efficiency.

- Develop a comprehensive ZEV Charging, Fueling, and Maintenance Strategy to guide ZEV transitions on campus.

### 5.1.3.2 Short – by 2023

- Incorporate a Zero Emissions Vehicle and Equipment First (ZEV First) requirement into existing fleet policy for all new vehicles and equipment, where feasible operational solutions exist.

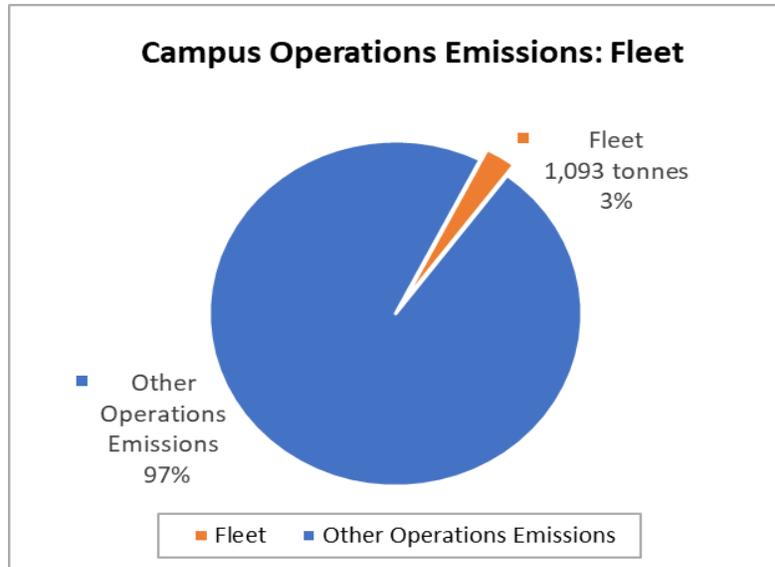


Figure 16: Campus Operations Emissions - Fleet

### 5.1.4 Financial Mechanisms: Internal Carbon Pricing

**Target:** Implement an internal carbon price to better align financial decision-making criteria with UBC’s climate goals.

**Rationale:** Carbon pricing is seen as a key policy tool and a financial mechanism to address climate change. It works by incorporating the true costs of carbon pollution into the decision-making process. So far, external climate policy has lagged behind providing an actual representation of the costs of damages associated with climate change. To address these challenges, CAP 2030 proposes the introduction of an Internal Carbon Price (ICP) to better align financial decision-making criteria with UBC’s climate goals and provide certainty, predictability, consistency and rigor for decision making. Unlike a carbon charge, the internal carbon price does not result in the exchange of money; it is simply used to inform decisions. The application of an internal carbon price can result in more money being invested initially in climate-friendly

systems that reduce carbon dioxide emissions; however, it often saves money when factoring in the life cycle cost-benefits of the solution.

UBC's internal carbon price represents an overall price ceiling, inclusive of all external pricing instruments, such as carbon offsets and fuel taxes. With the introduction of an internal carbon price, UBC will join the City of Vancouver and Metro Vancouver to create a local cluster of global leadership on carbon pricing. Refer to Appendix C for UBC's Internal Carbon Pricing Policy Guideline .

#### **5.1.4.1 Actions - Immediate (Start F2021-22)**

- An internal carbon price level of \$250/tCO<sub>2e</sub> has been selected based upon carbon price escalation seen at the provincial and federal levels, which will reduce risks by ensuring that carbon costs are fully accounted for during decision making.
- Pilot the internal carbon price approach in lifecycle cost analysis for several energy supply, equipment renewal and energy conservation projects.

#### **5.1.4.2 Short Term - By 2024**

- Implement the internal carbon price and use life cycle cost analysis to inform decision-making for energy projects (energy supply, energy equipment, energy conservation projects), as well as to fleet purchases and programs.
- Pilot and implement the internal carbon price and use life cycle cost analysis to inform decision-making on capital and infrastructure planning.

## **5.2 Extended Impacts Emissions**

### **5.2.1 Commuting**

**Target:** By 2030, achieve a 45% reduction in commuting emissions from 2010 levels.

**Rationale:** Accounting for approximately 36,000 tCO<sub>2e</sub> emissions per year, commuting by students, faculty and staff to the Vancouver campus is the highest extended impact emissions category accounting for nearly the same GHG emissions of buildings and energy supply combined. UBC has been very successful at increasing the transit mode share from 18% in 1997 to 54% in 2019 as a result of the introduction of the U-Pass program for students in 2003. However, substantial growth in the transit mode share is constrained until there is a rapid transit connection to UBC, which isn't anticipated until around 2030. This risks an increase to the single occupant vehicle mode share above the current 32% and therefore an increase in commuting emissions and public health impacts. There are opportunities for significant emissions reductions by decreasing commuting trips, shifting choices of transportation modes and vehicle types, and increasing transit capacity in the longer term. Climate justice factors into the

development of transportation policies and programs to ensure that equity across the UBC community is considered.

### 5.2.1.1 Actions – Immediate (Start F2021-22)

- Develop policies, targets and tools that enable and support departments in incorporating remote work / teleworking, flex days and online learning on an ongoing basis.
- Explore funding via a “Sustainable Transportation Levy” as part of parking permit fees (e.g., \$0.25 / trip) to fund sustainable transportation initiatives, including a Sustainable Transportation Program, that will support increased use of sustainable modes of transportation and reductions in commuting emissions.
- Establish an ongoing Sustainable Transportation Program to deliver infrastructure, programs and initiatives that enable sustainable transportation choices and drive behavioural change to reduce commuting emissions.
- Continue to pursue a SkyTrain connection to campus by 2032 (existing action).
- Identify a suite of improvements including infrastructure, procedural, and policy changes to improve the Electric Vehicle (EV) charging user experience and increase capacity to support transition towards electrical vehicle ownership in the UBC community.

### 5.2.1.2 Short Term - By 2024

- Transition parking permit fee structure to daily permits only (eliminating monthly, term, and annual permits), and offer a discount/subsidy for monthly transit passes for all staff and faculty.
- Improve cycling experience to support increased cycling trips to and from campus, such as improved secure bike storage, working with government partners to provide dedicated bike lanes to/from campus and an integrated e-bike and bike share program with the City of Vancouver.

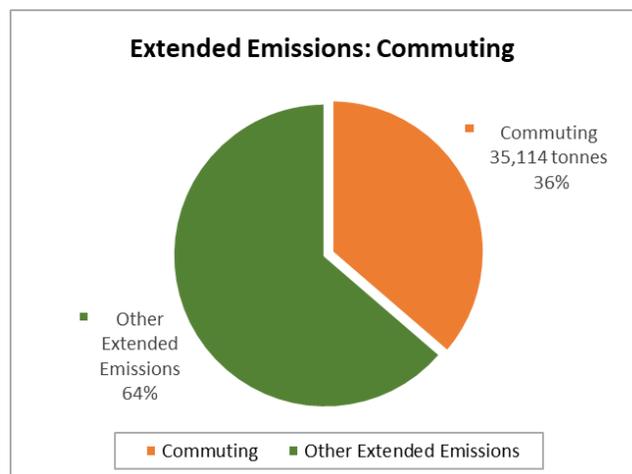


Figure 17: Extended Emissions - Commuting

## 5.2.2 Business Air Travel

**Target:** By 2030, reduce business air travel emissions by 50% from 2019 pre-COVID-19 levels.

**Rationale:** Business air travel is a significant source of extended impact emissions, accounting for approximately 17,500 tCO<sub>2e</sub>/yr. This is equivalent to about 50% of total campus operations emissions. Much of this travel is undertaken by UBC faculty and staff to attend academic and professional conferences. By leveraging the availability of better communication technology solutions, greater social awareness, and recent learnings from the COVID-19 pandemic, air travel and associated emissions can be reduced while providing an opportunity to maintain or improve UBC's education and research objectives, and is a key opportunity to increase access to educational opportunities for students and departments lacking means for engaging in extensive travel. This acknowledges the dependence upon air travel for researchers to carry out certain types of research and scholarly projects. Generally speaking the UBC Okanagan Campus often bears a somewhat disproportionate amount of "UBC system" travel. Identification and removal of barriers to choosing travel alternatives will be integral to shifting cultural norms, while ensuring an equitable approach

### 5.2.2.1 Actions – Immediate (Start F2021-22)

- Initiate a Sustainable Travel Program to develop behavioural change programming and awareness campaigns that shift behavior and create awareness around travel impacts and the increasing number of virtual alternatives available.
- Implement a study across both campuses to understand inter-campus air travel patterns, barriers and opportunities to reduce inter air-travel emissions. This action will enable UBC to better understand travel between the two campuses and how our travel behaviours should ideally shift as we start to emerge from COVID-19 travel restrictions.

### 5.2.2.2 Short Term - By 2024

- Track and report GHG emissions and other key parameters for all UBC business air travel.
- Lead a coordinated approach to reduce air travel across the University ecosystem by leveraging UBC's leadership role across peer networks (e.g., UC3, U7+).

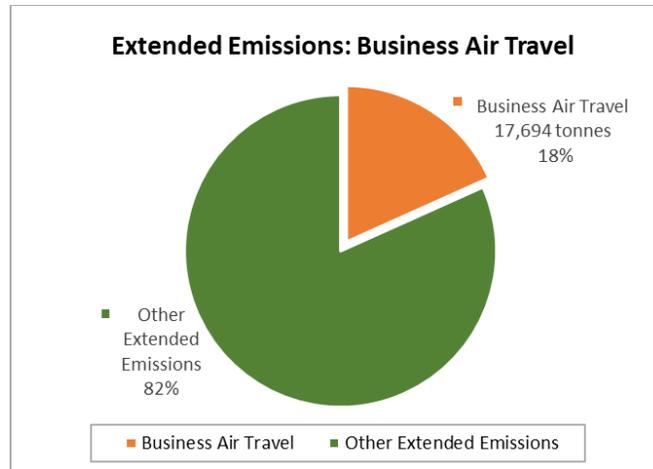


Figure 18: Extended Emissions – Business Air Travel

### 5.2.3 Food Systems

**Target:** By 2030, achieve a 50% GHG emission reduction of food systems.

**Rationale:** UBC campus food systems account for over 29,000 tCO<sub>2</sub>e per year and is the second highest category in extended impact emissions after commuting. From a global perspective, food systems are an enormous driver of climate change and contribute between 21 - 50% of global GHG emissions. After commuting, food is the second highest emissions category in the extended impact emissions area.

Over 60% of food produced, equivalent to 35 million tonnes of food are wasted in Canada each year, generating about 56.5 million tonnes of CO<sub>2</sub>-equivalent emissions. Approximately 32% – equaling 11.2 million metric tonnes of lost food – is avoidable and is edible food that could be redirected to support people in our communities<sup>12</sup>.

UBC is well positioned to lead an integrated approach in creating a just and resilient campus-wide food system – access to sustainable, safe, affordable, healthy foods increases mental health, physical health, and sense of wellbeing benefits. Through partnerships with communities both on and off campus, a Climate-Friendly Food System at UBC will use science-based targets to reduce food system-related GHG emissions. The creation of a campus-wide food system strategy will address all components of UBC’s food system, including food production, procurement, provision, consumption to waste and recovery.

<sup>12</sup> <https://secondharvest.ca/research/the-avoidable-crisis-of-food-waste/>, accessed 13<sup>th</sup> August 2021



*Figure 19: UBC Farm Centre for Sustainable Food Systems*

#### **5.2.3.1 Actions – Short Term – by 2024**

- Develop campus-wide Climate-Friendly Food System (CFFS) definition, mandatory CFFS labelling, and a toolkit to increase sustainable dietary choices and habits.
- Develop and implement mandatory campus-wide Climate-Friendly Food System Procurement Guidelines applicable to all food providers. Develop a Food Waste Reduction and Recovery Strategy (including food-related waste).
- Amend the UBC Supplier Code of Conduct to reflect UBC's climate commitments.
- Develop a Food System Resilience and Climate Action Strategy that holistically advances climate-friendly foods at UBC including climate mitigation and adaptation.
- Leverage and expand established interdisciplinary research initiatives, student and faculty-led research to advance climate-friendly food systems, spanning climate mitigation and adaptation.

### 5.2.3.2 5.2.3.2 Actions - Medium Term — 2024-2030

- Enhance the measurement and reporting of the campus food system’s environmental footprint, and coordinate with other food sustainability tracking priorities.

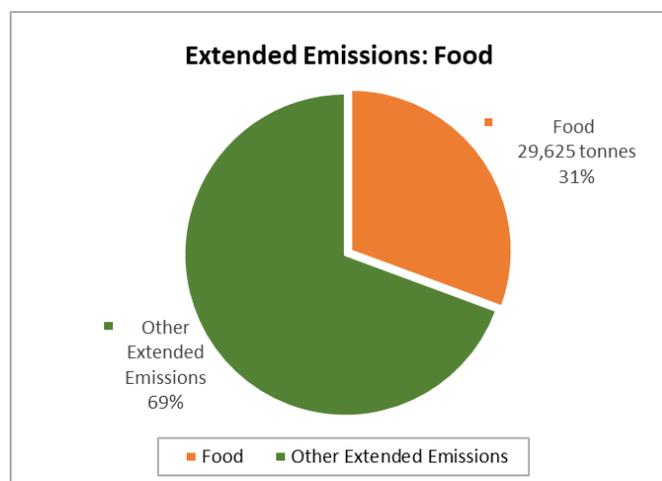


Figure 20: Extended Emissions - Food

## 5.2.4 Waste and Materials

**Target:** By 2030, UBC will apply a circular economy lens<sup>13</sup> to enable a 50% reduction in waste, progressing toward a zero-waste community.

**Rationale:** While UBC’s reported GHG emissions from waste disposal are a very 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. 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.

A Zero Waste Action Plan update planned for 2022 will more strongly prioritize emissions reductions opportunities such as reuse, apply a circular economy lens, and address barriers that have limited progress toward UBC’s zero waste goals to date.

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<sup>13</sup> In contrast to a conventional linear economy (“take, make and dispose”), a circular economy lens increases the focus on reuse and recycling of goods and materials back into the economy to avoid and eliminate waste and generate economic value.

#### 5.2.4.1 Actions – Immediate (Start F2021-22)

- Initiate a process for updating the Zero Waste Action Plan, which will include refining and integrating the actions below.
- Complete the planning and resourcing for launch of a scalable reuse program that includes furniture, residence items, and scientific equipment.

#### 5.2.4.2 Short Term – by 2024

- Fund, develop, and implement the Waste Operations Strategy (implemented through Building Operations), which will provide critical waste management infrastructure and business process updates needed to reach our zero waste goals.
- Scope and develop a central sustainable procurement program that could include vendor and product sustainability criteria, packaging requirements, updated procurement guidelines and processes, and integration with the Integrated Renewal Plan (UBC’s enterprise level IT systems upgrade).

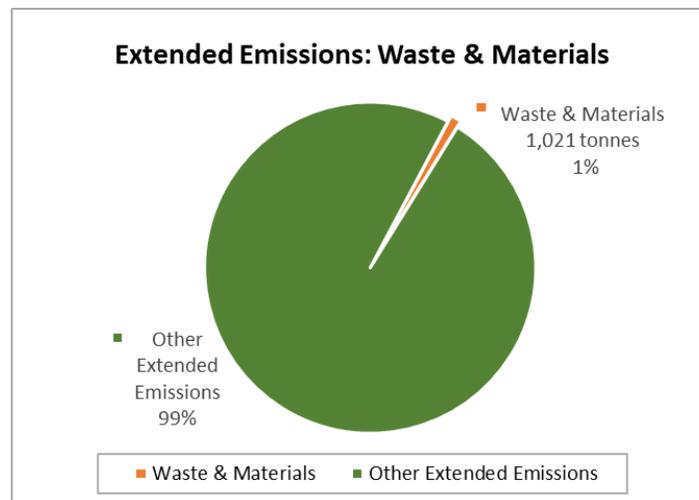


Figure 21: Extended Emissions – Waste and Materials

*Note:* Waste emissions shown only include those from disposal and do not include life cycle emissions, which are much larger.

## 5.2.5 Engagement and Outreach Programs

**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.

**Rationale:** UBC's climate-related engagement and outreach programs have demonstrated successes in reducing energy and emissions from UBC operations through energy conservation initiatives and campaigns delivered by programs including Green Labs, Sustainability Coordinators and Sustainability in Residence. With the inclusion of extended emissions targets in CAP 2030, new and expanded communications and engagement capacity will be critical to underpin the community climate action and behaviour and social changes needed to reach the Paris Agreement target-aligned goals for business air travel, commuting, food, and waste.

### 5.2.5.1 Actions – Immediate (Start F2021-22)

- Create a comprehensive plan to track, support, and (where needed) coordinate the implementation of CAP-related engagement and outreach communications, campaigns, and programming, in alignment with institutional action on the Climate Emergency Task Force priorities, Sustainability & Climate Action Integrated Communications & Engagement (ICE) Plan, and CAP 2030 scope 1, 2 and 3 emissions reduction actions.

### 5.2.5.2 Short Term – by 2024

- Establish a climate action communications, engagement and outreach model (supporting awareness-building and education as well as social and behavioural change) for both targeted and campus-wide audiences.
- Develop new and expanded sustainability engagement and outreach programs, tools and resources, ensuring adequate and ongoing resourcing to amplify engagement on climate action.
- Standardize a university-wide process for portfolios, faculties and/or departments to track, measure and report out on UBC CAP participation and progress.

### 5.2.5.3 Medium Term – by 2030

- Identify, create and promote (existing and additional) funding opportunities to support innovative sustainability initiatives driven by faculty, students and staff (i.e. AMS Fund, Workplace Sustainability Fund, Green Labs Fund, Sustainability Revolving Fund, and building-based energy-savings projects to benefit lab environments).
- Incentivize and recognize employee climate action by broadly integrating sustainability into performance metrics or job descriptions across the institution,

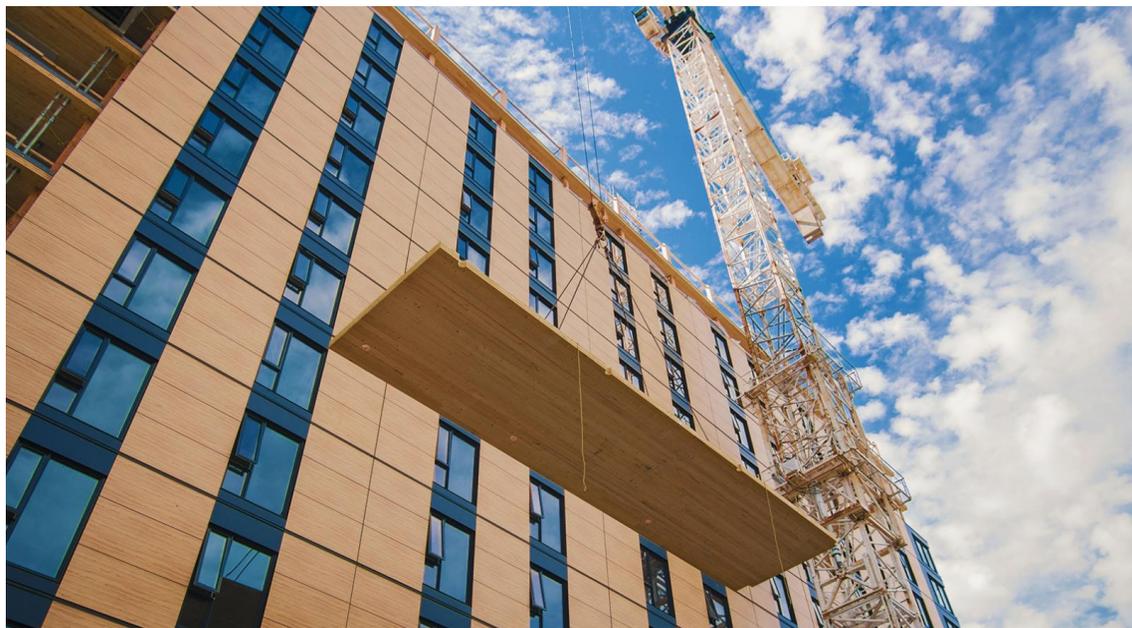
transitioning climate action from being viewed as a hobby or extra/unpaid effort for many employees to being a formally acknowledged and encouraged work component.

- Identify and utilize price signals to incentivize GHG reduction behaviors (i.e. transportation, business air travel, waste, etc.).

## 5.2.6 Embodied Carbon

**Target:** By 2030, establish an embodied carbon baseline and align new building and renewal designs with a 50% reduction target.

**Rationale:** As UBC continues to drive down operational emissions from buildings, it is becoming more important take a life cycle approach and address embodied emissions that arise from materials used to construct these buildings, in addition to the energy emissions from operating the building. Even when averaged over the life of the building, these emissions represent a significant share of all UBC's extended impact emissions, hence limiting new construction as far as possible represents the first step in limiting GHG emissions. The embodied energy of new buildings can be reduced by using materials which use less energy to produce and are made from natural materials and recycled materials.



*Figure 22: UBC's Tallwood Building*

There has been significant progress made in initial research and scoping of this area; UBC is already a recognized innovator and leader in building projects that use low carbon materials and innovative construction techniques, as demonstrated by UBC's Brock Commons Tallwood Project (Figure 22), which was world's tallest contemporary

wood building at the time of completion. Research will need to continue into developing more accurate and streamlined assessment methods for embodied carbon, reliable regional supply chains for low carbon materials, as well as design and construction strategies to further reduce embodied carbon across the campus.

### 5.2.6.1 Actions – Immediate (Start F2021-22)

- Develop clear guidance for embodied carbon Life Cycle Assessment (LCA) studies for new buildings and renewals, and introduce a pilot target of 20% reduction over a baseline building.
- Develop guidance for reducing embodied carbon in buildings to discourage, reduce or potentially eliminate materials with the highest embodied carbon impacts
- Update the method for campus level reporting on embodied carbon emissions in UBC's GHG inventory and carbon reporting.

### 5.2.6.2 Short Term – by 2024

- Create an operational and academic research collaboration or hub for UBC building performance/embodied carbon.
- Develop embodied carbon reduction targets for UBC buildings by type and for campus as a whole, for application on projects in 2025-2030.

### 5.2.6.3 Medium/Long Term – by 2031+

- In addition to embodied carbon, consider healthy and equitably-sourced materials as part of a holistic approach to building material choices.

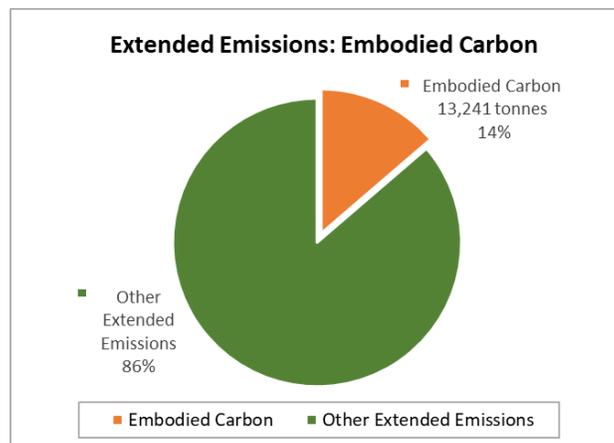


Figure 23: Extended Emissions – Embodied Carbon

## 5.3 Complementary Action Areas

The following actions are tied to other planning initiatives that are not specifically part of CAP 2030, but contribute to important CAP 2030 objectives.

### 5.3.1 Adaptation, Resilience and Biodiversity

CAP 2030 is focused on the mitigation of greenhouse gas emissions to meet UBC's and Paris Agreement targets. However, adaptation and resiliency in the face of a changing climate, notably that our biodiversity and ecosystems are a key issue as evidence of a changing climate.

British Columbia is already experiencing the impacts of climate change on our population and unique biodiversity. Average temperatures are increasing, sea levels are rising, and more variable and extreme weather is becoming more frequent, including increased rainfall and extreme rainfall events. It is also important to note, that though all of BC faces challenging climate change impacts, Indigenous communities continue to experience a disproportionate share of historical and magnifying climate impacts. These impacts directly affect the province and require government and public sector organizations to re-think how they will deal with their own infrastructure and operational needs, and their ability to provide services to the public. Failing to adequately consider and manage risks from climate change will cost significantly more than implementing proactive management of these risks. In response, the Province of BC is drafting a Climate Readiness and Adaptation Strategy that UBC has helped inform. The Province is also developing Minimum Climate Resilient Design standards and guidelines that will influence our future actions.

In recent years, the Province has required public sector organizations including UBC to complete an Annual Climate Risk Survey to understand current public sector capacity to report on climate risk management. In the near future UBC will be required to report and track progress against key climate risk categories, in the same way we report on and offset carbon emissions and mitigation actions. Increasingly UBC will need to incorporate climate resiliency and adaptation considerations into campus planning and operations. For example, designing stormwater management systems that can accommodate more intense rainfall events, modelled for future climate conditions.

Addressing climate and ecological crises simultaneously is critical in developing a resilient campus. In addition, natural assets are also part of a holistic suite of solutions that can contribute to mitigating GHG emissions - e.g., urban forests and shading buildings to reduce cooling energy loads, using green space to mitigate heat island effects, and carbon sequestration via trees and vegetation.

Given the devastating local impacts of climate change, there will be a continued immediate campus response to recent heat wave and climate fires with a focus on

building retrofits, addressing indoor air quality measures for wildfire smoke, and exploring ways to enhance the UBC Vancouver Climate Ready Building Requirements for new construction. The campus will be developing an Adaptation, Resiliency and Biodiversity Strategy as a subsequent CAP 2030 planning phase.

#### **5.3.1.1 Actions – Immediate (Start F2021-22)**

- Increase understanding of the biodiverse ecosystems on campus and the climate adaptation benefits they provide by developing foundational research around biodiversity and climate resilience on the UBC campus. This will include:
  - A community-driven process to develop a set of campus biodiversity and climate principles to advance climate change mitigation and adaptation, ecological health, and human health and wellbeing.
  - A campus natural asset baseline that quantifies the contributions of UBC's natural assets to the range of ecological and socio-cultural services.
- Continue UBC's immediate response to recent heat wave and climate fires with a focus on building retrofits, addressing indoor air quality measures for wildfire smoke, and updating and expanding the UBC Vancouver Climate Ready Building Requirements for new construction.
- Provide technical and advisory contributions to the drafting Provincial Climate Preparedness and Adaptation Strategy.
- Develop procedures and protocols for building occupants and facility managers – i.e. UBC to take proactive steps to introduce new maintenance and operation protocols to improve air quality through ventilation systems by implementing MERV 13 filters.

#### **5.3.1.2 Short Term – by 2024**

- Develop a Climate Adaptation, Resiliency and Biodiversity Strategy that is an "umbrella" strategy that incorporates other UBC plans, policies and initiatives, with specific actions to maintain and enhance urban biodiversity as a tool for climate action through nature-based solutions.
- Adopt biodiversity metrics as a key indicator of climate resilience on campus.
- Leverage and expand established interdisciplinary research initiatives, student and faculty-led research to advance climate mitigation, adaptation and biodiversity solutions, in service of community health and wellbeing (e.g. reducing climate anxiety, addressing health impacts from forest fire smoke, etc.).

#### **5.3.1.3 Medium Term – by 2030**

- Incorporate and codify UBC biodiversity enhancements as a strategy to advance towards the target of 85% GHG emission reductions by 2050.

### 5.3.2 Housing at UBC

A strategy supporting affordable housing at or near UBC for students, faculty and staff to reduce commuting emissions was identified as an important issue, while it is important to simultaneously recognize that significant embodied carbon emissions arise before and during new construction that have major climate impacts and will take many decades to balance with reduced commuting emissions.

#### 5.3.2.1 Actions - (Immediate to Medium Term):

- Continue to implement UBC's Housing Action Plan to address housing affordability challenges for UBC faculty, staff, and students by increasing housing opportunities on campus.
- Explore additional opportunities for affordable on-campus housing through the upcoming Campus Vision 2050 land use process.
- Conduct a study to model the impacts on commuting emissions and embodied carbon emissions for various on-campus housing scenarios to help inform future land use planning and Campus Vision 2050.

## 6 Plan Implementation

### 6.1 Distributed Leadership Approach

The CAP 2030 is a UBC wide effort across both the Vancouver and the Okanagan campuses, and will require leadership and resourcing from many units across both campuses. The breadth and scope of the Plan necessitates that it reaches every corner of the institution, requiring a distributed approach to implementation. A CAP Accountability framework has been developed that outlines responsibilities for implementation of actions, monitoring progress, governance over decisions and processes – See Appendix B.

The distributed leadership model integrates concurrent work into this Plan, enhances mobilized resources across campuses, and embeds ownership and accountability for delivering on this Plan across the organization. This approach builds the cross-organizational capacity required for systems change. UBC Campus and Community Planning will serve as a support and/or lead for several discrete actions, and support the monitoring and reporting on progress led by units over time, ensuring all units are held accountable and recognized for advancing their respective actions. The distributed leadership approach will continue through implementation to ensure successful execution of this Plan.

## 6.2 Resourcing CAP 2030

### 6.2.1 Approach and Resourcing – Campus Operations

CAP 2030 has identified bold targets and key actions that can accelerate UBC towards its net zero target for Campus Operations. Technically there are solutions that can support deep emission reductions through more aggressive performance requirements at building and site scales, as well as low carbon energy at the campus scale. However, the final decarbonization approach for UBC's current context requires further development. Therefore, a top priority is to continue key studies to identify the best approach to decarbonize UBC's core operations, progressively refine the costing, and ensure that limited resources are spent in the most effective manner to reduce GHG emissions.

As UBC advances towards deeper GHG reductions, increasing levels of capital investment will be required in the short term, to help reduce UBC's carbon liability in the medium and longer term. While it is too early to provide a detailed estimate of investment needed for achieving the overall GHG reductions identified by CAP 2030, a sense of the scale of investment can be given when considering future carbon liabilities. Translating the recent update of the federal carbon price to UBC's remaining carbon emissions gives carbon liabilities of approximately \$100 million over a 20 year project period (provincial offset requirements and implicit carbon costs from regulations will further add to this)<sup>14</sup>. Investments in clean solutions will be needed to avoid having to pay this liability.

The timing of investments will vary widely. Generally, building scale decarbonization projects will be ongoing throughout the decade to 2030. Investments in district energy decarbonization projects are forecasted to commence earlier following detailed studies and analysis.

### 6.2.2 Approach and Resourcing – Extended Impacts

In contrast to campus operations emissions which are generally addressed through capital investments, reductions in extended impact areas will be driven by policy, procedures, processes, and programs aimed at achieving behaviour change across the UBC community. This, in combination with the fact that many emission reduction opportunities of 'low-hanging fruit' are still available in the extended impact categories, means that relative to campus operations emissions, its resourcing needs are lower and will be in the form of human resources, administrative, or program funding. Addressing extended impact emissions is something the University can commence quickly, to drive action and to show leadership and commitment to the Climate Emergency Declaration.

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<sup>14</sup> Estimate based on multiplying UBC's remaining emissions by the announced federal carbon price (\$170/t CO<sub>2</sub>e) and by an assumed average project life of 20 years.

### 6.2.3 Short-term Resourcing Priorities

There are several short-term priorities that will require immediate resourcing to ensure that the CAP 2030 process continues to advance.

- **Academic District Energy System and building decarbonization plans:** these technical and financial studies currently underway will continue into 2022 and lead to the recommended technical solutions and projects that will provide the “heavy lift” emissions reductions for campus operations.
- **Low carbon equipment replacements:** There are several hundred pieces of fossil fuel (natural gas) equipment in buildings, responsible for about half of Campus Operations emissions. This equipment periodically needs to be replaced, with new equipment often staying in operation for 15-20 years. Avoiding locking in of new fossil fuel equipment is critical to achieve the CAP 2030 targets. It will require extra funds to cover the higher upfront capital costs of low carbon alternatives (many of which will have lifecycle savings when including the cost of energy and carbon). Importantly, this will protect against the risk of having to replace gas-using equipment well before its end of life at a later date, which would come at considerable extra cost.
- **Low carbon design for new and renewal green buildings:** Similar to equipment replacements, it is critical to avoid locking in new fossil fuel equipment going forward wherever possible. As new and renewal buildings are designed, low carbon features may necessitate incremental capital costs. UBC must find ways to address these costs in budgeting and funding.
- **Extended impacts program development and implementation:** Quick-start actions have been initiated to reduce emissions from food systems and business air travel. These programs and others will need to continue and expand to support achievement of our aggressive 2030 targets.

This short-term resourcing will help build the foundations for success of CAP 2030, ensure that the long-term costs of climate action are minimized, and demonstrate early leadership on priorities identified in the Climate Emergency Declaration.

## 6.2.4 Resourcing Strategy

Resourcing and funding of the CAP 2030 will help achieve multiple objectives across the institution, including avoiding future costs and reducing UBC's carbon liability. CAP 2030 will help position UBC at the vanguard of climate action leadership and will help to advance a core pillar of UBC's Strategic Plan. CAP 2030 will continue to elevate UBC's brand and reputation on sustainability. UBC's investment in CAP 2030 is not just an investment in improving operational excellence through higher performance buildings, low carbon infrastructure and behavioral change programs and community climate action. Resourcing CAP 2030 will also provide innovative platforms for Campus as a Living Laboratory projects whereby the operational and academic communities of students and faculty partner together to foster innovation, ingenuity and position UBC as a progressive change-agent that advances applied research to demonstrate climate action(s), practices and policies.

The CAP 2030 project management team collaborated with UBC's Strategy and Decision Support (SDS) to develop an overall Resourcing Strategy for CAP 2030 (Appendix A), which identifies opportunities, efficiencies and innovative resourcing approaches for the many actions and the resulting future projects and programs identified in the Plan. It also defines the selection process for major projects, with project implementation considerations, financial planning considerations, and a preliminary overview of the types of funding needs and opportunities to support CAP 2030 actions.

Realizing the bold vision and aggressive GHG reduction targets in CAP 2030 will require significant effort from across the university, and significant investments in innovative low carbon projects, student and faculty-led research and programs. These necessary investments will challenge UBC's current resourcing abilities. Innovative solutions will be needed not only in technology, but also in processes for planning and resourcing projects and programs.

Achieving our emissions targets will not only help protect the climate, our biodiversity, and public health and wellbeing, but will also mitigate UBC's carbon liability, while maintaining UBC's sustainability leadership role at this critical time for our planet.



*Figure 24: UBC Climate Strike in front of Musqueam Welcome Post, Sept 2019<sup>15</sup>*

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<sup>15</sup> Photo credit: Joachim Zens

## 7 Glossary

**Academic District Energy System (ADES):** UBC's district energy systems that produces hot water and distributes it to buildings to provide space and water heating. UBC's ADES is the main source of heating to campus buildings.

**Air Source Heat Pump (ASHP):** An air source heat pump is a system that transfers heat from outside the building to inside the building for heating (or vice versa for cooling). As it transfers heat and doesn't create heat, ASHPs can be extraordinarily energy efficient, with heat generated up to 400% of the initial electrical energy input.

**Alliance of World Universities (U7+):** An international alliance of university presidents to engage in discussions and concrete action and commitments to address the most pressing global challenges in a multilateral context.

**Biodiversity:** A characteristic of an ecosystem that describes the diversity of life it contains, and directly correlates to the function and resilience of that ecosystem. Biodiversity is manifested at all levels of the organization and functioning of biological life, from the micro to the macro level, including genetic diversity, diversity of species, ecosystems and biomes, and cultural diversity

**Bioenergy Research and Demonstration Facility (BRDF):** UBC's plant that produces heat and electricity from biomass fuel, renewable natural gas, and conventional natural gas. The biomass fuel is gasified to create syngas that is burned to produce steam. The heat produced by the BRDF is distributed by the ADES to buildings in the form of hot water.

**Business As Usual (BAU):** Refers to a situational context or scenario that does not undergo any change; a scenario where no climate action is taken.

**Campus Operations Emissions:** Emissions generated through campus operations are defined as emissions from sources directly controlled and operated by UBC, including combustion of natural gas on campus (scope 1), and from upstream emissions from electricity consumed on campus (scope 2).

**Carbon Dioxide (CO<sub>2</sub>):** A naturally occurring gas that is also a by-product of the combustion of fossil fuels and biomass, land-use changes, and other industrial processes. It is the principal anthropogenic greenhouse gas. It is the reference gas against which other greenhouse gases are measured and therefore has a Global Warming Potential (GWP) of 1.

**CleanBC:** A plan developed by the British Columbia provincial government that sets 2030 climate goals through energy and industry emission reduction innovations and initiatives.

**Climate Action Plan (CAP):** A framework that provides a pathway to net zero emissions for the Vancouver campus. This was first initiated in 2010, and has been subsequently updated for 2020, and now 2030.

**Climate Adaptation:** An approach aimed to mitigate the suffering and destruction of climate change through adapting ecological, social, economic and physical environments to withstand threats such as rising sea levels, severe storms, higher temperatures and changes in rainfall patterns.

**Climate Justice:** A holistic approach to climate action that acknowledges the ways in which climate change and its consequences differently affect underprivileged and marginalized populations, compounding and exacerbating the existing inequalities they experience.

**Climate Justice Lens:** Recognizes responsibility and accountability for causes of climate change, the inequitable burdens of climate change impacts and an awareness of intersecting vulnerabilities, systemic and structural injustices. Climate justice might generally be thought of as advocating for what is right, fair, appropriate or deserved in relation to climate change drivers and impacts, including thinking about climate justice as forms and processes of distributive justice, procedural justice and restorative justice.

**Climate Mitigation:** A human intervention to reduce the sources or enhance the sinks of greenhouse gases (GHGs).

**Climate Resilience:** The degree to which a socio-ecological system can withstand and adapt to the adverse effects of a changing climate.

**E3 Fleet Rating (E3):** A unique made-in-Canada rating program that evaluates and recognizes excellence in the green performance of vehicle fleets.

**Extended Impact Emissions:** Emissions occurring from activities that are not always fully controlled by UBC, but that the institution impacts and influences through purchasing decisions, plans, policies, guidelines, behavioral change programs, and others. These emissions are generally referred to as scope 3 emissions and include sources such as commuting to and from campus, business air travel, food consumed on campus, waste, and the embodied carbon associated with the construction of new buildings and retrofits.

**Global Warming Potential (GWP):** GWPs are particularly important within the context of emissions reporting since international protocols require the reporting of both individual GHGs and their carbon dioxide equivalents (CO<sub>2</sub>e). For this reason, the calculation of GHG emissions generally involves multiplying the emission factor for a GHG by an appropriate measure of consumption (activity) to produce the corresponding emissions for that GHG and then multiplying those emissions by its GWP to produce the corresponding CO<sub>2</sub>e emissions.

**Greenhouse Gas (GHG) Emissions:** Gases emitted from fuel combustion and other sources, that contribute to the greenhouse effect and global warming. This includes carbon dioxide, methane, nitrous oxide, ozone, and chlorofluorocarbons.

**Heating, Ventilation and Air Conditioning (HVAC):** The system and technology of heating and cooling of buildings through heating, ventilation and air conditioning.

**International Sustainable Campus Network (ISCN):** An International forum that support higher education institutions in the exchange of information, ideas, and best practices for achieving sustainable campus operations and integrating sustainability into research and teaching.

**Renewable Natural Gas (RNG):** A biogas (or biomethane) that results from bacteria breaking down organic waste from sources such as landfills, agriculture and wastewater treatment facilities, and is upgraded to a quality similar to fossil natural gas. Because of its biological source, it is considered a carbon neutral energy source.

**Resilience:** An ongoing process of diverse, interconnected relationships and processes that activate and build up resilience-enhancing capacities within and across a community for short, medium and long term sustainability and wellbeing.

**Tonnes of Carbon Dioxide Equivalent (tCO<sub>2e</sub>):** The universal unit of measurement to indicate the global warming potential (GWP) of each of the six greenhouse gases, expressed in terms of the GWP of one unit of carbon dioxide. Expressing all GHGs in terms of tonnes of CO<sub>2e</sub> allows the different gases to be aggregated. The GWP of CO<sub>2</sub> equals one. Methane or CH<sub>4</sub> has a GWP of 25, indicating that its radiative forcing is 25 times that of CO<sub>2</sub>. In other words, releasing one tonne of CH<sub>4</sub> will have the same warming impact as releasing 25 tonnes of CO<sub>2</sub>. This impact is often expressed using the concept of carbon dioxide equivalent, or CO<sub>2e</sub>: that is, one tonne of CH<sub>4</sub> can also be expressed as 25 tonnes of CO<sub>2e</sub>.

**University Alliance for Sustainability (UAS):** An alliance between Freie Universität Berlin, the Hebrew University of Jerusalem (Israel), the Peking University (China), St. Petersburg State University (Russia), and UBC to focus on sustainability as a comprehensive topic for collaborating in research, teaching, and campus management.

**University Climate Change Coalition (UC3):** A coalition of North American research universities committed to climate action and cross-sector collaboration to accelerate local climate solutions and build community resilience.

**Zero Emissions Vehicle (ZEV):** A vehicle that has the potential to produce no tailpipe emissions. These can still have conventional internal combustion engines but must be able to operate without it. Some types of ZEVs are battery-electric, plug-in hybrid electric, and hydrogen fuel cell.

# Appendix

**Appendix A: Resourcing Strategy**

**Appendix B: Unit Accountability Framework**

**Appendix C: Internal Carbon Pricing Policy Guidelines**

**Appendix D: Public Engagement Summary Report**

# Appendix A – CAP 2030 Resourcing Strategy

## Purpose and Objectives

The Resourcing Strategy will help enable implementation of CAP 2030, by providing an overall strategy and approach for resourcing the many actions and the resulting future projects and programs identified in the Plan.

It also defines the selection process for major projects, with project implementation considerations, financial planning considerations, and a preliminary overview of the types of funding needs and opportunities to support implementation of CAP 2030 actions.

Implementation planning and implementation of “quick start” actions is already underway, therefore this Resourcing Strategy can be utilized immediately. However, it is not static – CAP 2030 actions and projects will be developed, refined, and implemented over time; and the resourcing needs and opportunities will also evolve over time.

## Resourcing CAP 2030 is Critical

Realizing the bold vision and aggressive GHG reduction targets in CAP 2030 will require significant effort from across the university, and significant investments in innovative low carbon projects and programs. These necessary investments will challenge UBC’s current resourcing abilities. Innovative solutions will be needed not only in technology, but also in processes for planning and resourcing projects and programs.

Recently announced federal and provincial climate policy dramatically increases the cost of carbon pollution, exposing UBC to future carbon liabilities from its current operations to well over \$100 million<sup>1</sup>. Achieving our emission reduction targets will not only help protect the climate, but will also mitigate this carbon liability. Conversely, without continued aggressive action and investment, UBC will lose its leadership role on climate action, and forego the research and reputational benefits this brings.

## Guiding Principles and Approach

Moving forward, the guiding principles and approach outlined below should be utilized by UBC CAP 2030 stakeholders involved in planning and resourcing actions, projects and programs.

## Planning & Developing CAP 2030 Projects & Programs

- **Strategic priorities:** Alignment of CAP 2030 to advance UBC’s Strategic Priorities including: Strategic Plan: Shaping UBC’s Next Century (Operational Excellence), 20 Year Sustainability Strategy, Climate Emergency Declaration and Climate Emergency Task Force Report, Wellbeing Strategic Framework, Campus Plan, Green Building Action Plan, Zero Waste Action Plan, Transportation Plan, etc.

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<sup>1</sup> Estimate based on multiplying UBC’s remaining emissions by the Federal Governments proposal of an [escalating carbon price](#), increasing by \$15/year from 2023 and reaching \$170/tonne in 2030.

- **Achieve multiple objectives:** CAP 2030 projects should seek to strategically advance multiple objectives at the same time wherever possible, such as research into clean technology solutions, coordination with existing infrastructure updates, and enhancing campus climate adaptation, resiliency, health and wellbeing and the biodiversity of campus ecosystems.
- **Prioritize and phase projects strategically:** Recognizing that UBC has many competing priorities for resourcing, focus primarily on projects that achieve significant GHG reductions and other co-benefits relative to level of effort and resourcing, applying a rigorous review process. Resourcing can be distributed over time by strategically phasing projects and initiatives, building on incremental successes.
- **Leverage capacity across UBC:** To minimize incremental costs and new funding needs, plan projects and programs to leverage existing human and financial resources wherever possible, building capacity and integrating CAP 2030 priorities into mainstream activities. Use a decentralized approach to allow units that are best positioned to take the lead and implement specific CAP projects and programs, and play a leading role to identify resourcing needs and seek funding opportunities. Pursue opportunities that leverage UBC's intellectual resource assets in ways that integrate applied research opportunities for students and faculty to advance CAP priorities (e.g. SEEDS).
- **Position UBC and CAP 2030 projects for funding and partnership opportunities:** Identify and scope a pipeline of high impact projects to set UBC up in a strong position for funding and grant opportunities as they emerge. Additionally, projects will consider how UBC can help achieve the objectives of governments and other funding entities, e.g., help demonstrate new decarbonization solutions to help advance objectives of CleanBC and federal climate priorities.
- **Prioritize funding needs:** Prioritize identification and sequencing of CAP 2030 funding needs that are high visibility/demonstratable, low administration, high impact/GHG reduction, and high engagement (students & community).

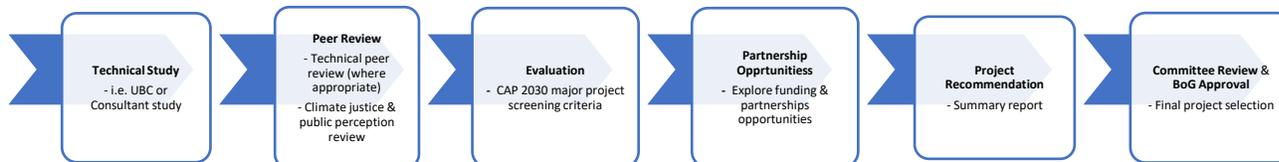
### Major Project Review & Selection Process

Before selecting projects and pursuing resourcing, major CAP 2030 projects (i.e. major decarbonization projects above \$5 million) will be reviewed against a set of assessment criteria to ensure projects align with CAP 2030/climate emergency declaration goals, maintain institutional reputation and mitigate financial/operational risks.

- Screening criteria include:
  - GHG emissions reduction
  - Reputation, brand and identity (helps to elevate UBC's leadership and innovation, amplifies our role as agent of change, attracts academic and professional expertise to the university, etc.)
  - Social license: climate justice and public perception, input from stakeholder groups including the Climate Hub
  - Financial performance: Life Cycle Costing (capital and operational expenditures), with application of UBC's Internal Carbon Pricing on operational expenditures (see next section)
  - Maturity of technology (Technology Readiness Level: TRL)
  - Site footprint (space required for implementation)

- Environmental impact (exclusive of GHG emissions, e.g., public health, and biodiversity impacts (ecological connectivity / ecosystem structure))
- Policy and legislative risk, e.g., future potential for provincial recognition of carbon capture under B.C.'s Climate Change Accountability Act

The CAP 2030 Major Project Review & Selection process will consist of a number of phases as illustrated in Figure 1 below:



**Figure 1 – CAP 2030 Major Project Review & Selection Process**

### Financial models and analysis

- **Identify cost savings and financial benefits:** Decarbonization projects often come with higher upfront costs, but can potentially enable operational savings from lower energy consumption or fuel costs. For example, UBC achieved over **\$22 million in energy savings since 2014** as a result of energy conservation projects completed by Energy and Water Services (EWS); investments in the Academic District Energy System will save the university an estimated **\$13 million per year** in energy and carbon costs by 2030.<sup>2</sup>
- **Integrate internal carbon pricing:** In some cases, projects to reduce GHG emissions may not have acceptable financial paybacks using existing financial analysis models. But going forward, investment decisions will apply Life Cycle Costing (LCC) to operating expenditures over the lifespan of the project and fully factors in accelerating government and other carbon costs to the energy supply component of operational expenditures. Utilizing the proposed Internal Carbon Pricing (ICP) in conjunction with LCC (as outlined in UBC's Internal Carbon Pricing Policy Guideline) will help identify the best projects to achieve UBC's GHG reduction targets – both major projects and smaller projects.
- **Address decentralized savings:** Many CAP 2030 actions can lead to university wide cost savings, such as reducing air travel with virtual alternatives, programs for reusing furniture and equipment assets, and optimizing space use in buildings to avoid new building projects. However, a key challenge to realizing these savings is that currently no unit can make a business case for advancing such projects, as the costs are concentrated in the unit running the program, while the savings are often distributed

<sup>2</sup> This considers today's energy rates net of carbon prices (\$6.50/ GJ natural gas, \$85/ dry tonne of biomass) and already announced implicit and explicit carbon pricing policies for 2030 (\$170/tCO<sub>2</sub>e federal carbon price, \$25/tCO<sub>2</sub>e public sector offset requirements, and an estimated \$45/tCO<sub>2</sub>e for the CleanBC Renewable Gas Mandate).

across other units. UBC should develop new and innovative financial and accounting models/mechanisms to overcome this barrier.

### Funding and partnerships

- **Lower the costs of borrowing:** The cost of borrowing is often a major barrier for capital intensive projects, including clean energy projects. While the cost of capital has never been cheaper, UBC often can't access money at market rates. To address this, UBC should engage its partners in the BC Government to test possible solutions to this issue, and explore other opportunities for low cost financing.
- **Engage with external partners:** UBC should continue to develop and nurture partnerships with the federal, provincial, and local governments, as well as with BC's major utilities, emphasizing opportunities for UBC to help support and inform the priorities of these partners, such as low carbon district energy solutions and decarbonizing buildings.
- **Focus on efficient funding sources:** Given the effort required and complexity of many external funding processes and reporting requirements, UBC should assess the effort vs. potential benefits and focus on opportunities that have a larger chance of success.
- **Get creative:** There are likely many other opportunities that will arise as CAP 2030 is implemented from an initial plan into concrete projects and programs over the next nine years. New and innovative approaches to resource and operationalize CAP 2030 will be critical, and sometimes this will require UBC staff and stakeholders to work outside traditional comfort zones. Leveraging interdisciplinary research partnerships internally will also expand funding opportunities.

### Potential financing opportunities

Potential opportunities to explore include but are not limited to:

- **UBC fundraising programs:** Explore potential fundraising projects or campaigns, e.g., to UBC's alumni and donor network, to help set up UBC as a leading low-carbon community.
- **UBC Sustainability Revolving Fund:** explore expansion of fund criteria to enhance decarbonization opportunities.
- **Canada Infrastructure Bank:** Continue discussions to assess the feasibility of debt financing for buildings and infrastructure projects.
- **Government Funding Opportunities:** Continue to monitor and investigate other existing and emerging federal and provincial government funding opportunities, aligning with resourcing needs.

### CAP 2030 implementation & resourcing outline

While investments are required to implement the CAP 2030 actions, some actions will have a positive return in investment, similar to past CAP projects such as the BRDF that had strong financial performance. The approach for operationalizing the CAP actions is summarized below:

- **Overall:** the investments in CAP2030 will help create teaching, learning and research (TLR) opportunities, attract research and innovation interest and funding, and positively impact campus wellbeing, UBC reputation and leadership and other co-benefits.
- **Capital projects** (new buildings) to be designed to new low carbon standards
  - o Use updated Life Cycle Costing (LCC) approach that incorporates ICP as a tool and guideline for decision making
  - o Research indicates this should have a positive long-term business case and co-benefits – however will entail higher capital costs
  - o The higher capital costs will impact project budgets, which will entail tough decisions. It will be critical to develop innovative solutions to support funding and avoid potential cutting of the high performance and low carbon components.
- **Building decarbonization retrofits**
  - o Similar to above, projects to use LCC with ICP to guide decision making on a case by case basis
  - o Depending on the project, low carbon retrofits may increase capital costs, and business cases will not always be positive
  - o Projects can be prioritized to leverage equipment end of life, address other building issues, and achieve co-benefits
  - o External/government funding will be sought to support these projects wherever possible
- **District energy low carbon solutions**
  - o Detailed feasibility study will recommend option(s)
  - o Costing studies will follow, and lead into the CAP 2030 Major Project Selection & Review process
  - o External/government funding will be sought to support these projects wherever possible
- **Extended impact emissions**
  - o Initial funding for first 2 years will focus on program scoping, development, capacity building across units and initial deployment
  - o Leverage existing UBC resources wherever possible, and leverage external funding whenever available
  - o Work toward clear outcomes
  - o Explore alternative funding models for future years

The following Table provides additional information, including general funding needs by type, opportunities to mitigate costs and improve the business case, and some potential funding sources that will inform CAP 2030 funding asks and resourcing going forward. The funding opportunities will evolve over the coming months and years as CAP implementation advances.

Project type & funding needs	Cost mitigation & business case considerations	Potential funding sources
<b>1. Operations: Infrastructure &amp; Buildings</b>	<ul style="list-style-type: none"> <li>• Reduce carbon liabilities created by escalating external carbon costs</li> <li>• Each project evaluated on a case by case basis</li> <li>• Apply LCC with ICP for decision making</li> </ul>	
<b>A. District Energy low carbon energy supply (e.g., large</b>	<ul style="list-style-type: none"> <li>• Diversify energy supply to reduce supply risk</li> </ul>	<ul style="list-style-type: none"> <li>• BC Hydro contributions to decarbonization studies</li> </ul>

<p><b>scale heat pumps, thermal storage)</b></p> <p>One or several major projects 2025 - 2030</p>	<ul style="list-style-type: none"> <li>• CAP 2030 Major Project Review &amp; Selection Process</li> </ul>	<ul style="list-style-type: none"> <li>• Government grants – e.g. federal</li> <li>• Research funding and Campus as a Living Lab opportunities</li> </ul>
<p><b>B. Existing Building Decarbonization Retrofits</b></p> <p>5-10 retrofit projects, 2022 – 2030+</p>	<ul style="list-style-type: none"> <li>• Leverage and align with other retrofit needs: deferred maintenance, seismic upgrades, heating equipment end of life</li> <li>• Avoid installing new fossil fuel-based equipment: more cost effective than retrofitting equipment prior to end of life (i.e. a new natural gas boiler is likely to need retrofitting before end of life to meet our GHG goals)</li> </ul>	<ul style="list-style-type: none"> <li>• Clean BC</li> <li>• Utility incentives/partnership</li> <li>• Sustainability Revolving Fund &amp;/or future Green Fund</li> <li>• Future Provincial funding related to Step Code</li> </ul>
<p><b>C. New Building Incremental Capital Costs (to meet GHG targets) 2022+</b></p>	<ul style="list-style-type: none"> <li>• Avoid installing new fossil fuel equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Explore funding models – e.g., develop an internal low carbon/green building fund</li> </ul>
<p><b>D. Funding for Community Energy &amp; Emissions Plan (CEEP) update</b></p>	<ul style="list-style-type: none"> <li>• To provide planning and focus for GHG reduction and adaptation in UBC’s Residential Neighbourhoods</li> </ul>	<ul style="list-style-type: none"> <li>• GPO/central funding for 1 Project Manager and consulting budget for a period of 2 years</li> <li>• Utility incentives &amp; funding</li> </ul>
<p><b>E. Permanent funding for existing term positions: Climate Action Planner and Green Labs Lead</b></p> <p>2022+</p>	<ul style="list-style-type: none"> <li>• Climate Action Planner oversees Climate Change Accountability Reporting (regulatory), manages CAP and facilitates implementation</li> <li>• Green Labs includes operational energy conservation and extended impacts emission reduction initiatives, leading to operational cost savings</li> </ul>	<ul style="list-style-type: none"> <li>• GPO/central funding</li> </ul>
<p><b>2. Extended Impacts Programs</b></p>		
<p><b>A. Scope and establish new programs</b></p> <p>Program development &amp; coordination, communications planning, capacity building, engagement and communications support</p>	<ul style="list-style-type: none"> <li>• Opportunities for cost savings/avoided costs – e.g., business air travel</li> <li>• Leverage and integrate within existing staff resources wherever possible</li> </ul>	<ul style="list-style-type: none"> <li>• GPO/central funding needed for core program development and capacity building</li> <li>• Potential opportunities for alternate funding models – e.g., user fees for furniture/equipment reuse program</li> </ul>
<p><b>B. Business air travel</b></p> <p>Engagement and behavioural change campaigning - Sustainable Travel Program with a goal to reduce UBC’s Staff &amp; Faculty business related GHG emissions</p> <p>Emissions tracking and annual reporting:</p>	<ul style="list-style-type: none"> <li>• Reduced travel costs across departments i.e. a 45% reduction in annual travel would result in approximately \$10m in annual travel savings</li> <li>• IT A/V upgrades to enable more virtual and hybrid activities have already started and may be funded already - TBD</li> </ul>	<ul style="list-style-type: none"> <li>• GPO/central funding</li> <li>• Future potential for offsets fund</li> </ul>

<ul style="list-style-type: none"> <li>- Integration with existing IT systems (e.g. Workday) &amp; processes</li> </ul>		
<p><b>C. Climate Friendly Food Systems (CFFS)</b></p> <p>1.Continuation of critical core project management to advance research to practice/policy:</p> <p>a)CFFS initiative development and implementation:</p> <p>b) Continuation and launch of new applied student research and development costs that produce demonstrable outcomes</p> <p>2. Operational Costs to support CFFS menu offerings</p> <p>3.Communications and Engagement -campaigning</p> <ul style="list-style-type: none"> <li>- Emissions tracking and annual reporting: Integration with existing business processes</li> </ul>	<ul style="list-style-type: none"> <li>• Helps maintain UBC's leadership position and global sustainability reputation</li> <li>• Significant co-benefits on other intersectional campus sustainability and wellbeing commitments, including human and ecological health and wellbeing.</li> <li>• Opportunities to leverage and highlight student-led research and interdisciplinary partnership opportunities that use CLL, contribute to key UBC Strategic Plan strategies including: interdisciplinary education, practical learning, student research, thriving communities, public relevance and knowledge exchange (e.g. SEEDS/Food Systems Project/Food Security Initiative)</li> <li>• Financial savings from capturing/recovering value of rescuable lost and wasted food</li> </ul>	<ul style="list-style-type: none"> <li>• GPO/central funding</li> <li>• Future potential for alternative funding sources</li> <li>• Internal/External research grants</li> <li>• CLL funding and resources</li> <li>• Resourcing opportunities from other planning and policy processes that support mutual/synergistic priorities (i.e. ZWAP Update, Wellbeing Strategic Framework)</li> </ul>
<p><b>D. Commuting</b></p> <p>Sustainable transportation program staff &amp; operating budget</p> <p>Program costs: to be offset by proposed parking levy</p>	<ul style="list-style-type: none"> <li>• Commuting emissions are the largest extended emissions area, with campus energy decarbonization these will become the largest source of emissions under a BAU scenario.</li> <li>• Significant impact on campus wellness for active transportation modes.</li> <li>• Efficient land use, as over time less space will need to be reserved for parking</li> </ul>	<ul style="list-style-type: none"> <li>• Proposed Sustainable Transportation parking levy to generate funding</li> </ul>
<p><b>E. Waste &amp; materials</b></p> <p>Reuse program administration costs; build and expand program incrementally based on KPIs</p> <p>Other waste-related costs TBD pending update to Zero Waste Action Plan</p>	<ul style="list-style-type: none"> <li>• Reuse generates savings to departments; could generate net savings to UBC</li> <li>• Potential revenue generation for some components</li> </ul>	<ul style="list-style-type: none"> <li>• GPO, and/or user pay to distribute some costs to departments (but must avoid dis-incentivizing departments from participating)</li> </ul>
<p><b>3. Complimentary Opportunities</b></p> <p><b>A. Climate Resilience &amp; Nature-Based Adaptation Solutions</b></p>	<ul style="list-style-type: none"> <li>• Nature-based solutions to climate mitigation and adaptation (through biodiverse ecosystems and ecosystem services like shading, carbon sequestration) present a low-</li> </ul>	<ul style="list-style-type: none"> <li>• Campus Vision 2050</li> <li>• Internal/External research grants</li> <li>• Campus as a Living Lab funding and resources</li> </ul>

	<p>cost alternative for climate action</p> <ul style="list-style-type: none"> <li>• Climate resilient ecosystems require less maintenance and irrigation, thus lowering operational costs to maintain campus landscapes.</li> <li>• Student-led research and interdisciplinary partnerships (e.g. SEEDS/CBIRD/CCUB) to highlight and leverage opportunities to maintain and enhance urban biodiversity</li> </ul>	
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**Governance and Process**

The CAP 2030 will require incremental funding over the 10-15 year horizon of the plan. The plan identifies strategic priorities and projects that are phased and calibrated to achieve demonstrable impacts and leverage external funding opportunities as they arise.

1. **Implementation planning:** Informed by the guiding principles and approach outline earlier, continue to develop, prioritize and refine a range of cost estimates and investment needs for CAP 2030 priority actions and projects.
2. **Engage OSSC:** The Operational Sustainability Steering Committee holds significant institutional knowledge and connections. The CAP 2030 project team will continue to engage the OSSC in vetting and guiding the implementation and resourcing of major CAP actions and projects.
3. **Start conversations with UBC Development and Alumni Engagement Office & the President’s Office:** The UBC Development and Alumni Engagement Office provides an opportunity to explore innovative approaches to support CAP 2030 resourcing.
4. **Continue and refine conversations with potential utility, government and other partners:** In addition to the CAP 2030 team, work with units involved in implementation to leverage the distributed approach to resourcing described earlier.

# Appendix B – CAP 2030 Unit Accountability Framework

## Context and purpose

Sustainability is a core value of UBC's Strategic Plan. Climate action grounded in climate justice is strategic priority of the university, and defining metrics and targets are critical tools for advancing climate action.

CAP 2030 requires a 'whole of university' distributed approach whereby every unit has a role and responsibility in ensuring it is integrating climate action into its day to day decision making, work programming and business processes.

The Framework provides a mechanism and process for UBC units to report on their progress and achievements toward UBC's Climate Action Plan 2030 Board-approved targets. It can be a process, an action, an activity, a physical space or piece of infrastructure, or even a program that is measured over time and can help evaluate progress from an existing condition or baseline).

The Framework is similar in concept to BC's Public Sector Climate Change Accountability Reports, which PSOs including UBC submit to the Province annually to report on progress toward carbon neutrality, but for UBC internally (the largest PSO emitter in BC).

## Who would submit the reports?

Departments or business units that are leading or playing significant roles in actions identified in the CAP 2030. These units have already been involved in development of the CAP actions.

## How would the process work?

- The CAP 2030 team/Campus & Community Planning would provide guidance and tools to units for confirming CAP 2030 actions, creating simple unit action plans, and reporting
- The unit confirms their committed actions, ideally by completing a unit action plan
- The unit director/manager agrees to integrate the assigned actions into work plans /programs with allocation of staff time and resources to ensure actions are advanced
- The unit manages and advances implementation of the actions internally
- The unit completes and submits a Climate & Sustainability report annually, likely in the months following fiscal year end.

## What would be in the report?

- Definition and scope of responsibility of that unit
- Progress and status of actions committed by the unit
- Identification of success factors, barriers or limitations, and recommendations or requests to enable increased progress.

- Key performance metrics, where applicable (identified in the unit action plan). These may be quantitative or qualitative, as appropriate and based on what can be reported easily and efficiently; qualitative elements could also include stories or case studies.
- Updated priority action plan for the following year.

## **Governance: who are units accountable to?**

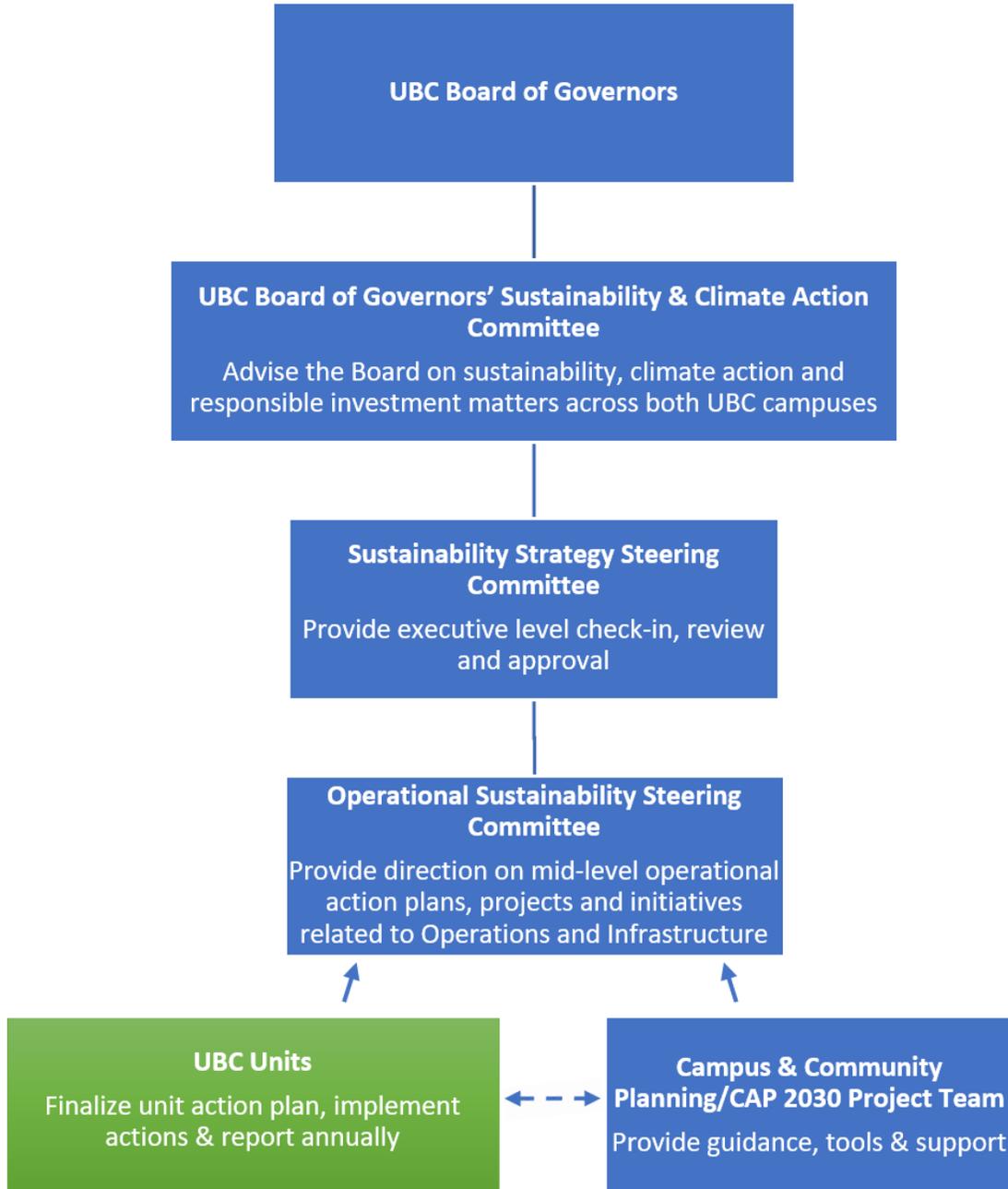
- Units would be accountable to the Operational Sustainability Steering Committee (proposed), to whom the annual reports would be submitted
- Refer to the Governance Chart in Figure 1 for more information.

## **Co-benefits and opportunities**

- Recognition and celebration of achievements by units or people demonstrating leadership and exemplary performance
- Supporting external sustainability reporting such as the Annual Sustainability Report and the emerging online sustainability metrics dashboard.

## **Related Policies and Programs**

Campus & Community Planning are also developing a complementary program to enable campus-wide, ground-level engagement on climate action and sustainability, with an anticipated launch in 2022. The program will serve as a clear roadmap for collective climate action, offering a customizable but standardized pathway for different groups within the UBC community (e.g. workplace units, laboratories, clubs) to prioritize and implement discrete, achievable actions to support UBC's sustainability and climate goals as well as concurrent institutional climate action.



**Figure 1 - Governance Chart – Unit Accountability Framework**

## Appendix C – UBC Internal Carbon Pricing Policy Guidelines

### Purpose

This document serves to guide low carbon decision making on capital investments and renewals to align with UBC Climate Action goals related to greenhouse gas (GHG) reduction, in addition to the provincial government's CleanBC Plan and Carbon Neutrality Act. In addition to GHG savings, implementation of Internal Carbon Pricing (ICP) will reduce UBC's exposure to future escalation of external carbon pricing, both federal and provincial, related to infrastructure decision making (primarily the external carbon pricing component within operating costs from energy consumption). The major users of this document would include project managers and consultants engaged in capital projects and renewals on both the Point Grey and Okanagan campuses.

### Types of Applicable Business Decisions

The value of applicable GHG emissions – through an internal shadow price – will be incorporated into lifecycle cost analyses for the following UBC projects or initiatives (Scope 1 and 2). Projects and initiatives have been calibrated to the UBC Green Building Action Plan (GBAP) Institutional Tier System where applicable:

UBC Project / Initiative	GBAP Tier
Energy supply decisions for buildings (e.g., utilities) including, but not limited to, natural gas, liquid petroleum products, propane, biomass, and electricity; applicable to both new and existing buildings and the district energy system (DES), e.g., the value of GHG emissions would be incorporated into decision-making related to switching to a different energy source	NA
Mechanical equipment renewal decisions, e.g., replacing a boiler or connecting to the DES	5
Energy conservation projects, e.g., building energy retrofits, programming and controls changes	4/5
New capital project planning, i.e., new, large projects with significant costs, such as new academic building	1/2
Building renewal projects, i.e., system renewal and large-scale building retrofits	3
Fleet purchases	NA

### Methodology

The ICP calculation is to be added as an additional criterion in capital and renewal decisions. All applicable analyses using lifecycle costing must include the carbon cost component – presented separately – associated with forecasted emissions stemming from a project, and must be embedded as a cost component in the schedule of cash flows. This can be accomplished in one of two ways:

1. As current lifecycle costing analyses account for existing provincial carbon taxes and offset mechanisms, the itemized breakdown would be replaced with a single carbon cost line which would equal the ICP price level. In this scenario, all existing and future external pricing instruments would be consolidated into this single line, and would therefore not be listed again as separate line items in the schedule of cash flows (see Example 1 below).
2. The status quo breakdown of carbon cost items would remain in place, with an additional line item added – representing the notional portion of the internal carbon price – which would equal the delta between the sum of all external carbon pricing instruments and the UBC internal carbon price level (see Example 2 below).

Irrespective of the scenario, the sum of all carbon costs must equate to the internal carbon price level. Individual users can exercise discretion with respect to the level of granularity of the carbon cost breakdown. It should also be noted that users must ensure that all relevant utility rates (including RNG) being used for forecasting do not have carbon costs included in them (i.e., commodity, delivery, and applicable taxes only). The UBC ICP should be applied to the same scope of GHG emissions as the BC Provincial Offsets, rather than the BC Carbon Tax (which applies to combustion sources only).

#### Example 1: Consolidating all carbon costs into one cost line, 2022

UBC Internal Carbon Price in 2022 (Only Cost Line)	\$250 per tonne of CO <sub>2</sub>
<i>Inclusive of:</i>	
UBC Shadow Price	\$175 per tonne of CO <sub>2</sub>
BC Provincial Carbon Tax	\$50 per tonne of CO <sub>2</sub>
BC Provincial Offset	\$25 per tonne of CO <sub>2</sub>

**Example 2: Itemized breakdown of all carbon costs, 2022**

BC Provincial Carbon Tax	\$50 per tonne of CO <sub>2</sub>
BC Provincial Offset	\$25 per tonne of CO <sub>2</sub>
UBC Shadow Price (\$250 - \$50 - \$25)	\$175 per tonne of CO <sub>2</sub>
<b>Total Carbon Cost in 2022</b>	<b>\$250 per tonne of CO<sub>2</sub></b>

As Example 1 illustrates, an internal carbon price of \$250 per tonne of CO<sub>2</sub> is inclusive of all current and UBC-relevant carbon pricing policies. In this example, as a lifecycle cost model is developed, the only cost component to be reflected in the schedule of cash flows for 2022 would be \$250 per tonne of CO<sub>2</sub>; as such, a separate cost line for the BC Provincial Carbon Tax or the BC Provincial Offset would not be included, otherwise the figures would be double-counted and therefore erroneously inflate the financial projections. On the other hand, as Example 2 shows, in this scenario all the carbon cost items are itemized, with an internal notional price of \$175 added in order to bring the total up to \$250 per tonne of CO<sub>2</sub>. Again, irrespective of the scenario, the total carbon cost remains the same.

The interface between new federal carbon taxes and existing provincial carbon taxes is unclear at this point; whether the federal carbon tax is superimposed on the existing BC carbon tax or if the BC carbon tax is raised to meet the federal standard remains to be determined. Irrespective of the outcome, the UBC internal carbon price will be inclusive of all federal and provincial instruments – i.e. it represents a total carbon price ceiling. With respect to the implicit costs associated with carbon regulations under the CleanBC strategy (e.g., the Renewable Gas Standard), the UBC internal carbon price will be inclusive of carbon costs associated with said regulations until they are adequately reflected in the respective utility rates.

**Price Level**

The UBC internal carbon price level is set at \$250 per tonne of CO<sub>2</sub>. The ICP price of \$250 / tonne was set to help UBC mitigate future financial risk in future carbon regulations (forecasted to escalate to around \$250 by 2030) and to provide a solid business case to shift capital investments to low-carbon options. The ICP price has been informed by leading practice by local, regional and federal governments.

The pricing level will continue to be in place unless all federal and provincial policies and regulations exceed the UBC ICP price level in a given year, at which point, the carbon price will simply equal the sum of all applicable external pricing instruments (see Example 3 below). For cash flows corresponding to years beyond 2030, the UBC internal carbon price will be held flat at \$250, i.e., \$250 per tonne of CO<sub>2</sub> in 2031, \$250 per tonne of CO<sub>2</sub> in 2032, etc., assuming the sum of all government policies do not exceed this amount, otherwise the latter amount will supersede the \$250 value. A mid-point check-in for reassessing the pricing level is proposed for the 2023-2025 period. This check-in will seek to determine potential price escalation beyond 2030, if still required.

All associated cash flows will be discounted at a rate of 5.75%, consistent with UBC cost of capital and general principles underscoring UBC financial projections.

**Example 3: External pricing instrument escalation and implications on UBC internal carbon price**

	<b>Scenario A: lower external price escalation</b>	<b>Scenario B: higher external price escalation</b>
Year	2026	2026
UBC Internal Carbon Price (\$ per tonne of CO <sub>2</sub> )	<b>\$250</b>	<b>\$250</b>
All External Pricing Policies, Sum Of (\$ per tonne of CO <sub>2</sub> ):	<b>\$160</b>	<b>\$260</b>
BC Provincial Carbon Tax	\$50	\$130
Incremental Federal Carbon Tax	\$60	\$80
BC Provincial Offset	\$25	\$25
Renewable Gas Mandate	\$25	\$25
<i>Applicable Carbon Price (\$ per tonne of CO<sub>2</sub>)</i>	<b>\$250</b>	<b>\$260</b>

As Example 3 illustrates, the applicable carbon price incorporated into lifecycle costing analyses will be the greater of the price as per the UBC internal carbon pricing level above or the sum of all federal and provincial pricing policies and regulations for that given year. In Scenario A of this example, since the sum of all external instruments only equals \$160, the carbon price of \$250 is applied – as per the UBC internal pricing level – to achieve federal and provincial climate targets for 2030. In Scenario B, all external instruments render a value (\$260) that exceeds the corresponding UBC internal pricing

level (\$250), and would therefore supersede it. In such an escalation scenario, UBC would re-assess the internal carbon pricing policy to determine if it would be necessary to increase to achieve its Climate Action Goals. If the external pricing instruments help achieve UBC's goals, then the ICP would no longer apply.

### **Decision-Making Process**

The results of lifecycle costing analyses with an internal carbon price must be interpreted in concert with broad-based institutional factors (e.g., available project funding); in other words, the decision is rarely clear cut, and would be considered among a broader set of decision-making criteria. When developing project budgets, it is critical to factor the impact of carbon pricing on proposals, as well as the alignment to institutional strategic goals and climate action targets.

To assist with decision-making, several scenarios have been presented for consideration. It should be that the 'proxy component' of the total internal carbon price refers to the portion of the carbon price that raises the sum of all external pricing instruments to the \$250 UBC shadow price on carbon:

<b>Scenario</b>	<b>Impact of Internal Carbon Pricing</b>	<b>Decision</b>
Scenario 1	The results of a lifecycle costing analysis point to the low carbon solution as being the lowest cost, with or without the proxy component of the total carbon price.	UBC should pursue the low carbon solution, for both environmental and financial reasons.
Scenario 2	The results of a lifecycle costing analysis point to the low carbon solution as being the lowest cost with the proxy component of the total carbon price, but not the lowest cost without the proxy component.	UBC should pursue the low carbon solution, for both environmental and long-term financial reasons.
Scenario 3	The results of a lifecycle costing analysis point to the low carbon solution as not being the lowest cost, with or without the proxy component of the total carbon price.	Generally, given the financial implications of such a result, UBC does not necessarily have to pursue the low carbon solution. Again, UBC can exercise discretion and choose the low carbon solution if it was needed to achieve emission reduction targets or if other associated benefits could be realized.

### **Business Case Example for Illustrative Purposes**

Analysis of the following case study, illustrates the impact of an internal carbon price on the decision to replace a natural gas boiler (like-for-like) in the Robert F. Osborne Centre (OSBO), or to connect to the Academic District Energy System (DES) altogether. A decision was made to replace the boiler, like-for-like. However, when accounting for the impacts of climate change using ICP, the decision would favour connecting to the DES, instead.

As Table 1 demonstrates, ICP is added to the energy price<sup>1</sup> which increases the total energy costs depending on the fuel sources and consumption. The present value of this energy cost in concert with the present value of capital expenditures and maintenance cost renders a lifecycle cost that is more indicative of the true cost of the decision over a 15-year time span. Figure 1 shows that without an internal carbon price, the decision would favour a like-for-like replacement; with an internal carbon price applied, however, the decision favours switching to the DES. In this case, with an internal carbon price applied, the present value of all costs to switch to the DES is approximately \$136K, i.e. incorporating ICP provides a positive business case (Net Present Value = \$136K) for switching to the DES compared to a like-for-like natural gas boiler replacement.

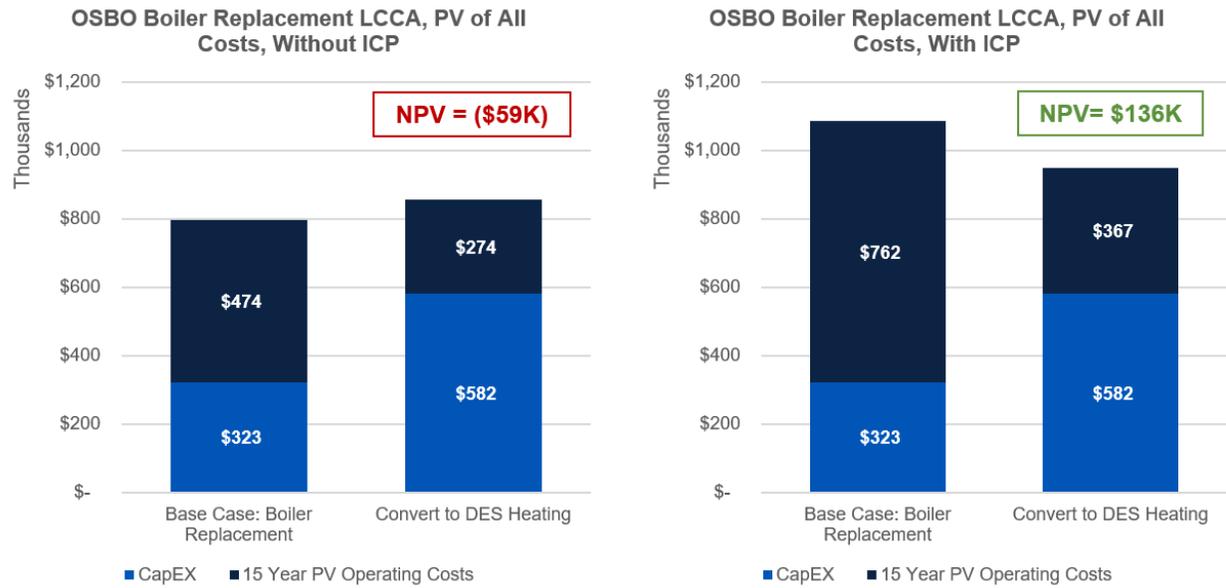
It should be noted that ICP, as a proxy price, does not directly entail money changing hands, it provides clarity as to which option may be chosen. In this case, the option to switch to the DES incurs higher initial capital expenditures compared to like-for-like replacement (\$323K vs. \$582K); however, considering all costs (capital, energy and maintenance costs), switching to the DES is more favorable.

**Table 1: Energy Cost Comparison of Options for the Robert F. Osborne Centre (OSBO)**

FY2021 Energy Rate (\$/GJ)	Option 1: Natural Gas Boiler Like-for-Like Replacement	Option 2: Switch to DES	
	Natural Gas Rate 25	Natural Gas Rate 22	Biomass
Energy Price (\$/GJ)	7	6	4
Provincial Carbon Tax (\$/GJ)	2	2	0
Carbon Offset (\$/GJ)	1	1	0
ICP Net of Provincial Carbon Tax <sup>2</sup> (\$/GJ)	6	6	0
Total Energy Rate without ICP (\$/GJ)	10	9	4
Total Energy Rate with ICP (\$/GJ)	16	15	4
Energy Consumption (GJ/Year)	3,220	1,038	2,292

<sup>1</sup> Inclusive of carbon offset.

<sup>2</sup> Equals to the lifecycle carbon intensity of each fuel multiplied by carbon price. For illustrative purposes, this business case is based on the following assumptions: carbon price is \$250/t-CO<sub>2</sub>e in FY20 inclusive of provincial carbon tax, escalated by \$5/year; provincial carbon tax is \$40/t-CO<sub>2</sub>e in FY20, \$45/t-CO<sub>2</sub>e in FY21, and \$50/t-CO<sub>2</sub>e afterwards; both options include existing provincial carbon tax; commodity prices inclusive of delivery and taxes.



**Figure 1:** Present Value of Total Cost Comparison of Options for the Robert F. Osborne Centre (OSBO)

*Note: PV of operating costs = PV of energy cost + PV maintenance costs*



# UBC Vancouver Climate Action Plan 2030

## Public Engagement Summary Report

June 2021



THE UNIVERSITY OF BRITISH COLUMBIA

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    FIRST AND FOREMOST, WE HEARD BROAD SUPPORT, INTEREST AND PASSION ABOUT UBC’S CLIMATE AND SUSTAINABILITY AGENDA. IT WAS CLEAR FROM THE SUBMITTED FEEDBACK THAT THE UBC COMMUNITY IS ALREADY VERY ENGAGED IN A DIVERSITY OF CLIMATE-FRIENDLY INITIATIVES AND HAS MANY CREATIVE AND INNOVATIVE IDEAS FOR HOW THEY AND THE UNIVERSITY CAN CONTINUE TO SUPPORT THE REGION IN CLIMATE LEADERSHIP..... 3

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# Executive Summary

## Climate Action Planning at UBC

In December 2019, [UBC declared a climate emergency](#), which included a commitment to accelerate the reduction of emissions at UBC Vancouver and UBC Okanagan. A key step is UBC's development of a Climate Action Plan 2030 (CAP 2030) for both campuses.

CAP 2030 at UBC Vancouver is building on earlier [climate action plans](#) and successes in climate change mitigation and action, which have resulted in significant emissions reductions from core operations. However, CAP 2030 is enabling UBC to accelerate the pathway to becoming net zero through clean energy solutions and energy-efficient technologies, as well as identifying new ways to reduce emissions in areas that every university community member has influence over including commuting, food, waste, and business air travel.

[Emerging directions and draft targets for CAP 2030](#) were presented to the Board of Governors in February 2021. The final CAP 2030 will be presented to the Board of Governors in November 2021 and will incorporate direction from the Board of Governors, refinement of targets and actions through on-going studies, as well as input received through public engagement.

## CAP 2030 Public Engagement

From March 29 – April 16, 2021, UBC's Campus and Community Planning held a university-wide engagement process on CAP 2030. This engagement process was an opportunity for UBC community members to learn about the emerging CAP 2030, ask questions, and share perspectives. Engagement took place on both UBC campuses; however, this report focuses on the Vancouver campus. Please visit [here](#) for more information about the UBC Okanagan CAP 2030 engagement.

### Engagement Activities

We heard from a total of **764 participants** through three virtual engagement activities:

- **Online Survey (627 participants):** The online survey was a chance for the UBC Vancouver campus community to submit feedback about the CAP 2030 emerging directions and targets as well as provide insights about the barriers and opportunities for climate action on campus.
- **Virtual Open Houses (92 participants):** Two virtual open houses were held for the Vancouver campus community to connect with the CAP 2030 team over Zoom, watch a presentation and have a Q&A with UBC staff and the planning project team.
- **Speaker Event (45 participants):** A cross-campus staff event was held over Zoom and included small breakout sessions for staff to have detailed discussions on the CAP 2030 emerging directions and targets.

## What We Heard

Through our online survey and virtual events, we heard feedback from participants about the emerging CAP 2030, and the barriers and opportunities for climate action on campus. Feedback was focused specifically around five areas focused on indirect emissions (called “extended impacts”): (1) engagement, (2) commuting, (3) UBC business-related air travel, (4) climate-friendly food systems, and (5) waste. The main themes that we heard during the CAP 2030 public engagement are summarized in the infographic and paragraphs below, with more detailed information in the Appendices at the end of this report.

# THEMES WE HEARD



### Support for UBC Continuing to be a Climate Leader

First and foremost, we heard broad support, interest and passion about UBC’s climate and sustainability agenda. It was clear from the submitted feedback that the UBC community is already very engaged in a diversity of climate-friendly initiatives and has many creative and innovative ideas for how they and the university can continue to support the region in climate leadership.



### **Support for a Hybrid Approach to Working and Learning**

The top comment we received overall was strong support from UBC students, faculty, and staff for a hybrid approach to working and learning following the COVID-19 pandemic. Participants felt strongly that a mixture of remote and in-person activities was the best way to reduce greenhouse gas emissions from commuting, while contributing positively to individual health and wellbeing.



### **Promote Climate Justice, Fairness and Affordability**

Another theme we heard was about ensuring aspects of equity, fairness, and justice are integrated across all CAP 2030 focus areas. This theme was related to a number of topics, such as sustainable divestment, Indigenous partnerships, and acknowledging the intersectionality of climate change impacts. Additionally, students emphasized the need for climate actions that are affordable.



### **Encourage a Climate-Friendly Culture Shift**

There was significant interest amongst participants to use CAP 2030 to incite a culture shift towards more climate-friendly actions and behavior. Feedback included the desire for UBC leadership to lead by example (especially around air travel), holding UBC partners and vendors to a high environmental standard, and strong support for systemic UBC change, in addition to individual behavior change.



### **Design for Long-Term Climate Impact**

A final theme heard from participants was about designing our campus buildings and green spaces to be adaptive to climate changes over the long-term. Notably, feedback surrounded landscape stewardship, green space protection, and thermal comfort considerations for buildings.

## **Next Steps**

The ideas and feedback collected from this public engagement process about the emerging CAP 2030 directions and targets, in combination with further technical work to refine the targets and actions, will inform the final CAP 2030 to be presented to the Board of Governors in November 2021.

# Appendix I – Engagement Process Summary

## Engagement Process

The UBC Vancouver Climate Action Plan 2030 public engagement was held March 29 – April 16, 2021. Community members participated through an online survey, virtual open houses and a virtual Hot Lunch cross-campus staff event.

This engagement process was guided by Campus and Community Planning’s [Engagement Principles](#) laid out in the Engagement Charter. These ten principles define how we engage the public and campus community in the planning and development of our campus, as well as collaborating and partnering on community programs and services.

In total, **764 people participated** in this engagement, either attending the virtual events and/or completing the online survey. Our engagement summary is as follows:

- **92 people** attended a virtual public open house via Zoom.
- **627 people** completed the online survey.
- **45 people** participated in the Hot Lunch staff event.

The online survey questions and detailed feedback analysis are included in Appendix II and verbatim survey responses are included in Appendix III.

### Online Survey

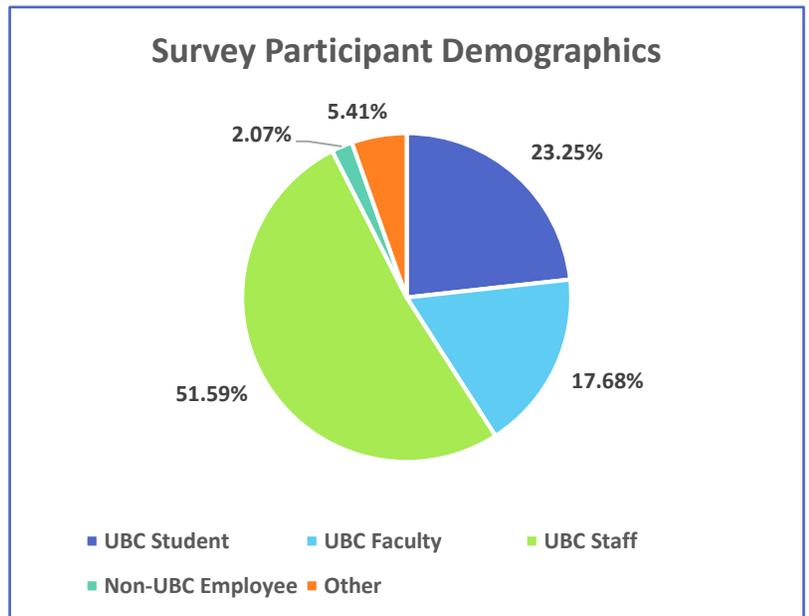
The online survey was a chance for the Vancouver campus community to submit feedback about CAP 2030 emerging directions and targets, as well as provide insights about the barriers and opportunities for climate action on campus. The majority of survey respondents were UBC staff (52%) and UBC students (23%).

### Virtual Open House

The virtual public open houses were held on March 30 and April 7, 2020 over [Zoom](#). These events started with a 20-minute CAP 2030 presentation, but then were drop-in style events where participants met for a Q&A with UBC staff and the planning project team.

### Speaker Event

The public engagement process was also supplemented with a Hot Lunch speaker event, where John Madden, Director of Sustainability & Engineering at Campus + Community Planning, presented an overview of CAP 2030. This event was held over Zoom on March 31, 2021 and included small breakout sessions for staff to have detailed discussions on the CAP 2030 emerging directions and targets.



## Appendix II – Detailed Survey Results

This section outlines what we heard from the Vancouver Climate Action Plan 2030 online survey that was conducted between March 29 – April 16, 2021.

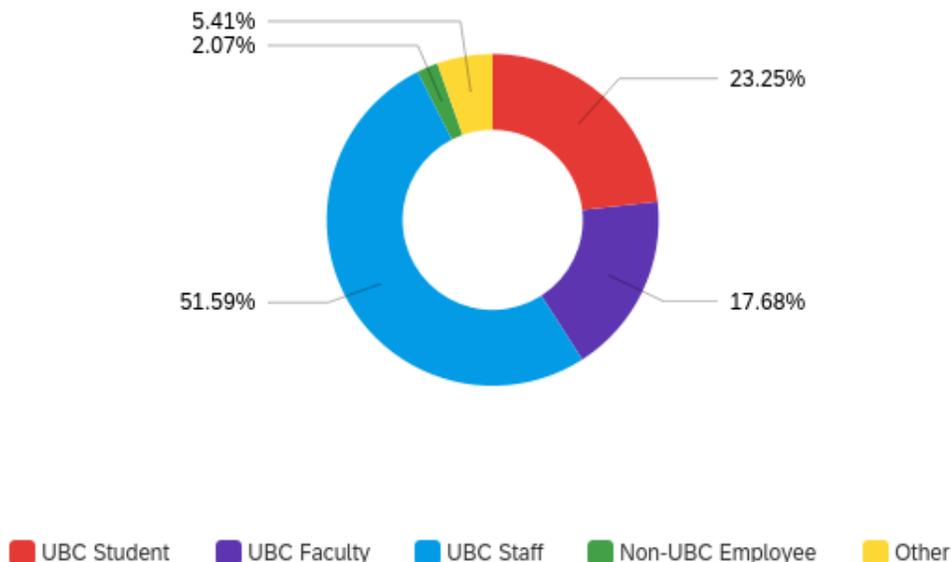
Both qualitative and quantitative feedback were collected through the online survey. The quantitative feedback is summarized below in a number of different charts and visualizations. This data was collected through multiple choice and Likert scale questions, with options to add text entries under “Other” for most questions. It is important to note that most questions had the option to “select all that apply,” so percentages of responses will not sum up to 100%.

The qualitative verbatim responses collected were reviewed and themed according to the sentiment of each comment. Top themes for open-ended survey questions are highlighted in the tables at the end of this Appendix. These include themes with an occurrence rate of 5% or more of the total number of comments for each question.

The top themes heard in the following charts and tables were collected and analyzed to develop the key takeaways for what we heard in the Executive Summary of this report. Responses to multiple choice, ranking and “other” text entry questions were combined with open-ended question responses to identify the top opportunities and barriers to specific climate actions for the Vancouver campus.

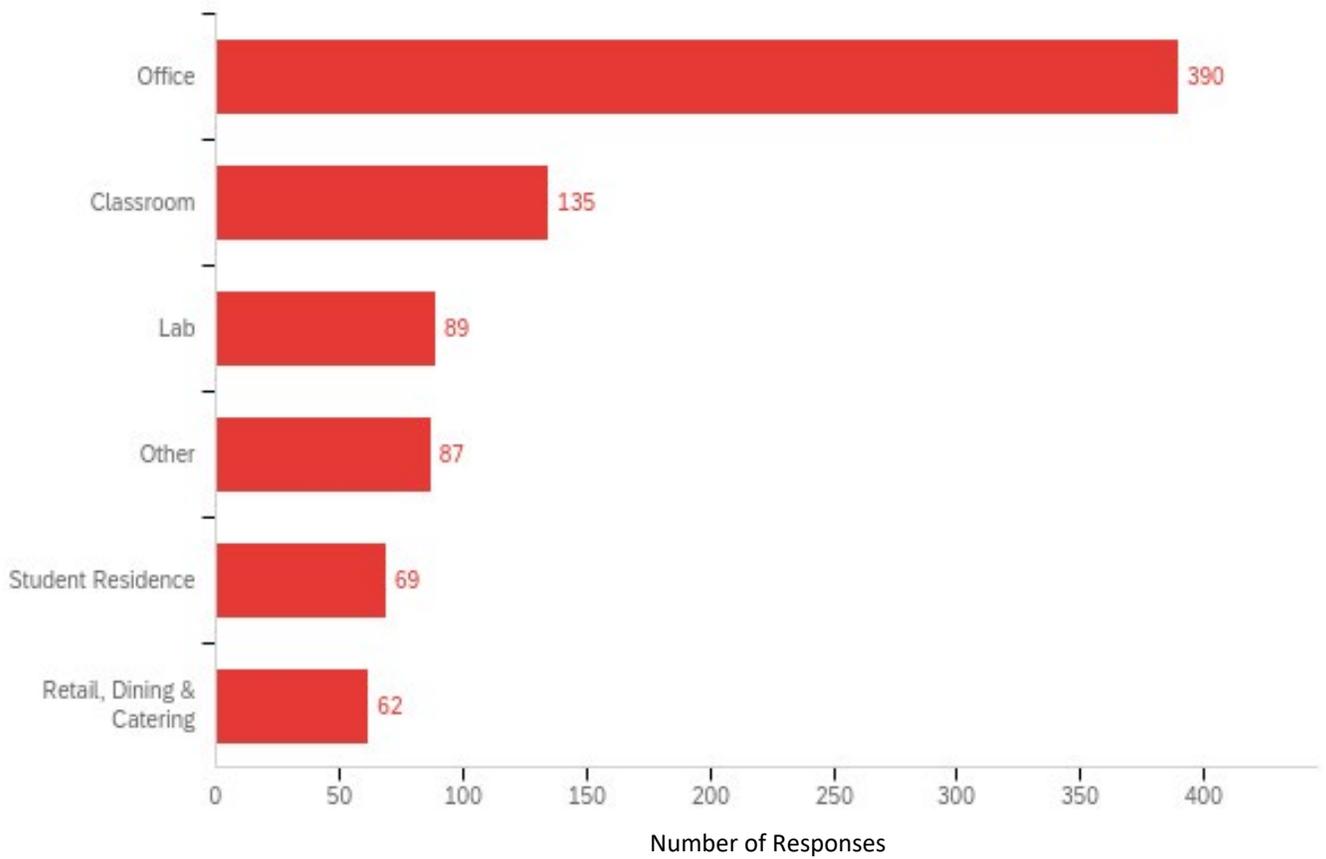
### Section 1: Demographics

#### 1. What is your primary connection to UBC?



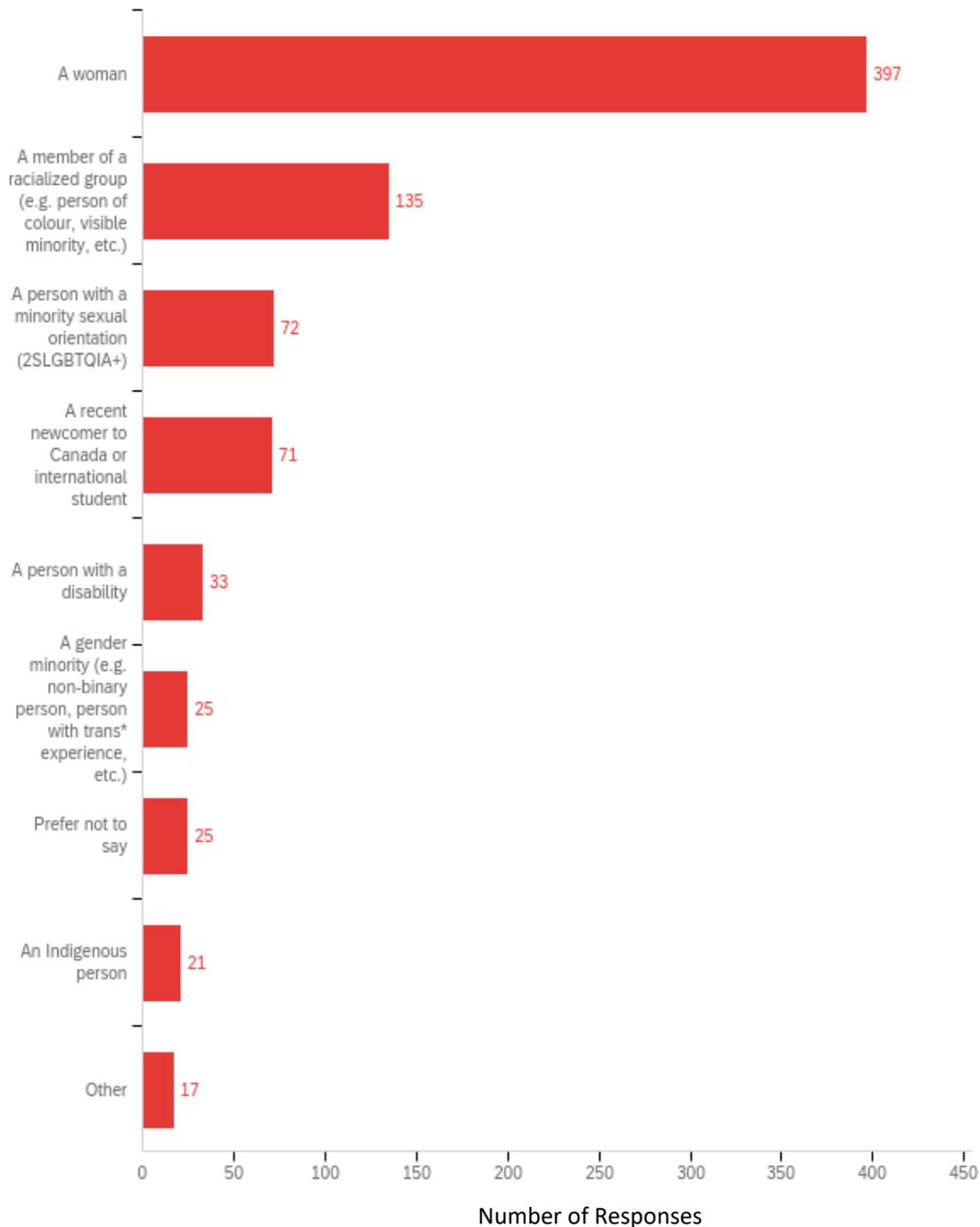
Other: Alumni, multiple affiliations and emeritus professors.

**2. When not based remotely due to COVID, where do you spend the majority of your time on campus? (Select all that apply)**



Others: Library, retired/home, recreation facilities, hospital.

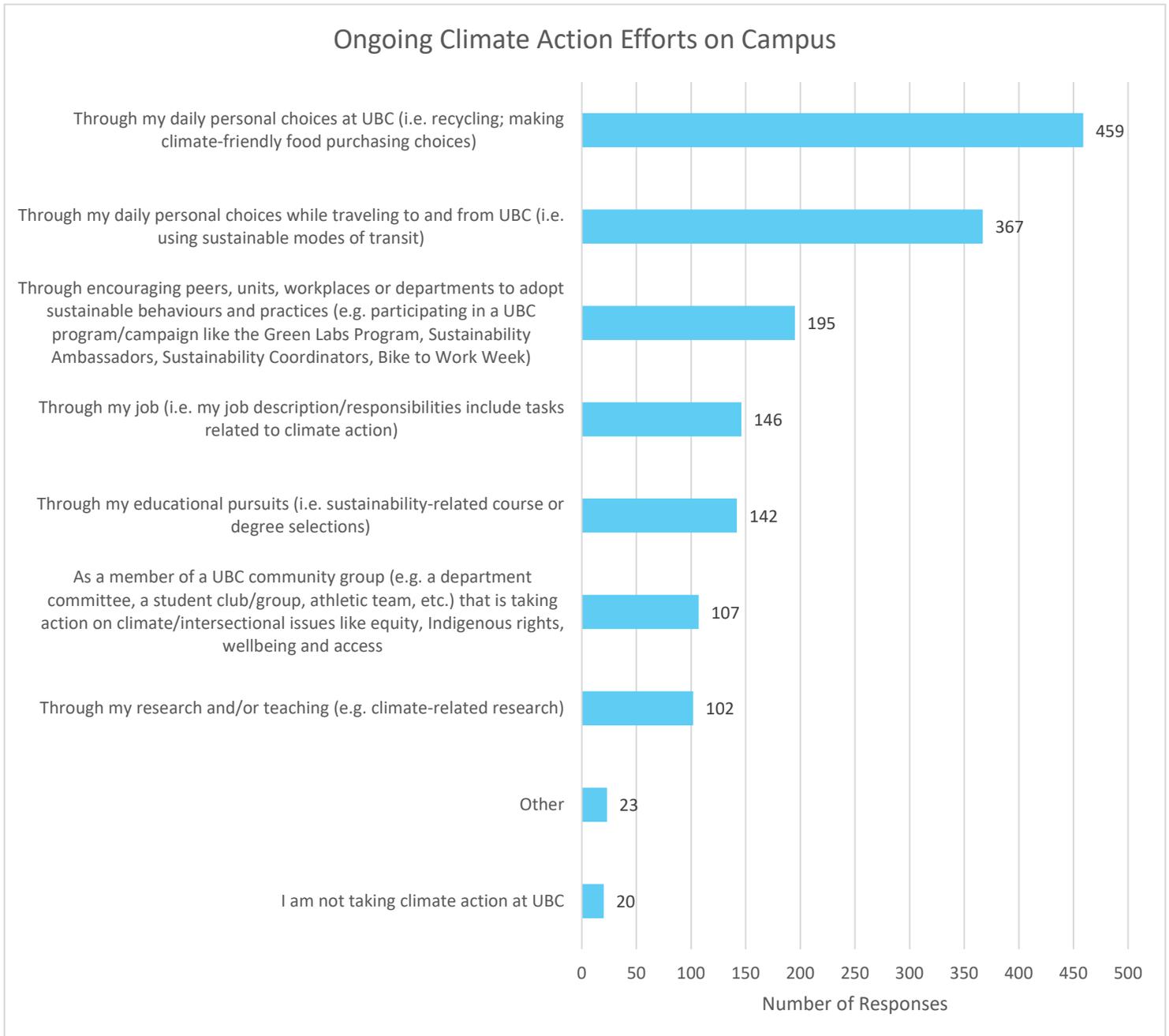
**3. UBC is interested in knowing whether the voices of groups who have been historically, persistently, or systemically marginalized are represented in this engagement process. Do you self-identify as (select all that apply):**



Others: Mental and physical health issues, mothers and carers.

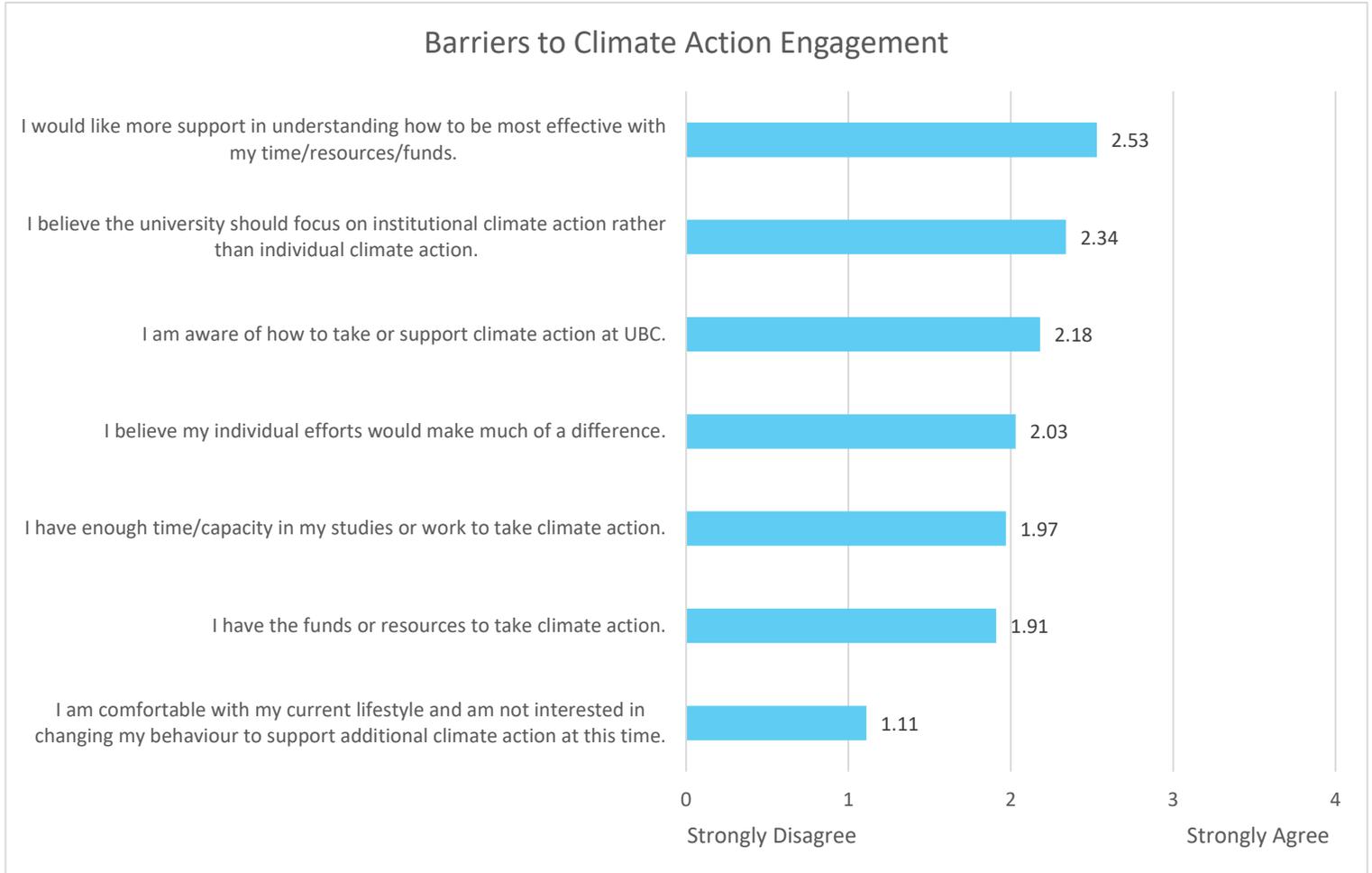
## Section 2: Engagement

- 1. We recognize that many efforts to address the climate crisis are already ongoing across UBC’s campus. How have you been taking climate action and/or supporting others to take climate action at UBC? (Select all that apply)**



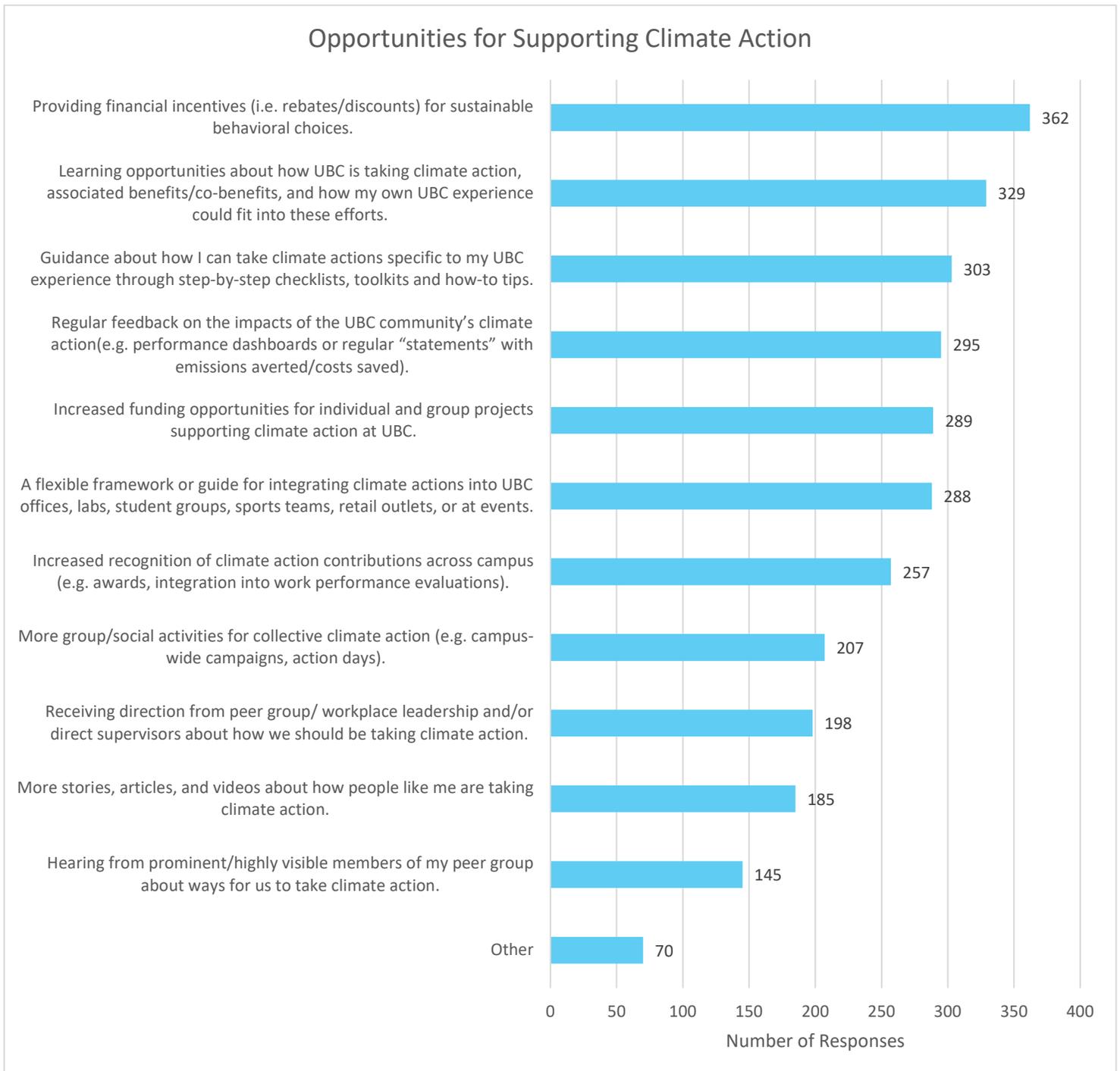
Other: Shop at UBC Farmers Market, participate in campus campaigns and rallies, supporting others to make climate friendly choices, working from home,

**2. To help us understand the barriers (all/if any) to taking general climate action at UBC that you have experienced, how much would you agree or disagree with the following statements (0=Strongly disagree, 4=Strongly agree):**



Other: Change needs to include levels of government, divestment, green jobs training, university needs to implement institutional actions in addition to actions by individuals, UBC leadership should lead by example.

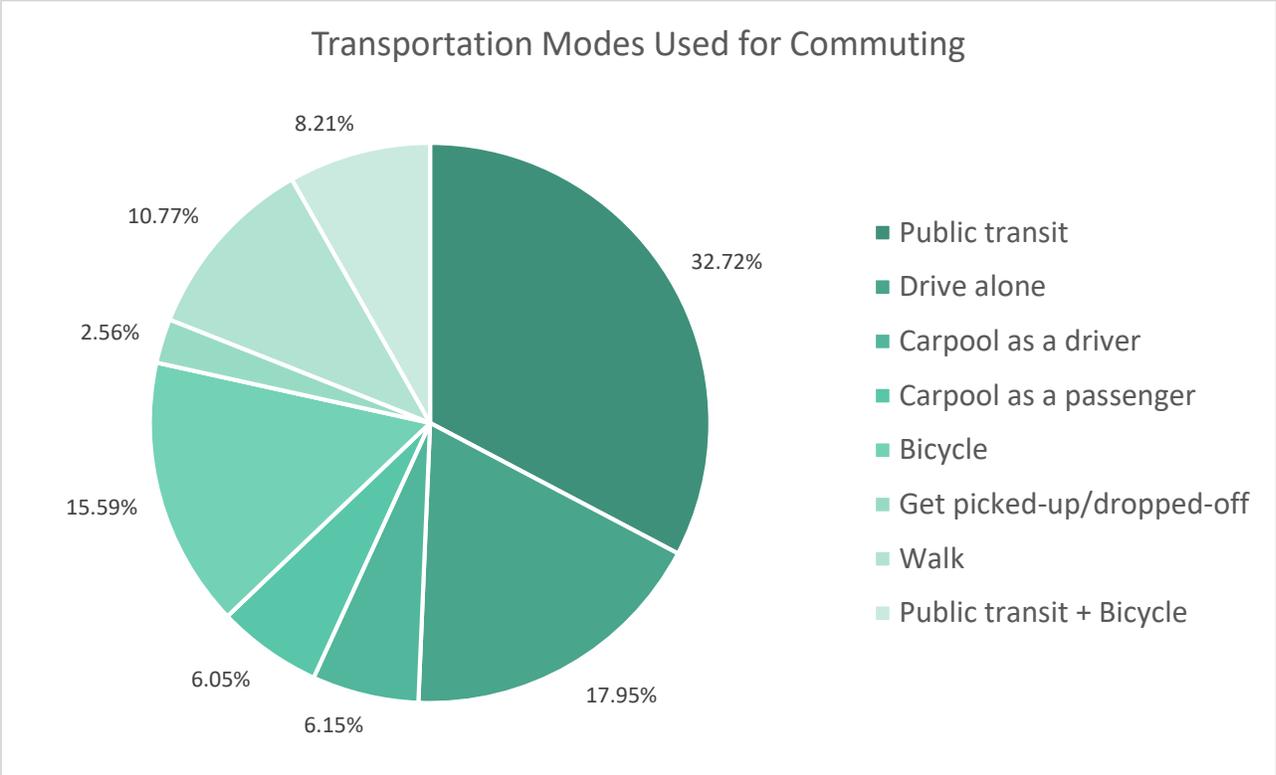
**3. Which of the following options would be helpful in supporting you to take climate action at UBC? (Select all that apply)**



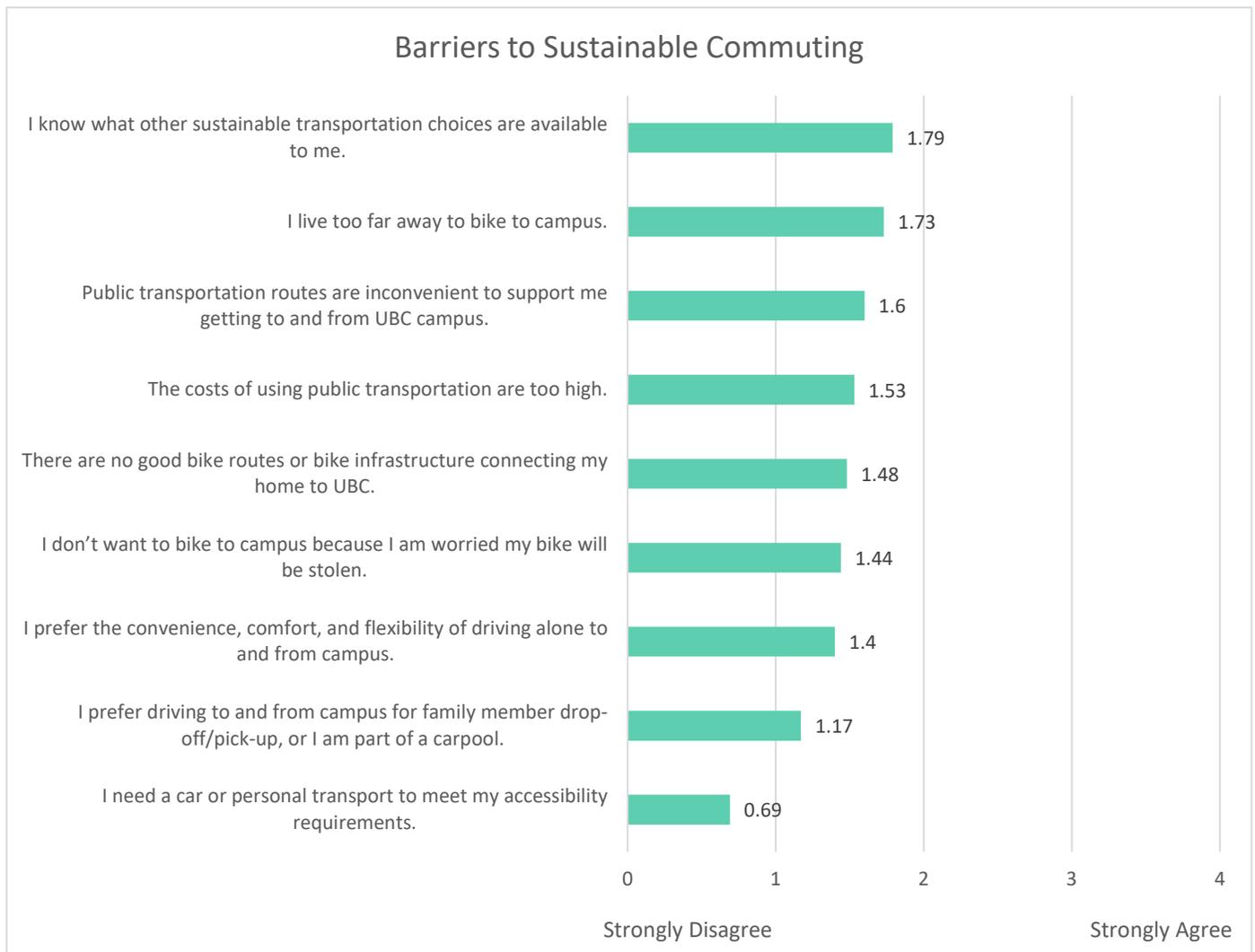
Other: Encourage working from home, more plant-based food options, funding for climate research and carbon neutral infrastructure, clearer information about how to get involved.

### Section 3: Commuting

1. Pre-COVID, which modes of transportation did you use to commute to and from campus? (Select all that apply)

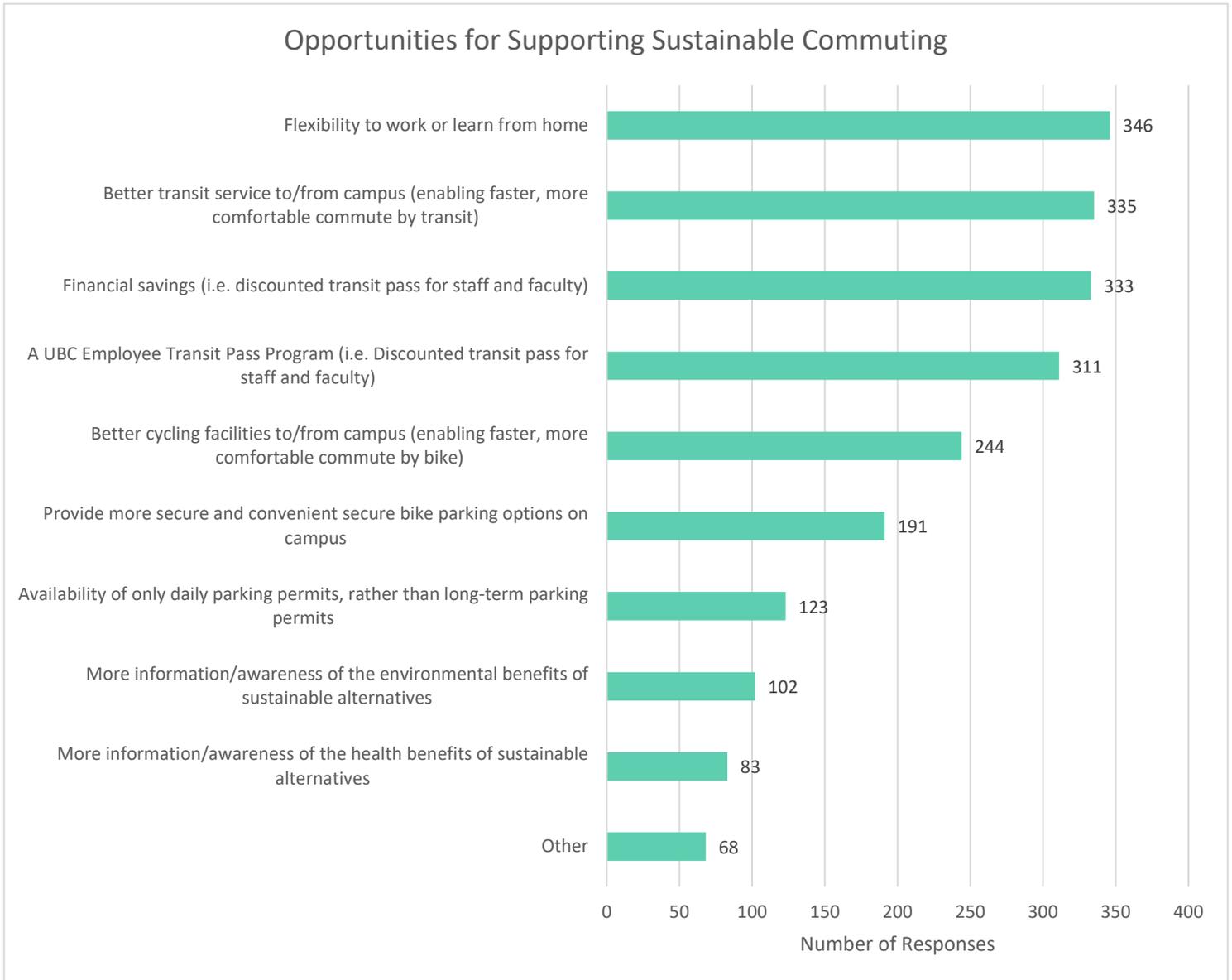


**2. To help us understand the barriers to sustainable commuting pre-COVID, how much would you agree or disagree with the following statements:**



Other: Need a car for accessibility or pick-up/drop-off, public transit is inconvenient, drive an electric vehicle, lack of end-of-trip facilities.

**3. Which of the following options would support you in selecting more sustainable commuting alternatives to and from UBC’s campus? (Select all that apply)**

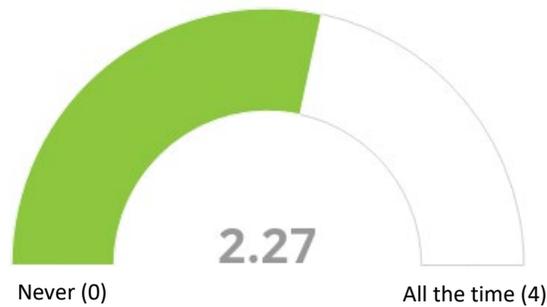


Other: Provide better end-of-trip facilities, encourage remote work, financial incentives to take public transit or use electric vehicles/bikes, increase safety of bike lanes, accelerate the SkyTrain extension to campus.

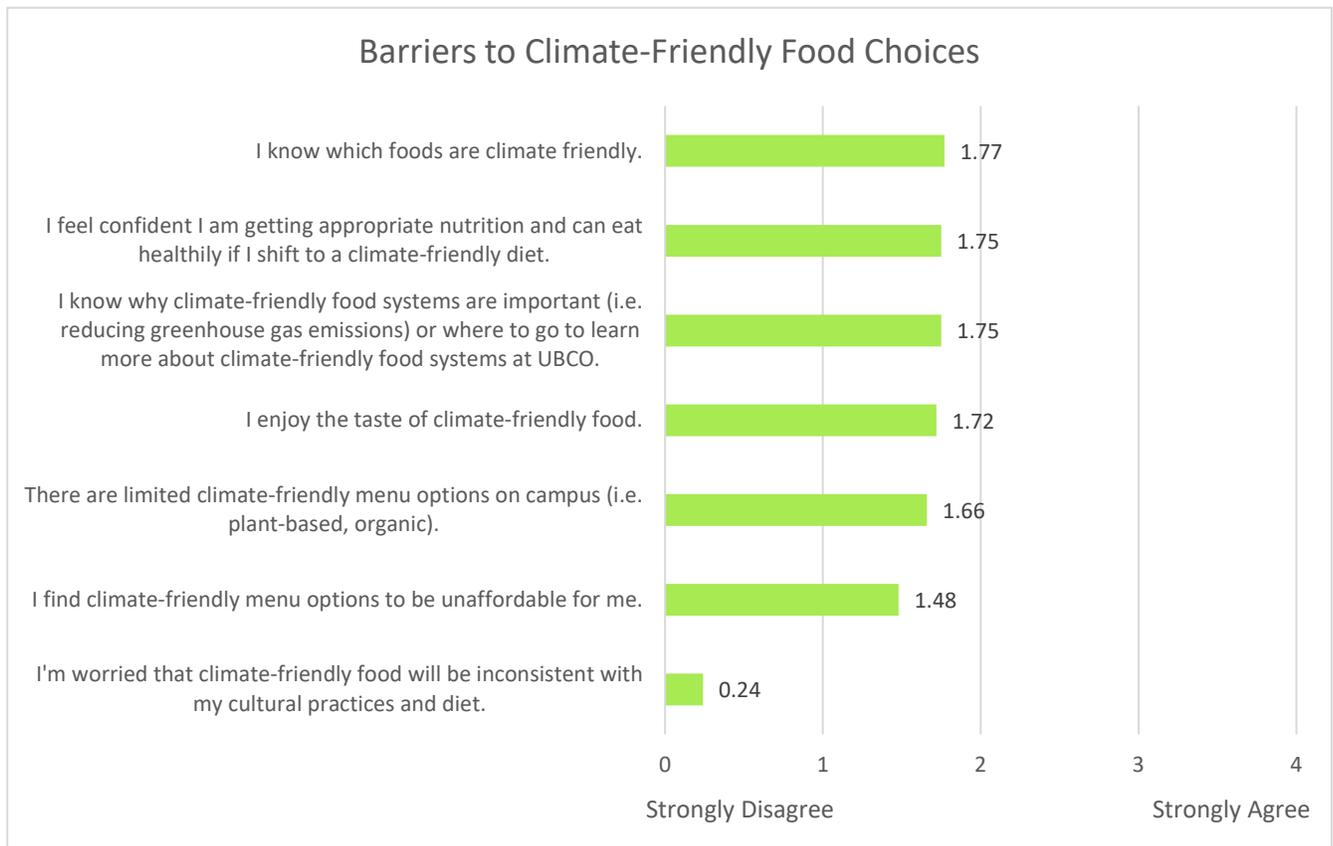
## Section 4: Climate-Friendly Food

1. As a UBC community member, how often do you eat climate-friendly foods (i.e. plant-based, organic, local)?

Respondents said that on average they ate climate-friendly foods some of the time.

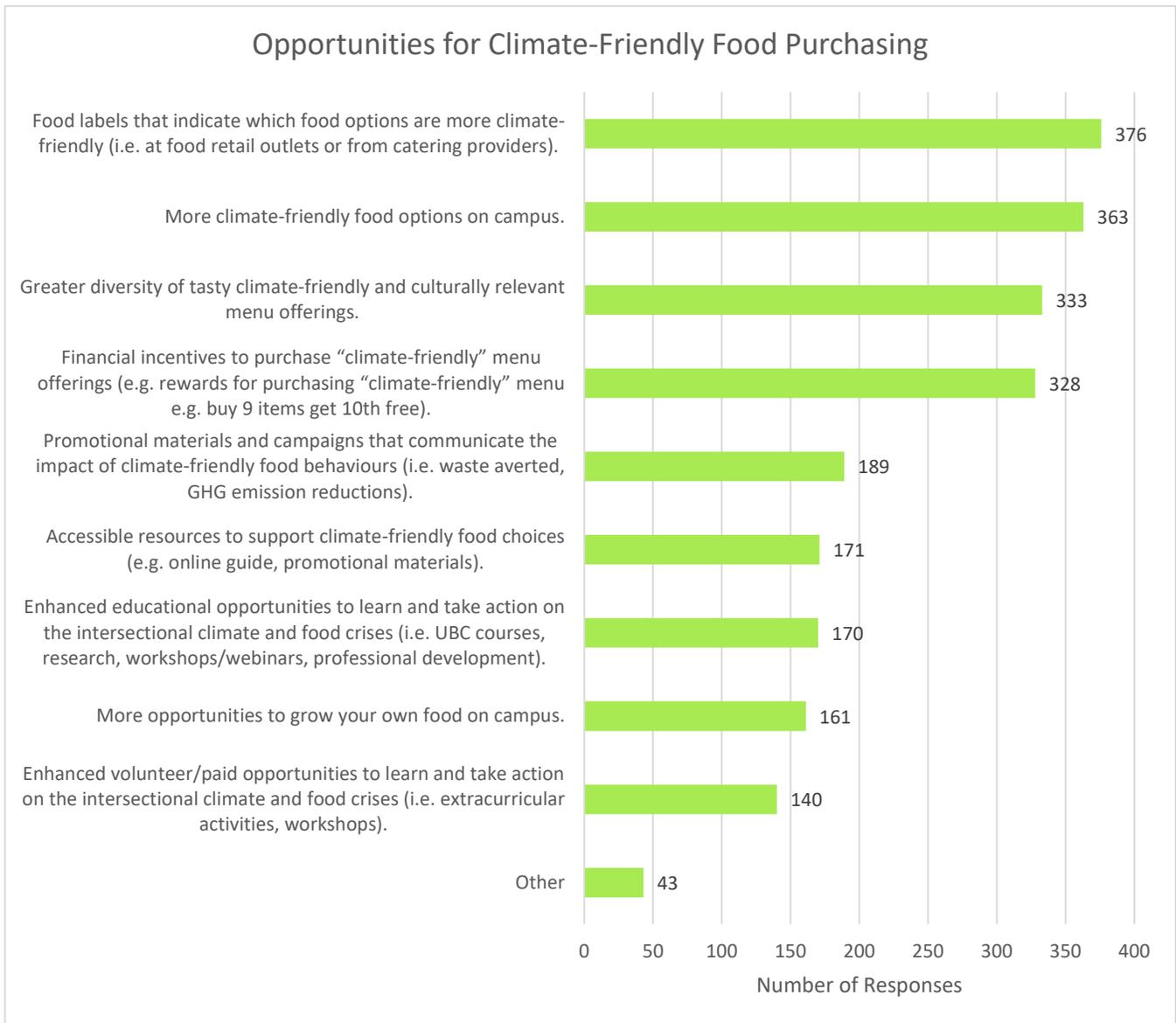


2. To help us understand the barriers to making climate-friendly food choices at UBC pre-COVID, how much would you agree or disagree with the following statements:



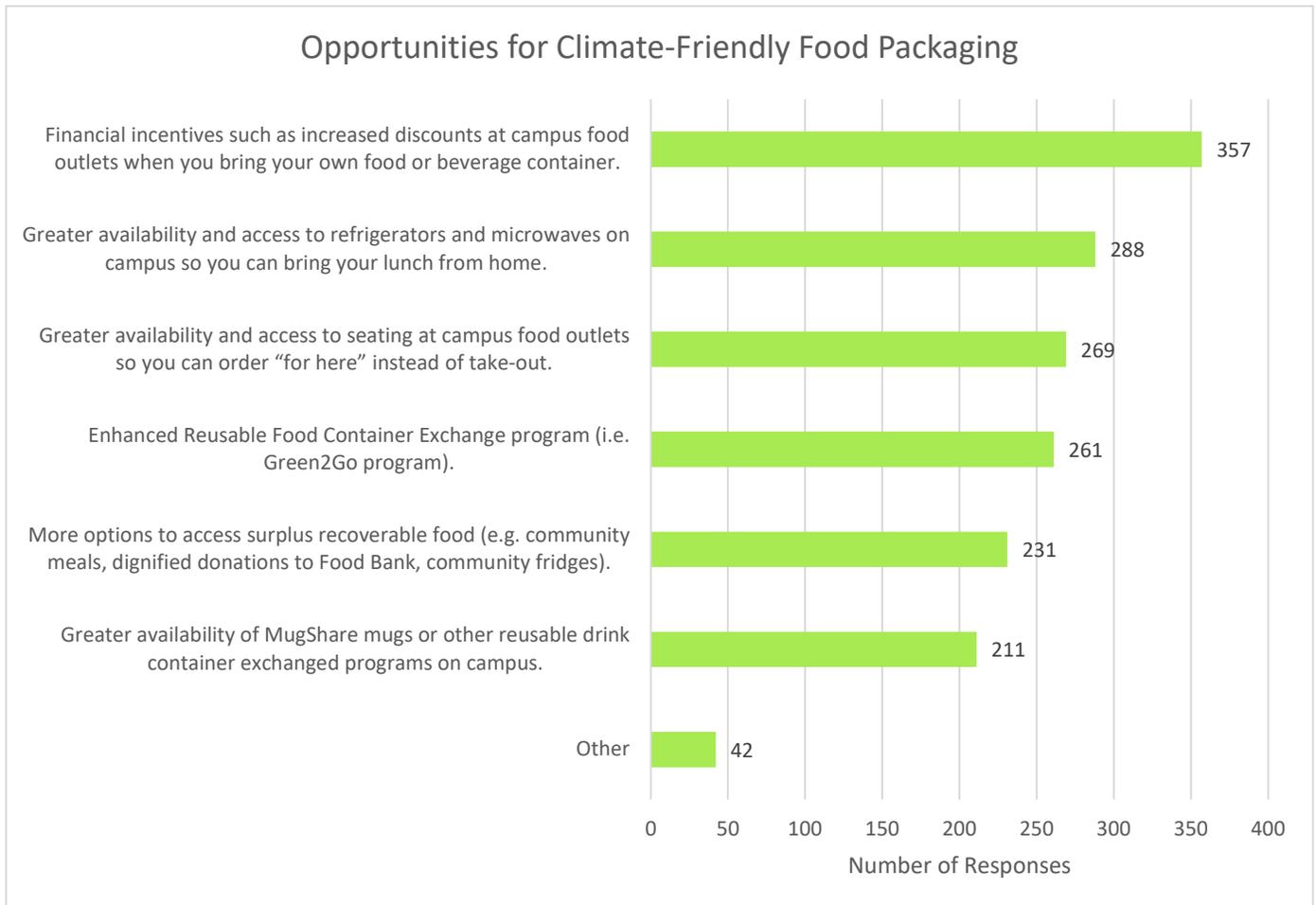
Other: Dietary restrictions, climate-friendly food is more expensive, need more sustainable food packaging, difficult to determine which foods are climate-friendly.

**3. Thinking about climate-friendly food purchasing, eating habits and dietary restrictions, which of the following options would support you in making more climate-friendly food choices on UBC campus? (Select all that apply)**



Other: More options for those with dietary restrictions and food sensitivities, increase sustainable food options on campus broadly (i.e. plant-based), make climate-friendly food affordable, education around cooking and gardening.

**4. Thinking about reducing food waste and packaging, and promoting food recovery, which of the following options would support you in making more climate-friendly food choices on UBC campus?**

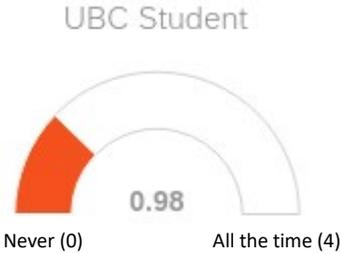


Other: Surcharge on all disposable containers, hold vendors accountable for their packaging, expand container sharing programs, more food options that do not use packaging (i.e. bakery items).

# Section 5: UBC Business-Related Air Travel

## 1. As a UBC community member, how often do you travel by airplane for UBC-related business?

UBC students responded that they rarely travel by airplane for UBC business, UBC faculty travel often, UBC staff travel rarely, and non-UBC employees travel often.

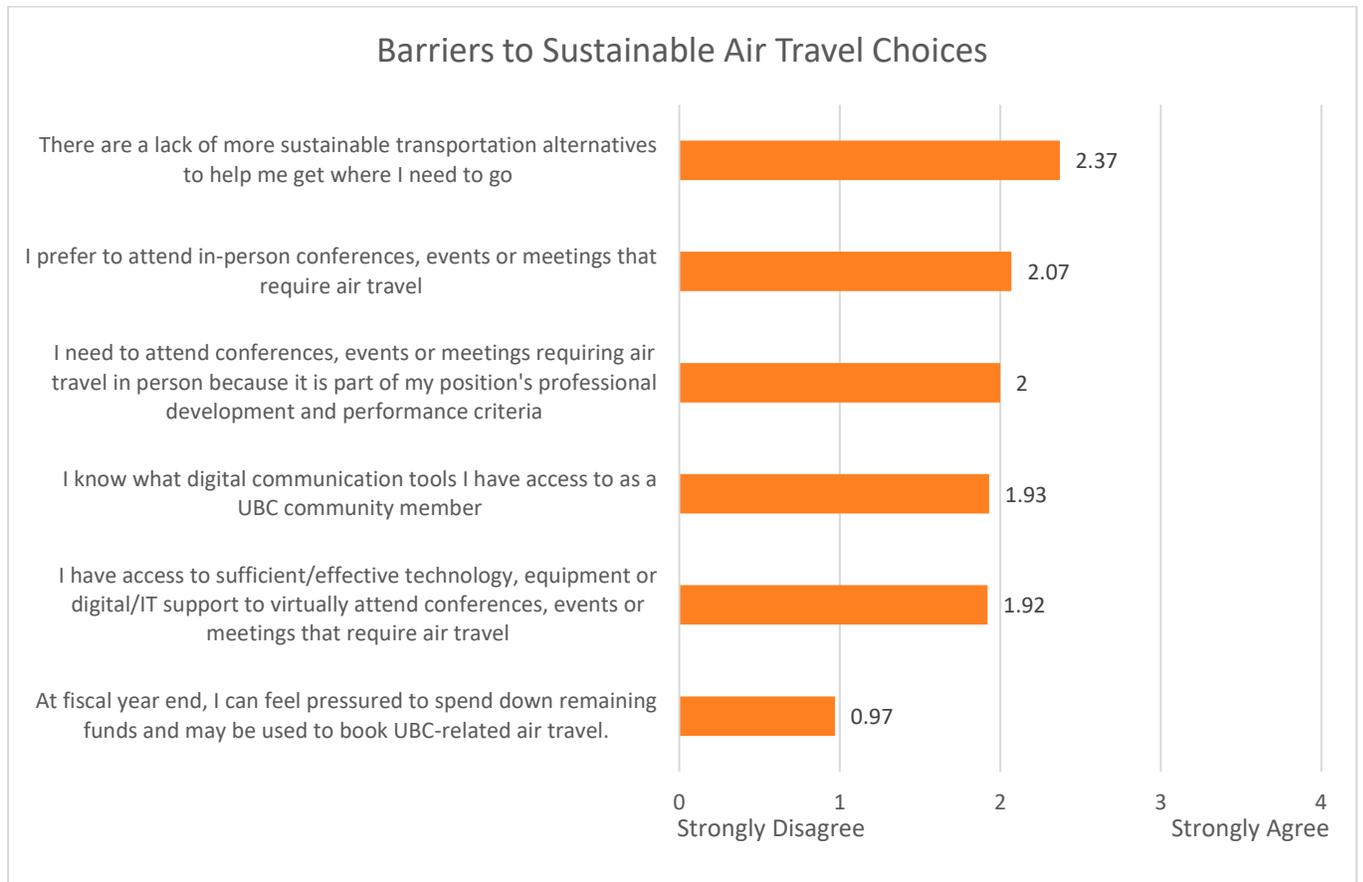


**2. The COVID-19 pandemic has provided us with a host of powerful new virtual platforms, allowing us to shift our meetings, events, learning opportunities and conferences online. In the future, compared to pre-pandemic behavior, would you be more or less likely to:**

Respondents said that on average they are very likely to reduce air travel, conduct and host virtual meetings, and attend virtual conferences and virtual courses compared to pre-pandemic behaviour.

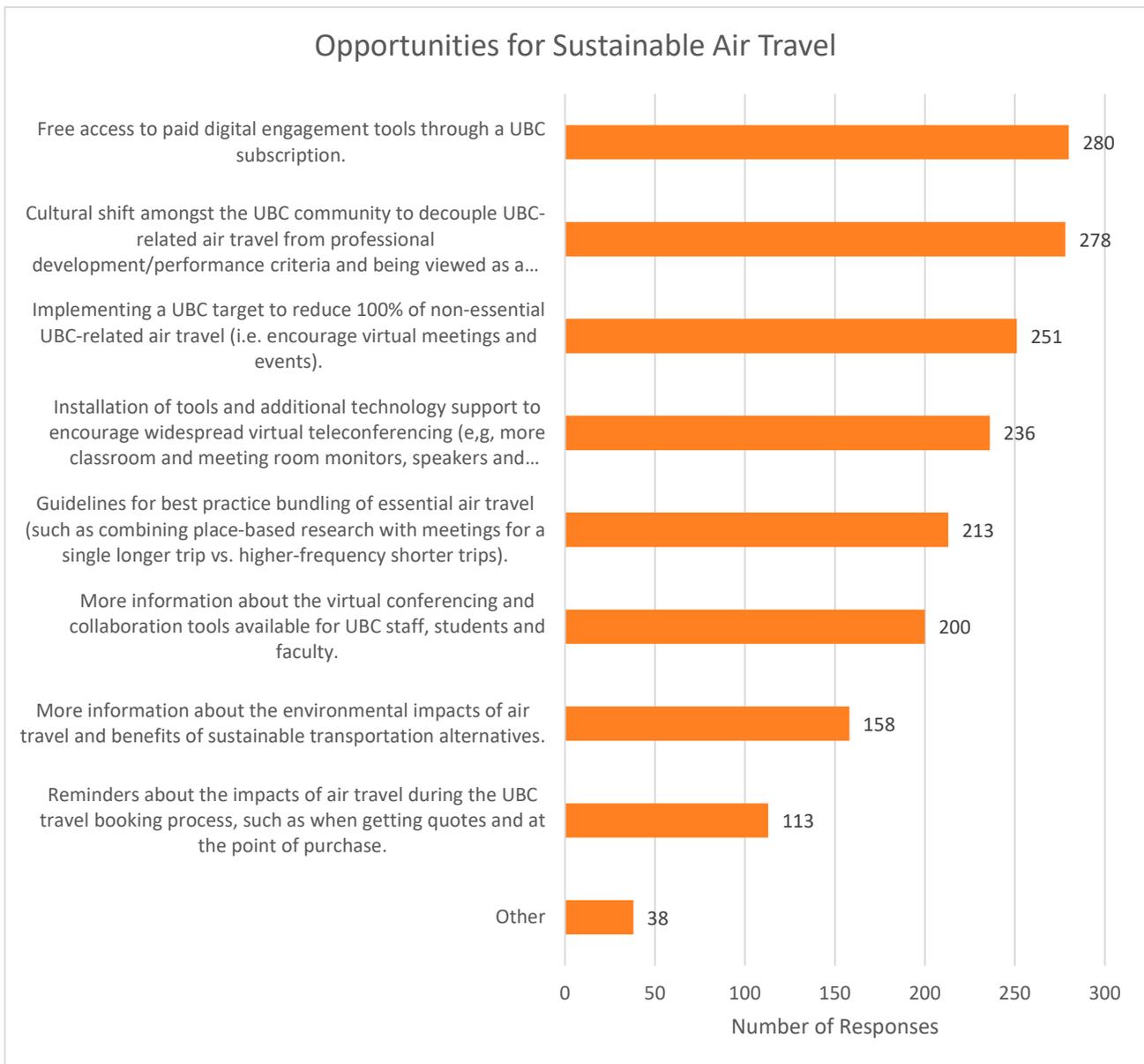


**3. To help us understand the barriers to making sustainable UBC business-related air travel choices pre-COVID, how much would you agree or disagree with the following statements:**



Other: Prefer in-person conferences; In-person conferences offer many benefits including networking, socializing and professional development; travel is currently viewed as a “perk.”

**4. Which of the following options would support you in making more sustainable UBC business-related air travel choices? (Select all that apply)**



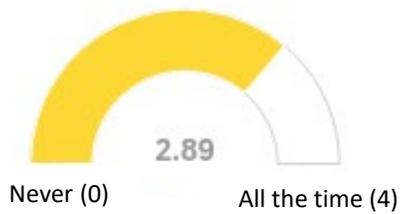
Other: Carbon offset travel program; conferences formats are outside UBC's control; requires cultural shift; incentive programs such as unused travel funds available to departments; formal demerits for frequent flyers.

## Section 6: Waste

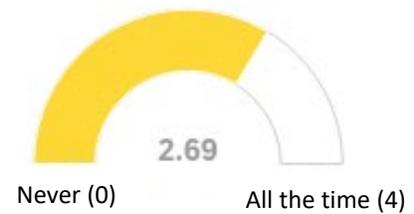
### 1. As a UBC community member, how often do you partake in the following sustainable waste practices?

Respondents said that on average they reduce and reuse their waste often, and sort their waste almost all of the time.

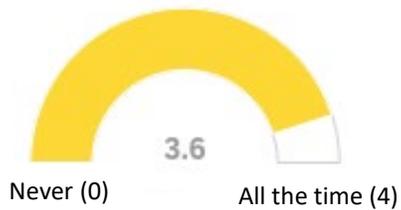
Reduce my waste (i.e. bring your own mug to a coffee shop)



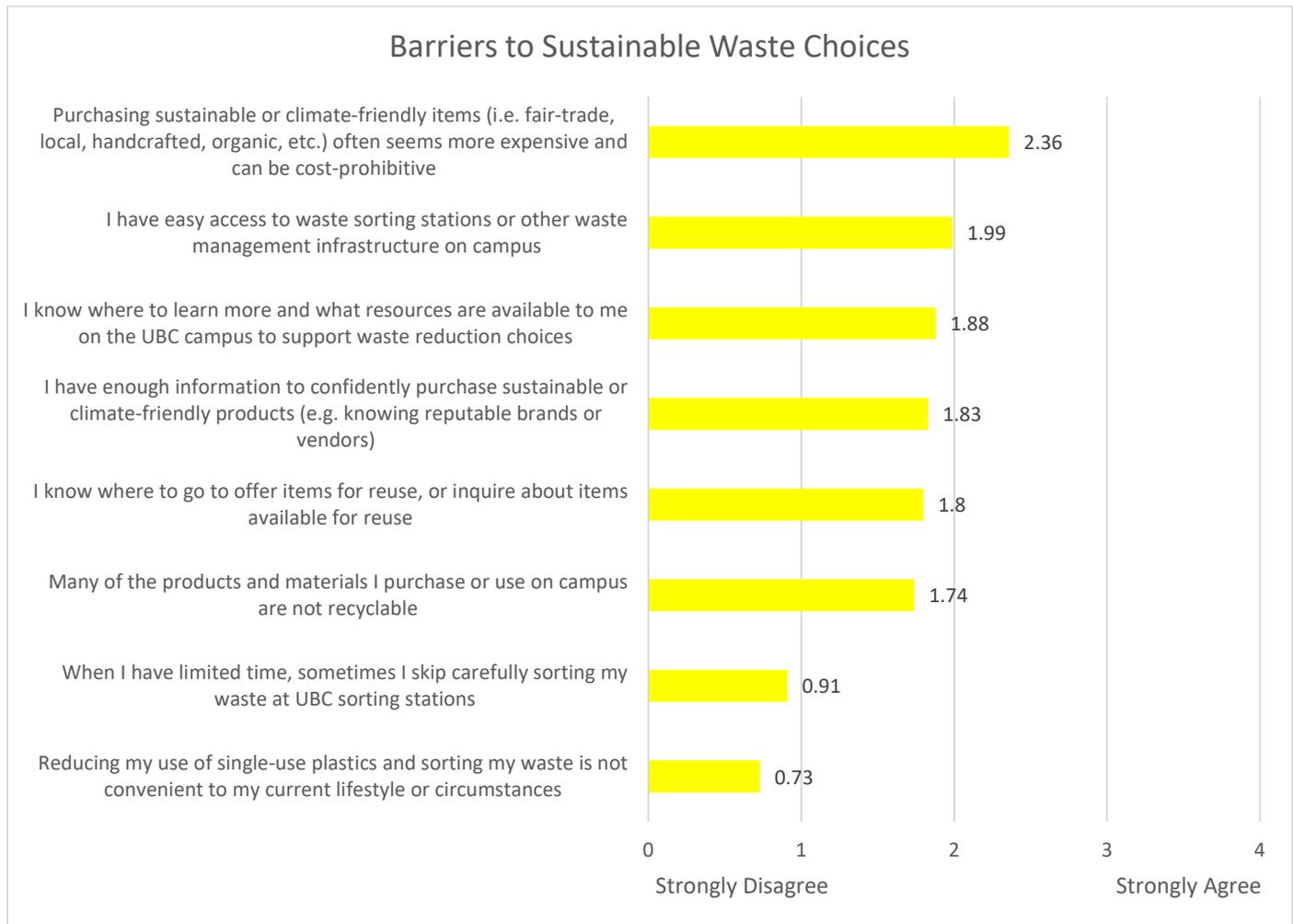
Reuse materials to avoid waste (i.e. buy or sell used furniture)



Sort my waste (i.e. into categories: food scraps, containers, paper and garbage)



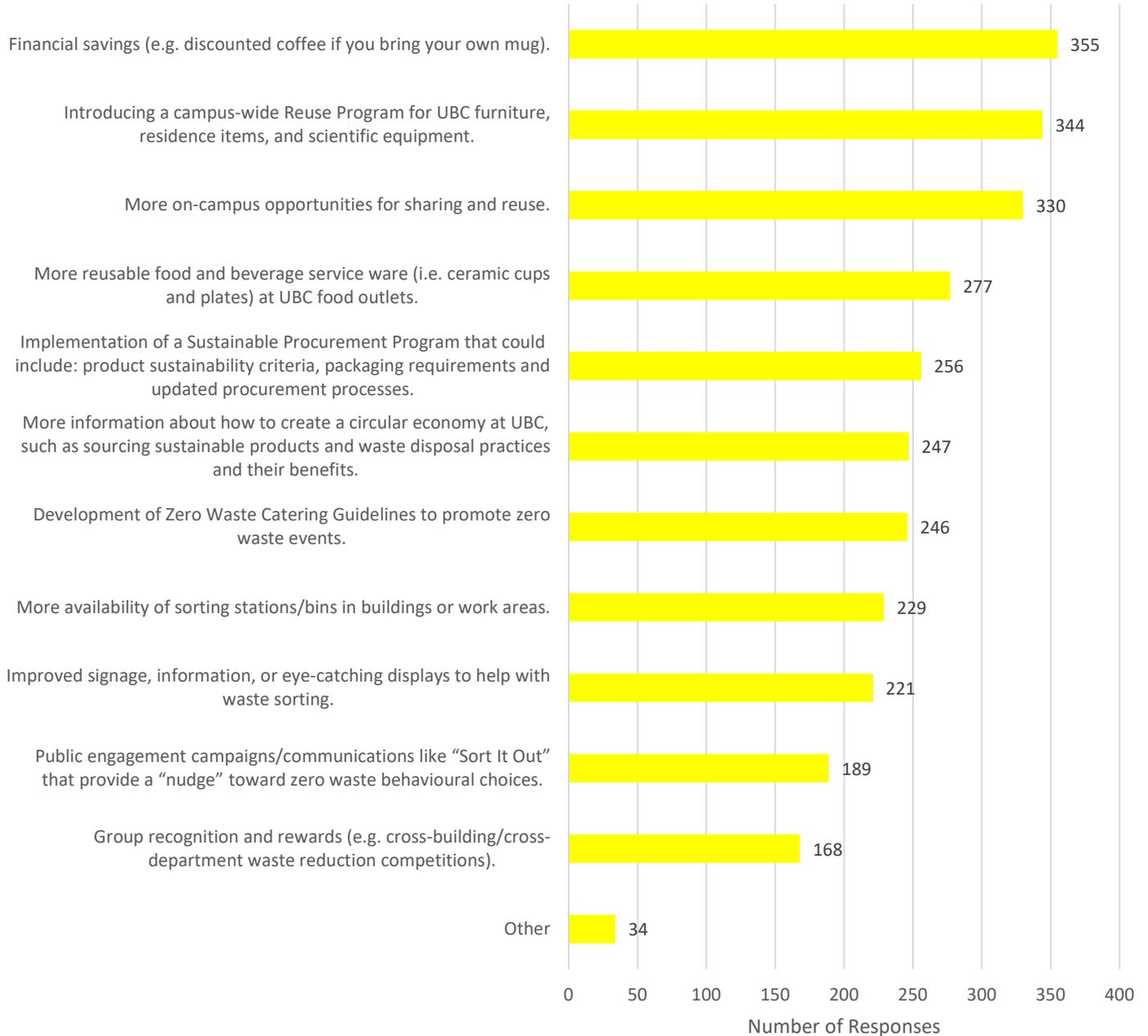
**2. To help us understand the barriers to making sustainable waste choices pre-COVID, how much would you agree or disagree with the following statements:**



Other: Need more information about where waste and recycling goes after leaving UBC; hold vendors accountable for their packaging and materials; recycling does not feel impactful or meaningful in the grand scheme of climate change; not enough plastic recycling options.

**3. Which of the following options would support you in helping to reduce UBC waste sent to landfill and in building a circular economy? (Select all that apply)**

**Opportunities for Climate-Friendly Waste Choices**



Other: Make items with single-use packaging more expensive and items with sustainable packaging more affordable; additional Sort-It-Out education; expand composting infrastructure; waste streams are best managed by the institution, not individuals.

## Section 7: General Feedback

The following qualitative analysis reflects what we heard from the two open-ended questions in the CAP 2030 Vancouver survey. The themes shaded in grey represent the top themes we heard from participants, while the unshaded themes are included for transparency and interest. To see the verbatim survey responses, please refer to Appendix III.

- To help us understand the climate action efforts currently taking place across UBC, please let us know if you and/or your UBC community are involved with any initiatives aimed at reducing GHG emissions on campus (and, if possible, the name of your community):**

Top themes for this question included responses from those already undertaking general climate actions in their daily lives, and a notable number of survey respondents that are participating with the UBC Vancouver Library Climate Action Team.

Feedback Comments	Frequency
<b>General</b>	<b>12</b>
General climate actions in pursuit of sustainability	7
Looking for opportunities but not currently involved	2
External organizations to UBC	1
Switching from gas/diesel to electric equipment	1
Started working at UBC during COVID - so still learning what is available	1
<b>Student club or organization</b>	<b>11</b>
Engineering Undergraduate Society	2
Sustaengineering Design Team	2
Asian Studies Sustainability Committee	2
UBC Sustainability Ambassadors	1
UBC Climate Hub	1
Vegans at UBC Club	1
Student Sustainability Council	1
Studying high performance buildings	1
<b>Academic group</b>	<b>11</b>
Peter Wall Institute Scholar Program	1
Emerging Media Lab	1
Sustainable PostDocs - PostDoc Association	1
Emeritus College	1
Mitacs - Green Initiative	1
Faculty of Applied Science	1
Project Drawdown	1
Green Chemistry Group	1
Urban Forestry Research Hub	1
Institute of Oceans and Fisheries	1
Michael Smith Laboratories	1
<b>Climate Emergency and CAP 2030</b>	<b>8</b>

Library Climate Action Team	5
Earth, Ocean and Atmospheric Sciences Climate Emergency Committee	1
Climate Emergency Committee - Dept of Geography	1
Climate Friendly Food System Working Group	1
<b>Food systems</b>	<b>8</b>
UBC Farm and Farmers Market	2
Plant-based menus	2
UBC Roots on the Roof	1
Vancouver Fruit Tree Project	1
Community garden	1
Sprouts	1
<b>Sustainability engagement</b>	<b>6</b>
Sustainability Coordinators Program	2
Green Labs	2
UBC Children's Garden	1
SEEDS Sustainability Program	1
<b>Commuting</b>	<b>5</b>
UBC Parking - Access Services (i.e. EV infrastructure, smart technologies for data collection)	2
Shared office bikes	1
#AllOnBoard campaign for affordable transportation in BC	1
Bike to Work Week	1
<b>Waste</b>	<b>4</b>
Zero Waste Squad	1
Waste sorting	1
First Nations House of Learning Waste Management Program	1
Recycling	1
<b>Staff department or group</b>	<b>4</b>
SHCS and Facilities Management	2
University Sustainability Initiative	1
University Neighbourhoods Association	1
<b>Air travel</b>	<b>2</b>
UBC's Fossil Fuel Free Pension Fund	1
Sustainable Travel Industry best practices	1
<b>External partnerships</b>	<b>2</b>
Perkins&Will + Building Transparency	1
OurTime Vancouver	1
<b>Climate justice</b>	<b>1</b>
Climate Justice UBC and UBC Social Justice Centre	1
<b>Grand Total</b>	<b>74</b>

## 2. Do you have any feedback about the emerging CAP 2030 directions and targets, or any other considerations (i.e. equity, climate justice) to add that we should be aware of as we develop the CAP 2030?

Top themes for this question included encouraging a hybrid back to work and campus model post-COVID, considering elements of climate justice in the CAP 2030, ensuring UBC as an institution is not shifting responsibility to individuals, and general support for the CAP 2030 and planning process.

Feedback Comments	Frequency
<b>CAP 2030 Process</b>	<b>48</b>
<b>General support</b>	<b>12</b>
General support	12
<b>Barriers</b>	<b>15</b>
UBC shifting too much responsibility onto the individual and away from the university/institution	13
Include more costing and resourcing nuances for targets	2
<b>Opportunities</b>	<b>21</b>
Include more costing and resourcing nuances for targets	6
Be more ambitious with our target setting and timelines	5
Real change requires UBC leadership to lead local and regional policy change by example	4
Support for specific CAP 2030 goals	3
Any CAP recommendations for individuals need to be affordable and convenient	3
<b>Commuting</b>	<b>34</b>
<b>Barriers</b>	<b>5</b>
Public transit much more inconvenient than commuting by car alone	2
Public transit currently feels unsafe	2
Cannot bike for health reasons	1
<b>Opportunities</b>	<b>29</b>
Encourage hybrid model of remote working and learning	21
Explore new approaches to sustainable commuting (i.e. Staff/faculty U-Pass, combined transit/parking pass)	6
Promote SkyTrain to UBC	2
<b>Climate justice</b>	<b>21</b>
<b>Opportunities</b>	<b>21</b>
Consider equity, fairness and Indigenous values	16
Prioritize affordable housing for faculty/staff/students on campus	3
Support poverty reduction and community education	2
<b>Waste</b>	<b>17</b>
<b>Barriers</b>	<b>3</b>
Strengthen waste and composting infrastructure	2
Recycling does not feel meaningful or impactful	1
<b>Opportunities</b>	<b>14</b>
More e-resources to avoid printing in UBC offices and libraries	5
Strengthen waste and composting infrastructure	3
Reduce single-use plastics	3

Invest in longer-life technology and equipment	1
Arrival care package of reusable items for new students	1
Wastewater reuse	1
<b>Missing from CAP 2030</b>	<b>16</b>
<b>Opportunities</b>	<b>16</b>
Long-term planning for landscapes and tree protection	11
Environmental standards and requirements for UBC industry and corporate partners	5
<b>Other</b>	<b>16</b>
<b>Barriers</b>	<b>1</b>
Acknowledge climate impacts of technology	1
<b>Opportunities</b>	<b>15</b>
Sustainable divestment	8
Automatically turn off building and field lights at night	3
Prioritize affordable housing for faculty/staff/students on campus	1
Stormwater management opportunities	1
Acknowledge climate impacts of technology	1
Need environmentally friendly strategies for long-term campus design	1
<b>Air travel</b>	<b>12</b>
<b>Barriers</b>	<b>1</b>
Recruiting top academics while reducing international air travel	1
<b>Opportunities</b>	<b>11</b>
Need a culture shift for reducing air travel led by UBC leadership	5
New evaluation models that reduce international travel (i.e. naming and shaming frequent flyers)	2
Air travel surcharge to contribute to climate action initiatives	2
Culture shift for not rushing to spend money by the end of fiscal	1
Incentivize students staying on campus during holidays	1
<b>Buildings</b>	<b>9</b>
<b>Opportunities</b>	<b>9</b>
Thermal comfort and wellbeing considerations for building design	6
Reduce waste and emissions from construction, new building materials and retrofits	3
<b>Food Systems</b>	<b>5</b>
<b>Barriers</b>	<b>1</b>
Organic and plant-based foods not necessarily sustainable	1
<b>Opportunities</b>	<b>4</b>
Shift retail and food outlets towards more local and plant-based options	4
<b>Research and Partnerships</b>	<b>4</b>
<b>Opportunities</b>	<b>4</b>
Partner with UBC groups researching climate solutions	2
UBC should publish more public-facing climate information and research	1
Create UBC Climate Policy Institute	1
<b>Community Engagement and Education</b>	<b>1</b>
<b>Opportunities</b>	<b>1</b>
Performing arts are a powerful community engagement tool	1
<b>Grand Total</b>	<b>185</b>

## Appendix III – Verbatim Survey Responses

**Question: To help us understand the climate action efforts currently taking place across UBC, please let us know if you and/or your UBC community are involved with any initiatives aimed at reducing GHG emissions on campus (and, if possible, the name of your community).**

I am not involved in initiatives but I do support the UBC Farmer's Market and try to get most of my produce from them

We have a pool of two office bikes purchased through a centrally-funded program (forget the name) that team members can use to get to meetings across campus (when the weather is good)

Yes we promote predominantly plant forward menus at all locations

More spaces to grow? UBC Farm gets smaller. UBC KILLED the Orchard Garden. Green space that could be used to grow is seen as housing.

I live close to campus. I promote stories of sustainability. I am committed to taking climate action.

Green chemistry UBC group

Asian Studies Sustainability Committee

Yes, have implemented several initiatives and they have all come to fruition and have been implemented.

Parking: removing gates at parkades has eliminated idling vehicles waiting to enter/leave; they installed 75 EV charging stations at their own expense; they are an integral part of developing the clean energy hub at Thunderbird parkade; they participate in SEEDs projects; they have financially contributed to emissions research within parking facilities; they are supporting wayfinding projects within the Rogers 5G projects; they are using smart city technologies to collect data on parking habits and parking facility usage

Urban forestry research hub at UBC Forestry.

#AllOnBoard campaign is working on affordable transportation in BC. This will also lessen the need for parking lots at UBC. Less cars means better air quality and safer for bikers.

Unfortunately, it seems to me that the efforts were left to the individuals. I wholeheartedly support a more through Climate Action Plan.

I led the creation of UBC's Fossil Fuel Free Pension Fund, and (as you can tell from this survey), have been lobbying for a decade for us to profoundly reduce our air travel. Please reach me to volunteer for that

N/A - I have to look outside of my job and what is available to me at UBC. I volunteer for an outside organization

climate friendly food system working group

Electric Charging Stations (Parking)

Geography has a climate emergency committee

I was previously involved in Sprouts.

I continually keep up to date with sustainable travel industry best practices for public and private organizations/corporations, in various markets (CDA, Intl) through webinars, articles, networking and virtual conferences. This year a new emerging action by the hotel industry is to improve visibility and create standards where they can be measured by Water, Energy and Waste reductions

N/A (Bike to Work Week once in a while)

Not at this time. I started working at UBC 3 weeks before the lockdown and didn't have a lot of opportunity to find out about many groups.

We are switching lots of our equipment from gas/diesel powered to electric powered. Unfortunately, we are often limited by the added cost and electric replacements may not meet our needs.

We are working on Green labs project under ubc sustainability

Yes, with the UBC Climate Hub.

Peter WALL Institute Wall Scholar program: <https://pwias.ubc.ca/wall-stories/2018-wall-scholars-launch-initiative-address-ubc-flight-emissions>

Green Labs, LSC Sustainability Leadership Team

As a student involed in the Engineering Undergraduate Society, I work with a team of fellow engineering students to embed sustainability into the EUS operations and promote sustainable practices to students. We just got started on our work about a year ago and recently passed policy within the Society to mandate sustainable initiatives aimed at reducing waste and raising awareness

IOF

The Library #ClimateAction Team has developed an Air Travel decision tree to assist UBC Library employees in choosing which conferences to attend in person and which virtually.

member of Asian Studies Sustainability Committee

The Emeritus College is familiar with the general principles advocated by the CAP, but does not have specific programs in place. That may change once the College has permanent premises.

I am not involved with any initiative but am looking for opportunities to do so.

The Michael Smith Laboratories has implemented many sustainable practices over the years and taken part in many pilots (recycle styrofoam before it available campus wide, amber glass recycling, soft plastic segregation, compost before it was campus wide, ice pack reuse, Aircurity, LED lights in labs and offices, ultra low freezer 'warm-up', change tap on film processor to stop constant flow of water and now elimination of instrument all together). I'd love to give a tour (virtual okay too) to showcase some of these successes.

SHCS Facilities, EWS, A&R Facilities.

no yet bout would love to get involved

EOAS Climate Emergency Committee

It's great that UBC is committed to these actions and providing support to all campus members in achieving the goals and targets.

UBC Roots on the Roof

SHCS

We work on our community garden with our preschoolers

Thanks for organizing this survey. I could imagine that it is highly biased though, since the majority of people who contribute to this questionnaire are already involved in SD activities. I personally for example just started a new group of "sustainable Postdocs" at the UBC (we don't have a name yet, but are part of the Postdoc Association).

UBC Library now has a Library Climate Action Team with members from different employee groups and library branches/units. Thus far we've hosted a climate research panel, drafted guidelines around air travel, held climate change movie nights, creating a webguide for climate research, and shared information with each other. Now we are reviewing the emergency task force report to identify how our work can align with the priorities.

I am a physician, clinical assistant professor of medicine - interested in supporting efforts to reduce GHG emissions at work, and increase access to plant-based foods - making things like bringing your own cup, and ordering plant based the default - extra costs if adding meat, cheese or a plastic cup

Library Climate Action Team

I am generally in touch with colleagues at APSC in the topic of long term work-from-home arrangements that could benefit students, staff, and faculty and also reduce GHGs.

I am President of Vancouver Fruit Tree Project. Thanks to UBC Triumph support, we have been able to harvest the extra fruit from their trees to distribute them to community members. In addition to strengthen food security in our community, this harvest allows to reduce food waste.
yes
USI
Mitacs has its Green Initiative that are aimed at reducing our carbon footprint (at our UBC office and beyond)
UBC SEEDS Sustainability Program
At the Emerging Media Lab we are doing limited work on digital collaboration technology but our budget compared to how much is spent on travel annually is laughable.
I am studying High Performance Buildings
I am part of the Sustaingeneering engineering design team, and a member of the EUS Sustainability Council
Library
Project Drawdown - only buy from fossil-reducing sellers
I am working with Perkins&Will (an architecture firm) and Building Transparency (a non profit) to help reduce embodied and operational carbon in buildings in BC.
Sustainability coordinator program, lighting upgrades, awareness exhibits addressing "ghost nets," oil pipelines, etc.
sustainability coordinator program, Library #ClimateAction Team
I'm a recent graduate (I hope it's okay I completed this) and am now involved with organizing beyond the UBC community (e.g. with OurTime Vancouver).
ubc children's garden
UNA
Engineering Design Team bring sustainability and reduced emissions into our design.
Recycling
Executive at Vegans of UBC club which promotes sustainable/ethical food choices on campus; member of Zero Waste Squad (paused for covid) which sorts waste on campus and has education events; council member on Student Sustainability Council which gets student feedback on sustainability initiatives; support initiatives done by Climate Justice UBC and UBC Social Justice Centre
While normally I take transit, I've been commuting via car since June 2020, when my place of work reopened to on site employees. I don't like driving to get to work. Other than that, I try to use as many reusable dishes for meals, do my recycling, not waste work supplies, etc.
UBC Sustainability Ambassadors
Garbage classification
I am very engaged in climate-friendly living for many years already. However, as a Postdoc in Canada, I actually spend way to much money to stay truthful to his environmentally friendly living style. I think that this a structural problem, so UBC should support people of all sorts of salary classes to live a sustainable life. I still feel living consciously in Canada demands from you to be a little rich, in particular, when it comes to food!

**Question: Do you have any feedback about the emerging CAP 2030 directions and targets, or any other considerations (i.e. equity, climate justice) to add that we should be aware of as we develop the CAP 2030?**

Perhaps as the planet continues to warm, develop green ways to stay cool during the summer and warm during the winter. Eliminating bottled drinks and water from being sold on campus and eventually from Canada.

To realistically pursue its targets, UBC needs to reform from a majority commuter campus to more hybrid models of learning and teaching without detriment to students and faculty. Remote work has proven effective and should be supported where sensible rather than discouraged on principle!

Not sure if this is important here but I see a gap in reusing resources - are we looking at infrastructure which would allow water reuse/recycling? I know we have a lot of park/green space - can we recapture water from buildings to reuse for landscape? Projects like that would be very interesting.

Allowing remote work to continue would be significant.

I strongly believe that UBC as an institution must enact systemic change as opposed to putting the onus on individuals to bring reusable mugs, pack lunches from home, etc. As a staff member, the transit to and from campus is my largest contribution to greenhouse gas emission and I would love to see a discounted staff/faculty transit pass to incentivize taking public transit, as well as UBC continuing to allow staff to work remotely if their position and duties allow. Something like this would greatly benefit myself and other staff in a similar position as me.

UBC Supported boycott and divest from the petro chemical industry. Is it about time we do the same for China? A boycott divest campaign from China the worlds leading polluter of the Air, land and sea (as well as their horrendous human rights violations in the Xinjiang province?

<https://www.forbes.com/sites/rpapier/2018/07/01/china-emits-more-carbon-dioxide-than-the-u-s-and-eu-combined/?sh=7c5008e9628c>

Getting academics to avoid air travel to go to conferences is going to be a tough sell and, if too stringent, could make it hard to attract top talent.

Yes I strongly encourage the University to ban or put a tax on individual meals being delivered to campus from delivery services like Uber Eats, Doordash, Skip the Dishes, Fantuan etc... These create a BIG carbon footprint. a 20km food delivery is the equivalent of 7 kg of CO2.

Most of these questions about individual actions seemed to be about visible forms of climate impacts (waste, air travel). Some kinds of computing resources (esp. high-fidelity video conferencing for online classes and high intensity computation, such as in machine learning applications) have less visible climate effects. I would like to see UBC consider making known the climate costs of technology and acknowledging computing power as being a relevant consideration in climate action.

2030? Why not TODAY!

I would like to see organizations such as UBC use their purchasing clout to increase the life of technology equipment such as laptops, workstations, phones etc. Shift the focus on speed to life span - five years for a workstation is wasteful and unsustainable.

In terms of air travel, UBC could tack on a surcharge to all air fares purchased with UBC funds and use the money raised on climate initiatives and/or carbon offset programs.

If more staff were able to work part of the week from home, it might not be necessary to have as much dedicated office space. This could in turn free up existing space for other purposes and ideally limit the amount of construction at UBC. Don't raise a building, plant more trees.

What about pushing for more e-resources in the library so that it is not purchasing and supporting a print-based economy.

Your questions around public transit don't really cover all the issues related to our bus system. Buses are overcrowded, dirty and unhealthy. Is there a way to make public transit less unattractive from a health perspective.

-Working from home can greatly reduce our carbon footprint as an institution.  
 -Air travel should be restricted or carbon offsets should ALWAYS be purchased for every flight taken.  
 -Remote work options extended to anywhere in Canada could help us make a broader impact.

Equity and Climate Justice and Indigenous values are important and would be good inclusions to CAP for a robust holistic solution.

Thanks and continue with the good work!

Need to look at whether retrofitting older buildings would be paid off (both financially and environmentally in terms of CO2) before the building is rebuilt/replaced

UBC's industrial and corporate partners should be held to strict environmental standards as well as UBC's preferred vendors, couriers, and other services

Too much tuition \$\$\$ being spent on pet projects such as climate action plans. Individuals are already doing so much.

Not at this time. I am interested in learning more and appreciate the university's initiative to educate us as staff, faculty and students, because in turn, we as individuals, can educate our families and our communities off campus. I am optimistic that we as a larger community, at UBC, and a leader in our province can demonstrate what is possible and lead the way.

remote work option would make most difference in impact for office-based staff, particularly as COVID anxiety may result in more people choosing to drive

The financial aspect of this is the biggest target. It is understandable that we require industry and to sell/purchase goods and services in order to keep our economy rolling. Historically consumers have been offered all types of products and it is "their choice" whether they wish to use them or not. Tobacco; unhealthy snacks; vape products are a few that come to mind. Industry makes money selling and they will continue to do so without regard for human health or environmental impact as long as our system allows them to reap benefits from selling harmful products. Industry must be made responsible for making money off of consumers. Their products must be fully recyclable non-toxic or they should not be available for sale. If their product causes physical harm (e.g. diabetes) then there must be a tax placed on selling of the item so the cost of down the road healthcare does not fall once again into the hands of the tax payers. Politics must stop bowing down to big money industries.

If the university changed the culture around air travel and conferences it would have a big impact. So much business travel is unnecessary, especially by senior executives.

The questionnaire is very targeted on individual actions, which have been shown to have too limited impact and won't be sufficient.

We need to stop talking about parking and start talking about access: that changes the context and puts the focus onto sustainable, affordable mass transportation. UBC cannot solve it's access issues one vehicle at a time. We also need to look at UBC vehicles - how do we 'green' the UBC fleet (and how do we stop Dept's buying vehicles instead of sharing existing ones...just because you have a grant doesn't mean you should use that on a vehicle). There is a HUGE amount of work to be done on sustainable transportation

Any recommendation on individual action must be made with affordability in mind. Financial pressure, especially on the younger population, has increased significantly with the pandemic. If the recommended climate friendly choices, e.g. organic foods, are the more expensive option, then it will never be adopted. A large portion of the student body is food insecure, raising the price of food on campus to meet climate targets would be horrifyingly cruel. You cannot get people facing pressing short term problems (e.g.: hunger) to care about long term issues (climate change), no matter how dire.

I think UBC needs to continue to support working remotely post covid (more often than pre covid). I have two young children and I have to drop them off at daycare in the morning. Taking the transit was not an option for me. The only way I can put my effort into climate action is by working from home, so I don't have to drive my car out everyday. This also saves me lots of commute time which I can then use in other areas, for example choosing more climate friendly foods when cooking for my family. I can also use the money I save from not have to purchase a parking permit on things such as climate friendly products. Those are often times much expensive than what I usually purchase.

UBC NEEDS to include its natural landscape in the CAP. On campus tree cover loss is a big issue. Additionally, sustainable management of turf and other landscapes should definitely be integrated into the plan. Landscape management and operations can have substantial carbon emissions! This is beyond the scope of the biodiversity plan.

Look at the University of Pennsylvania's Ecological Landscape Stewardship Plan for an example of an innovative, unified campus approach to sustainable urban landscapes.

I recycle, but most recycling is pointless anyway: only a tiny percentage of anything actually gets recycled. Most plastics aren't recycled effectively. Separating food is a waste of time and effort as it breaks down anyway. I do it, but it's yet another drain on my already limited time.

To reiterate a previous point, commuting to campus by public transit is not an option for me, and I live too far away to cycle. By the time I walk to the bus stop, wait for the bus and -- if I'm lucky enough that it's not full -- then stand all the way to campus, and then walk to my office or the classroom, it has taken at least twice as long as it does to drive (and often even longer), not just because the route is less direct, but because of the additional walking and waiting and because of the slower nature of public transit. I'm also typically carrying at least one very heavy bag, which makes things harder still. If I have to stop on the way to campus or home, for example to buy groceries or to go to the post office, it increases the time even more significantly. I already spend more time working than anything else in my life, and it's exhausting. I am simply not willing to give up even more of my limited free time to commute. With Covid I'm even less likely to take public transit. But, as I rarely travel, drive a car that's relatively low emissions (and also, with working from home I've barely driven at all for the last year), don't have children, don't redecorate my home every year or buy new clothes every month, always cook at home, and don't do the many other things that increase people's carbon footprint, I have no concerns about driving my car to campus, and UBC should have no concerns about my driving to campus either.

UBC can and should do more to improve work-life balance for its employees, and that means not adding yet more chores and more responsibility and more stress to our lives. Instead of adding burdens on individuals, the focus should be on the corporations that are actually responsible for the majority of pollution. UBC as an institution can easily make changes, for example by ending the sale of bottled water on campus, requiring reusable drinkware in all food establishments, and phasing out the use of plastic utensils and single-use plastic containers. Those actions would require little direct action on the part of students and staff.

Divestment of all UBC investments from fossil fuels, polluting industries, and resource-extraction is the most impactful thing the university can do to help reduce the impact of climate change.

Climate action has too many layers associated with it and it is, therefore, a very complex issue. One layer that does not seem to be very well accounted for in here is the issue of time-commitment. For example, recycling and reusing takes time because one has to learn how to do it right first and then execute it. In execution times is allocated for sorting and cleaning some of the things one is trying to recycle or reuse. Another example is transportation, it is very quick and comfortable to go to work driving your own car as opposed to using public transit, which results in about double to time

commuting, or riding a bike, which results in triple the time or more depending on where one lives. Let's also consider that the closer to UBC campus, the more expensive the property, so riding a bike may not even be possible for most students and commuting by public transit takes longer. So, time allocation to commuting must also be considered.

Picture a grad student with a lot on their plate by mere fact that they are conducting research. That, by and of itself is a huge time commitment. This person also has to find time to self-care by sleeping enough hours (8 hours per day), eating well (accounting for grocery shopping and time dedicated to cooking a healthy home meal: 4 hours per day), exercising (an often times disregarded element in academia, but our bodies DO need exercise: 2 hours per day), mental health caring (also disregarded often times in academia: 1 hour per day). These very basic needs already add up to 15 hours per day. On top of that, that student also has to maintain a job because UBC underfunds their students (best case scenario: 2 hours per day), conduct their research (again, best case scenario: 4 hours per day). Up to this point this student has already at 21 hours of their day gone! With only 3 hours of their day left, this student has to dedicate time to their family if they have one, commute to UBC, get involved in campus activities like this climate action stuff, participate in "leadership" activities if they want to get any additional funding so that they can one day stop working and have more time to complete their degrees instead of having to work, etc., etc., etc...

So, when asking about climate initiatives, please consider time-commitment as a parameter. If UBC would fund their students better, students would have time to network and participate in campus-wide activities that would have a positive impact within UBC. As it currently stands, the situation is such that grad students are below poverty level in Vancouver and need to find additional sources of income, which is a time commitment. Eliminating this time commitment would allow them to be more active and generate ideas that would favor UBC goals.

While individual action is important I strongly believe that UBC is failing to put in place the institutional capacity to develop climate policies that could reduce GHG emissions not only on campus but in Vancouver, BC, Canada and other countries. A fully funded UBC Climate Policy Institute would be awesome and innovative and would show that UBC is serious about identifying, analyzing and evaluating potential climate policy solutions. The effects would dwarf the impact of on campus and individual behavioural changes ...

I recently purchased an electric vehicle and because of my lengthy commute would like to be able to charge at work, however its often hard to leave to move my car after 4 hours --- the parking spaces are also limited. I don't think the charging stations are ever full.

It is important to shift away from placing emphasis on individual responses to holding institutions responsible for implementing sustainable solutions. Currently, the burden is placed on individuals to change their behavior when it is corporations and institutions that are economically benefitting from using and purchasing unsustainable cheaper options. For example, a department will buy cheaper furniture from the States rather than buy something a little bit more expensive locally. People will make good choices when given the opportunity. Vancouver is highly unaffordable so this is a barrier too many people when it comes to making sustainable choices. Compassion is needed to recognize that people have different needs and the solutions will be complex. Marginalized communities will be more impacted by climate change so please be aware of that when taking about timelines.

It is the time to really carefully think about architecture, health and climate sustainability of campus buildings. Many buildings have terrible indoor air, problematic heating and cooling, so that is the problem that needs to be, and that can be addressed sustainably with more research and planning. Also how about more plants, for food, for roof gardens, for indoor green walls?

Through Covid-19 faculty, staff and students have shown great adaptability in teaching, researching, working and learning from home. I hope UBC will also be as adaptable and encouraging of these practices after things return to normal. Commuting to UBC should be done as needed not every single day. This is a great opportunity to reduce pollution through traffic reduction. We'd have less packed buses too!

On air-travel I really hope to see senior leaders at UBC take the lead on reducing their air travel. If they can model good behaviour and reduce their travel I think this will encourage everyone to reduce their air travel carbon footprint.

promote work from home more - less time spent in the office, less energy and pollution from commuting. I support wfh but leadership wants us to return to the office and looking at expanding office space. We need leadership to be more active on climate action than staff; we need to do as we are told even if it is less green.

UBC remains caught in the "more and bigger" agenda of progress that encourages longer CVs, more travel for prestigious research consortia, bringing in international tuition dollars, etc. Even living in Wesbrook Village pre-pandemic (allowing me to walk to the office), all I saw was more expensive for-profit construction (for non-UBC folks) and limited retail options, still forcing UBC faculty and staff who live there to drive frequently to shop off campus. Climate Action will involve campus and neighbourhood planning that STARTS from the premise of ecological sustainability. Perhaps it's time to focus more on the local? I would also like UBC to just take some non-sustainable travel/food/operations options off the table, because "we just don't do that anymore."

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For the love of our environment, UBC's planning office needs to do a better job of long-term campus design. Over the last number of years, I have frequently seen concrete poured for new sidewalks and meeting areas across the Point Grey campus, then seen them torn up 1-2 years later in order to change or build something else. That's incredibly wasteful and increases the amount of carbon our campus produces.

Advanced Planning to Support Robo-Taxi Network

Put pressure on provincial government to build the sky train to UBC NOW

As a UBC staff member (and previous student), I've done a lot of surveys over the years. This was one of THE best surveys I've seen yet. I really appreciated the contextual information, the definitions, and the overall survey design. But what I loved most was the selection of practical solutions you offered for each problem. Thanks for putting together this survey. Please tell the survey designers that they've done a good job.

There have been a lot of "Sustainable plantings" but they aren't. A lot of plantings are not designed for plants to grow, and will probably die within 10-20 years. A fair amount of the construction work does not appropriately protect trees, despite UBC have tree preservation rules. There is an island by the intersection of agronomy and westbrook mall that has a sewer drain, and theres no vegetation around it so the soil, mulch, other debris is just going down the sewer. Also there are a lot of opportunities for stormwater management, like the westbrook remodel, but there are never curb

cuts. Plant management and maintenance is poor which increases risk of injury & damage to humans and buildings
I would like to see divestment from companies that emit large amounts of GHG emissions added to the CAP target.
The survey/current approach do not address the significant impact of the use of technology/social media on the carbon emissions (the use of energy associated with data processing/storage/transmission; the associated hardware and software, etc.). The survey itself seems to be rather selective in its focus (e.g., as it asks about the use of reusable food containers, it overlooks the impact on water pollution). The list of suggested actions/remedies is too repetitive and limited - and misses opportunities uniquely related to UBC as an academic/research community (e.g., no suggestions of encouraging researchers to acknowledge sustainability considerations as they develop their proposals (regardless of the study focus, whether it has anything to do with sustainability or not); no reference to any expectations of UBC community members taking personal responsibility for their use of mobile phones/technology/social media from the environmental perspective, etc.)
There is currently no composting at the UBC Hospital site/building that I work at. I would like to see UBC make some efforts to implement composting in all of its buildings (whether it's on campus, or otherwise).
Working and studying from home does eliminate to/from emissions from vehicles. Offering at home options could help to reduce transportation emissions.
Systemic change is needed. Targets won't be met by individual behavioural changes alone. New UBC neighbourhoods are conventional design- need more vision. Don't deflect responsibility to the individual, UBC as a major institution with a massive budget should put its money where its mouth is and make decisions according to the fact that we are in an emergency. Not clear that message has sunk in.
--Related to the above, another major cultural shift needs to be made around spending money at the end of a fiscal year. There are huge problems in doing so during a pandemic fiscal year end and it's never really been clear to me why this is even a thing. It's hypocrisy and makes no sense to say departments need to cut back, and then tell departments to spend money that has so far been unallocated.
--I'm quite shocked to see such a large emphasis on air travel and that there is even an option for people to state that they are 'required' to travel by air. No one is forced to travel for work, and UBC seems to have this culture of requiring face-time 'to build relationships.' I understand this, but there really needs to be a cultural shift away from these perceptions of forcing people to be physically present in a particular location.
--Organic and plant-based foods aren't necessarily more sustainable or environmentally/climate friendly and shouldn't be presented as such without context.
Feedback on content: --I appreciate that targets need to be made, but we should be looking at a 100% reduction, not just 75% by 2030. We need to be thinking longer term all the time, and CAP 2030 should reflect a phase/stage rather than a goal. People need to understand that this is just one part. It's shocking this isn't addressed anywhere and that UBC is taking a truncated approach. --
Continuing to work from home post-COVID would help reduce car emissions.
In general I think UBC needs to be aware that the greatest impacts will be made through large-scale structural change and supporting appropriate policy directions at various governmental levels.

Continue remote work after the pandemic ends. Commuting is not only an environmental issue, it's a massive waste of time. I am better able to participate in sustainable food systems (buying local, cooking at home, etc) by working remotely. Commuting will mean returning to highly packaged/distributed food that is a massive waste. Allowing a majority of your staff remain remote will make a huge impact just in terms of commute and food alone.

Why does our printing contractor, Xerox, still not use tree-free paper?! They need to be using this by default, but currently do not.

I believe if we look within our own communities and support the reduction of poverty by supporting community educational opportunities it will help with sustainability as well.

Yes. The #1 step the university should take on its Vancouver Climate Action Plan is to make superior affordable housing available for purchase for faculty and staff, so that they can live on campus long term. Currently, UBC has plenty of land, but it seems to be prioritizing leasing it to developers who then sell to non-UBC people, meaning that UBC faculty and staff have to commute from far away. Rentals are available, but renting is not a long-term solution and the Village Gate units are way too small for families.

It is vitally important that climate change issues are not isolated from the huge socio-economic disparities that existed prior to covid, and have been exacerbated by the pandemic. Increasing socio-economic inequalities should be just as much a priority for UBC as climate change. Unfortunately, some activities undertaken in the name of climate change will increase these disparities.

need to fix the temperature in buildings so as not to waste resources

I am pleased to see that reduction of unnecessary air travel is a priority of UBC's. I believe that systematized mechanisms should be put in place to discourage unnecessary air travel. Examples would include: (A) formal demerits on the annual review for promotion and tenure of professors who flew more than some number of times (e.g., once) per year; (B) increased infrastructural support for virtual attendance of conferences; (C) financial rewards and/or faster advancement to promotion and tenure based on virtual attendance of conferences; (D) financial rewards to departments that generate the lowest amount of carbon emissions per head due to flights; (E) a publicly available yearly report on the collective amount of carbon emissions generated by flights taken by UBC's professoriate; and (F) other measures in that same general vein.

Let staff work from home. We have such a long commute to UBC and many have to drive, we don't want to.

Faculty and Staff housing (which allows walking or cycling to work for the parents and school of their kids) was created to be exactly that - for faculty AND staff. Then a few loud and controversial faculty voices took over the conversation and intimidated and belittled staff. Now it's mostly faculty and the rental rates reflect that. On-campus housing needs to be returned too being for faculty AND staff and rental rates need to be adjusted to reflect how much less staff make in comparison to faculty.

Your scope and framing look excellent!

We have seen the value of reducing commutes and cleaner air quality. This should be a consideration. Climate wellness, human wellness. More time to participate in communities, including those who live at UBC.

It looks sufficient

Remote work/education reduces commuting, waste and provides better food choices. If you are serious about this, don't let departments go back to the way things were just because some manager works better that way and thinks everyone else should too.

Printers! Discourage the use of printers in every office especially as most units have a large printer/Xerox accessible for large numbers of staff.

Having a printer beside someone's desk so they don't have to get up and walk down the hall should be strongly discouraged!

E-waste bins should be located around campus so that students/staff can dispose of broken/old/hardware. Is e-waste to Building operations promoted at student residence? Or even in office spaces?

Climate justice, gentrification, white-washing of programs and initiatives

I think the plan should include emissions targets in relation to new buildings being built on campus and a commitment to divest all university pension funds and any other investments from fossil fuels or other climate change causing businesses or areas of the economy.

I would like to see UBC focus on its financial investments (divestment from fossil fuels was a really wonderful step), on supporting climate research, and on working with the Musqueam and other Coast Salish Nations to promote Indigenous-led climate action and climate justice. I'd also like to see more campus shuttles. I would not like to see a lot more energy put into recycling and whatnot--I think we are doing a pretty good job with that and have been for a while. Also, as a member of the research faculty, I'd like to be funded and evaluated in a way that would encourage fewer, longer international trips. Thank you!!!

Ensure that the onus of change is on the institution not on individuals. Ensure that an intersectional lens is taken to understanding the impacts of climate action policies on multiply-marginalized groups.

The investments that the university engages with will also have an important impact, as will UBC's business partnerships, etc. The impact of these cannot be ignored while asking under-resourced students and staff to take action.

UBC should encourage plant based catering at events by departments and Centres etc.

I think UBC should also be implementing sustainable buildings on campus, as well as sustainable building/construction practices. It's always discouraging to see how UBC continues to cut down more trees.

My above thoughts continued. The management is not holding staff with respect or showing good will in terms of reciprocity. I think in order to do the work with the land we need to work with one another. We need to take these values and apply them across the board. This requires a look at structures that management uses which is a harsh power over model vs a power together model. We can't just decolonize our time in the garden or walking in the woods with children. We need to change our thinking by looking at the hierarchical structure that's in place right now and replace it with a form of management that reflects respect, reciprocity and reverence. This process has to be for everyone. UBC needs to rethink their management choices at UBC childcare and take the leap to promote harmony and well being for employees so they feel safe and supported to do this decolonizing work.

While a mandate may not be feasible or appropriate at this time, UBC adopting and communicating a 'virtual-preferred' policy for business travel could be very supportive in shifting the norm to online conferences etc.

have not fully reviewed yet but hope to provide input. Thank you for this important work!

When I first arrived at UBC as an international student, I was overwhelmed with the amount of expenses I had in my first months, considering the costs of travel/moving, tuition/students fees, unaffordability of rent in Vancouver, high living costs, etc. I was also chocked with the discovery of the "take-out", single-use culture in North America that is less prominent in my culture. I would like to help students chose zero-waste options over single-use and I believe one first step would be in the

financial incentive. Supporting students in this initiative through financial relief or a "arrival care package" of reusable items could be an effective first push towards zero-waste.

It's important to provide containers to collect waste paper, garbage, etc; but it's equally important to keep them serviced and clean--not always the case, unfortunately.

This is very important and it would be good if we had strong leadership guiding the UBC community.

Individual choices are such a small drip in the bucket. UBC should also lend their voices to collective climate change and ensuring pension funds do not support oil/gas industries. Climate change is inherently tied to Indigenous sovereignty and efforts of land defenders need to be supported fully by UBC. I would like to see stronger statements in regards to opposing pipeline construction in BC

The targets are succinct, aggressive yet achievable with the required resources.

"Academic District Energy System: By 2030, 100% of the energy used by the Academic District Energy System will come from low carbon sources." seems very aggressive and not achievable.

The costing section of the draft targets are very limited to the cost of carbon liability but does not address the increased costs (both financially and staff required) of achieving these targets. For example, at the current budget and rate of replacement, we will not electrify all building level gas fired equipment; we currently do not have a way of quantifying food related carbon footprint, will we have the resources to facilitate this?

Metrics drive behavior so we need to ensure that we review how we measure things to ensure we drive the desired behavior. We need a more systematic change in the way we operate

It will further destroy Canada's economy relative to the rest of the world.

Encouraging other offices connected with UBC ( Medical, law, contract companies,..) to replace mail communications with electronic communications such as secure fax or email and spread the climate action beyond the campus.

Need a lot more focus on the system/decision making level. Infrastructure, renewable energy, governance and decision making throughout the organization, climate KPIs.

I often wonder with our food vendors why they are allowed to sell items in single-plastic use containers when more eco-friendly options are clearly available, e.g. plastic beverage bottles when metal or glass are clear alternatives.

Thank you for taking action on the climate emergency. I am happy to participate more and love how the momentum of this project provides additional motivation.

Please consider built environment factors and system design that support individuals to take more sustainable action without really having to think about it or 'choose' it. For example, so many people are confused about how to sort their own waste or dont have the time. So ensuring that the waste being produced is more easily/obviously sorted (ex. everything is compostable other than cans/glass) would be extremely helpful for changing individual behavior. Or hiring people to sort waste.

UBC is in a position to offer public data on both its own operation and the wider business community.

UBC should be a clearing house for reliable data and best science on climate issues. For example, SFU published an assessment of TMX <https://biv.com/article/2021/03/sfu-study-says-tmx-provide-no-net-benefit>. UBC should increase its media footprint on climate matters.

It is odd that public-facing climate information comes from online projects like skepticscience.com and not from large research-oriented universities like UBC. That needs to change, because universities like UBC are an authoritative voice that can reply to the immense effort of disinformation coming from the fossil fuel industry in particular, but from the business community in general, which

promotes to our peril the business as usual model in a time of crisis.

On a practical level, UBC should use its influence to put pressure on the businesses it works with. Vendors should be ranked according to their sustainability and more sustainable vendors should be preferred. Rankings should be made public.

Air travel, students: Try to reduce air travel by students.

For example:

- Provide incentives for students to stay on campus between the winter terms
- Reduce (or stop increasing) number /percentage of international students.

typo in the survey on following page: "would like to be entered"

Just to keep in mind that the sustainable choice may often come with a larger ongoing cost to maintain that choice, and ongoing funding will need to be allocated to ensure those choices are fiscally sustainable.

I think the focus should definitely be on policies and collective action rather than individual behaviors.

Continue to maintain the university campus more Greenpeace

Here are some ideas:

- Invest in green investments
- Monitor the carbon footprint (of individuals/faculties etc)
- Make penalty/incentive for low footprints
- Vegan options as default
- Extra high parking fees
- More protected bike lanes
- Start Parking Days
- Free bike-repairs services? Service to swap/buy used bikes? Security against theft?
- Subsidize e-bikes
- Green insurances
- Include ESD in all different subjects!!
- Make plant-based products the cheapest option in UBC canteens
- Stipends/awards for sustainable research
- Encourage people to vote for a sustainable party
- Offer sustainable food, i.e. local, seasonal, vegan, organic. It should be cheap and fresh, potentially subsidized by the UBC.
- Forbid certain plastic products?

Climate Venture Studio supporting translation of research to societal impact for climate solutions via Innovation UBC and entrepreneurship@UBC

I think the most important thing to remember is that changes need to be as easy for people to adopt as possible. Don't make actions harder than they need to be or force people to go out of their way to be sustainable - make it the easier choice! Keep information clear and any physical places/resources easily accessible; messaging should not indicate that behavioural change is a sacrifice, but a good and easy thing to do! Do also keep in mind that while working from home or reducing conference travel is good for the planet, it's also really important to maintain good networking opportunities, and a virtual conference will simply never be the same as an in-person one. One way to reduce emissions could be a yearly quota for travel, but with a cap-and-trade system so people who don't need to travel much could "transfer" their quota to others who do (making it more equitable in that way as well). I also know how difficult this will be due to COVID, but encouraging sharing of resources and repair of items

instead of single-use will go a long way. And of course, we need more research on how to reduce emissions, along with ways of implementing that research into policy and practice. I believe that special support should be given to sustainability-related entrepreneurship and research to help us find better ways of doing the things we already do, so that we can maintain our current lifestyles to some degree as well!

Banning meat products on campus would directly contribute to reducing emissions and would make a bold statement to the UBC community and beyond.

All individuals are responsible to make our lives more sustainable - but as a leading institution, UBC must recognize how intersections of experience affect people's financial and physical options (driving, parking, part time staff with invisible disabilities not qualifying for COVID office supplies...etc). How can UBC make the largest impact by asking those in positions of privilege to do things differently? Stop flying, stop cutting costs on purchasing large orders of unsustainable UBC SWAG, make sure all janitorial supplies are biodegradable, sustainable, recycled TP etc) Whose job is it to review the big spending and ensure it is in line with Climate Action commitments? Thanks for this work &lt;3

Working from home reduces commuting impacts as well as increasing how well I eat and minimizing the waste I create in my meals

I am still learning about CAP 2030 -

Perhaps as well as UBC centered initiatives - to provide resources on how we can make wider policy changes - for things ranging from pipelines to animal agricultural subsidies - how can UBC harness its community to be a leader in addressing climate change?

Myself and many staff strongly urge UBC to lead by making at least hybrid work-from-home arrangements permanent for staff to bounce forward rather than back and help reduce GHG emissions through this initiative.

great target but we need to make it financially work as a non core faculty

Focus on the "big stuff" - hold the institutions of UBC accountable. Also, the appetite for online learning will be very close to zero post Covid, and perhaps focusing on green commuting/sustainable campus living would be a much better focus than pivoting to online learning.

1.) Given that commuting is a huge source of GHG and there is an acute housing crisis in V, why is the University not focusing on providing more affordable housing on campus for students, staff and faculty? Costs on campus are higher than off campus.

2.) What is being done to reduce single-use plastics in labs? There is a hidden crisis of plastic waste in labs that is not being adequately addressed. Most labs do not work sterile and could reuse plastic, yet there is neither the education nor the infrastructure to reduce and reuse. A solution here would be to have a centralized plastics pick-up and cleaning service on campus.

Urban biodiversity, inclusion

Please do not hesitate to be bold and ask for redirecting funds from travel towards research on digital presence tech in order to minimize the need for travel.

I strongly disapprove of buying carbon offsets: this is an accounting trick to trade money for real progress. Let's be alert to other fake ways to improve poorly-designed performance metrics and make sure our improvements are real.

We could cut UBC's CO2 emissions to zero by closing the University forever. That would obviously be a greater reduction than anything the CAP might produce, and yet the net impact on global emissions would \*still\* be too small to measure. My point? The \*direct\* benefit of CAP 2030 will be completely irrelevant to solving the world's climate emergency. We must admit this and push hard on maximizing the \*indirect\* benefit instead. That is, we need swift global change on an utterly unprecedented scale. The main point of the CAP should be to earn UBC enough clout and credibility that we can

effectively change the behaviour of public opinion and world leaders. This means that the communications and promotional aspects of the plan must be given very high priority. (And for this, honesty and transparency are essential -- a callback to the previous paragraph.)

I hope that UBC will recycle material from buildings that are gutted or taken down. And when UBC contracts out to construction companies that sustainable practices will be a major factor in who to choose.

This is probably the most important thing for the UBC Community to work on over the next few years. Thank you for your work!

No project is well supported

There are 117 months to 2030. We need 1% of today's level of fossil emissions cut each month down to 0% by 2030.

I would like to connect with some folks about the UBC Climate Action Plan to see whether we could collaborate or support your effort by providing embodied carbon, circular design, and operational carbon expertise.

I think we should go carbon neutral

Fair, of course

Focus on fairness and justice

YES

YES

Pay attention to the fair

Energy conservation and emissions reduction

Energy conservation and emissions reduction

fair

fair

Expand scope to define project work development

I hope to be fair and just

Taking into consideration materials, supply chain, delivery emissions and maintenance costs, etc. I would like to see signage in bathrooms across campus explaining which is more sustainable: air dryers or paper towels

Climate change is happening, for all of us. No country or community is immune.

UBC should stop cutting down trees!

Thank you for doing this urgent and important work!

I think climate justice and an intersectional approach to this action need to be central to this plan. I hope that UBC will also aim for more than 45% reduction in extended impacts as it's not clear why this number was set and if the university takes strong actions to support sustainable transit and food choices while discouraging air travel, etc. I would hope a higher reduction could be achieved.

Thanks for the work your team is doing for CAP! Excited to see many of these ideas come to life :)

Minimise commutes by allowing people to work remotely multiple days per week post-pandemic. Also helps with the inequities as poorer people cannot afford housing in Vancouver anymore, so enables people to live further and only come in now and then.

please include the role of sustainable buildings, wildlife-friendly products (bird-friendly coffee), wildlife-friendly landscaping.

I hope the plans will embrace the idea that the performing arts are a really powerful way to engage in these topics and with the community-at-large around these issues.

Stop worrying about disposable coffee cups and focus on what UBC's role is in lobbying for better mass transit.

Textbooks usage is a big part of GHG emissions. Professors should encourage electronic versions, sharing or using old editions more often.

Behaviour change is very important, but institutional change has the biggest impact.

The ability to work from home will reduce travel emissions (cars, etc.), and it reduces the carbon footprint from reduced building occupancy, and more effective use of building spaces. Work from home should continue to be encouraged even post-pandemic.

While the efforts UBC is taking are commendable, I must ask what is being attended to regarding the design of new buildings and the retrofitting of older ones? This is a huge issue for energy use and long-term impacts on our environment, locally and globally. I know you've been working on this. I've also noticed that one overall issue with newer buildings like the CIRS (Centre for Interactive Research on Sustainability), the Beaty Biodiversity Museum or the AMS Nest is that they favour open interior architecture, which leads to a loud and overly-stimulating environment. I find this incredibly difficult to deal with, and wonder if or how these stark places can be noise-dampened in some way. Also, the "smart" toilets in the AMS Nest have a prolific tendency to flush at least four+ times while one is using them, or even just changing for a yoga class. Not terribly intelligent if you ask me. I also expect that climate control might be more difficult in large open spaces, whether heating or cooling.

For myself, I've found parts of helping with this effort much more difficult during Covid due to having to use more single service consumables and commuting to work with my personal car. Given that I'm one of the staff that needs to be on-campus to work my job, this is very frustrating. Perhaps I can start cycling with spring's opening. I prefer public transit, due to not having to drive, but I cannot risk my health by using it. It also restricts the daily walking I do, which isn't good either.

While it's great that we have a 2030 plan to be carbon neutral, shouldn't this have mostly happened a decade ago? What happened to Kyoto 2012 goals? I'm so tired of hearing the talk from everywhere in our country and not seeing more action on really cutting back to change our spiking temperatures across the globe and the often permanent detriment to environments around the world. This is far more an institutional, corporate and large firm issue than just what individuals can contribute to (though I'm not saying we shouldn't try). Are we teaching students about what the large banks are investing in, such as oil & gas, mining and chemicals? Or poor forestry and large agri-business practices that are not sustainable? What about more active respect for our First Nations throughout BC and Canada: their causes and needs for environmental and social restitution from us?

If we cannot make wise choices with where we entrust our finances, how can we change the impacts of large financial banks & insurance companies on what they support? Does UBC teach students (not just business students) about better, sustainable companies that are developing for the future beyond where our economy and society stands now? What is life going to look like post-oil and in a land that switches to more long-term strategies for harvesting our forests and growing food that we need in our country - even restoring more of the manufacturing sector that has been divested into China and other countries over the years. These are huge issues that need addressing and that UBC has the capacity to do if you choose to. As a large university that has a great deal of influence around the Americas and the world, this is something that we need to stand out on - not just with words, but with serious and sustained action.

Focusing on systemic and policy changes at the institutional level (eg divestment) should be prioritized over individual behavior changes (eg educational materials about recycling)

Incorporating a meaningful biodiversity strategy into CAP 2030 will have social, cultural, economic, and environmental benefits; many biodiversity management strategies also have significant climate co-benefits (e.g. carbon sequestration through urban forests, green roofs for urban temperature

regulation, ecosystem-based stormwater management systems). It is also critical that racial justice and Indigenous sovereignty are included and addressed in CAP 2030, as any climate policies must recognize the communities on the frontlines of the climate crisis.

We need a tree canopy coverage inventory and a plan to increase our canopy coverage. As it stands now we do not know how much tree canopy coverage we have or are losing. With this plan should include storm water management and recovery.

Please make an effort campus wide to reduce the number of people coming to campus each day by way of zoom or virtual learning. This will improve the quality of life for so many staff who commute to campus each day. They gain valuable time with family and the ability to take care of themselves much more than sitting in a car for hours each day to travel to work. Please make a meaningful effort to encourage work from home whenever possible for people and for the planet.

We need bold action from UBC Leadership to ensure individual departments are supporting staff to address the climate emergency through remote work and reducing air travel with virtual meetings/events. For instance, we need a university-wide policy that allows all eligible staff to work 3-5 days a week from home if they want to...more impact will happen if this is something mandated across the University as oppose to left up to individual units to decide (where work place cultures differ so widely).

Thanks for the opportunity to provide feedback. I believe that while education that enables individual choices can be empowering, there needs to be more cultural/structural attention to addressing this issue immediately. This should include divesting of all fossil-fuel related investments by the university and provision of financial incentives/perks/subsidies for behaviours that will support the transition to a sustainable future. As someone who already engages in a low-waste, climate friendly lifestyle as much as possible, I recognize the financial and capacity-related issues that might be barriers for many. In fact, it has been difficult for me, someone who has relatively good access to financial resources and time needed to make informed choices, to stick to my principles. And that can be agonizing and difficult. Workshops and educational materials alone are not sufficient for people to be able to make needed changes personally.

I often noticed that the lights in the fields/track fields were left on even no one was using them. I live on campus, and I feel it's a lot of electricity waste when I see the lights on around 11pm. Are there any automatic switch that turns them off at the certain time?

I pay for parking every day. I'm not against transit (but takes a while from Richmond - 2 exchanges/3 vehicles), but refuse to pay monthly parking AND transit pass. I would love a combined pass that allows for either Transit Ride OR parking (since I can't use both on the same day).

There is very little discussion in my department about climate or environmental impacts resulting from department activities. A mandate to report on impacts would be great!

I started working for the ISC in January 2021. I've worked remotely the entire time and see no need to return to campus full time. Working from home saves not only on commute but reduces food waste and packaging.

During the Covid-19 pandemic, my building sat empty, yet for every single day and night the lights remained on throughout the building's halls. Investing in a lighting retrofit for motion activation would not only save money but also the environment

I am off work right now with an immune deficiency disease but when I return I would like to decolonize the daycare I work at. I intend to use Braiding Sweetgrass and the ideas of the Honorable harvest to start this conversation. I am interested in the ideas of respect, reciprocity and reverence in terms of the natural world and us as humans being a part of this. Unfortunately the climate with management and the childcare workers has eroded so much up at UBC childcare services under covid

The woods on and around campus are amongst the most precious resources. Grow it, don't cut it. Reduce streets and parking.

Nothing about UBC divestments in oil. Nothing about converting farm land into housing. Nothing about making affordable ownership of housing for faculty and staff on campus. Nothing about loss of growing land to development.

just think of people who CANNOT bike for health reasons before telling everyone to bike to work

Turn off the lights as soon as possible

I think policy changes are really the only effective way to change people's behavior to the extent that it makes a major impact.

Buses from downtown and along the Broadway corridor are too busy and take too long. I have lived in NYC and London, and commuting there was better than commuting to UBC. Driving my own car to campus is the only feasible option for me. My commute takes me less than 30 mins door to door in my car; it takes more than 1.25 hours if I take transit. This is not feasible.

We ship our green waste off campus instead of reusing it like we have in the past so we are going backwards. Building operations.



THE UNIVERSITY OF BRITISH COLUMBIA

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**The University of British Columbia Okanagan Campus**

# **Climate Action Plan 2030**

## Acknowledgements

*We begin by acknowledging that UBC's Okanagan campus is located on the unceded territory of the Syilx (Okanagan) peoples and that UBC's activities take place on Indigenous lands throughout British Columbia and beyond. The Syilx Okanagan people have been here since time immemorial. In September 2005, the Okanagan Nation Alliance officially welcomed UBC to Okanagan territory in a ceremony, Knaqs npi'lsmist, where UBC signed a Memorandum of Understanding with the Okanagan Nation Alliance. The university works with the Okanagan Nation in the pursuit of campus plans for UBC Okanagan in respectful acknowledgement of the Syilx Okanagan people's stewardship of their territory for thousands of years.*

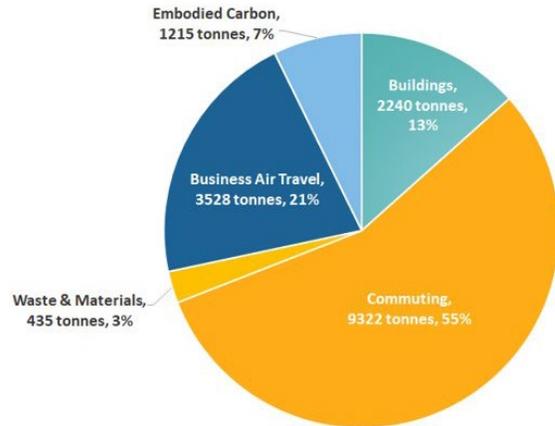
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# Executive Summary

This is UBC Okanagan’s first Climate Action Plan (UBCO CAP 2030) developed by the Okanagan campus to address the growing climate emergency and accelerate greenhouse gas (GHG) emission reductions from campus operations and extended (indirect) sources. This Plan outlines an ambitious path of GHG emission reductions for the campus, while also providing a platform for teaching, learning and research through Campus as a Living Lab initiatives that address the climate imperative.



Total operational & extended emissions (2019)

Total UBC Okanagan GHG emissions in 2019 were approximately 17,000 tCO<sub>2</sub>e (tonnes of carbon dioxide equivalent), with **extended impact emissions comprising approximately 85%** of those emissions. With projected future growth, the business as usual forecast demonstrates that UBCO’s **GHG emissions will continue to increase substantially across all areas without further action.**

UBC’s Climate Emergency Declaration and Climate Emergency Community Engagement process reaffirmed UBC’s commitment to accelerate emissions reductions in alignment with the [Paris Agreement](#) of limiting global warming to 1.5°C. Building on input received from the UBC Okanagan community through the Climate Emergency Community Engagement process, over 130 staff, faculty and students from across both campuses were engaged to develop targets, actions and implementation pathways across all goal areas. This Plan puts forward UBCO-led and system-wide actions that, if all actions, strategies and plans in this Plan are implemented, **will achieve the 45% reduction by 2030**, in support of the Paris 1.5°C target. The Plan is organized into the following categories:

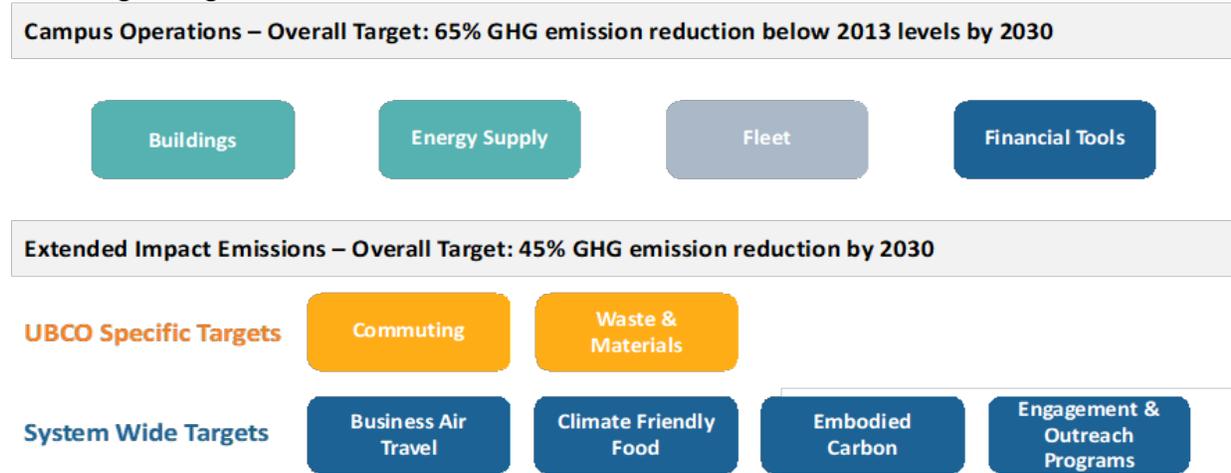


Figure 1: UBCO CAP Targets & Action Areas

The UBCO CAP 2030 is a UBC-wide effort, across both the Okanagan and Vancouver campuses, that will require leadership, resourcing, cross-campus engagement with the academy and collaboration from many units across both campuses.

Resourcing this Plan will require units to leverage existing staffing through reallocation and reprioritization of work programs, and ongoing leadership to plan, resource and implement actions aligned with the strategic priority to address climate change. Partnership opportunities will continue to be pursued with utilities, industry, government and the academy to invest in low carbon solutions. Financial mechanisms and price signals will be identified that support behavioral change while helping to fund emission reductions (e.g., the sustainable transportation levy).

This Plan includes an accountability framework that outlines responsibilities for implementation, monitoring progress, and governance for decision making over time. Accountability will be achieved through alignment of programs, plans, policies and projects as well as decisions and funding to help reduce GHG emissions and mitigate future impacts of climate change.

# 1 Introduction

## 1.1 A Call to Action

Through this Plan UBC is creating a Vision Statement for climate action that guides accelerated action in the CAP 2030 for both the Okanagan (UBCO CAP 2030) and Vancouver campus:

*The Climate Action Plan 2030 will position UBC as a model of how universities can mobilize to address the climate emergency and Paris Agreement targets through bold, impactful actions to accelerate and deepen reductions across operations, and expanded action on reducing indirect emissions.*

Three objectives for the UBCO Climate Action Plan are reflected in the Vision statement and UBC's Climate Emergency Declaration mandate. The objectives provide direction to help achieve the Vision.

- Establish greenhouse gas (GHG) emission reduction targets for 2030.
- Accelerate the decarbonization of campus operational GHG emissions to achieve a “net-positive performance in operational energy and carbon” by 2050.
- Widen the scope of GHG reduction activity to extend UBC's influence to address emission reductions in areas such as commuting, air travel and food.

This is UBC Okanagan's first climate action plan. It builds on existing plans and climate achievements of the campus. Informed by the Vision Statement and objectives, this Plan provides UBCO-specific GHG emission reduction targets and actions, as well as cross-campus (Vancouver and Okanagan) actions that support UBC system-wide GHG emission reduction targets across ten action areas (Figure 1). Targets are aligned with the Paris Agreement goal of limiting global temperature increases to less than 1.5°C. This Plan also helps to advance one of the nine strategic priority areas identified by UBC's Climate Emergency Task Force Report that was endorsed in principle by UBC Board of Governors.

### **UBC's Climate Emergency Declaration**

In December 2019, UBC's Board of Governors unanimously endorsed a [Declaration on the Climate Emergency](#). Joining over 1,700 jurisdictions around the world UBC is committed to accelerate emissions reductions in alignment with the [Paris Agreement](#) of limiting global warming to 1.5°C<sup>1</sup>. Meeting the 1.5°C Paris Target (IPCC pathway) requires a global net anthropogenic GHG reduction of 45% from 2010 to 2030 and reaching net zero around 2050.

UBC's declaration recognizes the severity, complexity, disproportionate impacts of, and responsibilities for, the climate crisis. It commits UBC to develop a collective response that embeds climate justice throughout its activities and priorities. With this endorsement, the UBC Board of Governor's emphasized that climate action continues to be a top strategic priority for the University. Specifically, the Declaration gives impetus for UBC to update plans to address the climate crisis with the urgency it requires.

This Plan addresses how climate action is envisioned to advance across operational and extended impact emission areas and is rooted in supporting the academic mission. It provides a critical platform for climate informed teaching, learning and research and aligns with the vision and values of multiple campus plans. Notably, this Plan supports [Outlook 2040's](#) vision of a globally connected, regionally engaged campus, responsive to 'grand' global challenges, including climate change.

This Plan's actions are designed to align with embedding wellbeing, equity and diversity across university systems and structures – foundational to the [UBC Wellbeing Strategic Framework](#), [Inclusion Action Plan](#) and [Indigenous Strategic Plan](#) - and to consider indigenous perspectives on climate and sustainability, in alignment with the [UBC Okanagan Truth and Reconciliation Commitments](#) for meaningful support for reconciliation. This approach is ongoing and achieves significant co-benefits across many of this Plan's emission themes, particularly those related to extended emissions.

This Plan's implementation is supported by a **Resourcing Strategy** and an **Accountability Framework**. The Resourcing Strategy provides the overall approach for resourcing the many actions and resulting future projects and programs identified in this Plan. The Accountability Framework provides a mechanism and process for UBC units to report on their progress and achievements toward UBCO's Climate Action Plan 2030 Board-approved targets.

## 1.2 Purpose of the UBCO CAP 2030

This Plan provides the overarching campus climate policy direction to guide the campus to make informed, strategic policy and investment decisions to reduce GHG emissions, to reduce medium to longer term operational costs associated with increased carbon pricing, and to continue to demonstrate UBC's commitment and leadership to address climate change. This Plan also underscores the imperative for the campus to take adaptive measures in response to climate change and articulates UBC Okanagan's immediate climate adaptation response and actions going forward.

As a regional innovator and change agent, UBC Okanagan is a place where investments in climate action amplify well beyond campus boundaries.

Successful delivery of UBC's climate action will require all parts of the UBC community to be engaged and to participate to achieve collective impact. This is especially true for addressing UBC's extended impacts, such as commuting, air travel, food and waste. Supported by UBCO's program development, tools, resources, and purchasing policies, UBCO students, faculty and staff, through their own individual choices, have an opportunity to take action and contribute to these emissions reductions.

Some actions in this Plan are already underway, or set to begin, while others will require further study to advance. Through strategic investment decisions in high-impact climate action areas over the next ten years, UBC Okanagan is setting a course to leverage institutional, operational and intellectual capacities to chart a leadership path for other

similar post-secondary institutions to emulate. These investments will support the attraction and retention of students and top talent at every level of the organization.

Further, the anticipated advancement in campus decarbonization and energy efficient technologies, and the advancement of behavioural, social and cultural policies and tools to reduce extended impact emissions, will provide an opportunity for partnering with faculty researchers devoted to help advance innovation in these areas, positioning the University as a testbed of innovation.

## 1.3 Key Drivers for this Plan

Significant and adverse effects of climate change are visible today, from heat waves and wildfires, to flooding and unprecedented storm events. These changes can be expected to intensify over time, as documented in the recent [Climate Projections for the Okanagan Region Report](#) (2020) issued by three Okanagan Regional Districts.

Accelerated action to reduce reliance on fossil fuels and plan for adverse effects is a global imperative and a shared responsibility. The urgency to act is underpinned by the latest science which demonstrates that global emissions will need to fall by approximately 45% from 2010 by 2030 to avoid the most detrimental impacts, reaching 'net zero' by 2050.<sup>1</sup> In Canada, warming is occurring and will continue to occur at twice the rate of the rest of the world, accelerating heat, drought and wildfire impacts and future risks.<sup>2</sup> Locally, the Okanagan has experienced extreme weather conditions, including level four summer droughts, devastating wildfires and smoke, and record high temperatures in recent years.<sup>3</sup> The recent [IPCC report](#) (Climate Change 2021: The Physical Science Basis<sup>4</sup>) concludes that the frequency and intensity of regional hot extremes and ecological droughts will increase in direct relation to increasing global warming. Continued, immediate campus response to recent heat waves and climate fires is a key action in this Plan.

### 1.3.1 Internal Policy Drivers

The UBCO CAP 2030 is informed by and supports the implementation of several important UBC Plans:

[UBC's Strategic Plan: Shaping UBC's Next Century \(2018-2028\)](#), asserts UBC's climate leadership as a key priority. It states, ***"The challenges around climate change are high. We need to intensify our academic and operational efforts on our campuses, in affiliated communities around the world. We must go beyond minimizing harm to becoming net contributors to human and ecological health."***

The UBCO CAP 2030 will help define how sustainability and climate change will support

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<sup>1</sup> IPCC, October 8, 2018. IPCC Press Release: Summary for Policymakers of IPCC Special Report on Global Warming of 1.5°C approved by governments. [https://www.ipcc.ch/site/assets/uploads/2018/11/pr\\_181008\\_P48\\_spm\\_en.pdf](https://www.ipcc.ch/site/assets/uploads/2018/11/pr_181008_P48_spm_en.pdf)

<sup>2</sup> Environment and Climate Change Canada, April 2019. Canada's Changing Climate Report. [https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/Climate-change/pdf/CCCR\\_FULLREPORT-EN-FINAL.pdf](https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/Climate-change/pdf/CCCR_FULLREPORT-EN-FINAL.pdf)

<sup>3</sup> City of Kelowna Climate Action Website, accessed March 2019 <https://www.kelowna.ca/our-community/environment/climate-action>

<sup>4</sup> [https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC\\_AR6\\_WGI\\_SPM\\_final.pdf](https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf)

UBC’s efforts to shape the next century. The UBCO CAP 2030 also helps to advance two of the nine strategic priority areas identified by UBC’s **Climate Emergency Task Force Report** that was endorsed in principle by the UBC Board of Governors. These include accelerating UBC’s emissions reductions in response to the climate emergency and support community wellbeing in the face of the climate crisis.

Founded on UBC’s Strategic Plan, the [UBC Okanagan Outlook 2040 Plan \(2019\)](#), provides a future view of the Okanagan campus to support the academic priorities and mission of the campus. In fulfilling this priority, the Plan **calls out climate change as one of the three grand challenges universities will need to respond to**, envisioned at UBCO through educating future leaders and leading by example. The Plan’s forecasts of institutional growth provide the basis for population data used to develop the UBCO CAP 2030 GHG emissions scenarios.

The [UBC Okanagan Campus Plan \(2015\)](#) sets out a vision for the physical development of the campus and provides a long-term planning framework to manage future campus growth and to support the University’s strategic plan and academic mission. **The Campus Plan incorporates key principles and design considerations that are characteristic of the Okanagan context and climate.** It is referenced in conjunction with subsequent infrastructure plans to inform the UBCO CAP 2030’s growth projections.

The [Whole Systems Infrastructure Plan \(WSIP\) \(2016\)](#) provides a high level Plan for sustainable campus development to 2030 and beyond, that addresses energy, carbon, water, landscape, ecology, biodiversity and engagement to ensure that the campus is resilient to future changes in growth, utility rates, and climate change. **The WSIP sets the Okanagan campus’ first climate action goal to achieve a “net-positive<sup>5</sup> performance in operational energy and carbon” by 2050.** The UBCO CAP 2030 provides the interim operational reduction target of 65% by 2030, on the pathway to the campus’ net-positive by 2050 goal. Continued implementation of the WSIP’s campus-scale water, landscape, ecology and biodiversity actions are required to support climate adaptation and resiliency.

### 1.3.2 External Policy Drivers

There are significant financial and social costs associated with climate change. Carbon pricing is the primary Provincial and Federal mechanism to address these impacts and reduce GHG emissions. As the provincial and federal governments continue to increase the carbon tax associated with fossil fuel purchases, and with the continued mandate of public sector organizations such as UBC Okanagan to purchase carbon offsets to maintain a carbon neutral public sector in BC, UBCO’s carbon liability will continue to

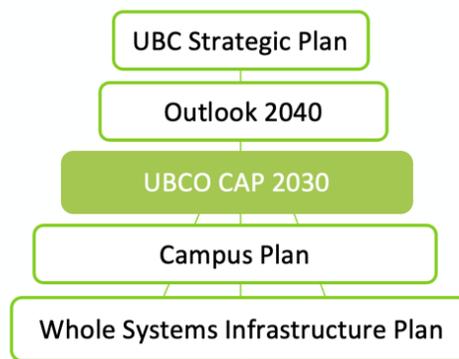


Figure 1: Policy Background

<sup>5</sup> The goal that a development adds value to living systems (social and/or ecological systems); buildings that generate more resources/energy than they consume (Pamela Mang & Bill Reed, Building Research Information, 2014)

grow over time. Under the business as usual scenario, UBCO’s operational carbon liability is anticipated to reach over \$500,000 annually by 2030, and a cumulative total over \$3 million (from 2021-2030), if no new actions are taken.<sup>6</sup> Further campus investment in clean solutions required to achieve the targets set out in this Plan will also serve to reduce the campus’ overall carbon liability, creating the greatest impact and co-benefits for a given level of investment and effort.

Many rapidly-changing external policy drivers have influenced the direction of the UBCO CAP 2030, and will continue to inform this Plan’s direction as it is implemented.

<b>Transportation &amp; land use</b>	<ol style="list-style-type: none"> <li>1. BC Government’s <i>Zero-Emission Vehicle Act</i>: 100% new vehicle sales by 2040, including 10% by 2025 and 30% by 2030</li> <li>2. BC Government’s <i>Renewable &amp; Low Carbon Fuel Requirements Regulation</i>: reduce lifecycle carbon intensity of fuel by 20% by 2030</li> </ol>
<b>Buildings</b>	<ol style="list-style-type: none"> <li>3. BC Building Code: 20% more energy efficient by 2022 and 80% more efficient by 2032 (net-zero energy ready standard)</li> <li>4. Federal Government’s escalation of carbon price on fuels to \$170/tCO<sub>2e</sub> by 2030, which BC’s carbon tax will have to match to stay in compliance. Public sector offset requirements add an additional \$25.00/tCO<sub>2e</sub> to this cost<sup>7</sup></li> <li>5. <a href="#">BC Government’s amendment</a> for increased supply of renewable natural gas (RNG), hydrogen, and other clean fuel sources (15% renewable content in natural gas by 2030) to support transition to renewable fuel economy.</li> <li>6. BC Government’s updated GHG emission intensity factors for electricity use in BC integrated grid-connected entities</li> <li>7. BC Government’s requirement for post-secondary capital project submissions to reduce GHG emissions by 50% (relative to LEED Gold)</li> </ol>
<b>Waste</b>	<ol style="list-style-type: none"> <li>8. BC Government Organic Waste: 95% of organic waste diverted from landfills and turned into other products by 2030</li> </ol>

<sup>6</sup> The carbon liability estimate assumes that UBCO continues to purchase offsets at \$25 per tonne CO<sub>2e</sub> (under the provincial carbon neutral public sector initiative), and that the carbon tax increases annually by \$15 per tonne CO<sub>2e</sub>, reaching \$170 per tonne CO<sub>2e</sub> by 2030 (under proposed federal carbon tax).

<sup>7</sup> To support these reductions by discouraging pollution-intensive investments and increasing affordability of cleaner options, the federal government is also proposing to increase the carbon price by \$15 per year, starting in 2023, rising to \$170 per tonne of carbon pollution in 2030.

## 2 UBCO CAP 2030 Approach

### 2.1 Building on our Strengths

UBC Okanagan is an innovative hub for teaching, learning, research, and innovation situated in the heart of Syilx Okanagan Territory. The campus is a close-knit academic community that has experienced rapid growth. Over the last 10 years, staff, faculty and student population has increased by 209% from 3,975 to 12,279 and is projected to reach as high as 15,000 to 20,000 by 2040.<sup>8</sup>

Since 2007, the number of buildings on campus has increased from 12 to 46. At the same time, GHG emissions from buildings alone have dropped by 7% despite extraordinary growth and transformation of the campus. **In 2019, UBC Okanagan buildings emitted 2,240 tCO<sub>2</sub>e - a 28% reduction from its 2013 baseline<sup>9</sup>, achieving an average emissions intensity that is 30% less than BC Campuses<sup>10</sup>.** Legacy investments of over \$1.5M in the past five years has made the Okanagan campus a leader in low-carbon district energy supply to buildings, resulting in a low operational carbon baseline. With successful implementation of many 'low-hanging fruit' options, will come the need for deeper investments over the longer term to achieve the levels of decarbonization committed to in this Plan.

This Plan puts forward priorities to advance climate action that build on UBC Okanagan's strengths, distinct campus setting, regional context and current conditions. It provides **Okanagan-specific GHG emission reduction targets and actions** where local conditions apply - buildings, energy supply, commuting, food, waste and materials and outreach and engagement. This Plan also aligns with **UBC system-level targets and actions** (described in section 5) and related Okanagan and Vancouver plans and initiatives referenced in this Plan.

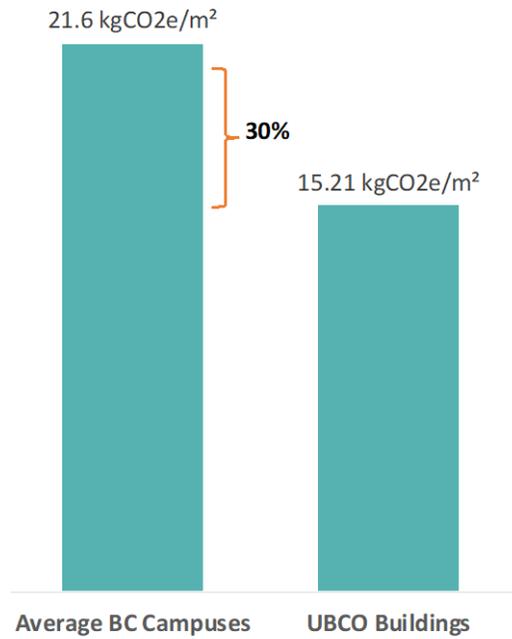


Figure 3: UBCO GHG Emissions Intensity Performance (2019)

<sup>8</sup> UBC Okanagan Outlook 2040

<sup>9</sup> 2013 was selected as UBCO's baseline year, as it represents the point at which the first major phase of new campus development was complete; the district energy system closed loop conversion was complete, and campus energy performance levelled off.

<sup>10</sup> 7<sup>th</sup> Annual PUMA Benchmarking Summary for BC Advanced Education, 2019

## 2.2 A Systems Approach

This Plan identifies actions that will be led and advanced by the Okanagan campus, as well as opportunities for the Okanagan campus to leverage and tailor actions developed for UBC as a system (text box). Policy-level actions being developed for UBC, (e.g., business air travel), will inform actions required for UBC Okanagan to achieve UBC's system-wide targets articulated in this Plan. This approach necessitates key cross-campus linkages and dependencies related to financing, staff resources, and roles between the two campuses. Taking a systems approach, where it makes sense, amplifies investments, creating a bigger impact beyond one campus.

Examples of actions led by UBCO: Energy Supply Decarbonization

Examples of actions being developed for UBC that will be tailored by UBCO: Business Air Travel Policy

## 2.3 Beyond Mitigation

While this Plan focuses on climate mitigation to reduce fossil fuel impacts, responding to climate change will also require the development of adaptation strategies to reduce the effects of climate change. Climate adaptation, resilience and biodiversity planning will prepare the campus to protect its infrastructure and ecological assets against future climate risk, and lay the groundwork for anticipated new regulatory climate resiliency planning and reporting requirements, expected to follow from the release of [Clean BC's Climate Preparedness and Adaptation Strategy](#) anticipated in 2022.

In consideration of the devastating local impacts of climate change, there will be a continued immediate campus response to recent heat wave and wildfires, with a focus on building retrofits, addressing indoor air quality measures for wildfire smoke, and adapting UBC's Climate Ready Building Requirements for new construction. The development of a Climate Adaptation, Resiliency and Biodiversity Strategy that incorporates other related UBC Okanagan plans, policies and initiatives will follow as a subsequent CAP 2030 phase (Ref: Section 5.5).

## 2.4 Lessons from the COVID-19 Pandemic

This Plan was developed and completed during the COVID-19 pandemic, which offered an unprecedented time of learning for UBC Okanagan, and for society in general. With classes moved online and a significant reduction in on-campus activities, the pandemic reduced operational and extended emissions associated with the UBCO campus.

Emerging policy reflections that require further development include maintaining the quality of experience while leveraging learning from remote working and online class delivery, ensuring flexibility and accommodations remain in place to support student, staff, and faculty well-being, and managing space to reduce energy use, GHG emissions and associated costs. Specific lessons and actions emerging from the COVID-19 pandemic are referenced in the relevant sections below. The pandemic has

had little impact on the analysis presented in this plan as most findings are based on the data collected in pre-pandemic periods. Moving forward, the impacts of this pandemic on campus travel patterns, air travel, and the issues and opportunities it presents in the near future will be monitored through the UBCO CAP 2030 implementation process.

More generally, the COVID-19 pandemic has heightened public awareness of systemic racism against IBPOC (Indigenous, Black and People of Colour) communities, and this message was heard strongly through the climate emergency engagement process and recommendations framed around its nine strategic priorities to address the climate crisis. Climate justice must be advanced in conjunction with institutional responses to today's multiple intersecting crises, which compound inequalities faced by marginalized populations.

## **2.5 Climate Justice**

A climate justice lens has informed the development of actions in this Plan to ensure equity, inclusion and diversity are upheld and advanced while climate action is accelerated. Throughout the development of the CAP 2030, working groups have considered how to advance climate action while enhancing equity when working to reduce emissions. Addressing climate justice is particularly relevant when developing climate actions related to food systems (e.g., considering the supply and affordability of nutritious food) and commuting (e.g., affordable low carbon transportation systems). UBC's understanding of climate justice will continue to evolve and we will seek to integrate this learning into inform our planned actions.

## **2.6 Co-Benefits of Climate Action and Risk Mitigation**

Taking strong action on climate change is critical to improving UBC Okanagan's contribution to reducing globally harmful GHG emissions. This is, however, far from the only benefit. Advancing an ambitious UBCO CAP2030 will further many other UBC interests, including:

- Protect UBCO against the increasing costs of carbon policy at the provincial and federal level;
- Mitigate UBCO's exposure to future volatility in conventional energy costs;
- Increase resiliency, capacity, and diversification of UBCO's energy infrastructure in the face of climate change;
- Future-proof UBCO's buildings to the impacts of climate change, through the use of a passive measures first approach, while integrating whole systems infrastructure considerations regarding active cooling strategies;
- Align action among multiple stakeholders at all levels of government (e.g., enhanced transit services);
- Promote and foster the development of sustainable products at a national and local level through technical guidelines, procurement and other policy mechanisms;

- Build industry and regional capacity in upper Step Code design and construction through new, innovative building projects;
- Establish access to new markets and emerging technologies;
- Leverage technology innovation, research, and development at UBCO with Industry partners;
- Leverage external funding to advance key research and innovation priorities by UBCO;
- Increase external investments into campus infrastructure priorities;
- Build internal leadership capacity in climate action;
- Support sustainability challenges within the institution and capitalize on teaching and learning opportunities; and
- Bolster UBCO’s internationally recognized reputation and leadership in climate action and sustainability in operations and research.

These co-benefits are being considered alongside technical, financial, risks, and other criteria when assessing future investments in UBCO CAP 2030 priorities.

### 3 Plan Development Process

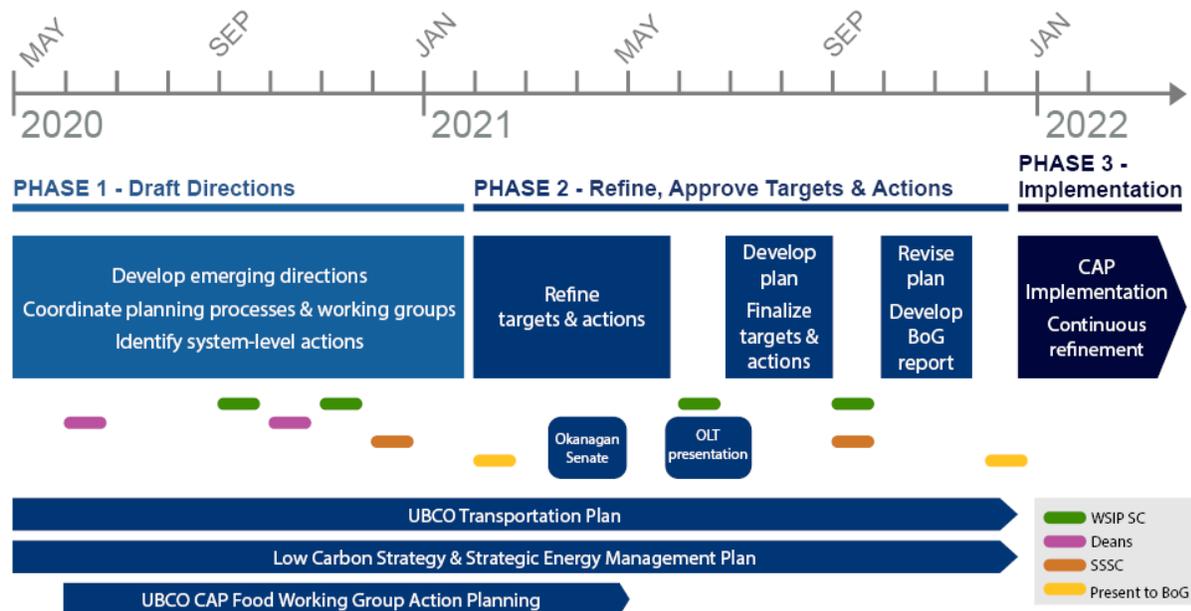


Figure 4 – UBCO CAP2030 Process Overview

The UBCO CAP 2030 process began in early 2020. The process was led by Campus Planning, with strategic oversight and direction provided by a project Steering Committee with representation from faculty and administrative leadership. Early technical work identified commuting emissions to be the largest source of emissions, which supported the need for the UBC Okanagan Transportation Plan, developed in parallel to this Plan.

The UBCO CAP 2030 planning process supported key campus plans with the greatest potential to reduce the largest sources of carbon the campus emits:

- Okanagan Transportation Plan
- Low Carbon Energy Strategy
- Strategic Energy Management Plan
- Climate Friendly Food Strategies

UBC working groups were established to develop targets and actions for all CAP topic areas. Actions in areas that apply to both Vancouver and Okanagan campuses were identified for Vancouver-led engagement (e.g., business air travel and embodied carbon). Key Okanagan staff and faculty were engaged to develop Okanagan-specific CAP recommendations. Following this, emerging directions and draft targets for CAP 2030 – Vancouver and Okanagan Campuses were presented to the Board of Governors in February 2021.

As Okanagan actions were developed and refined, targeted stakeholder meetings were held with key staff responsible for leading or supporting specific actions. These meetings gathered support for implementation, identified resources currently being mobilized, and confirmed roles and responsibilities moving forward.

Stakeholders across both campuses were engaged during the development of this plan. UBC Okanagan engaged over 130 Okanagan staff, faculty and students in the development of targets, actions and implementation pathways to support both Okanagan and system-wide actions (Appendix B).

### **3.1 Public Engagement Process**

From March 29 – April 16, 2021, the Campus and Community Planning team lead a university-wide public engagement process on CAP 2030 across both campuses. Okanagan engagement provided the opportunity for UBC Okanagan community members to learn about the emerging UBCO CAP 2030, ask questions, and share perspectives through two campus-wide virtual public open houses and an online survey. Key public consultation highlights are shown in Figure 5. Further information on the main themes heard during the UBCO CAP2030 public engagement process can be found in the UBCO Public Engagement Report (Appendix C).



Figure 5 – UBCO CAP2030 Public Engagement Highlights

## 4 Addressing Climate Change

### 4.1 UBCO GHG Emission Sources & Contributions

UBC’s GHG emissions are generated from various sources, as illustrated below.

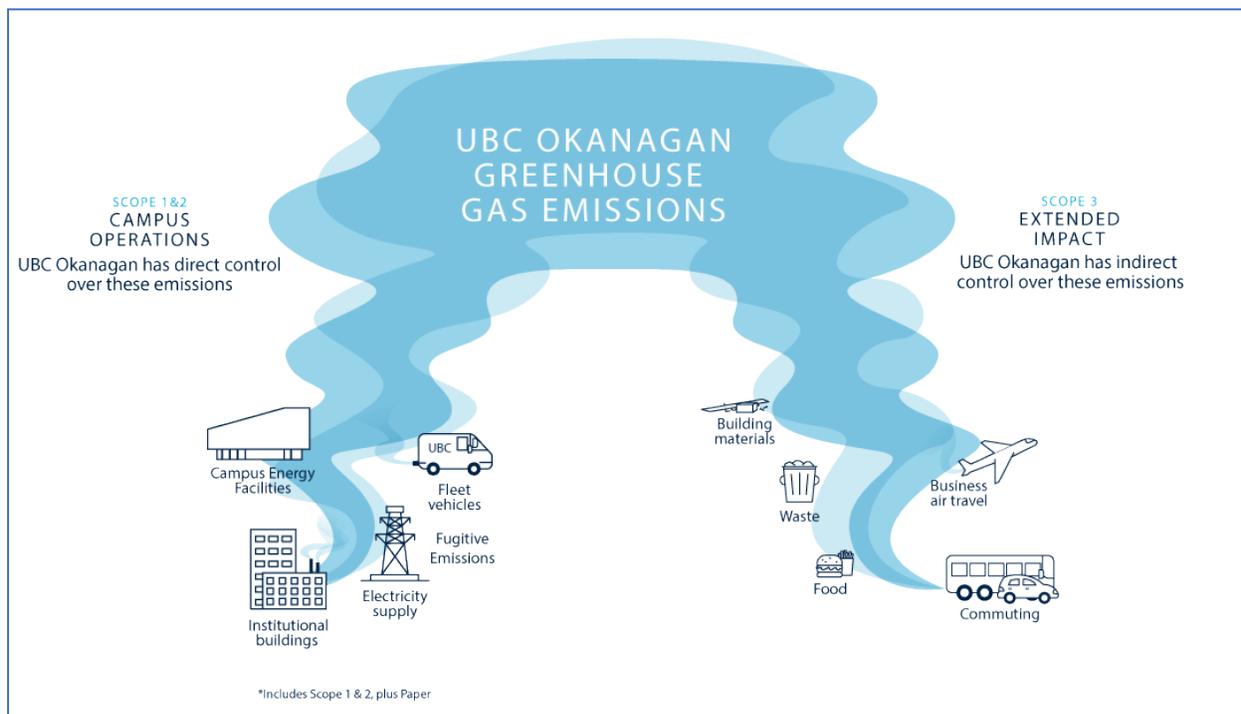
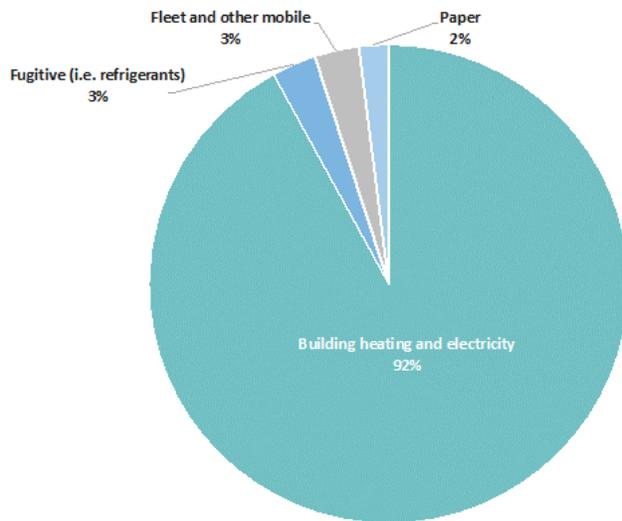


Figure 6: UBCO Operational and Extended Impact Emissions

### 4.1.1 Campus Operations Emissions (Scope 1 & 2)

**Campus Operations Emissions** are those that UBC has direct control over and pays carbon offset taxes on through the provincial carbon neutral legislative requirements for Public Sector Organizations (PSOs). Sources include emissions from buildings, campus energy facilities and fleet vehicles. Reducing these emissions requires infrastructure change and capital investments. To date, these emissions have been successfully reduced by enhancing the energy performance of buildings and expanding the campus' existing District Energy system to new buildings.



In 2019, campus operations emissions accounted for 2,024 tCO<sub>2</sub>e (tonnes of carbon dioxide equivalent).<sup>11</sup> Heating and operating buildings accounted for 92%, and the vast majority came from burning natural gas (96%). Emissions generated from campus operations are defined as emissions from sources directly controlled and operated by UBC (Scope 1), and from upstream emissions from electricity consumed on campus (Scope 2). Electricity accounted for 4% of these emissions.<sup>12</sup>

Figure 7: UBCO Campus Operations Emissions (Scope 1 & 2) by Energy Source (2019) UBCO Climate Change Accountability Report

### 4.1.2 Extended Impact Emissions (Scope 3)

**Extended impact emissions** are those that UBC Okanagan does not directly own or control, but indirectly impacts through University activities. UBCO has the ability to influence these emissions through behavioural change campaigns, sustainable supply chain procurement guidelines and others. These emissions are generally referred to as Scope 3 emissions and include sources such as commuting to and from campus, business air travel, food consumed on campus, waste, and building materials.

**Extended impact emissions are nearly six times larger than campus operations emissions.** While UBC has some influence on these emissions, they are also captured as Scope 1 and Scope 2 emissions for our partner organizations<sup>13</sup>. While the University

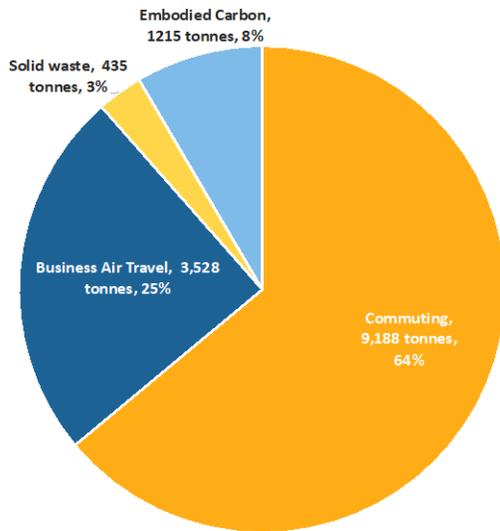
<sup>11</sup> Operational GHG emissions inventories are generated annually by Campus Planning, Sustainability Office as required through the provincial Carbon Neutral Government Regulation.

<sup>12</sup> Electricity emissions factors in BC have become somewhat volatile due to a change in emissions factor approach. Analysis for UBC's CAP 2030 targets and actions has been based on recent provider-based electricity emissions factors and this area will be monitored as these factors continue to evolve in the future.

<sup>13</sup> Examples: building suppliers and products, regional transit fleet vehicles

is not responsible for carbon tax or offset payments on them, it is important that we collaborate with our partners to support achieving these reductions.

Reporting on extended emissions is new for UBC Okanagan. Many foundational UBCO CAP 2030 actions will involve refining our measurement methodologies. Reducing these emissions requires policies and programs (such as behavioural change campaigns) that support social change that empower the UBCO community to affect change through their own actions and choices.



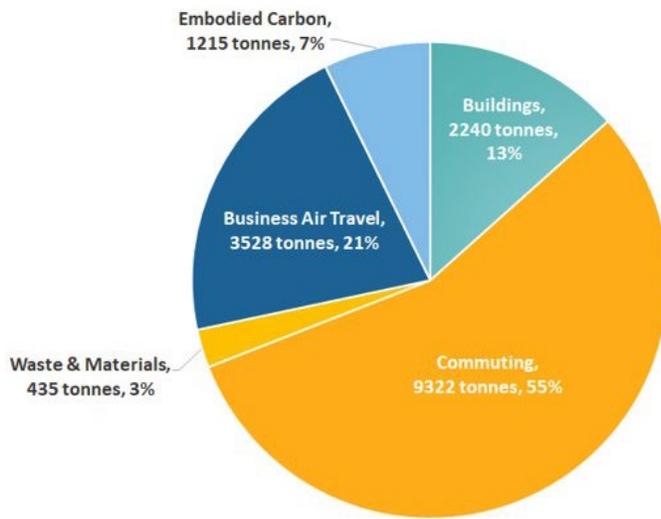
CAP 2030 is the first climate plan to address UBC’s explicit mandate to reduce extended impact emissions. Significantly larger than campus operations emissions, extended impact emissions are estimated<sup>14</sup> to be at least 14,366 tCO<sub>2</sub>e in 2019 (Figure 8). The greatest proportion is attributable to staff, faculty and student commuting.

Figure 8: UBCO Campus Extended Impact Emissions (Scope 3, 2019)

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<sup>14</sup> Extended impact emissions are estimated using consistent UBC methodology and less accurate than campus operations emissions. Embodied carbon uses a standard emissions factor per floor area. Solid waste emissions do not include life cycle emissions, which are much larger.

### 4.1.3 Total Operational and Extended Impact Emissions (Scope 1,2&3)



Total UBCO GHG emissions in 2019 was approximately 17,000 tCO<sub>2</sub>e. Extended impact emissions are estimated to be at least six times greater than campus operations emissions (Figure 9).

Figure 9: UBCO Total Emissions (2019)

## 4.2 Business as Usual Growth

This Plan’s business as usual (BAU) analysis provides a forecast UBCO GHG emissions with growth, if no new policies or actions are brought into place.

Growth is based on projected changes in student, staff and faculty population and the projected change in building floorspace. In the course of developing the CAP 2030, it was concluded that Outlook 2040 Scenario 2 was the most likely path forward for campus population growth. This aligns with the UBCO Transportation Plan (Table 1).

Building floorspace projections for residences and academic buildings is also expected to increase from 147,236 to 226,373 GSM (gross square meters) by 2030. These projections are aligned with expected campus infrastructure growth and the Low Carbon Energy Strategy.

Daily Campus Population Projections	
2019 Existing	2040 Outlook Scenario 2
9,300 students	15,310 students
440 faculty	750 faculty
860 staff	1,110 staff
= 10,600 daytime population	= 17,170 daytime population

Table 1: Campus population growth projections

The BAU also considers how the emissions per unit of growth will change given known policies or trends in place. These include,

- BC Provincial government commitment to require 100% new light duty vehicle sales to be electric

- Air travel trends based on historical data collected by UBCO
- Solid waste disposal trends based on historical data collected by UBCO

The BAU forecast (Figure 10) demonstrates that despite a strong policy foundation, achievements to date, and a relatively low operational GHG emissions baseline compared to similar universities, UBCO’s **GHG emissions will continue to increase substantially across all areas without further action**. Due to the location of the campus, and the surrounding low-density land use, emissions associated with commuting to and from campus will continue to be the largest source. It is also notable that emissions from air travel may be the largest area of growth, if based on pre-pandemic trends. Appendix A provides detailed assumptions for the BAU forecast.

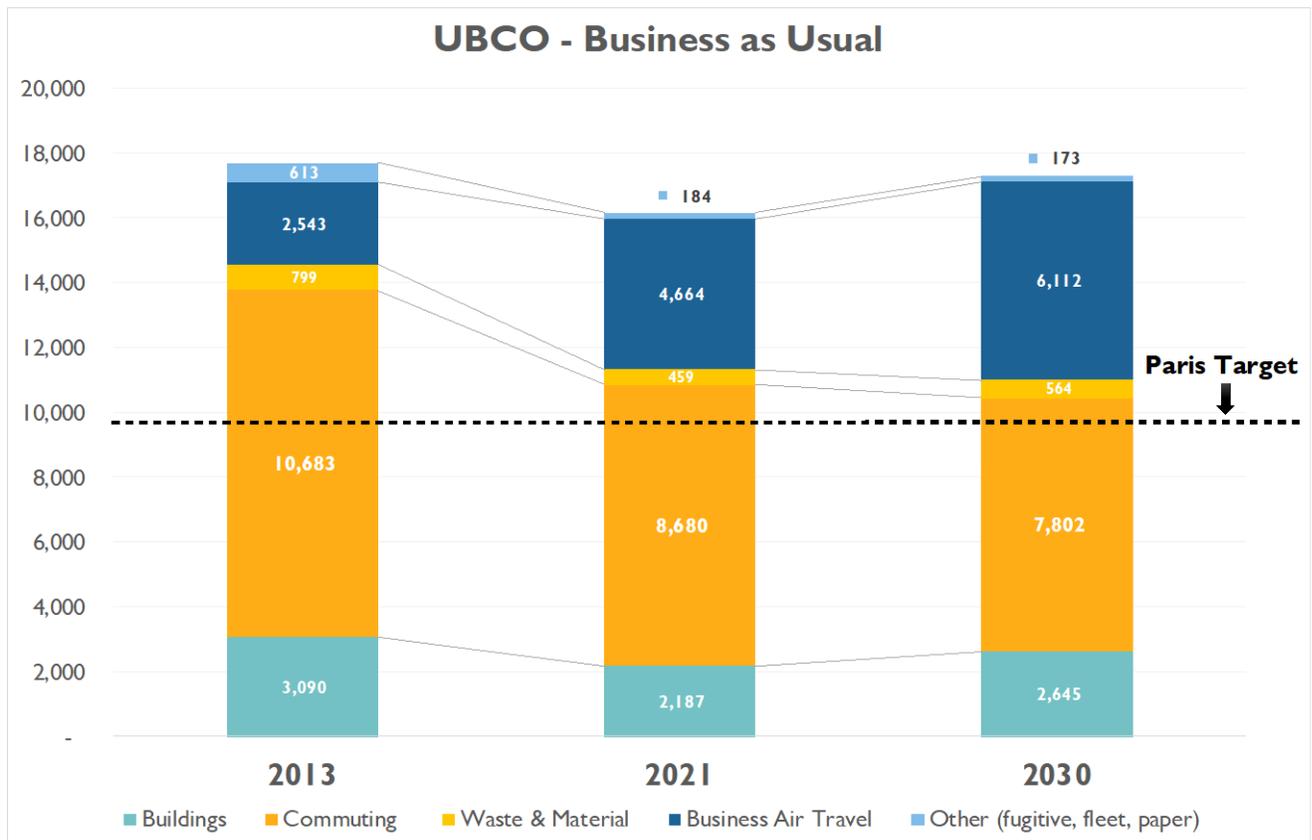


Figure 10: UBC Okanagan BAU (considers policies and trends that influence the rate of GHG emissions growth)

### 4.3 What this Plan Will Achieve

Efforts to substantially reduce total campus GHG emissions will involve both addressing existing operations and ensuring growth in services is decoupled from growth in emissions. The following **combined emissions reduction scenario**<sup>15</sup> shows the combined impact of this Plan’s implementation. **Based on current analysis, the campus will achieve a 45% reduction by 2030** to achieve the Paris 1.5°C target, if all actions, strategies and plans articulated in this Plan are implemented.<sup>16</sup>

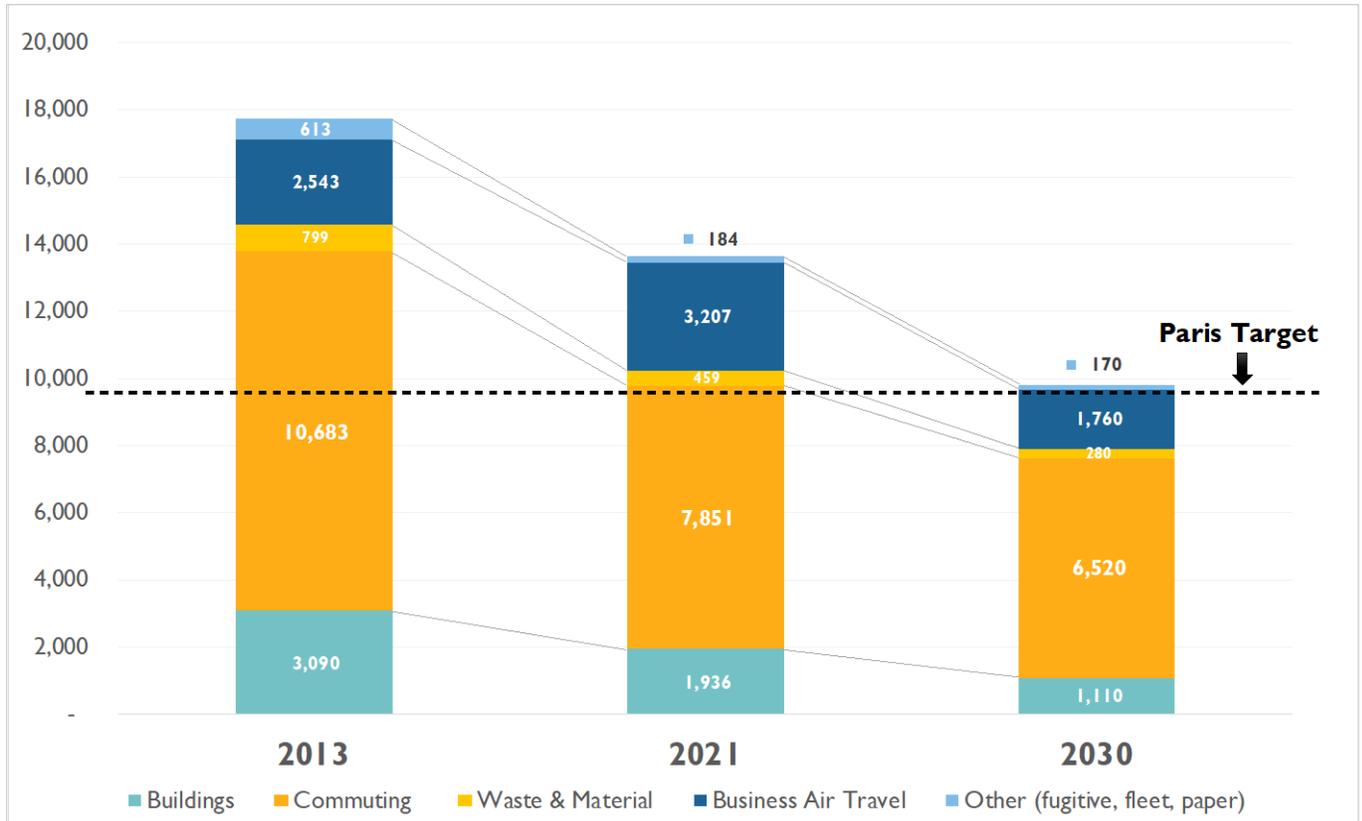


Figure 11: UBC Okanagan Campus GHG Reduction Scenario

<sup>15</sup> The business as usual and reduction scenarios include both operational and extended impact emissions for all categories except embodied carbon. Further analysis is required to estimate the amount of embodied carbon in UBCO buildings constructed since the baseline year, and to forecast embodied carbon under the business as usual and reduction scenarios.

<sup>16</sup> As implementation progresses, there will be opportunity for some targets to progress faster than others, while maintaining the overall extended emissions target of 45%. For example, if there is an accelerated uptake in zero-emissions vehicles, the commuting emissions will reduce more rapidly than forecast.

## 5 The UBCO CAP 2030 Plan – Targets, Strategies & Actions

This Plan sets the vision, ambitions, targets and pathway of actions to achieving the targets. Actions across campus operations and extended impact emissions have been organized into ten<sup>17</sup> action areas, many of which are already planned or under development, and are being led by different operational units across UBC Okanagan and UBC Vancouver campuses.

### 5.1 GHG Emission Reduction Targets

This Plan sets the course to 2030 for UBC Okanagan to reach its contribution to the Paris Agreement target of limiting global warming to 1.5°C. Implementation of actions in this Plan provide a reduction pathway to achieve the seven targets outlined below (Table 2 & 3). Estimates are based on currently available data, methods may be updated in future. See Appendix A for detailed assumptions.

<b>Table 2 - UBCO Specific Targets, Okanagan Data</b>			
<b>Campus Operations Emissions</b>			
Buildings & Energy Supply (combined)	<b>2013 Baseline:</b> 3,090 tCO <sub>2</sub> e (2013) <b>Projected 2030:</b> 1,100 tCO <sub>2</sub> e	23 kgCO <sub>2</sub> e/GSM  4 kgCO <sub>2</sub> e/GSM	→ 65% GHG emission reduction below 2013 levels by 2030 <sup>18</sup>
<b>Extended Impact Emissions</b>			
Commuting	<b>Baseline:</b> 10,683 tCO <sub>2</sub> e (2013) <b>Projected 2030:</b> 6,500 tCO <sub>2</sub> e	1,264 kgCO <sub>2</sub> e/FTE <sup>19</sup>  480 kgCO <sub>2</sub> e/FTE	→ 40% reduction in commuting emissions from 2013 levels by 2030
Waste & Materials <sup>20</sup>	<b>Baseline:</b> 435 tCO <sub>2</sub> e (2019) <b>Projected 2030:</b> 280 tCO <sub>2</sub> e	41 kgCO <sub>2</sub> e/FTE  21 kgCO <sub>2</sub> e/FTE	→ 50% less waste (per capita) compared to 2020, progressing to a zero waste community.

<sup>17</sup> Table 2 excludes two of the ten action areas - fleet and financial tools, as targets do not currently apply to these areas.

<sup>18</sup> The operational CAP Target addresses emissions from institutional buildings including core infrastructure, academic and student housing, excluded are off-campus buildings.

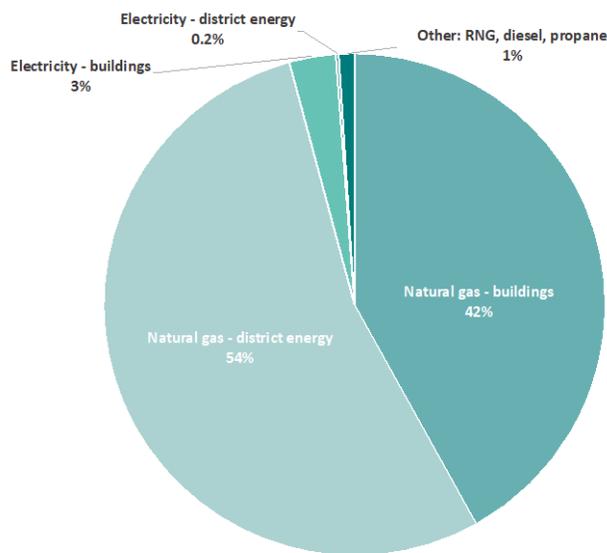
<sup>19</sup> FTE (full time equivalent) includes all staff, faculty and student FTE actuals combined and projections; FTE assumptions may need to be adjusted to align with UBC reporting methodology.

<sup>20</sup> Waste emissions do not include life cycle emissions which are much larger.

Table 3 - UBC System Wide Targets, Okanagan Data		
Extended Impact Emissions		
Business Travel	<p><i>For these extended emissions, methodology development is in progress and numbers will be refined over time.</i></p>	→50% reduction in business air emissions from pre-COVID 2019 levels by 2030
Food		→50% reduction in GHG emission reduction of food systems by 2030
Embodied Carbon		→By 2030, establish an embodied carbon baseline and align new building and renewal designs with a 50% reduction target
Outreach & Education		→By 2030, three quarters (75%) of UBC faculty, staff, and students will be aware of UBC’s climate action goals

## 5.2 Campus Operations

### Target 65% GHG emission reduction below 2013 by 2030



The distribution of GHG emissions resulting from heating and powering campus buildings is shown in Figure 12. The majority of emissions are attributable to natural gas use (buildings and district energy systems), providing a strong case for decarbonization.<sup>21</sup>

\*May not sum to 100% due to rounding

Figure 12: UBCO Campus Buildings and Energy Supply Emissions (2019)

<sup>21</sup> While electricity consumption accounts for a small proportion of GHG emissions, it is notable that electricity emissions factors in BC have become somewhat volatile due to a change in emissions factor approach. Analysis for UBC’s CAP 2030 targets and actions has been based on recent provider-based electricity emissions factors and this area will be monitored as these factors continue to evolve in the future.

The campus is starting from a comparatively low baseline in terms of operational emissions, despite substantial growth. **GHG emissions from buildings alone have dropped by 7% since 2007 despite increasing from 12 to 46 buildings - nearly a 300% increase.** Early projects to support climate action include the construction of a geothermal district energy system to reduce reliance on fossil fuels for building energy supply. UBC Okanagan was also among the first institutions to partner with FortisBC to pilot a building optimization program to monitor legacy academic building energy consumption and implement energy and carbon reduction measures. While these accomplishments illustrate commitment to climate action, the climate emergency has brought new urgency and need to accelerate action.

Figure 13 illustrates that since 2013, UBC Okanagan has reduced GHG emissions by 33%. Further reductions present both an opportunity and a challenge – technically and financially. The Low Carbon Energy Strategy and 10-Year Strategic Energy Management Plan have identified complementary operational strategies that, if implemented, will enable UBCO to achieve and potentially exceed the new CAP 2030 **operational GHG reduction target of 65% reduction by 2030, from baseline.** The BAU increase (Figure 13) is based on building floorspace projections for residences and academic buildings, a constant emission factor for electricity 2020 onward<sup>22</sup> and a gradual decrease in natural gas emission factor to meet -15% by 2030, in line with the provincial CleanBC commitment. These plans outline actions related to future building retrofits and the decarbonization of future campus energy supply over time.

**Achieving a further 65% emission reduction from the campus' 2013 baseline would mean a further reduction of nearly 2,000 tCO<sub>2</sub>e, leaving just over 1,100 tCO<sub>2</sub>e remaining.**

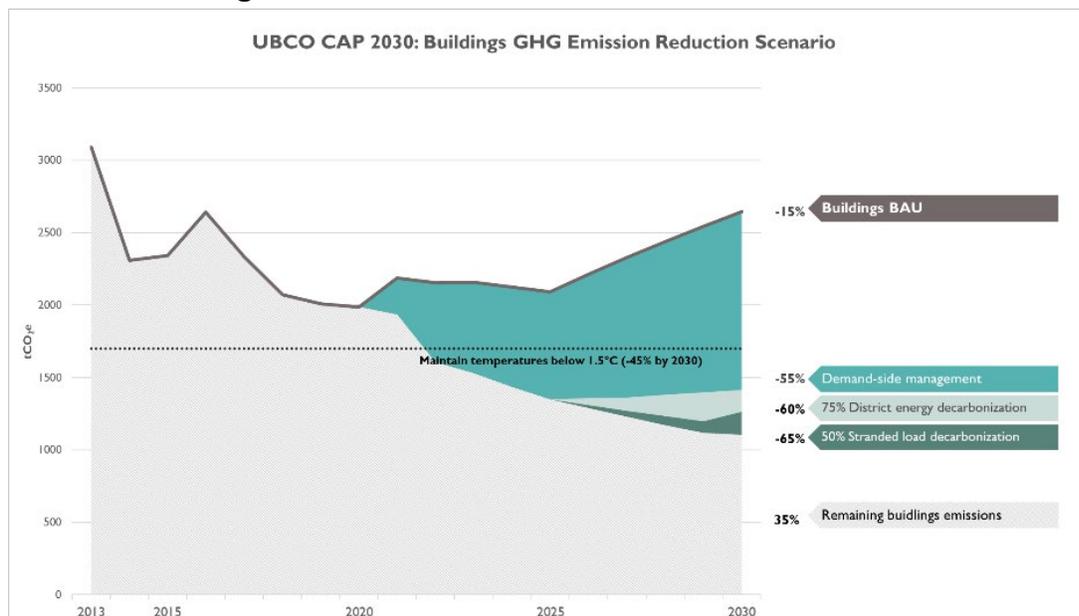


Figure 13: Campus Operations Emissions Reductions Pathways

<sup>22</sup> UBCO operational CAP 2030 targets and actions has been based on recent provider-based electricity emissions factors. This area will be monitored as these factors continue to evolve in the future.



## **UBC Okanagan-Led Actions**

### **5.2.1 Buildings**

#### ***Accelerated Actions - Start F2021-22***

- Eliminate fossil fuel equipment installation in new and existing buildings, unless sufficient amounts of renewable natural gas (RNG) are secured for the lifetime of the equipment.
- Develop UBC LEED® V4.1 Implementation Guide to provide direction and clarification for LEED implementation for new buildings to ensure the Okanagan's climate, energy and environmental characteristics are reflected.
- Reduce emissions from refrigerants used in buildings.
- Develop and implement Okanagan climate-specific building and renewal performance targets by building type<sup>23</sup>. Incorporate energy-efficient designs and low carbon energy sources, and create a life cycle costing process that deals with capital budgets to meet low-carbon design requirements.
- Update UBCO Whole Systems Infrastructure Plan (WSIP 2016) to reference UBCO CAP 2030, Green Building Requirements, Low Carbon Energy Strategy, new Building Performance Targets.
- Initiate a process to append or develop a compendium to the UBCV Green Building Action Plan to indicate building performance requirements for UBCO.
- Continue to implement institutional building performance requirements in UBCO's Design Guidelines' Green Buildings requirements.

#### ***Short Term Actions – By 2024 and Medium Term Actions – By 2030***

- Implement building retrofits and demand-side management measures within UBCO's 10-Year Strategic Energy Management Plan.

<sup>23</sup> Includes Total Energy Use Intensity (TEUI), Thermal Energy Demand Intensity (TEDI), and Greenhouse Gas Intensity (GHGI) targets for each archetype, as well as Energy Conservation Measure (ECM) bundles, costing and financial analysis.

## 5.2.2 Energy Supply

### *Accelerated Actions - Start F2021-22*

- Update UBC Technical Guidelines for compatibility with UBCO Low Carbon Energy Strategy.
- Implement 10% renewable natural gas (RNG) supply.

### *Short Term Actions – By 2024 & Medium Term Actions – By 2030*

- Develop and implement Low Carbon Energy Strategy to decarbonize the District Energy System and address 'stranded loads'.
- Implement Phase 1 Air Source Heat Pump (ASHP) 700 kW Project.
- Implement Phase 2 Air Source Heat Pump (ASHP) 700 kW Project.
- Carry out electrical supply demand studies to determine future supply opportunities with pricing and dispatchable loads.

### **Key Achievements**

The UBCO Skeena Residence completed in 2020 is on track to become the first passive house dormitory in Canada

- 6 story, 220-unit residence and UBC's first Passive House project, designed to the highest performance level of the BC Energy Step Code.
- Integrates leading-edge green building "Living Lab" research for UBCO faculty and green building innovation of provincial, national and international significance.
- Winner of CleanBC's Better Buildings Net-Zero Energy-Ready Challenge Construction and Design Incentive Award, in recognition of best practices in the early adoption of innovative low-carbon building design.
- Recipient of the Environmental Performance Award for the 2020 Wood Design Awards, Canadian Wood Council.



*UBC Okanagan Skeena Residence*

### 5.2.3 Fleet

UBC Okanagan fleet of vehicles and motorized equipment has the smallest impact on operational GHG emissions. Significant work has been undertaken by the campus to electrify fleet. This includes procuring hybrid electric vehicles, and rightsizing vehicles, including electric golf carts for on-campus travel.

### UBC Okanagan-Led Actions

#### *Accelerated Actions– Start F2021-22*

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- Planning and reporting on action related to UBCO's fleet is conducted through the provincially mandated Climate Change Accountability Report (CCAR) process. This process will include the continued pursuit of fleet optimization and efficiency for all fleet vehicles on campus.
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### 5.2.4 Financial Mechanisms: Internal Carbon Pricing (ICP)

The global community is beginning to put a price on GHG emissions. As of 2018, 51 nations or subnational jurisdictions currently, or soon will, price carbon.<sup>24</sup> While there is growing agreement that carbon pricing is an effective tool to contribute to global action to reduce GHG emissions, this field is new and uncertain. Universities provide a space for innovation and open experimentation, and can offer research outcomes to industry and governments to inform future policy development.<sup>25</sup>

Carbon pricing is seen as a key policy tool and a financial mechanism to address climate change. It works by incorporating the true costs of carbon pollution into the decision-making process. So far, external climate policy has lagged behind providing an actual representation of the costs of damages of climate change. To address these challenges, CAP 2030 proposes the introduction of an internal carbon price to better align financial decision-making criteria with UBC's climate goals and provide certainty, predictability, consistency and rigor for decision making. Unlike a carbon charge, the internal carbon price does not result in the exchange of money; it is simply used to inform decisions. The application of an internal carbon price can result in more money being invested initially in climate-friendly systems that reduce carbon dioxide emissions, however, it often saves money when factoring in the life cycle cost-benefits of the solution. UBC's internal carbon price represents an overall price ceiling, inclusive of all external pricing instruments, such as carbon offsets and fuel taxes. Internal carbon pricing has been successfully applied in higher education institutions to evaluate physical infrastructure decisions for energy conservation projects and capital planning and to offset university-sponsored air travel.

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<sup>24</sup> World Bank Group, "States and Trends of Carbon Pricing 2018," May 2018, World Bank, <https://openknowledge.worldbank.org/bitstream/handle/10986/29687/9781464812927.pdf?sequence=5&isAllowed=y>  
Page 8

<sup>25</sup> <https://secondnature.org/climate-action-guidance/i-why-price-carbon/>

## Accelerated Actions – Start F2021-22

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- The internal carbon price level of \$250/tCO<sub>2</sub>e has been selected by UBC based upon carbon price escalation seen at the provincial and federal levels, which will reduce risks by helping to accurately account for the lifecycle cost during decision making.
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## UBC Okanagan-Led Actions

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- Pilot the internal carbon price approach in lifecycle cost analysis for several energy supply, equipment renewal and energy conservation projects.
- Adapt UBC guidance documentation and supporting toolkit to help operationalize the carbon price analysis on campus.

## 5.3 Extended Impact Emission Reductions

### Target: 45% GHG emission reduction by 2030

The overall target of 45% reduction from baseline has been identified to achieve the Paris Agreement 1.5°C target. This is in line with the mandate of the UBC climate emergency declaration.

The CAP 2030 is addressing extended impact areas for the first time, which **are estimated to account for approximately 86% of all UBC Okanagan's emissions** - significantly greater than campus operational emissions. While UBCO administration does not have direct control over its extended impacts, it has influence by creating the enabling infrastructure and policy levers to encourage, support and incentivize behaviour change. Achieving this will also require coordination with local governments, service providers, and vendors, further technology innovation and adoption, and working with businesses and stakeholders across various sectors. Most importantly, it will require strong buy-in and support from UBC's students, staff and faculty, who through their own personal choices have the most control over these emissions.

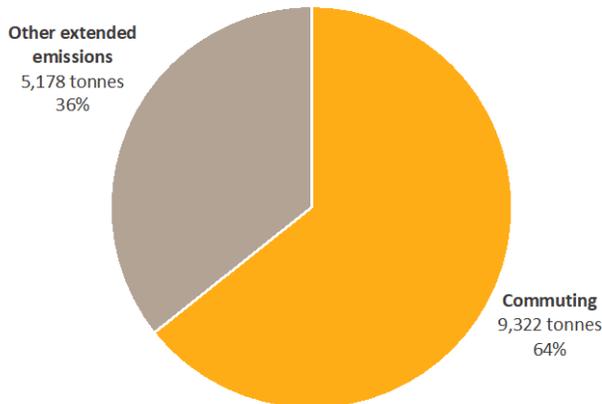
Additionally, many of the actions that relate to extended emissions are integrated actions with UBC Vancouver campus, and/or belong to specific units with their own strategic plans. For example, achieving the commuting GHG reduction target is entirely dependent on the successful implementation of all strategies in the UBC Okanagan Transportation Plan, and external dependencies with BC Transit, the Central Okanagan Regional District, and the City of Kelowna. Achieving the Climate Friendly Food targets will require UBC Vancouver's policy development leadership and support to implement shared lessons policies, and programs across the UBCO campus, as well as Okanagan actions led by staff locally.

Foundational CAP 2030 actions involve establishing measurement methods and monitoring protocols to enable the campus to make informed, strategic decisions in this

area. It is acknowledged that foundational actions in new areas will be built on over the ten year plan trajectory, recognizing some require further study to understand associated costs and benefits. Below is a breakdown of extended impact emission reduction targets and actions by focus area.

### 5.3.1 Commuting

**Target: 40% reduction in commuting emissions from 2013 levels by 2030.**



*Figure 14: Commuting as a Proportion of Extended Emissions (2019)*

Accounting for approximately 9,322 tCO<sub>2</sub>e (64%) emissions per year, commuting by staff, faculty and students to and from the UBC Okanagan campus is the highest extended impact emissions category (Figure 14). In 2019, over 8,800 daily trips were generated by people driving alone, which is 37% of all trips by all modes to and from campus. By 2040, under a medium growth scenario, this number could increase to nearly 14,200 trips by people driving alone.

The campus has several Transportation Demand Management (TDM) policies and strategies in place including the successful U-Pass program to encourage students to take transit, and the bike rental program with UBCycles and bike parking and end-of-trip facilities across campus to support cycling. There are also some unique TDM events that are held throughout the year to encourage sustainable trips including the annual commuter challenge, GoByBike Week, and virtual cycling workshops. However, there are few other TDM programs and services available to manage vehicle traffic and parking demands on campus.

There are opportunities for significant emissions reductions by decreasing commuting trips, shifting behaviours (to zero emission vehicles and to transit, walking and biking), and increasing transit capacity in the longer term. Climate justice also factors into development of transportation policies and programs, to ensure that equity across the UBC community is considered.

**The UBC Okanagan Transportation Plan**, developed in parallel to the UBCO CAP 2030, serves as a high-level roadmap for meeting the transportation needs of the UBCO community through 2040. The UBCO CAP 2030 commuting GHG reduction target is based on modelling the emission reduction impact of strategies identified by the UBC Okanagan Transportation Plan (Figure 15). The analysis demonstrates the campus can achieve a 40% GHG emission reduction by 2030, if all strategies and actions in the Transportation Plan are successfully implemented over the next ten years.

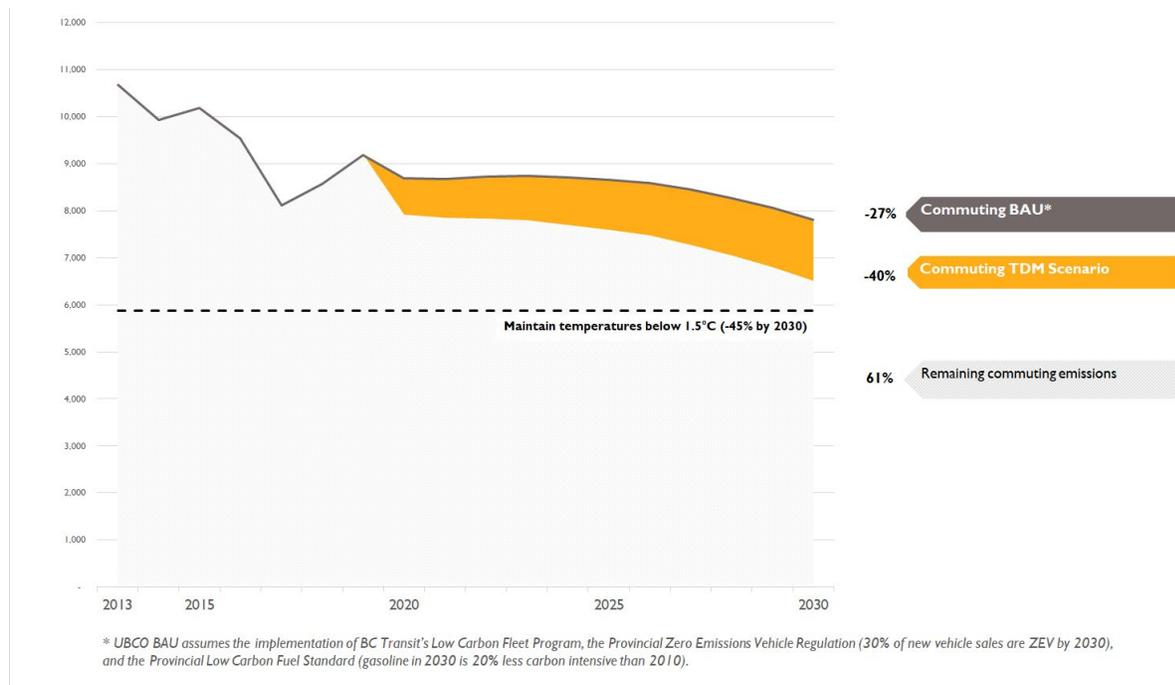


Figure 15: UBC Okanagan Campus Commuting GHG Reduction Scenario

## UBC Okanagan-Led Actions (Ref: UBCO Transportation Plan)

- Advocate for increased transit service levels and an expanded transit network to the City of Kelowna and BC Transit to increase transit ridership by the university community and reach the university's transit mode-share target.
- Directly influence transit ridership by attracting riders through incentive programs, education and awareness programs, and a transit pass discount program for staff and faculty.
- Develop policies, targets and tools that enable and support departments in incorporating teleworking, flex days and e-learning on an ongoing basis.

- Explore funding via a “Sustainable Transportation Levy” as part of parking permit fees to fund sustainable transportation initiatives including a Sustainable Transportation Program, that will support reductions in commuting emissions.
- Establish an ongoing Sustainable Transportation Program to deliver infrastructure, programs and initiatives that enable sustainable transportation choices and drive behavioural change to reduce commuting emissions.
- Continue to enable the widespread adoption of Zero Emission Vehicles by incentivizing their use and increasing the availability of EV chargers across campus.
- Update the current model of parking pricing on campus to manage parking demand and encourage a shift towards more sustainable transportation modes.
- Improve the cycling experience to support more cycling trips to and from campus, such as improved secure storage, working with government partners to provide dedicated bike lanes to/from campus and a joint bike/e-bike share program with the City of Kelowna.
- Provide a broader mix of housing, services and amenities on campus to eliminate commuter trips, encourage more travel by active modes, and enable a vibrant year-round campus community.
- Update campus parking supply requirements with the City of Kelowna to support the University’s transportation related targets and adjust operations to meet demands from new technologies and services, i.e., ride hailing, car sharing, carpooling, etc.

### Key Achievements

The John Hindle Drive and multi-use pathway corridor, and new housing in the Academy Hill area surrounding the campus has improved active transportation opportunities including walking, cycling, transit and new mobility options. Expansion of the transit exchange on campus has influenced travel behaviour by improving the transit experience for passengers and expanded capacity for future service expansion. UBCO sees this as an example of how strategies that support sustainable and convenient travel choices can be supported by the University with cost-effective investments in green infrastructure. The UBCO Transportation Plan presents an opportunity to assess up-to-date transportation conditions and identify areas to enhance multi-modal mobility to, from and around the campus.



*Bike lockers provide secure storage*

### 5.3.2 Food Systems

#### **UBC System Target: 50% reduction in GHG emission reduction of food systems by 2030.**

Food systems are an enormous driver of climate change - from producing, transporting, and storing food, and decomposing wasted food, our food system contributes significantly to local GHG emissions. Attempts to quantify GHG contributions from food systems is emerging, and there are different methods used. At the Vancouver campus, it is estimated that food systems account for an estimated 29,000 tonnes of CO<sub>2e</sub> per year. It is estimated as the second-highest extended impact emissions category following commuting and is anticipated to constitute a substantial share of emissions at the Okanagan campus.

UBC Okanagan is well positioned to lead an integrated approach in creating a just and resilient campus-wide food system. The campus has an active, long-standing Food Strategy Group with broad representation from students, academics and staff across multiple portfolios, responsible for tackling a broad scope of food-related issues ranging from food security to healthy, sustainable food options. The UBCO CAP Food Working Group formed from the Food Strategy Group to develop actions in this Plan. Subsequent work is ongoing to identify the highest UBCO GHG food impact areas on campus and opportunities to mitigate.

The campus is also supported by an in-house operation model of food service, extended to the UBC Okanagan campus in 2019, which aims to provide local and environmentally friendly food options. UBCO will lead many independent actions in this Plan to advance climate friendly food systems, and will also collaborate with the Vancouver campus and communities on system level actions critical for reducing emissions associated with food.

#### **Okanagan Climate Friendly Food Dialogues: An Inclusive, Community-Engaged Approach**

A series of highly attended UBCO food dialogues were developed and facilitated by the UBCO CAP Food Working Group. Over 150 campus community members gathered to learn the latest research evidence and other forms of knowledge, participants' opinions and experiences on topics related to climate friendly foods, wicked questions, and opportunity for immediate action. Outcomes of the dialogues were considered to inform the development of food and food waste actions in this Plan.

Actions outside the UBCO CAP 2030 will be advanced through parallel work including by the UBCO Food Strategy Committee. Examples include the launch of a UBCO Farmer's Market Pilot and leadership of the UBCO Student's Union to advance "Plant-Forward Diets" on campus.

## Key Achievements

Opened in September 2021, the Pritchard Dining Hall 'all you care to eat' strategy eliminates all food waste and packaging by using exclusively reusable utensils and dishware.



*Pritchard Dining Hall, Nechako Residence & Commons Block*

## UBC System-Level Actions (tailored to UBC Okanagan)

### Short Term Actions – By 2024

- Develop and implement scaled Climate Friendly Food System Procurement Guidelines for UBCO Food Services dining locations. This will include alignment of third-party contract stipulations.
- Apply UBC Supplier Code of Conduct to reflect UBC's climate commitments when amended.
- Adopt campus-wide Climate Friendly Food System (CFFS) definition, mandatory CFFS labeling, and toolkit to increase sustainable dietary choices, offerings and habits, following UBC Vancouver's lead.

### Medium Term Actions – By 2030

- Apply measurement and reporting of campus food systems environmental footprint, and coordinate with other food sustainability tracking priorities (adapt based on UBC Vancouver methodology).

## UBC Okanagan-Led Actions

### Accelerated Actions - Start F2021-22

- Perform systematic review of campus-wide food system procurement.<sup>26</sup>

<sup>26</sup> At the current time, measurement is extremely challenging due to the lack of data across supply chains. The purpose of this project is to help UBCO determine its highest food GHG impact areas and recommendations, leading into broader methodology for food emissions developed by the campuses.

## Medium Term Actions – By 2030

- Foster partnerships to enhance community driven food procurement, security and transparency.
- Continue to advance zero food waste actions at the Pritchard Dining Hall Facility at the UBCO Nechako Residence and Commons Block.
- Develop and implement an evidence-based approach to food waste reduction on campus.

In addition to the action noted above, future consideration is being given to **extend food catering commitments to off-campus dining partners.**

### 5.3.3 Business Air Travel

**UBC System Target: By 2030, Reduce Business Air Travel emissions by 50% from 2019 pre-pandemic levels.**

Business air travel is a significant source of extended impact emissions for the UBC Okanagan campus, accounting for approximately 3,528 tCO<sub>2</sub>e/yr. and equivalent to about 24% of total extended emissions. Figure 16 is likely an underestimation due to limitations on available data.

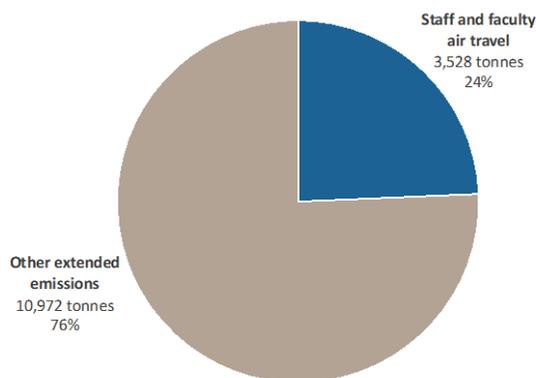


Figure 16: UBCO Business Air Travel as a Proportion of Extended Emissions (2019)

As one of UBC Okanagan’s largest sources of indirect emissions, business air travel provides an opportunity for improvement. Pre-pandemic data available indicate that approximately 17% of this travel is for business between the campuses, and the remaining is to other destinations and to meet academic research requirements. The dependence of faculty and students on air travel to carry out certain types of research and scholarly projects is acknowledged, as well as dependencies between the campuses as it relates to system-wide activities.

The response to the COVID-19 pandemic holds important lessons on how to address climate change. Emissions from business air travel were dramatically reduced while UBC's mission to excellence in teaching and research was generally maintained. By leveraging recent learnings from the COVID-19 pandemic, including the availability of better communication technology solutions, it is anticipated that air travel can be reduced while providing an opportunity to maintain or improve UBC's educational and research objectives. This also increases access to educational opportunities for students and departments lacking means for engaging in extensive travel. Benefits such as cost savings for the university presents an opportunity to strategically reallocate those savings.

Reporting on business air travel is new for UBC, and as this work progresses, we will increase our understanding of the impact and the potential to realize the significant GHG emission and cost savings associated with this scope. Action on business air emissions will involve coordination and decision making across UBC that implicates air travel generally and air travel between the campuses. Improving UBC's tracking and reporting of GHG emissions for all business air travel will strengthen the imperative to act to reduce emissions from this sector. Generally speaking the UBC Okanagan campus often bears a somewhat disproportionate amount of "UBC System" travel. Identification and removal of barriers to choosing travel alternatives will be integral to shifting cultural norms, while ensuring an equitable approach.

## **UBC System-Led Actions (led by UBC Vancouver with implementation support provided by UBC Okanagan)**

### ***Accelerated Actions - Start F2021-22***

- Initiate a Sustainable Travel Program to develop behavioural change programming and awareness campaigns around travel impacts and the increasing number of virtual alternatives available.
- Implement a study across both campuses to understand inter-campus air travel patterns, barriers and opportunities to reduce inter-campus air travel emissions. This action will enable UBC to better understand understanding why we travel between the two campuses and how our travel behaviours should ideally shift as we start to emerge from the COVID-19 pandemic travel restrictions.

### ***Short Term Actions – By 2024***

- Track and report GHG emissions and other key parameters for all UBC business air travel.
- Lead a coordinated approach to reducing air travel GHG emissions across the University ecosystem through the [University Climate Change Coalition](#) (UC3)

## UBC Okanagan-Led Actions

### Accelerated Actions – Start F2021-22

- Continue to support technology such as Zoom and Microsoft Teams which provide virtual meeting and collaboration options.

### 5.3.4 Waste and Materials

**Target: 50% less waste per capita by 2030, progressing toward a zero-waste community**

Waste material represents 3% of UBC Okanagan’s extended impact emissions<sup>27</sup>. It is comprised of operational and construction waste that has been disposed of at the landfill. Waste material removed from campus is tracked via operational waste weight reports provided by the campus’ service provider. Construction waste is reported by project managers on a project-by-project basis, in line with minimum 75% waste diversion requirement for all projects.

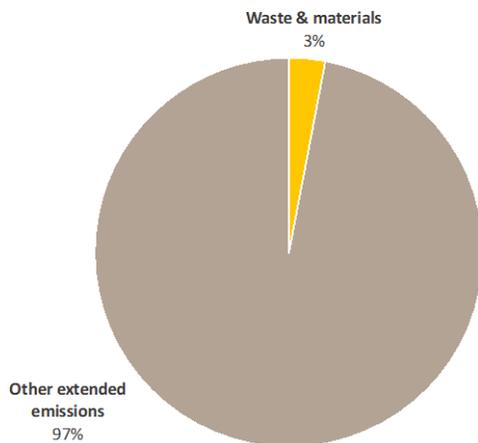


Figure 17: Detailed Emissions for Waste & Materials as a Proportion of Extended Emissions (2019).

Solid waste disposal trends for the UBCO CAP 2030 analysis are based on historical data collected by UBC Okanagan. Waste emissions per population dropped 60% from 2013 through to 2020, with the majority of reductions occurring between 2013 and 2016. The business as usual forecast assumes that the average disposal rate over the last three years (41 kg CO<sub>2</sub>e/capita for 2018-2020) continues through to 2030.

In 2020 the campus landfilled over 486 tonnes of operational waste and 167 tonnes of construction waste material. Landfill material risks soil, water and air pollution and

<sup>27</sup> Waste emissions shown currently only include those from material disposed/landfilled, and do not include life cycle emissions which are much larger.

creates the greenhouse gas methane (CH<sub>4</sub>). This means almost a quarter of the 637 tonnes of overall operational material generated by the campus in the last year was sent to a recycling facility, and the remainder to landfill. A key priority of the UBCO CAP 2030 is to reduce waste on campus. In cases where this is not possible, many recycling programs already exist on the campus, including:

- [Lab Plastics Recycling Program](#)
- [Rescue Paper Program](#)
- [Deskside Recycling](#)
- [Pipet Tip Box Recycling Program](#)
- [Composting](#)
- [Battery Recycling](#)

UBC Okanagan is working in partnership with a third party to collect food waste and other organic material from campus to make chemical-free fertilizer and compost. The compost helps the soil to retain water, and helps reduce the use of non-organic fertilizer & soil amendments while helping companies and communities lower their GHG emissions. This supports Clean BC's target for 95% of organic waste to be diverted from landfills and turned into other products by 2030.

Achievement of UBC Okanagan's waste reduction target requires a coordinated effort across multiple units on campus including Student Housing, Facilities Management and Food Services. Actions to support food waste are therefore included in this section of the Plan.

## **UBC Okanagan-Led Actions**

### ***Accelerated Action - Start F2021-22***

- Identify and implement high impact Green Labs Programs that target waste reduction.
- Increase the volume of organics captured from the landfill and recycling waste streams.

### ***Short Term Actions – By 2024***

- Develop a UBCO section or compendium to the UBC Recycling Infrastructure Guidelines for UBCO Buildings.
- Increase community engagement and behavioural change initiatives to encourage personal responsibility for separation of waste streams.
- Apply/adapt UBC's sustainable procurement program that addresses vendor and product sustainability criteria, zero waste compliant packaging requirements, updated procurement guidelines and processes, and integration with the Integrated Renewal Plan.
- Maximize recycling to reduce waste to landfill.

- Expand re-use programs.
- Reduce volumes of waste on campus.

### Key Achievements

**How to Sort It Out at UBC Okanagan** is a video educational series launched to support sorting compliance with recycling, returnable and compostable streams to keep materials out of the waste stream. The program was developed by geography students supported by the Campus Planning Sustainability Office, Facilities Management and Food Services.

Creating a peer-to-peer educational tool to increase awareness of current waste and recycling issues and improve sorting compliance, the video has relevance to the campus community as a whole.



*Recycling center in the Sunshine Cafe*

### 5.3.5 Embodied Carbon

**UBC System Target: By 2030, establish an embodied carbon baseline and align new building and renewal designs with a 50% reduction target**

Buildings are currently responsible for 39% of global energy related carbon emissions; 28% from operational emissions, from energy needed to heat, cool and power them, and the remaining 11% from materials and construction.<sup>28</sup> As energy efficiency and the proliferation of low carbon systems reduce operational emissions, embodied emissions become a larger portion of the total environmental footprint of the building sector. Transitioning to truly net zero communities will require increased attention to the embodied environmental impacts of buildings.



*The Hangar Fitness and Wellness Centre*

<sup>28</sup> <https://www.worldgbc.org/embodied-carbon>

Given UBC Okanagan's significantly low operational emissions and plans to decarbonize, it is becoming more important to take a lifecycle approach and address embodied emissions that arise from materials used to construct campus buildings, in addition to the energy emissions from operating buildings<sup>29</sup>. Even when averaged over the lifecycle of the building, these emissions represent a significant share of all UBCO's extended impact emissions (at least 7% is estimated). Limiting new construction as far as possible represents the first step in limiting GHG emissions. The embodied energy of new buildings can be reduced by using materials which use less energy to produce and are made from natural and recycled materials.

## **UBC System-Led Actions (led by Vancouver, requiring involvement of UBC Okanagan to co-develop/adapt)**

### ***Accelerated Actions – Start F2021-22***

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- Develop clear guidance for embodied carbon Life Cycle Assessment (LCA) studies for new buildings and renewals, potentially including an early embodied carbon reduction target. The intent is to assess, reduce and report Embodied Carbon and provide data for future benchmarking.<sup>30</sup>
  - Develop guidance for reducing embodied carbon in buildings to discourage, reduce or potentially eliminate materials with the highest embodied carbon impacts.
  - Update the method for campus level reporting on embodied carbon emissions in UBC's GHG inventory and carbon reporting.
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### ***Short Term Actions – By 2024***

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- Develop an embodied carbon target for UBC buildings by type and for the campus as a whole, for application on projects in 2025-2030.
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### ***Medium Term Actions – By 2030+***

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- In addition to embodied carbon, consider healthy and equitably sourced materials/buildings as part of a holistic approach to building material choices.
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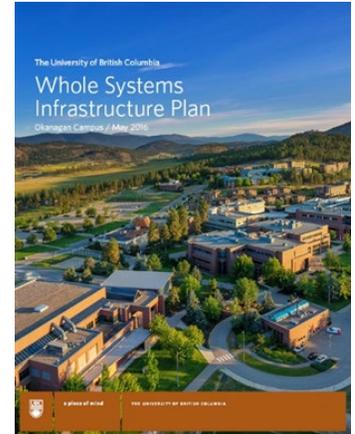
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<sup>29</sup> Embodied carbon refers to the carbon dioxide (CO<sub>2</sub>) emissions associated with materials and construction processes throughout the lifecycle of a building or infrastructure.

<sup>30</sup> Embodied carbon recommendations arising from the UBCO Interdisciplinary Collaboration & Innovation Building (ICI) project is anticipated to inform UBC's future policy and guidance towards the goal of lowering embodied carbon of the university's buildings.

## Key Achievement

The UBCO Whole Systems Infrastructure Plan (WSIP) (2016) led the way to demonstrate the significant opportunity of the campus to address embodied carbon emissions. The WSIP provides the first framework of recommended actions to reduce embodied carbon. This was incorporated into the Okanagan Campus Design Guidelines to guide low embodied carbon materials selection for new building projects.



## 5.4 Outreach & Engagement Programs

**UBC System Target: By 2030, three quarters (75%) of UBC faculty, staff, and students will be aware UBC’s climate action goals and participating in UBC’s evolving and expanding culture of sustainability.**

In addition to policy development that advances structural change needed for systemic emissions reductions, engagement and behaviour change is necessary to reduce extended impact emissions. With the inclusion of extended impact emissions targets in the UBCO CAP 2030, new and expanded communications and engagement capacity is required to drive the behaviour and social changes needed to reach this Plan’s Paris Target-aligned goals for business air travel, commuting, food, waste, and embodied carbon in buildings.

A short-term action for the Okanagan campus, subject to resources, is a realignment of its existing behaviour change program with evidence-based high impact areas for reducing GHG emissions through behaviour change, which represent key areas of focus in this Plan. A new climate change awareness and education strategy is envisioned to support achievement of the emerging CAP 2030 targets focused on reducing Scope 1, 2 and extended impact emissions.

**UBC System-Led Actions (led by Vancouver, requiring involvement of UBC Okanagan to co-develop/adapt)**

### *Accelerated Actions – Start F2021-22*

- Review/adapt UBCV’s comprehensive plan to track, support, and (where needed) coordinate the implementation of CAP-related engagement and outreach communications, campaigns, and programming, in alignment with institutional action on the Climate Emergency Task Force priorities, Integrated Communications & Engagement (ICE) Plan, and CAP 2030 scope 1, 2 and 3 emissions reduction actions.

- Co-develop/adapt UBCV's climate action communications, engagement and outreach model (supporting awareness-building and education as well as social and behavioural change) for both targeted and campus-wide audiences.
  - Coordinate with Vancouver colleagues and Okanagan lead units to adapt cross-campus climate action campaign management model for university-wide CAP 2030 campaigns to strategically guide engagement and outreach campaign implementation at the UBCO campus.
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### ***Short Term Actions – by 2024***

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- Adapt new and expanded sustainability engagement and outreach programs, tools and resources, ensuring adequate and ongoing resourcing to amplify engagement on climate action at the UBCO campus.
  - Apply standardized university-wide process for portfolios, faculties and/or departments to track, measure and report out on UBCO CAP 2030 participation and progress.
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### ***Medium Term Actions – by 2030***

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- Collaborate, where possible, on UBCV's (existing and additional) funding opportunities to support innovative sustainability initiatives driven by faculty, students and staff (i.e., AMS Fund, Workplace Sustainability Fund, Green Labs Fund, Sustainability Revolving Fund, building-based energy-savings projects to benefit lab environments).
  - Develop ways to ensure that climate action is an important aspect of every employee's work, where relevant – such as integration within performance metrics, job descriptions, etc.
  - Identify and utilize price signals to incentivize GHG reduction behaviors (i.e. transportation, business air travel, waste., etc.)
- 

## **UBC Okanagan-Led Actions**

### ***Accelerated Actions – Start F2021-22***

---

- Develop UBCO community engagement/behavioural change strategies for climate action based on lessons learned from COVID-19.
-

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### Short Term Actions – by 2024

---

- Building from the Power of You program, develop new and expanded climate and sustainability communications and engagement programs for high impact audiences to amplify climate action engagement at the UBCO campus.
- 

#### Key Achievement

2020 resulted in a number of shifts in campus behaviours with environmental benefits. Reduced commuting, air travel, and building occupancy resulted in the development of new communications and campus engagement methods targeting the maintenance of sustainable behaviours. Virtual webinars promoted cyclist safety and future bike to campus opportunities. Campus community participation in on-line presentations, “public open houses” and surveys informed many of the recommendations in this Plan, including actions to reduce GHG emissions from air travel, commuting and food.



## 5.5 Adaptation, Resilience & Biodiversity

The UBC Okanagan campus is located in the ecological setting of the Okanagan Very Dry Hot Ponderosa Pine zone, which represents the driest woodland regions in BC, with hot, dry conditions in summer and cool conditions with little snow in winter. At least 25% of the campus has high environmental sensitivity, representing primarily woodland and wetland ecological communities. With a diverse landscape of pine woodland and open grassland, the campus contains ecosystem communities of plants and wildlife identified as being species at risk.



*Arrow-Leaf Balsamroot, UBC Okanagan*

Addressing climate and ecological crises simultaneously is critical to adequately adapt to climate change. Natural assets are also part of a holistic suite of solutions that can contribute to reducing GHG emissions to achieve both mitigation and adaptation objectives, and co-benefits to campus ecology (e.g., shading of buildings to reduce cooling energy loads, and carbon sequestration via trees and vegetation).

UBC Okanagan’s current climate adaptation planning and activities include,

- [Skeena Residence \(Passive House Project\)](#) – Rigorous efficiency standards, climate & thermal comfort modeling

- [Integrated Rainwater Management Plan \(2017\)](#) – stormwater modelling using predicted climate change to provide infrastructure resiliency and achieve 100% diversion of rainwater from municipal system. Demonstrates best practice in green infrastructure and low impact development.
- [Whole Systems Infrastructure Plan \(2016\)](#) – climate sensitivity analysis for energy and carbon reduction measures; landscape, ecology and biodiversity actions and proposed performance indicators
- [UBC Okanagan Campus Design Guidelines \(2019\)](#) – Green Buildings, Climate Adaptive Design
- Campus Environmental Sensitivity Areas Mapping and species at risk protection best management practices (ongoing)
- Annual Climate Risk Survey as part of Provincial Climate Change Accountability Reporting requirements.

## UBC Okanagan-Led Actions

Driven by local conditions, recent climate events and rapid regulatory changes, UBC Okanagan will need to incorporate climate adaptation, resiliency and biodiversity considerations into campus planning and operations. Failing to adequately consider and manage risks from climate change will cost significantly more than implementing proactive management of these risks.

### *Accelerated Action - Start F2021-22*

- Develop procedures and protocols for facility managers in response to increased summer temperatures, decreased outdoor air quality/wildfire smoke for new and existing buildings (e.g., implement CO2 sensors in air handler units as a proxy for Indoor Air Quality Monitoring, implement automated smoke mitigation operational sequences to reduce amount of indoor air when critical thresholds reached).
- Amend UBCO Technical Guidelines to perform thermal comfort modeling of new buildings based on 2050 climate files.
- Undertake a Multi-Hazards Assessment to identify the main hazards and vulnerability facing critical campus infrastructure, teaching and research continuity.
- Continue to implement Low Carbon Energy Strategy – the District Energy Centralized Plant(s) provide the ability to increase cooling capacity (energy supply side) and resiliency for future climate needs more cost effectively.
- Continue to implement and build on campus-scale water, ecological landscape and biodiversity recommendations in UBCO’s Whole Systems Infrastructure Plan to restore and enhance the ecological landscape, promote biodiversity and climate resilience.
- Review and plan to update existing guidelines and plans that support climate adaptation and resiliency (e.g., wildfire plans).

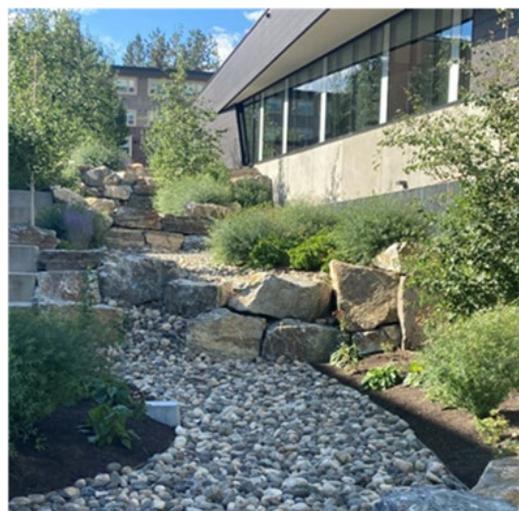
- 
- Tailor, expand and implement UBC's Climate Ready Building Requirements for new construction at the Okanagan campus.
- 

### ***Actions – Short Term – By 2024***

- Develop a Climate Adaptation, Resiliency and Biodiversity Strategy Campus Plan that is an "umbrella" strategy that incorporates other related UBCO plans, policies and initiatives and establishes indicators of campus climate resilience. Incorporate specific actions to maintain and enhance campus ecology and biodiversity as a tool for climate adaptation.
- Update the UBCO Integrated Rainwater Management Plan to respond to future campus growth anticipated by the Campus Plan (2015) update.

### **Key Achievement**

Climate adaptation planning at UBC's Okanagan campus is fundamental to address climate change risks. Climate modelling is an integral component of rain water modelling flows and volumes to responsibly manage rainwater at with future campus development, through the UBCO Integrated Rainwater Management Plan. This Plan assesses and proposes rainwater retention targets to responsibly manage 100% of the rainwater that falls on campus, to the impacts of the built environment on rainwater management, while supporting the natural hydrological cycle, habitat and social amenity.



*Nechako Residence & Commons Block  
Rainwater Garden*

## 6 Plan Implementation

### 6.1 Distributed Leadership Approach

The CAP 2030 is a UBC-wide effort across both the Okanagan and Vancouver campuses, and will require leadership and resourcing from many units across both campuses. This distributed leadership approach embeds the ownership and accountability needed to mobilize the magnitude of effort required to act on climate change across the organization. This approach also builds cross-organizational capacity required for systems change.

The distributed leadership model integrates concurrent work into this Plan, enhances mobilized resources across campuses, and embeds ownership and accountability for delivering on this Plan across the organization. Table 4 highlights where this Plan's actions are originating, who is leading, who is supporting, and where additional resources may be required. Implementation resourcing requirements will be revisited annually.

Area	Policy Level Actions Being Developed for UBC	Okanagan Lead Actions	Okanagan Support of Policy Level Actions
Commuting		*	
Business Air Travel	*		*
Buildings & Energy		*	
Food	*		*
Engagement & Outreach	*	*	*
Embodied Carbon	*		*
Financial Tools	*		*
Waste & Materials		*	
Fleet		*	
Adaptation & Resiliency (next phase of CAP)		*	
CAP Plan Implementation – Coord/Facilitation		*	

**Blue Cells (Okanagan Lead):** require additional resources to implement

**Grey Cells (Okanagan Lead and Support):** additional scoping of resource requirements is needed

**White Cells (Okanagan Lead and Support):** short-term actions are currently absorbed within existing resources - to be revisited annually

*Table 4: UBCO CAP 2030 Plan – Distributed Leadership Approach*

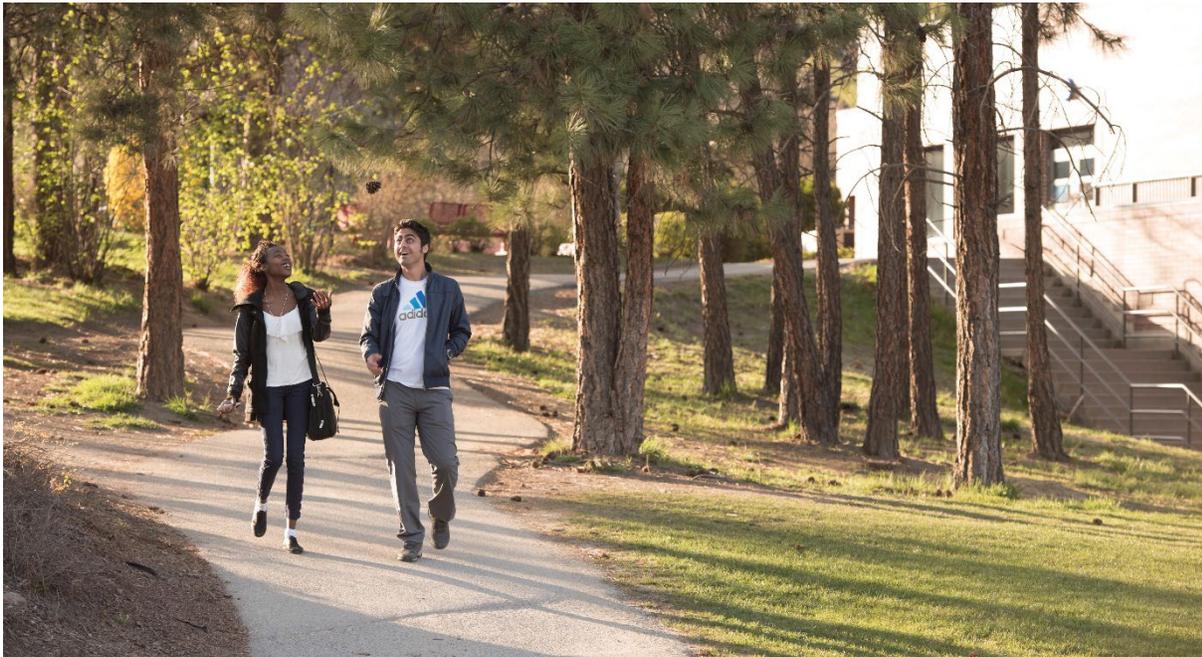
## 6.2 Plan Implementation Process

Informed by a distributed leadership approach, implementation of the actions in this Plan will follow three concurrent pathways.

**Pathway #1 - Implementation of Key Okanagan Plans:** The success of this Plan is contingent on implementation of a number of key plans and actions under various leads. The Low Carbon Energy Strategy and Strategic Energy Management Plan (2021-2030+) are key initiatives that will enable this Plan to achieve its operational GHG emission reduction target. The successful implementation of strategies outlined in the UBCO Transportation Plan 2021 (2021-2030+) will provide the pathway to achieve this Plan's extended impact emission reduction target for commuting.

**Pathway #2 - Okanagan-Specific CAP Actions:** For emissions related to food systems and waste, immediate (now), short (by 2024) and medium term (by 2030) actions have been identified by Okanagan lead and support units for implementation. Okanagan's leadership, and in some cases, Okanagan's ability to implement Vancouver's policy leadership, will move us towards achieving the targets set out in this plan.

**Pathway #3 – UBC System-Level Policies and Actions:** Vancouver, with Okanagan input, will lead policy development in the CAP areas that apply to UBC as a system - air travel, embodied carbon and financial tools. For air travel and financial tools, staff capacity for implementation on the Okanagan campus is required. Other system level actions such as embodied carbon will rely on Campus Planning staff time for input and coordination on both campuses.



## 6.3 Resourcing this Plan

### 6.3.1 Resourcing Campus Operations Emission Reductions

The UBCO CAP 2030 establishes high-level targets, policies and actions that guide projects and investments to achieve this Plan’s vision. Resources are required to implement the majority of actions in this Plan over the next ten years. Until now, accomplishments to reduce campus operational emissions have been largely the result of regular allocations of annual operating budget funding and,

- Existing routine capital funding – deferred maintenance, equipment replacement, building renewals
- New building design / district energy expansion
- Partnerships and Grants (e.g., FortisBC grants and rebates for energy conservation measures, Energy Specialist position, behavioural change programs)
- No or low-cost actions (e.g., Technical and Design Guideline Updates)
- In-kind staff, faculty and student time

#### Key Achievement

In the past two years alone, the campus has received more than \$240,000 in rebates from FortisBC for installing the chiller, as well as boiler upgrades, LED lighting, ventilation and heat recovery. In total, an annual energy savings of 1,900 gigajoules of natural gas and 1,333,500 kilowatt-hours of electricity are projected for these projects, which results in a total annual dollar savings of approximately \$131,000 for UBCO.



*UBCO Geo-exchange Facility*

Achieving the bold vision and aggressive GHG emission reduction targets in the UBCO CAP 2030 will require significant effort from across the university, and a focus on high impact investments in innovative low carbon projects and programs. These necessary investments may require strategic allocation of resources in the context of competing university priorities. However, increasing levels of capital investment in the short-term will help to reduce UBC Okanagan’s carbon liability in the medium and longer term.

The estimated operational carbon liabilities to the Okanagan campus from already-announced policy to 2030 is anticipated to reach over \$500,000 annually by 2030, for a cumulative total over \$3 million (from 2021-2030) if no new actions are taken.<sup>31</sup> Investments in clean solutions will be needed to offset this financial liability. Investments

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<sup>31</sup> The carbon liability estimate assumes that UBCO continues to purchase offsets at \$25 per tonne CO<sub>2</sub>e (under the provincial carbon neutral public sector initiative), and that the carbon tax increases annually by \$15 per tonne CO<sub>2</sub>e, reaching \$170 per tonne CO<sub>2</sub>e by 2030 (under proposed federal carbon tax).

will also serve to protect and future-proof buildings, infrastructure and assets to the impact of climate change that are already occurring, and to build resilience.

Through the UBCO CAP 2030 process, key studies and detailed business case analysis have been completed for operational emission reduction actions requiring larger capital investments. This includes investments required over the next ten years to advance decarbonization of buildings and energy supply options to meet this Plan's operational GHG reduction target. These investments will not only mitigate GHG emissions, they are critical to reducing the campus' carbon offset liability, and provide resiliency against rapid shifts in commodity pricing, and future renewable energy supply options. Just as importantly, without continued aggressive action and investment, UBC Okanagan will jeopardize its leadership role on climate action, and forego the research and reputational benefits this brings.

### **6.3.2 Resourcing Extended Impact Emission Reductions**

In contrast to campus operations emissions which are generally addressed through capital investments, extended impacts emission reductions will be driven by policy, procedures, process implementation, and programs aimed at achieving behaviour change in the UBC Okanagan community. This, in combination with the fact that many emission reduction opportunities of 'low-hanging fruit' are still available, means that in contrast to campus operations emissions, resourcing needs in this area are lower and will be in the form of human resources, administrative, or program funding.

The Okanagan campus has relied largely on 'in-kind' staff/faculty time and existing resources to develop actions in this area. Quick-start actions have been initiated to reduce emissions from high impact and high visibility areas including food systems, commuting and waste. Investment in these programs and emerging evidence-based behaviour change approaches will need to continue and expand to support achievement of this Plan's targets.

### **6.3.3 Resourcing Strategy Approach**

Continued development, prioritization and refinement of cost estimates and investment needs will be required to support this Plan's implementation over the next ten years. Consideration will need to be given to the urgency to fund future policy work required to advance UBC Okanagan's action in key high impact areas such as climate adaptation and resiliency of our campus.

In the near term, it is anticipated that specific resourcing requirements to implement high impact actions in this Plan will come forward under UBC's budget review process. Appendix D – Resourcing Strategy, provides an outline of recommended resourcing approaches as guidance for lead units responsible for the planning, resourcing and implementation of this Plan's actions, required to achieve the level of ambition in this Plan.

## 6.4 Plan Monitoring, Evaluation & Reporting

Monitoring, evaluation and reporting of progress to implement actions in this Plan is required to ensure that the campus meets its climate action commitments through demonstrated progress. This will enable adjustment and continuous improvement in response to changing conditions and policy directions that may influence the campus' climate actions over the next ten years. Monitoring will be facilitated through a Unit Accountability Framework.



### 6.4.1 Unit Accountability Framework

The Unit Accountability Framework provides a mechanism for UBC Okanagan units to report on their progress and achievements towards the UBCO CAP 2030 Board-approved targets. The Framework is similar in concept to BC's Public Sector Climate Change Accountability Reports, which public sector organizations (PSOs) including UBCO develop and submit to the Province annually to report on progress toward carbon neutrality.

Departments or business units that are leading or playing significant roles in actions identified in this Plan will be asked to annually provide information to the Campus Planning Sustainability Office on implementation progress. Implementation timelines may be adjusted based on resource availability, and support will be provided by the Campus Planning Sustainability Office. Detailed information is provided in Appendix E.

### 6.4.2 Performance Monitoring & Reporting

Informed by the Unit Accountability Frameworks, the Campus Planning Sustainability Office will conduct overarching campus climate action performance monitoring and reporting, in alignment with existing campus sustainability and climate reporting systems and requirements. Performance monitoring will provide the campus with an opportunity to assess its overall impact and adjust as needed. Updates to methodology for extended impact emissions (Scope 3) will be developed and incorporated into UBC Okanagan's performance monitoring and reporting process.

Performance monitoring will include the development of an annual UBCO CAP 2030 Progress Report built from Unit Accountability Reports. The Report will document the campus' implementation progress, status of actions and key performance indicators. Annual reports will be provided to the UBCO Sustainability & Climate Steering Committee (proposed). Detailed reporting timelines will be established as the timing of requirements are made available.

### **6.4.3 Plan Amendments and Updates**

This Plan sets out actions for the Okanagan campus to meet Board approved 2030 GHG reduction targets. However, this plan is one step on the path toward the 2050 net positive target. 2030 will mark another milestone in assessing progress. 2025 is recommended as an appropriate timeframe to undertake a comprehensive review and update of the UBCO Climate Action Plan 2030, including developing interim GHG reduction targets for the period between 2030 and 2050 for approval by the Board of Governors, and involving the campus community in consultation.

In order to meet the University's ambitious and challenging goals and targets for 2030 and beyond, strategic oversight and guidance for this Plan's implementation will be led by the UBCO Sustainability and Climate Steering Committee and UBCO Leadership Council. Regular check-ins will ensure progress is being made leading up to Plan updates.

All major amendments to the UBCO CAP 2030 will require approval by the Board of Governors, with any significant changes triggering public notification and public consultation per UBC Campus and Community Planning Engagement Principles.

## 7 Glossary

**Alliance of World Universities (U7+):** An international alliance of university presidents to engage in discussions and concrete action and commitments to address the most pressing global challenges in a multilateral context.

**Business as usual (BAU):** Refers to a situational context or scenario that does not undergo any change; a scenario where no climate action is taken.

**Campus operations emissions:** Campus emissions from sources directly controlled and operated by UBC, inclusive of emissions directly controlled and operated by UBC (Scope 1), and upstream emissions from electricity consumed on campus (Scope 2).

**Carbon Dioxide (CO<sub>2</sub>):** A naturally occurring gas (0.03% of atmosphere) that is also a by-product of the combustion of fossil fuels and biomass, land-use changes, and other industrial processes. It is the principal anthropogenic greenhouse gas. It is the reference gas against which other greenhouse gases are measured and therefore has a Global Warming Potential of 1

**CleanBC:** A plan developed by the British Columbia provincial government that sets 2030 climate goals through energy and industry emission reduction innovations and initiatives.

**Climate Action Plan (CAP):** A framework that provides a pathway to net zero emissions for the Okanagan campus by 2050.

**District Energy System:** District energy systems produce steam, hot water or chilled water at a central plant and distribute it to buildings to provide space and water heating and/ or cooling. UBC Okanagan's DES uses hot water to provide space and water heating to over 130 connected buildings.

**Embodied Carbon:** Embodied carbon refers to the carbon dioxide (CO<sub>2</sub>) emissions associated with materials and construction processes throughout the lifecycle of a building or infrastructure.

**Extended impact emissions:** Campus emissions that UBC does not directly own or control, that are indirect impacts created through University activities that UBC can influence through behaviour change programs and sustainable supply chain procurement guidelines. These are emissions generally referred to as scope 3 emissions that includes commuting, business air travel, food, waste, and building materials.

**Green Buildings Plan:** A document that outlines what actions a jurisdiction will take to decrease the negative environmental impacts and maximize environmental, health and other aspects of its buildings. The Climate Action Plan 2020 identified the development of a comprehensive Green Buildings Plan as a strategy the university may pursue to support its GHG emissions reduction targets. Currently, UBC has a number of green building initiatives, including the UBC Sustainability Process, Residential Environmental Assessment Program (REAP), Building Tune-Up, UBC Renew and Bird Friendly Design Guidelines for Buildings

**Greenhouse Gas (GHG) emissions:** Gases emitted from fuel combustion and other sources, that contribute to the greenhouse effect and global warming. This includes carbon dioxide, methane, nitrous oxide, ozone, and chlorofluorocarbons.

**Heating, Ventilation and Air Conditioning (HVAC):** The system and technology of heating and cooling of buildings through heating, ventilation and air conditioning.

**Integrated Renewable Program (IRP):** An integrated platform for UBC's Finance, Human Resources, and Student administrative processes and system environments with Workday.

**Greenhouse Gas Intensity (GHGI):** A measure of the emissions intensity of a building's emissions, measured and expressed in tonnes or kilograms of carbon dioxide equivalent per unit area over the course of a year (kg CO<sub>2</sub>e/MT/year).

**Life Cycle Assessment (LCA):** A systematic analysis of the potential environmental impacts of products or services during their entire life cycle.

**Renewable natural gas (RNG):** A biogas (or biomethane) that results from bacteria breaking down organic waste from sources such as landfills, agriculture and wastewater treatment facilities, and is upgraded to a quality similar to fossil natural gas. Because of its biological source, it is considered a carbon neutral energy source.

**Right size:** Sizing and designing infrastructure, systems or equipment so that it is correctly aligned with end use requirements. Typically, this includes avoiding over-designing.

**Tonnes of Carbon Equivalent (tCO<sub>2</sub>e):** The universal unit of measurement to indicate the global warming potential (GWP) of each of the six greenhouse gases, expressed in terms of the GWP of one unit of carbon dioxide. Expressing all GHGs in terms of tonnes of CO<sub>2</sub>e allows the different gases to be aggregated. The of CO<sub>2</sub> equals one. Methane or CH<sub>4</sub> has a GWP of 25, indicating that its radiative forcing is 25 times that of CO<sub>2</sub>. In other words, releasing one tonne of CH<sub>4</sub> will have the same warming impact as releasing 25 tonnes of CO<sub>2</sub>. This impact is often expressed using the concept of carbon dioxide equivalent, or CO<sub>2</sub>e: that is, one tonne of CH<sub>4</sub> can also be expressed as 25 tonnes of CO<sub>2</sub>e.

**Total Energy Demand Intensity (TEDI):** A measure of the amount of annual heating energy needed to maintain a building's stable interior temperature.

**Total Energy Use Intensity (TEUI):** A provides a measure of a building's total energy use, including both "process" and "regulated" loads, per meter of building area per year.

**University Climate Change Coalition (UC3):** A coalition of North American research universities committed to climate action and cross-sector collaboration to accelerate local climate solutions and build community resilience.

# Appendix A – Greenhouse Gas (GHG) Emissions Modelling Assumptions

## BAU Forecast Assumptions

Growth is based on the projected changes in student, staff and faculty population, and the projected change in building floorspace. All data sources to forecast these growth parameters are approved by key UBC Okanagan executive. They are aligned with growth estimated in other planning forecast exercises. The BAU also considers how the emissions per unit of growth will change given known policies or trends in place. Detailed assumptions are provided below.

- **Population:** Based on the average daily fall/winter population measured through the biennial transportation survey. Population projections from Outlook 2040 are adjusted to represent average daily fall/winter population (matching the UBCO Transportation Planning population used):
  - Outlook 2040 - Scenario 2: Reporting scenario for the Climate Action Plan and UBCO Transportation Plan. Students 15,389 ==> Adjusted based on daily fall/winter population: 14,407, Faculty and staff 1,857
- **Building area:** Building GSM (gross square meters) forecast set to Campus Plan (2015) estimates for Academic and Residential buildings. The same GSM is used for the UBCO Low Carbon Energy Strategy.
- **Solid waste:** 2019-2030 Emissions per population are equal to three year average emissions per population for 2016-2018. Note that the rate of solid waste disposal per population dropped progressively up to 2015, then remained relatively constant over the years of 2016 to 2018.  
**Embodied Carbon (building lifecycle):** Emissions per building square meters set to constant factor of 0.00825 per year. Building GSM forecast set to Campus Plan (2015) estimates for Academic and Residential buildings. *NB: Methodology needs to be updated, NOT INCLUDED IN BAU.*
- **Staff and faculty air travel:** Emissions per faculty and staff population have been increasing faster than the population increase rate since 2013. Based on a linear regression, an equation was identified to estimate the trend in air emissions relative to faculty and staff population change to 2030, then growth assumed to match faculty and staff population change rate to 2040.
- **Student beds:** Number of student beds increases at same rate as Residential GSM. Used to estimate commuting population (total population - student beds = commuting population).
- **Commuting:** Combines single-occupancy vehicle + carpool + transit emissions as follows:
  - Student commuting days represent two terms; summer commuting (<10% of total) is not currently quantified.
  - Faculty and staff commuting days represent year-round commuting.
  - Average distance per commuting population stays constant from most recent inventory year.
  - Modal split stays constant from most recent inventory year.
  - Single occupancy vehicle (SOV) and carpool emission factor reduces due to estimated impact of Provincial legislation for 100% EV sales by 2040 and 30% by

2030. Assumed sales grow linearly between target years; assume 14 year fleet turnover rate.

- **Carpool:** Average number of people per car stays constant from most recent inventory year.
- **Transit:** Emission factor stays same as most recent inventory year until 2023, then the fleet is assumed to gradually convert to electric by 2040, per BC Transit strategy.

## GHG Reduction Scenario Assumptions

- **Population, Building GSM, Provincial policies applied:** Same as BAU
- **Buildings (Scope 1 and 2):** Estimated emission reductions from three initiatives were provided by the UBCO Energy Team (E-Team) [Updated April 19, 2021]. The initiatives include:
  - Demand Side Management (DSM) measures: Beginning 2021 through to 2025
  - 75% District energy decarbonization: Beginning 2026 through to 2030
  - 50% Stranded load decarbonization: Beginning 2026 through to 2030
- **Solid waste:** 50% Less waste per capita by 2030 compared to 2020 per capita rate.
- **Faculty and staff air travel:** 50% Less business travel emissions by 2030, starts in 2021.
- **Commuting:** Estimated changes in commuting modes, e-learning and remote work patterns were provided by the UBCO Transportation Plan team [Updated June 9, 2021]. Changes include:
  - Commuting modal split in 2030 (changes linearly starting in 2021):
    - SOV: 33%
    - HOV: 18%
    - Transit: 28%
    - Bicycle: 3%
    - Pedestrian: 17%
    - Truck & motorcycle: 2%
  - Online learning: Student trips are reduced 2% by 2030 (changes linearly starting in 2021).
  - Remote work: Faculty and Staff trips are reduced 30% by 2030 (changes linearly starting in 2021).
- **Other areas:** No change from BAU (Fugitive, Fleet, Paper).
- **N.B. Embodied carbon:** *The UBCO CAP 2030 sets a target to reduce embodied carbon in new buildings by 50% by 2030. There is a placeholder for this calculation in the forecast tab, but it is NOT INCLUDED in the Reduction Scenario graph.*

# Appendix B – Stakeholder Engagement

## Okanagan Working Groups & Targeted Consultations

**Project direction and oversight – Whole Systems Steering Committee  
(Okanagan/Vancouver Leadership & Faculty Representation)**

**Okanagan Leadership Council**

**Okanagan Senate**

**Okanagan Deans' Council**

### **UBCO AVP Finance and Operations**

- Business Operations
  - Food Services
  - Student Housing and Hospitality Services
- Campus Operations & Risk Management
  - Custodial and Waste Services
  - Energy Team
  - Facilities Management
  - Health, Safety and Environment
- Campus Planning
- Finance
- Information Technology Services
- Infrastructure Development
- Integrated Planning and Budget Office

### **UBCO AVP Students**

- Health & Wellness
- Aboriginal Programs & Services
- Athletics & Recreation Services

### **AVP Campus and Community Planning**

- Sustainability and Engineering
- Social Ecological Economic Development Studies (SEEDS)

### **UBCO Research and Innovation**

- Business Development Indigenous Community Engagement (Mitacs)

### **UBCO Students' Union Executive**

### **UBCO Students' Union Key Staff**

### **UBCO Faculty Members from:**

#### **Faculty of Arts and Social Sciences**

- Community, Culture and Global Studies

#### **Faculty of Health and Social Development**

#### **Faculty of Management**

#### **Faculty of Science**

- Computer Science, Mathematics, Physics, and Statistics
- Earth, Environmental and Geographic Sciences

### **School of Engineering**

### **UBCO Okanagan Students**

## Appendix C – Public Engagement Report



# UBC Okanagan Climate Action Plan 2030

## Public Engagement Summary Report

1.1

June 2021



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# Executive Summary

## Climate Action Planning at UBC

In December 2019, [UBC declared a climate emergency](#), which included a commitment to accelerate the reduction of emissions at UBC Vancouver and UBC Okanagan. A key step is UBC's development of a Climate Action Plan 2030 (CAP 2030) for both campuses.

The CAP 2030 process builds on UBC's past successes in climate change mitigation and action, which have resulted in significant emissions reductions from core operations. However, CAP 2030 is enabling UBC to significantly extend its global climate leadership by developing an accelerated pathway for UBC to become net zero through new clean energy solutions and energy-efficient technologies, as well as identifying new ways to reduce emissions in areas that every university community member has influence over including commuting, food, waste, and business air travel.

[Emerging directions and draft targets for CAP 2030](#) were presented to the Board of Governors in February 2021. The final CAP 2030 will be presented to the Board of Governors in November 2021 and will incorporate direction from the Board of Governors, refinement of targets and actions through on-going studies, as well as input received through public engagement.

## CAP 2030 Public Engagement

From March 29 - April 16, 2021, UBC's Campus and Community Planning held a university-wide engagement process on CAP 2030. This engagement process was an opportunity for UBC community members to learn about the emerging CAP 2030, ask questions, and share perspectives. Engagement took place on both UBC campuses, however this report focuses on the Okanagan campus; please go [here](#) for more information about the UBC Vancouver CAP 2030 engagement.

### Engagement Activities

We heard from a total of **218 participants** through two virtual engagement activities:

- **Online Survey (177 participants):** The online survey was a chance for the UBC Okanagan campus community to submit feedback about the CAP 2030 emerging directions and targets as well as provide insights about the barriers and opportunities for climate action on campus.
- **Virtual Open Houses (41 participants):** Two virtual open houses were held for the Okanagan campus community to connect with the CAP 2030 team over Zoom, watch a presentation and have a Q&A with UBC staff and the planning project team.

## What We Heard

Through our online survey and virtual events, we heard feedback from participants about the emerging CAP 2030, and the barriers and opportunities for climate action on campus. Feedback was focused specifically around five areas focused on indirect emissions (called "extended impacts"): (1) engagement, (2) commuting, (3) UBC business-related air travel, (4) climate-friendly food systems,

and (5) waste. The main themes that we heard during the CAP 2030 public engagement are summarized below and more detailed information can be found in the Appendices at the end of this report.

## THEMES WE HEARD



### Support for UBC Continuing to be a Climate Leader

First and foremost, we heard broad support, interest and passion about UBC's climate and sustainability agenda. It was clear from the submitted feedback that the UBCO community is already very engaged in a diversity of climate-friendly initiatives and has many creative and innovative ideas for how they and the university can continue support the region in climate leadership.



### Build More Capacity for Sustainable Commuting

The top comment we received overall was the need for building additional capacity for sustainable commuting. Feedback on this topic included interest in cycling infrastructure upgrades, public transit network improvements, and expanding capacity for carpooling and electric vehicle charging. Respondents were especially interested in additional bike lanes connecting campus to surrounding areas.



## Provide Incentives to Increase Affordability of Climate Action

Another theme we heard was about ensuring actions related to the CAP 2030 are affordable for the UBCO community, most notably for UBCO students. Suggestions included incentives to make sustainable food purchases (i.e. buy 9, get 10<sup>th</sup> free), a subsidized Staff/Faculty U-Pass, and incentives for virtual networking and departmental events.



## Encourage a Climate-Friendly Culture Shift

There was also interest amongst participants to use CAP 2030 to incite a university-wide culture shift towards more climate-friendly actions and behavior. Feedback included the desire for UBC leadership to lead by example (especially around inter-campus air travel), expanding access to digital resources to reduce printing waste, and adequately resourcing sustainability staff. There was also strong support for systemic UBC change, in addition to individual behavior change.

## Next Steps

The ideas and feedback collected from this public engagement process about the emerging CAP 2030 directions and targets, in combination with further technical work, will inform the CAP 2030 development process.

# Appendix I – Engagement Process Summary

## Engagement Process

The UBC Okanagan Climate Action Plan 2030 public engagement was held March 29 – April 16, 2021. Community members participated through an online survey and two virtual open houses.

This engagement process was guided by Campus and Community Planning’s [Engagement Principles](#) laid out in the Engagement Charter. These ten principles define how we engage the public and campus community in the planning and development of our campus, as well as collaborating and partnering on community programs and services.

In total, **218 people participated** in this engagement, either attending the virtual events and/or completing the online survey. Our engagement summary is as follows:

- **41 people** attended two virtual public open houses via Zoom.
- **177 people** completed the online survey.

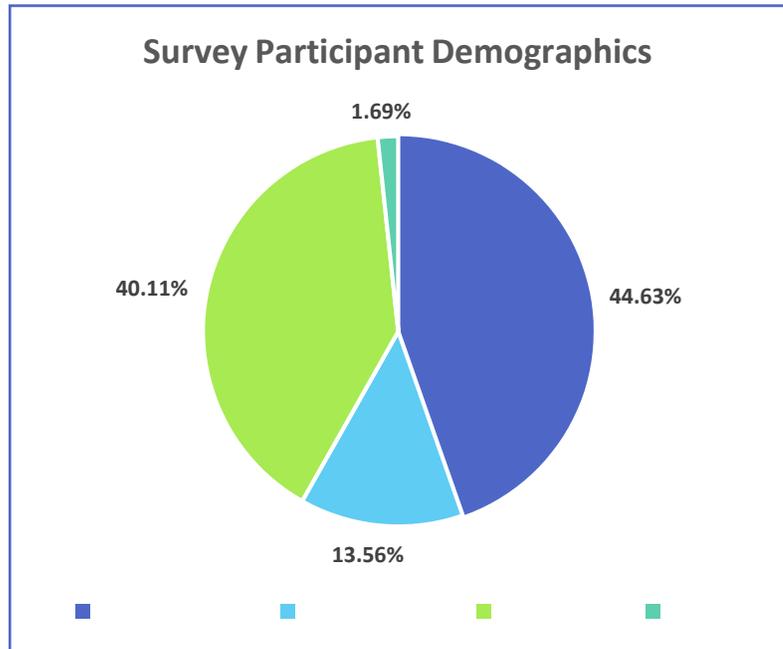
The online survey questions and detailed feedback analysis are included in Appendix II and verbatim survey responses are included in Appendix III.

### Online Survey

The online survey was a chance for the wider community to submit feedback about CAP 2030 emerging directions and targets, as well as provide insights about the barriers and opportunities for climate action on campus. The majority of survey respondents were UBC staff (52%) and UBC students (23%).

### Virtual Open House

The virtual public open houses were held on March 31 and April 8, 2020 over [Zoom](#). These events started with a 20-minute CAP 2030 presentation, but then were drop-in style event where participants met for a Q&A with UBC staff and the planning project team.



## Appendix II – Detailed Survey Results

This section outlines what we heard from the UBC Okanagan Climate Action Plan 2030 online survey that was conducted between March 29 – April 16, 2021.

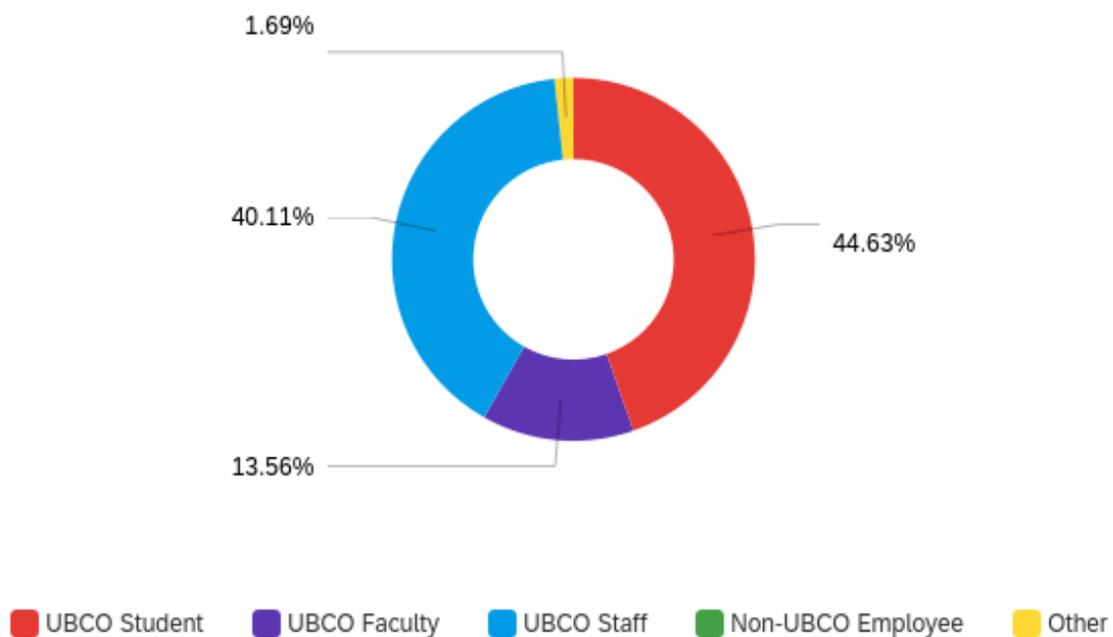
Both qualitative and quantitative feedback were collected through the online survey. The quantitative feedback is summarized below in a number of different charts and visualizations. This data was collected through multiple choice and Likert scale questions, with options to add text entries under “Other” for most questions. It is important to note that most questions had the option to “select all that apply,” so percentages of responses will not sum up to 100%.

The qualitative verbatim responses collected were reviewed and themed according to the sentiment of each comment. Top themes for open-ended survey questions are highlighted in the tables at the end of this Appendix. These include themes with an occurrence rate of 5% or more of the total number of comments for each question.

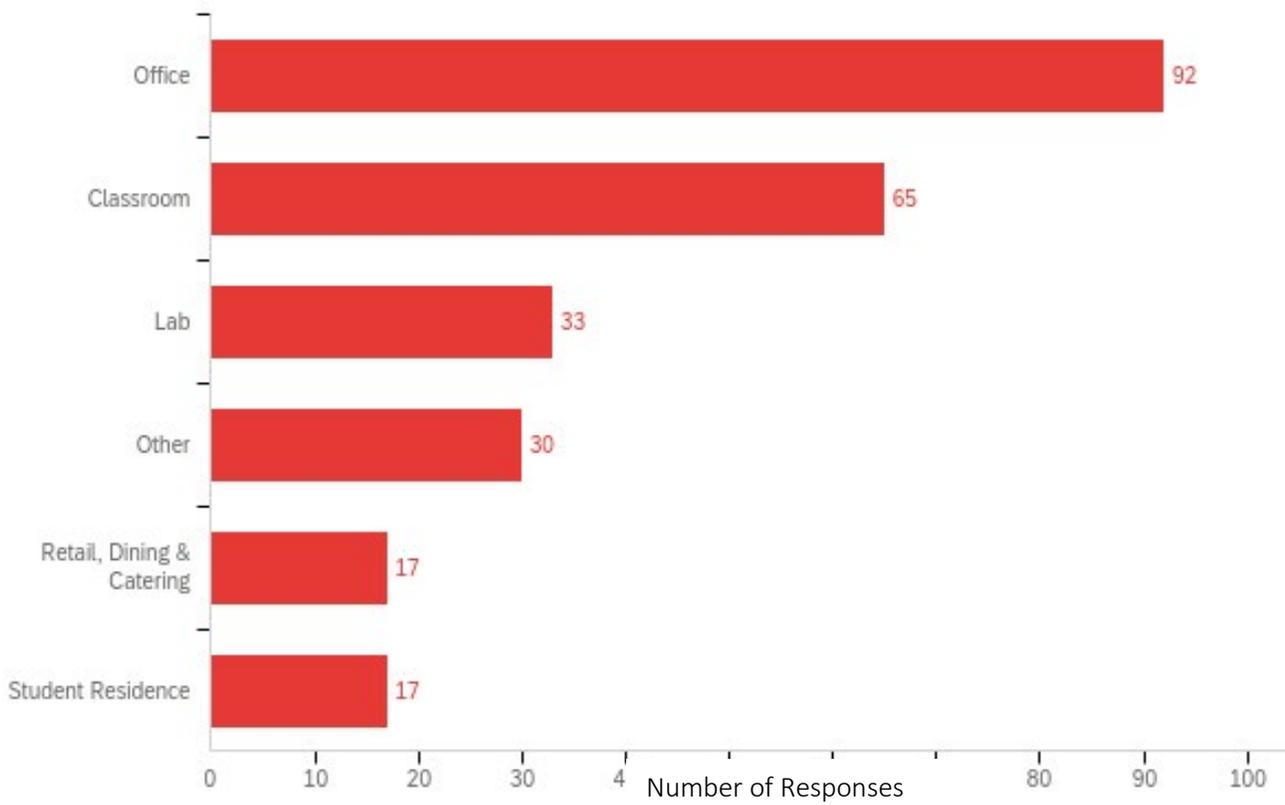
The top themes heard in the following charts and tables were collected and analyzed to develop the key takeaways for what we heard in the Executive Summary of this report. Responses to multiple choice, ranking and “other” text entry questions were combined with open-ended question responses to identify the top opportunities and barriers to specific climate actions for the UBC Okanagan campus.

### Section 1: Demographics

#### 1. What is your primary connection to UBCO?

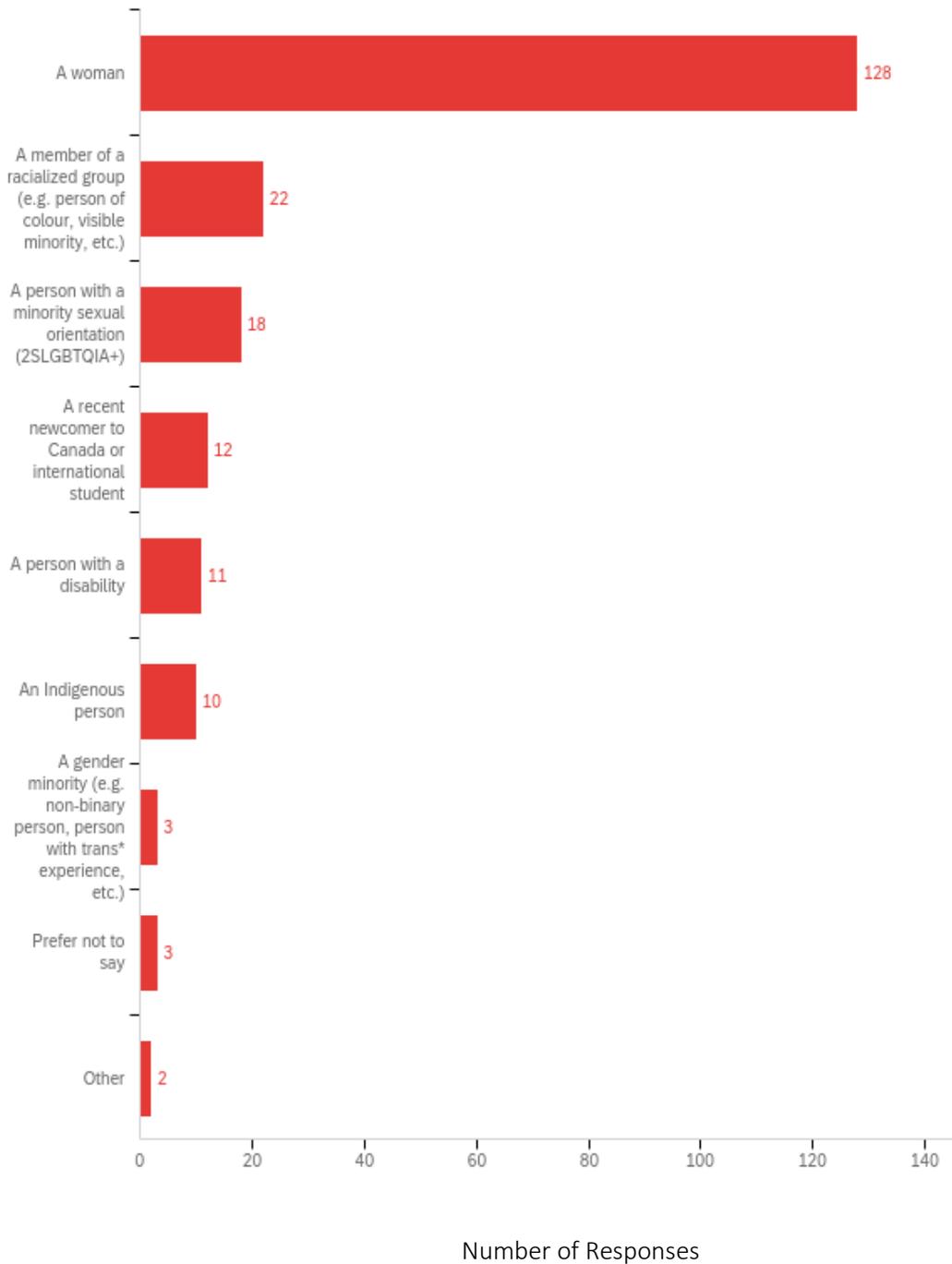


2. When not based remotely due to COVID, where do you spend the majority of your time on campus? (Select all that apply)



Other: Study spaces, library and recreational facilities.

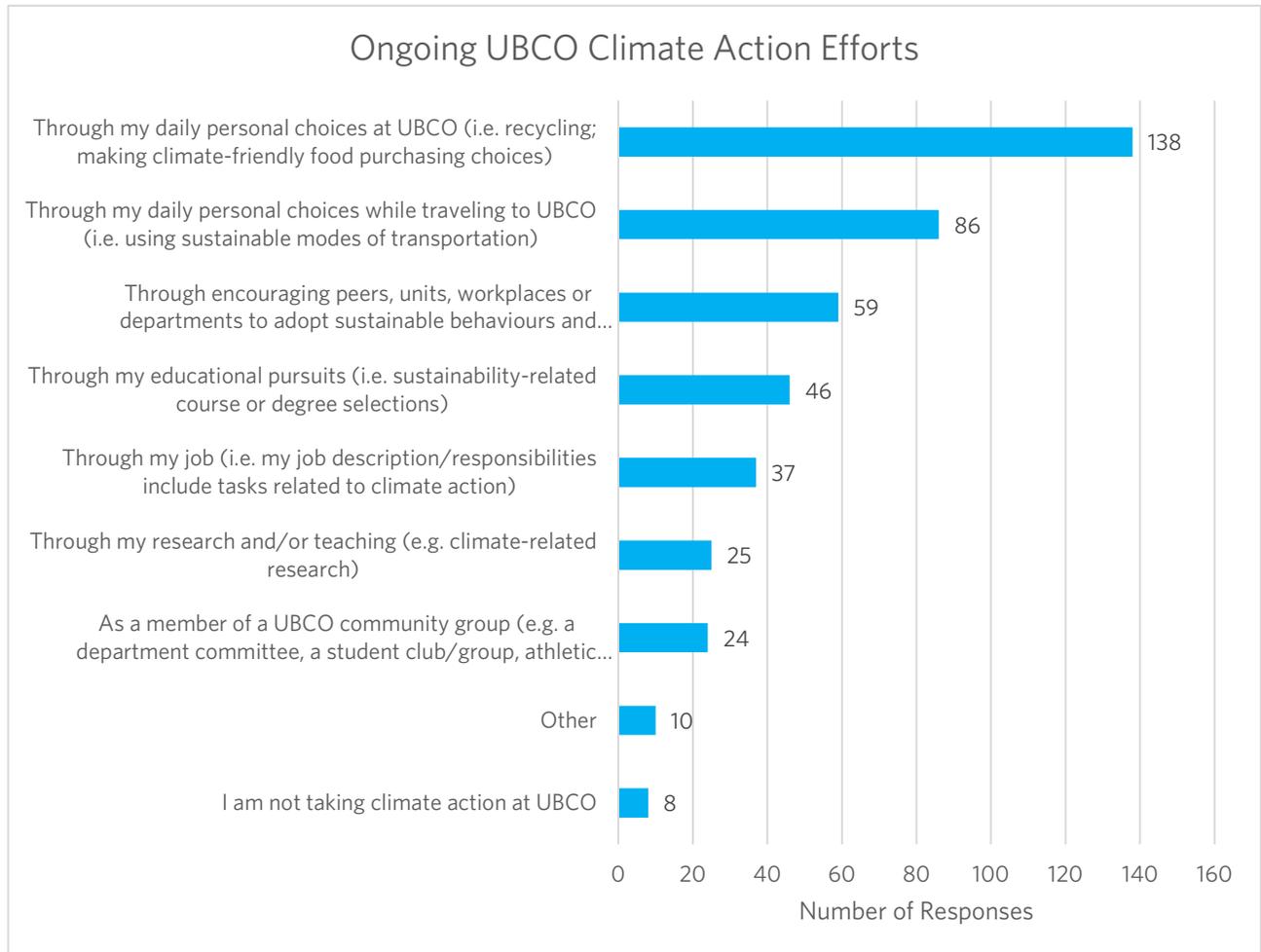
3. UBC is interested in knowing whether the voices of groups who have been historically, persistently, or systemically marginalized are represented in this engagement process. Do you self-identify as (select all that apply):



Other: Seniors.

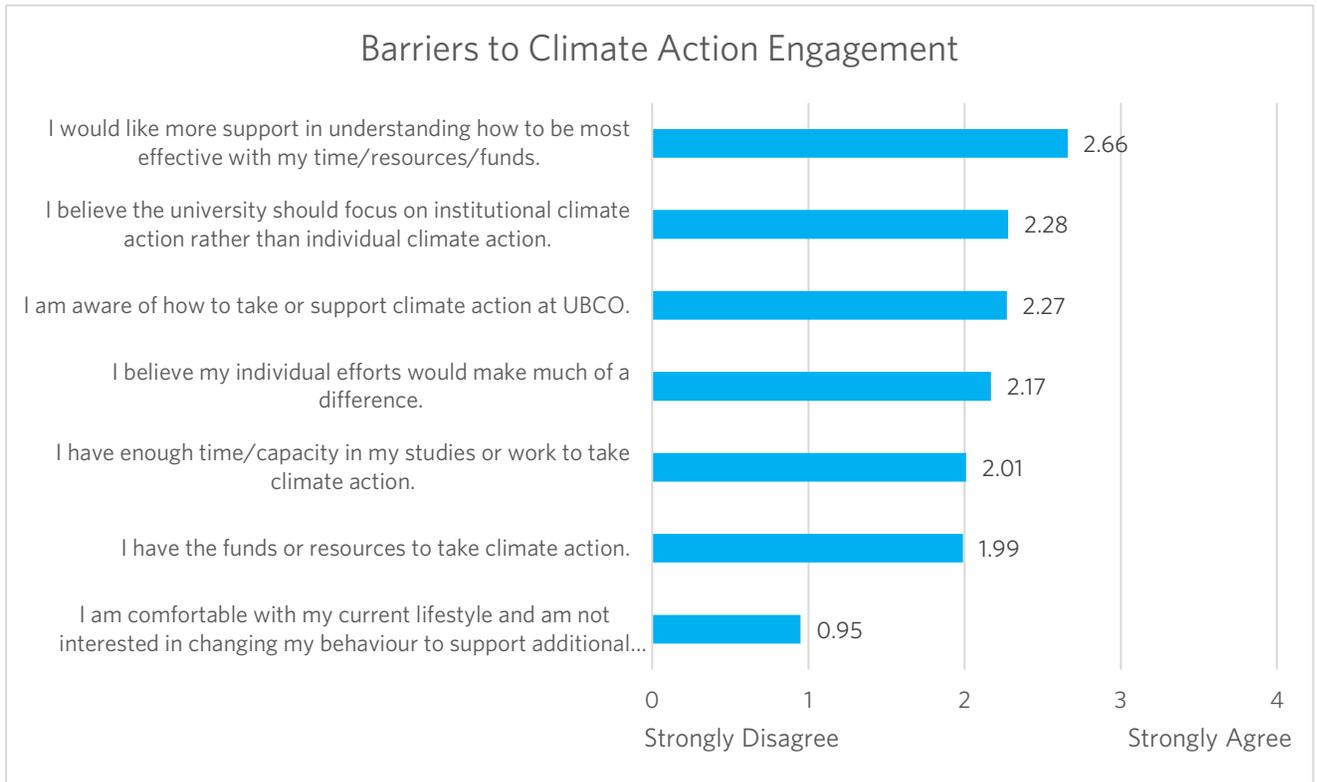
## Section 2: Climate Action Engagement

1. We recognize that many efforts to address the climate crisis are already ongoing across UBCO's campus. How have you been taking climate action and/or supporting others to take climate action at UBCO? (Select all that apply)



Other: Personal choices around climate justice; plant-based diets; political choices.

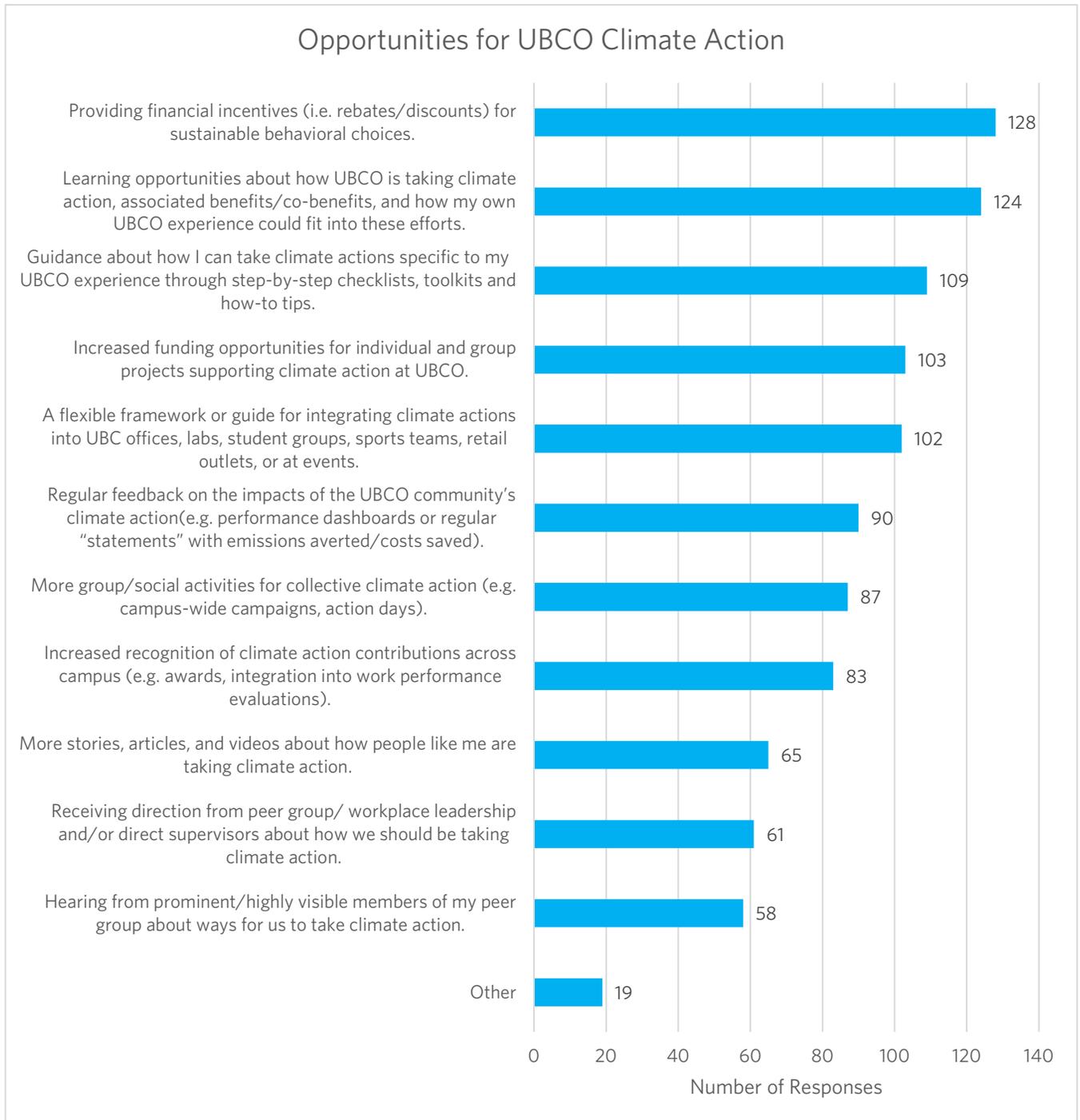
2. To help us understand the barriers (all/if any) to taking general climate action at UBCO that you have experienced, how much would



you agree or disagree with the following statements:

Other: Lack of manager support; sustainable transportation not an option due to far distances; need to also focus on institutional action and not just individual action; limited resources at UBCO compared with UBCV.

### 3. Which of the following options would be helpful in supporting you to



take climate action at UBCO? (Select all that apply)

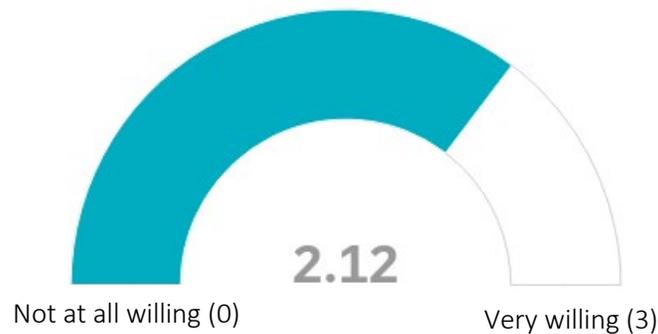
Other: Faculty-staff transit pass; encouraging working and learning from home; individual discount at food retailers; integrate student and faculty research in decision-making.

### Section 3: Commuting

Please note: In November 2020, UBC Okanagan Campus Planning conducted a Transportation Plan survey to learn more about community commuting behaviour. Therefore this survey does not go into detail about commuting behaviour, however you can visit the [UBC Okanagan Transportation Plan website](#) to learn more.

1. As a UBCO community member, how willing would you be to shift your own behavior to reduce greenhouse gas emissions from commuting to and from UBCO? (0=Not at all willing, 3=Very willing)

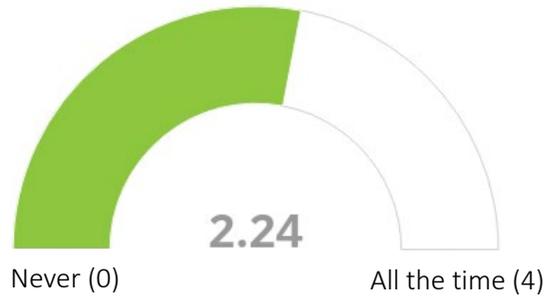
Participants responded that they are on average quite willing to shift behaviours towards more sustainable commuting.



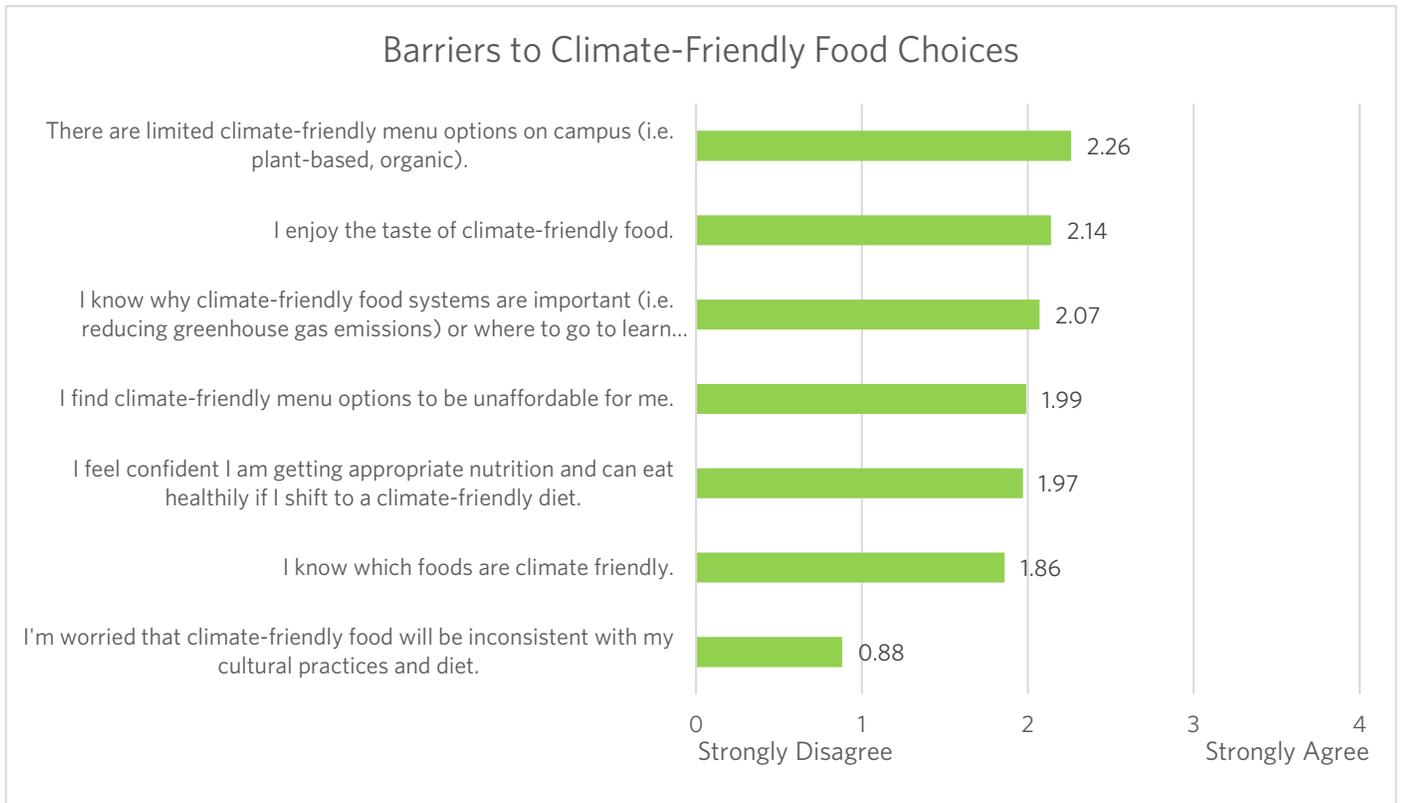
## Section 4: Climate-Friendly Food Systems

1. As a UBCO community member, how often do you eat climate-friendly foods (i.e. plant-based, organic, local)?

Participants responded that they eat climate-friendly foods some of the time.

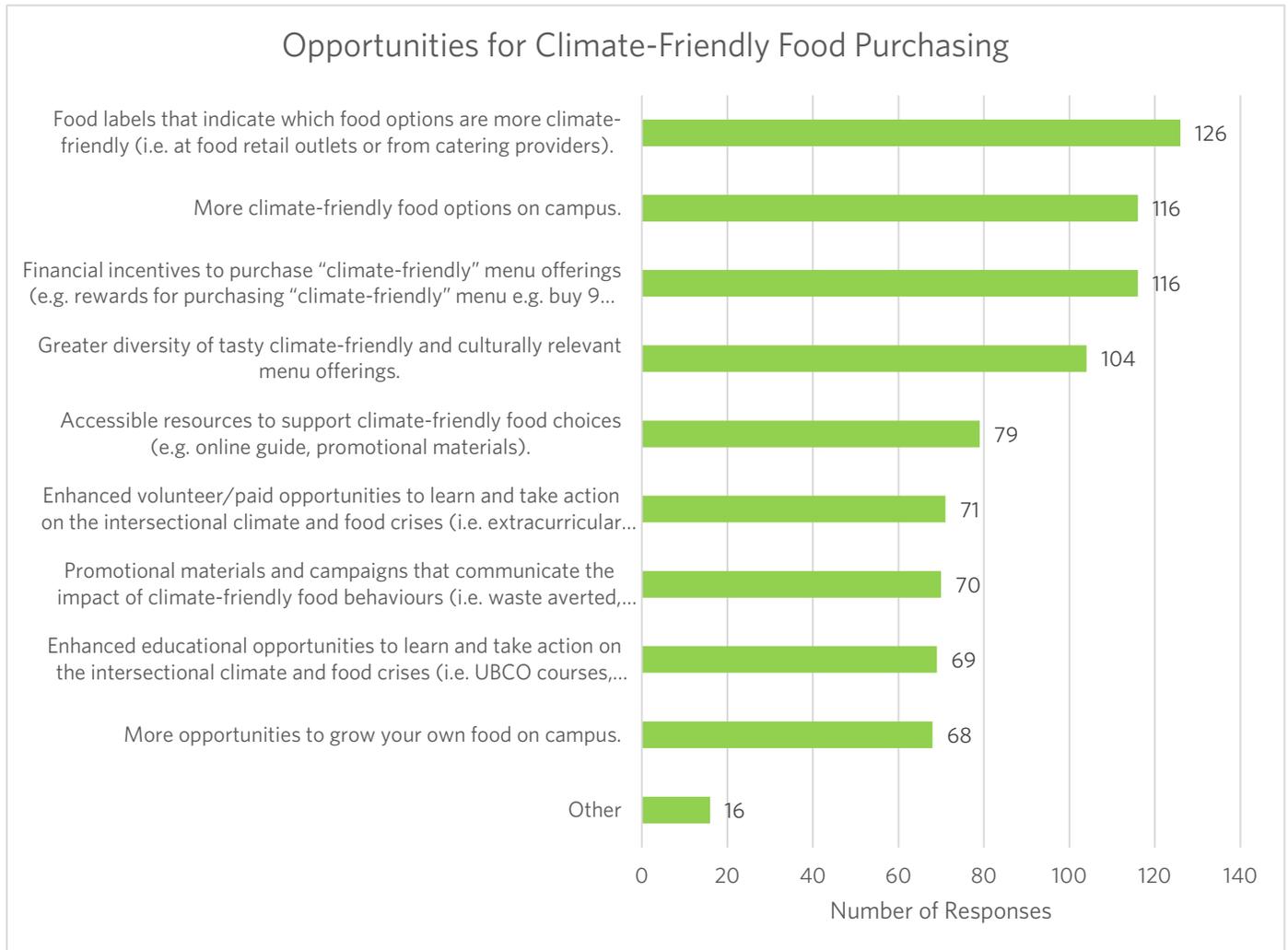


2. To help us understand the barriers to making climate-friendly food choices at UBCO pre-COVID, how much would you agree or disagree with the following statements:



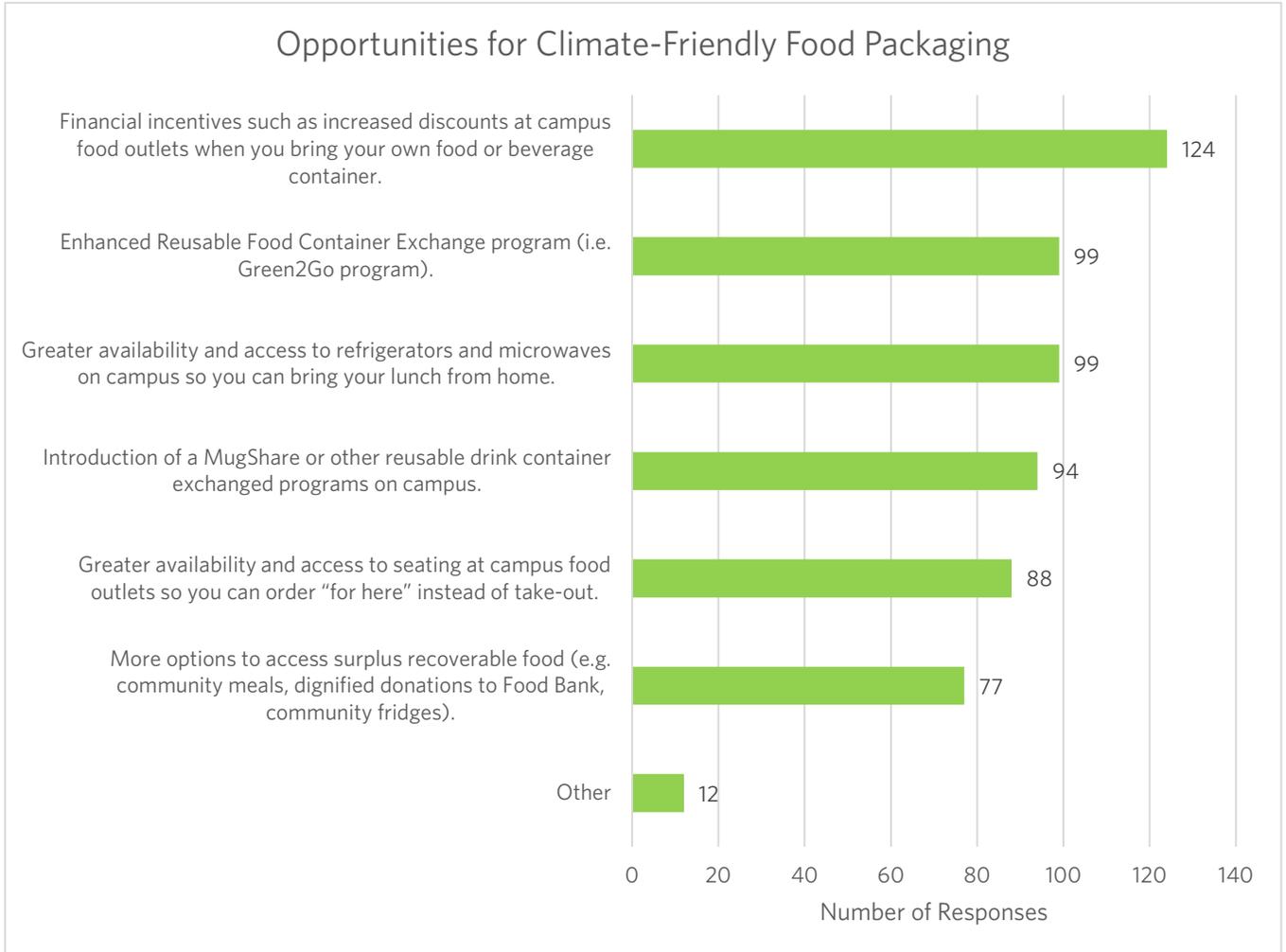
Other: Access to affordable; plant-based and seasonal options; dietary restrictions; decision fatigue; need for more education and information.

3. Thinking about climate-friendly food purchasing, eating habits and dietary restrictions, which of the following options would support you in making more climate-friendly food choices on UBCO campus? (Select all that apply)



Other: Reusable and compostable foodware; collaboration opportunities: Farmers Markets, farming research, volunteer campaigns; community and food gardens.

4. Thinking about reducing food waste and packaging, and promoting food recovery, which of the following options would support you in making more climate-friendly food choices on UBCO campus?

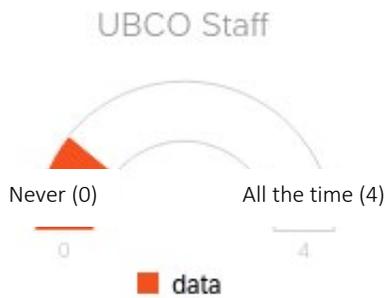
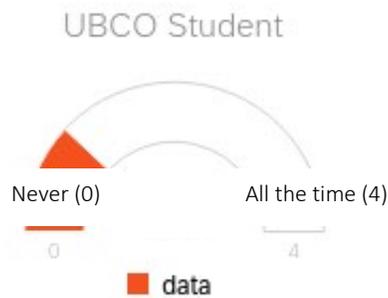


Other: More affordable sustainable container programs; access to food reuse infrastructure (i.e. water bottle fill stations); discounts (i.e. soon to be expired food, personal containers to purchase food).

**Section 5: UBCO Business-Related Air Travel**

# 1. As a UBCO community member, how often do you travel by airplane for UBC-related business?

UBCO students responded that they rarely travel by airplane for UBC business, UBCO faculty travel sometimes, and UBCO staff travel rarely.

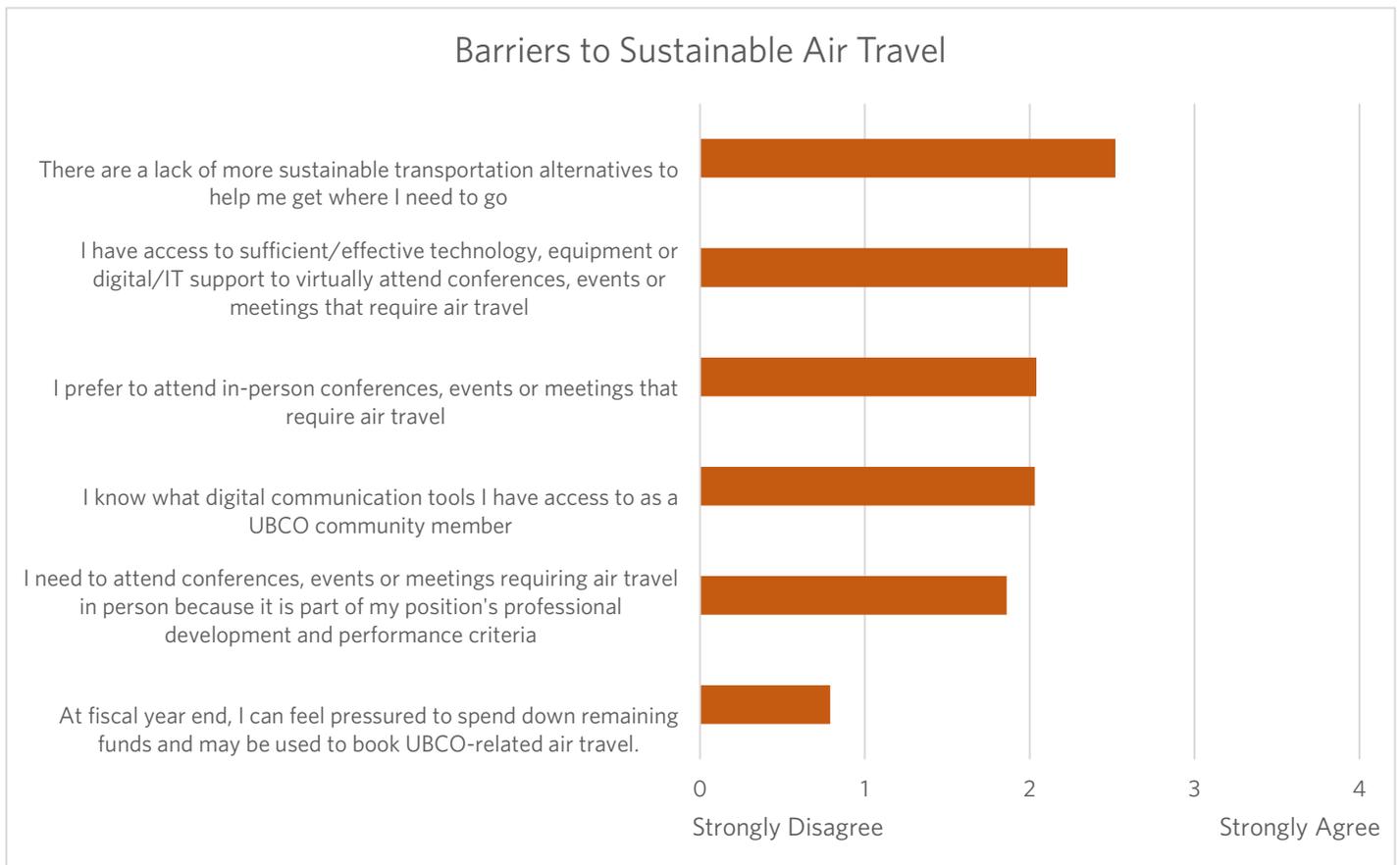


2. The COVID-19 pandemic has provided us with a host of powerful new virtual platforms, allowing us to shift our meetings, events, learning opportunities and conferences online. In the future, compared to pre-pandemic behaviour, would you be more or less likely to:

Respondents said that on average they are more likely to reduce air travel, and much more likely to conduct and host virtual meetings, and attend virtual conferences and virtual courses.

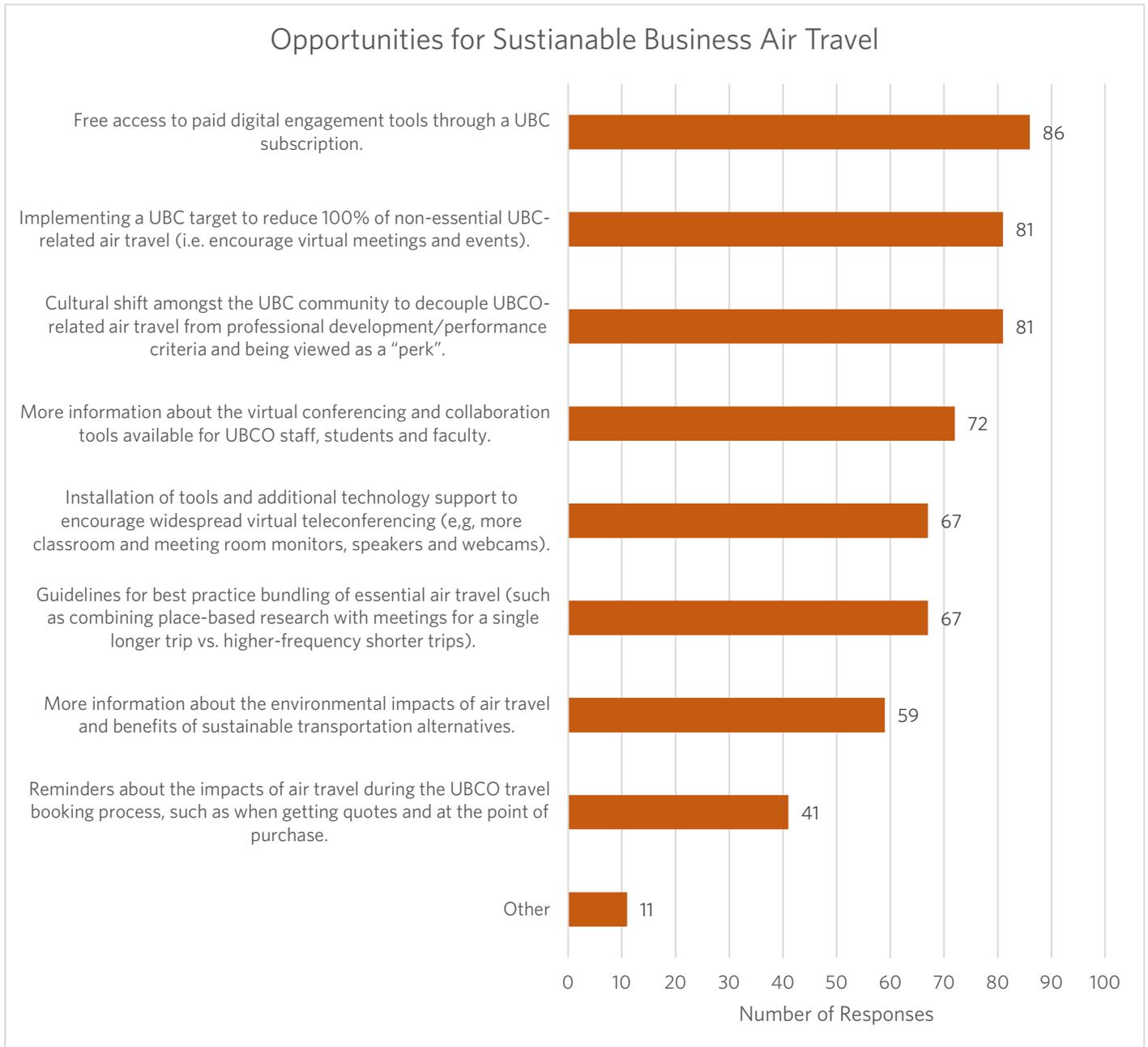


3. To help us understand the barriers to making sustainable UBCO business-related air travel choices pre-COVID, how much would you agree or disagree with the following statements:



Other: Offer staycation opportunities for students over breaks; require carbon offsets for air travel; prefer in-person conferences/meetings for networking/pro-D; more resources to learn about online communication tools.

4. Which of the following options would support you in making more sustainable UBCO business-related air travel choices? (Select all that apply)



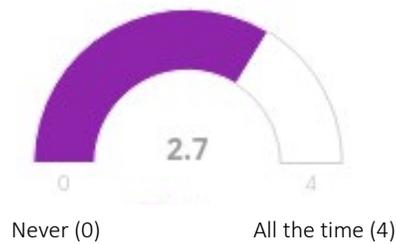
Other: Carbon emissions offsets program; need leadership to demonstrate this behaviour for employees; encouragement of transportation alternatives (i.e. UBC EV fleet).

## Section 6: Waste

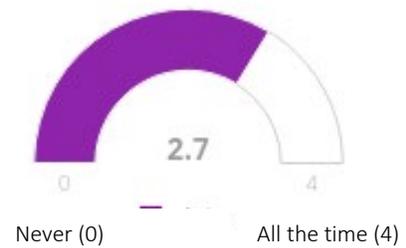
1. As a UBCO community member, how often do you partake in the following sustainable waste practices? (0=Never, 4=All the time)

Respondents said that on average they reduce and reuse their waste often, and sort their waste almost all of the time.

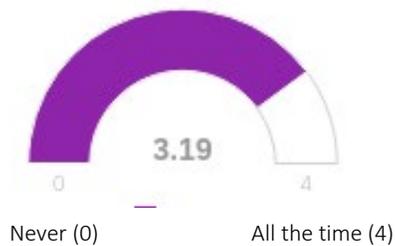
Reduce my waste (i.e. bring your own mug to a coffee shop)



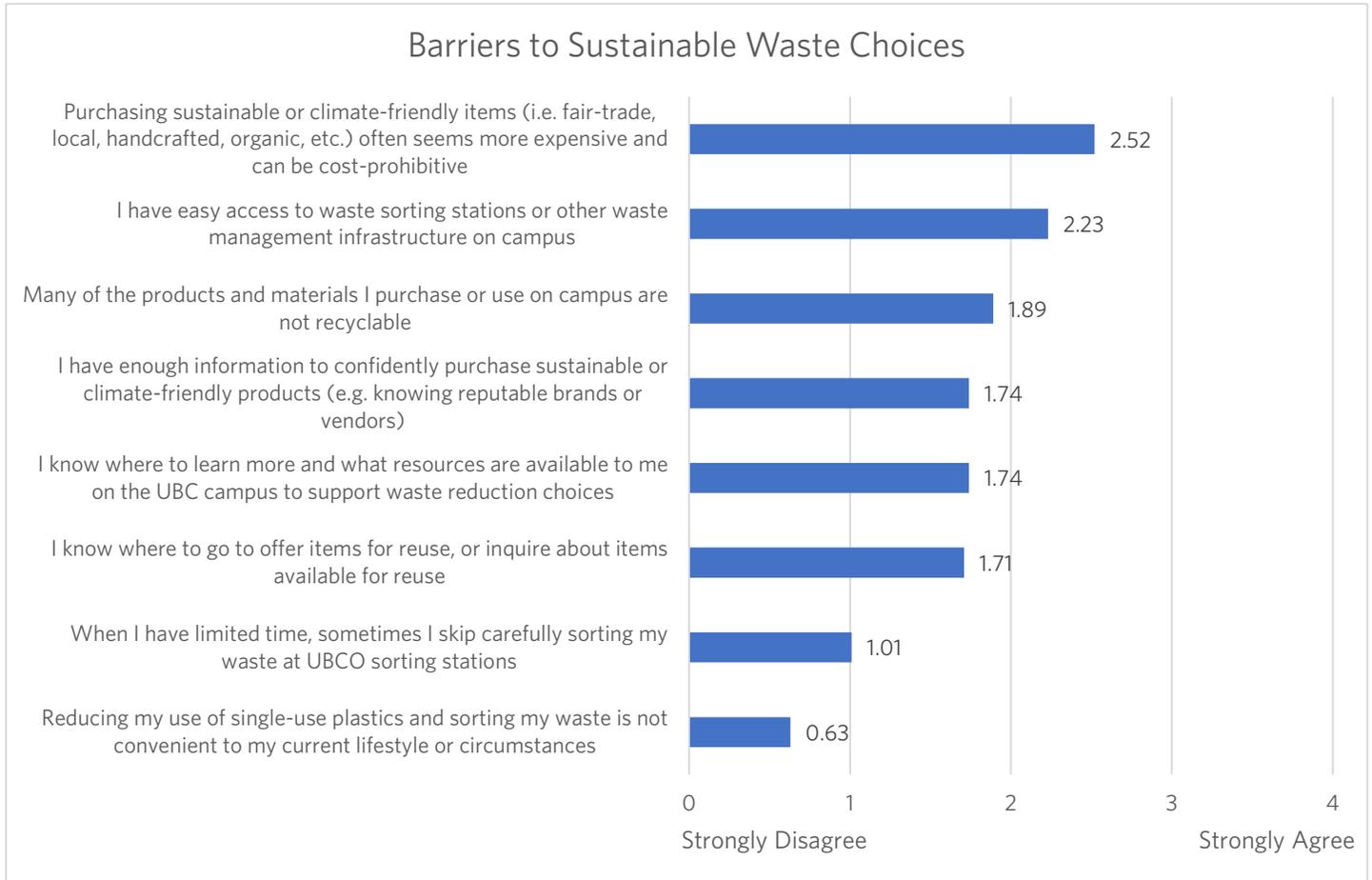
Reuse materials to avoid waste (i.e. buy or sell used furniture)



Sort my waste (i.e. into categories: food scraps, containers, paper and garbage)

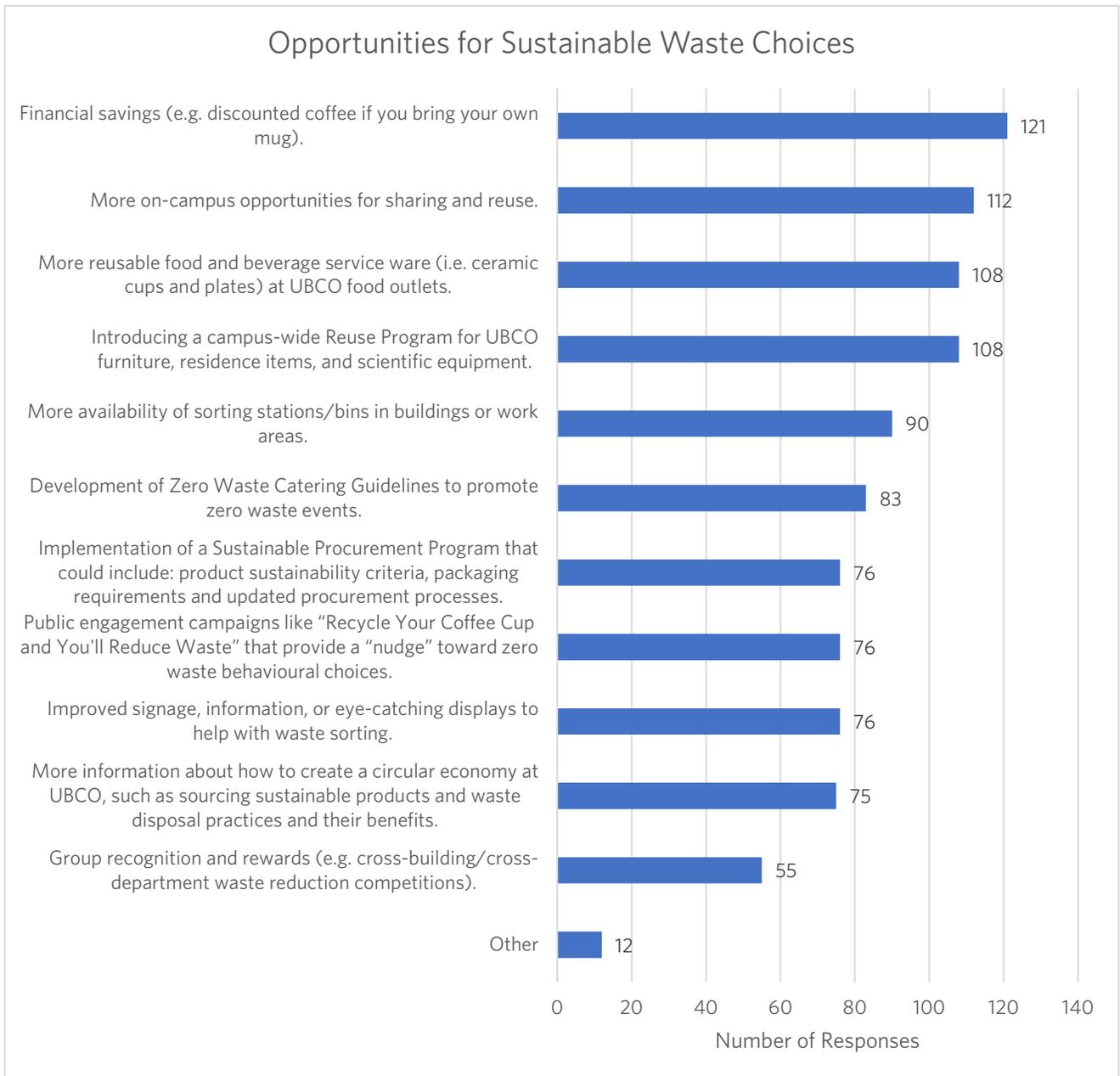


2. To help us understand the barriers to making sustainable waste choices pre-COVID, how much would you agree or disagree with the following statements:



Other: Expand composting infrastructure, donate more items, reduce plastic waste (i.e. bubble wrap (i.e. Central Receiving and Mail Services).

3. Which of the following options would support you in helping to reduce UBCO waste sent to landfill and in building a circular economy? (Select all that apply)



Other: More compost bins available in more areas of campus, hold suppliers accountable for sustainable packaging, clearer direction on waste sorting.

## Section 7: General Feedback

The following qualitative analysis reflects what we heard from the two open-ended questions in the CAP 2030 Okanagan survey. The themes shaded in grey represent the top themes we heard from participants, while the unshaded themes are included for transparency and interest. To see the verbatim survey responses, please refer to Appendix III.

1. To help us understand the climate action efforts currently taking place across UBCO, please let us know if you and/or your UBCO community are involved with any initiatives aimed at reducing GHG emissions on campus (and, if possible, the name of your community):

Top themes for this question were difficult to identify because of the small sample size. The only comment heard more than once was making general climate friendly choices in participants' personal lives.

Feedback Comments	Frequency
<b>CAP 2030</b>	<b>1</b>
Climate Action Plan 2030 Working Group	1
<b>Commuting</b>	<b>1</b>
UBCycles	1
<b>Food systems</b>	<b>2</b>
Enactus UBCO	1
Local food procurement	1
<b>Looking for more information</b>	<b>2</b>
Looking for more information about climate action courses	1
New hire looking for more information	1
<b>Other</b>	<b>3</b>
General climate friendly choices in personal life	2
UBCOWild	1
<b>Sustainability engagement</b>	<b>1</b>
SEEDS Sustainability Program	1
<b>Waste</b>	<b>2</b>
Designs courses and labs with re-usable tools and equipment	1
Green labs initiatives	1
<b>Grand Total</b>	<b>12</b>

2. Do you have any feedback about the emerging CAP 2030 directions and targets, or any other considerations (i.e. equity, climate justice) to add that we should be aware of as we develop the CAP 2030?

Top themes for this question included opportunities for sustainable commuting, including adding more bike lanes and cycling infrastructure and implementing a Staff-faculty U-Pass.

Feedback Comments	Frequency
<b>Commuting</b>	<b>14</b>
<b>Barriers</b>	<b>1</b>
Parking too expensive	1
<b>Opportunities</b>	<b>13</b>
More bicycle lanes and cycling infrastructure	4
Staff/faculty U-Pass	2
Encourage hybrid model of remote working and learning	2
Create carpooling website or app	1
Public transit improvements	1
Increase EV parking and charging stations	1
Consider accessibility for those with disabilities	1
Financial incentives to take public transit instead of driving	1
<b>CAP 2030 Process</b>	<b>8</b>
<b>Barriers</b>	<b>3</b>
UBC shifting too much responsibility onto the individual and away from the	2
Plan needs clearer key messages	1
<b>Opportunities</b>	<b>5</b>
Economic tools are more effective than behaviour change	2
Consider sustainability staff resourcing	1
Participation in climate initiatives a requirement for UBC staff	1
Include focus on moving towards 100% renewable energy	1
<b>Other</b>	<b>6</b>
<b>Opportunities</b>	<b>6</b>
Long-term planning for landscapes and tree protection	1
Reduce emissions from construction and new building materials	1
Make climate-friendly choices easy and convenient	1
Leadership need to lead by example	1
Create a UBCO sustainable community (i.e. co-housing, permaculture)	1
Leverage solar power and energy	1
<b>Waste</b>	<b>6</b>
<b>Opportunities</b>	<b>6</b>
More digital resources to reduce office and paper waste	2
Expand composting infrastructure to student residences	2
Reuse programs in student residences and at swaps the end of the year	1
Invest in sustainable technologies	1
<b>Air travel</b>	<b>6</b>

<b>Barriers</b>	<b>2</b>
Virtual meetings are not a replacement for in person meetings	1
Externally funded research requires air travel	1
<b>Opportunities</b>	<b>4</b>
Support for reducing inter-campus travel	1
Regulate air travel by staff for student recruitment	1
Incentivize virtual networking and departmental retreats	1
Leadership need to lead by example	1
<b>Food systems</b>	<b>6</b>
<b>Barriers</b>	<b>4</b>
Organic and plant-based foods not necessarily sustainable	2
Unwillingness to shift towards climate-friendly food choices	1
Prefer to bring food from home	1
<b>Opportunities</b>	<b>2</b>
Financial incentives to make sustainable purchases (i.e. buy 9, get 10th free)	2
<b>Climate justice</b>	<b>4</b>
<b>Opportunities</b>	<b>4</b>
Prioritize equity and climate justice	2
Strengthen Indigenous community engagement	1
Consider affordability for students	1
<b>General support</b>	<b>4</b>
<b>General support</b>	<b>4</b>
General support	4
<b>Grand Total</b>	<b>54</b>

## Appendix III – Verbatim Survey Responses

**Question: To help us understand the climate action efforts currently taking place across UBCO, please let us know if you and/or your UBCO community are involved with any initiatives aimed at reducing GHG emissions on campus (and, if possible, the name of your community).**

Yes, when designing both of my first-year lecture & lab-based courses, I purposely designed all activities to be disposable-free (as well as biohazard-free). Every activity uses equipment/tools that can be re-used every year (with minor repairs due to heavy student usage).

Working on local food procurement at UBCO

I am working for a SEEDS Research Project. I am a UBCO 3rd year science student working on a directed study to produce recommendations for UBC to reduce their inter-campus air travel. This Directed Study is working in conjunction with a group of master's students that is analyzing flight data from 2019 provided by the UBC Travel Office.

Not that I am aware of, but I am a relatively new hire

UBC is decades behind our family's home in all things sustainable. I'm sad to see how slow UBC is to move on this as we have been living this way for more than 30 years now.

UBCOWild provides conservation effort information

More climate related course content

UBCO Climate Action Plan

My Enactus club is still doing project roots which lets students buy "Ugly produce" on campus, so that helps i think

Participated in the campus environmental protection volunteer

Athletics & Recreation: UBCycles operations - bike rental, maintenance and indoor storage location. Promoting GoByBike initiatives and active transportation.

HSE - Green Labs, chemical and waste materials reuse from labs, helping labs reach composting options

**Question: Do you have any feedback about the emerging CAP 2030 directions and targets, or any other considerations (i.e. equity, climate justice) to add that we should be aware of as we develop the CAP 2030?**

Maybe improvement of sustainable ways of getting around Kelowna for those living off-campus, and to/from UBCO, as it's such a car-focused city, improved/ more frequent or direct buses from downtown to/from the university would likely help a lot, this is a main reason why many people I know drive instead of bussing.

Making it easy/ the default to make climate-friendly choices. Don't just provide it as an option or try to convince people to do it individually, make it the cheaper, easier and better choice. For example, making climate-friendly foods the default and having to pay extra for meat, or having to pay extra if you want a non-reusable cup/ disposable takeaway containers, etc. I think the university needs to take more initiative, along with education, but making it a universal policy to have climate-friendly options and just remove non-climate friendly ones, instead of making people decide.

equity and climate justice need to be prioritized

I think it would be beneficial to offer staff a reduced transit pass to promote using transit instead of driving. We are running out of parking anyway, it should be an option for staff to opt into the student U-pass

Stronger Indigenous community engagement

Please keep accessibility and disabled person's needs in mind

More bicycle lanes and bicycle parking containers are required as well as bicycle-riding promotion and information about bicycle riding/maps/parking. More traffic safety barriers to separate cars from bicycles should be installed on busy Kelowna roads and hwys (and throughout BC and Canada).

Great, but would like to see some of my suggestions taken seriously. Only focusing on small things like straw bans and bring your own cup is not helping the issues on an impactful scale. People still create waste, still use toxic single use items (and their subsequent production and disposal). Bringing my own mug is not going to change that. We need to see wider scale changes in combination with individual efforts (frequent opportunities to use a "backyard" compost on campus, sustainable single use products, roof gardens, buying local food, more plant-based options, providing research money to students who have great ideas to address global issues on a wider scale (engineering, tech, etc.). I don't want to see this being a cop-out "zero waste" campaign so we can promote how green we are, without any actual desire to make an actual impact on global climate issues. We are a top university and should be giving back to our own communities, and the world, with the information, strategy, and implementation we go forward with. It is our responsibility to make those changes and lead the way for others to follow, and find practical and affordable ways to follow our lead.

Kindly increase the number of bike paths and ensure safety of the cyclists in collaboration with the city of Kelowna in encouraging commuters for safer and easier access to campus from the community.

I think that there needs to be a willingness from the university administration, students, and those leading the CAP2030 project to recognize and accept when results and recommendations, particularly for sustainable food systems, are contrary to their current beliefs. Attending the CAP food system dialogue series, I am not confident that those in leadership positions are actually willing to put aside the results they want to hear (i.e. a big emphasis on local foods) that are not scientifically/evidence based methods of actually decreasing emissions associated with food systems. Until these communities are willing to accept answers they don't want to hear (i.e. wholesale reduction of cattle products including beef and dairy on menus) they will not be truly successful in their goals of creating a sustainable food system.

For transportation employees of UBC need financial incentive to take the bus. The cost of a bus pass is MORE than parking in some lots, and while gas and insurance is factored in, people don't see it that way! And in the summer some routes are discontinued in the morning which makes travel less appealing. I am trying to bike in this summer when I can, but in the winter it is not safe. I'd love to take my car off the road to save for an electric vehicle.

One idea to reduce paper waste on campus is to have more digital screens to replace the need for posters and bulletin boards- have some accessible to student groups, others for departments and programming, it's small but over time might have a big impact

Please consider making the search engine Ecosia part of the UBC community. It plants trees as people search.

This is a great first step but so much more needs to happen! Please have everyone in a leadership role read Bill Gate's book "How to Avoid a Climate Disaster" and David Attenborough's book "A life on our planet".

The focus in this survey on sustainable consumer purchase options makes it seem like you drank the Green-Capitalism Kool Aid. The scholarly literature refutes the perceived connections between

local/organic and greenhouse gas emissions reductions. If we go down that road, we ought to ask clearly who says this (whatever it is) is sustainable? Also, recycling was always the third R because it is the least helpful in reducing waste. Other than those complaints, I appreciate your work on behalf of our campus and our planet. Good luck!

UBC should prioritize systemic solutions rather than solutions that rely on personal choice. For instance, lobbying other universities and institutions to divest from fossil fuels 100%, lobbying for better and more affordable public transit, and building communities that are resilient to climate crises.

Please name specific targets, with benchmarking, and timelines to achieving a carbon-free campus. There is nothing about ENERGY here, UBC needs to go with 100% green, renewable energy sources, no more carbon-based energy on campus- including back-up systems. No diesel back-up generators - ZEV HFC only. And vehicle fleets must ALL go to ZEV - electric and/or Hydrogen only! And cut down the amount of parking on campus; get a U-Pass for staff and faculty going so we drive less, and crash less and pollute (GHG, particulates, noise) less!

all really, really important!

UBC should take a leadership role in changing the academic culture vis a vis air travel (e.g. influence how conferences, grants, funding is done) while Prof Ono has a leadership role in the university networks.

UBC should be doing more to encourage sustainable travel to/from UBC. Single occupancy petrol car use is still way to high. The number of electric car parking / charging stations is very much too low.

1. Given the large scale of expansion plans at the university, the margin for improvement in reducing emissions in construction is likely to be very large, but it's not mentioned.
2. Charge for parking at closer to market rates (i.e. what a private lot would). Why should I, formerly an undergraduate who exclusively biked and took the bus to campus, and now a person with physical disability working on campus, provide a MASSIVE subsidy (on the order of millions of \$ per year) in terms of parking to those that don't try to use sustainable transportation options (electric cars still negatively affect air quality and public health btw)

Many of the questions within the survey centered on purchasing food items on campus, however I rarely rely on campus food services, preferring to bring my own meals to UBCO.

Living in Canada and with the distances some people have to travel to work. Aside from the reason (COVID) - I have really appreciated working from home and not having to drive 350km a week to get to work. Unfortunately, taking the bus from Vernon to UBCO is too limiting time wise and would add to my commute time. Carpooling has the same issues very difficult to follow other people's schedules. There is no alternatives to get to Vernon if you miss these two options. Driving is still the best method of transportation.

Very interested in UBC's commitment to reducing inter-campus travel (Vancouver & Okanagan)

I think UBC really needs to scrutinize all travel related activities. I know of programs that go to Iceland, Bali, UK, India etc. to recruit all while we already HAVE a UBC recruiting team. This is a major waste of carbon credits and serves little purpose. UBC is not a travel service, and we should be really careful about who we send on long haul flights, and why we send them. It is reprehensible to travel unnecessarily, especially since it is the poor countries pay the highest price for climate change. We need to "ground" this generation wherever possible so that the next generations can survive.

Yeah, it is ridiculous. In history innovation through private enterprise is what shaped that world. The more you push austerity and socialist policies (subsidizing "good" behaviour). The free market will always find the optimal balance if you let it.

I think we are on the right track!

There is a high turnover and cost of office supplies, such as white board pens etc. that end up in the garbage after few uses. This is either due to inferior product quality or improper usage. It would be nice to see teaching materials and tools shift more and more to digital formats to encourage less waste and less expense.

As UBCO is a commuter campus (outside the downtown core) where many faculty and staff reside outside of the city, encouraging and planning for remote work moving forward would be better served now while the opportunity is already presented (due to the pandemic).

Need safe, convenient bike lock-ups and electric vehicle charging stations.

Air travel is a big issue but now with experience with virtual meetings and can 100% say that they are not a substitute for in person meetings. Air travel to engage with partners and collaborators is essential to build relationships and a professional network. I oppose any large scale restrictions on air travel. Members should be conscious about whether the travel is necessary or not.

I would like to see incentives (financial? academic?) given to faculty to organize small online workshops in their disciplines. This would allow us to continue networking while also staying put. Another idea is to expand the UBCO retreat facilities (there is currently a small property in Mission I believe). This would allow departments to organize writing retreats, allowing us to 'travel' locally. Finally, I know there is a group trying to organize co-housing community living (led by Gordon Lovegrove). It would be nice to see a project like this take off at UBC, with funding to make it a model sustainable community (sort of like the UBC farm, but with a focus on complete systems, like permaculture, sustainable building, etc.).

Thank you for this survey and all the information provided on this site. I have never seen it before!

We're in the Okanagan, let's get some solar panels, rooftop gardens, greenhouses! Maybe involve engineering students. It's surprising that this isn't already happening, or even ten years ago given the perfect climate.

please add composting to residence buildings!! it's ridiculous we don't have it since we have it everywhere else already. students eat and cook in dorms very often it is essential to have compost if we want to make an impact.

Flora on campus (since trees affect the climate too)

Glenmore can be scary to bike on. I would like to see a low jersey barrier or curbs for the bike lanes (just like the ones they have on some streets downtown) all the way up Glenmore to John Hindle to make that commute feel safer. Especially the route from Union road to John Hindle where the dog farm is, cars go extremely fast there. I think more people would bike in Kelowna if there isn't so much hostility from Albertan pickup truck drivers trying to kill us.

The growing inequality between climate friendly options being available for the well off. For me this is personal as I live 49 kilometers away from campus and moving closer is not financially feasible for me at this time (I am a staff member, not a student). I would love to bike to work, but I don't even have access to public transportation for 6 kilometers at the closest. I have tried to arrange carpooling before, as I know that there are many people in Vernon who work at the university, but I have come up empty. It would be great if there was carpooling website specifically for the staff at the university. The bus to Kelowna from Vernon is so packed that I do not feel safe riding it. There are also many students on this bus and I think that if there were some better options it would be safer for everyone.

General Feedback: Please do not try to enforce limits on air travel for externally sponsored research. Who are you to say what is valuable, and what actions an individual may have made in their personal life to reduce their greenhouse gas impact, to mitigate the impact of other places they might choose to spend their travel budget.

Also, "organic" food is not necessarily climate friendly. Also true to some extent for local food -- if you do a true life cycle analysis, it may be more beneficial to the environment to produce food elsewhere, even with the impact of transportation.

I am concerned about the power combined with lack of knowledge of this committee.

There is no clear message or plan

Very good survey! Lots of practical questions

I think ensuring that the approaches do not enlist a command control type of view is important. Economic tools seem like the better approach

Be aware that most students are very incentivized by saving money or earning money! For example, this survey offered a potential prize to attract more students to get it. I feel like potential prizes (such as buy 9, get 1 free environmentally friendly item) would definitely get more students to care about being environmentally friendly!

I would love to see it happen

I think it would help to have a bit closer of a goal we can hit and take into account tight budgets of students

The lack of composting in residency was an issue for me in my first year (2017/18) and although we addressed it with our RA's, we were told nothing could be done about it. The reuse program that was offered at the end of the year (where one vacant room per residence was used for students' old furniture, clothes etc. that they no longer needed or used and could be picked up by other students) was awesome. It would be great if these rooms/items could become available for other university students other than first years (e.g. a few rooms one weekend for second years to drop/swap/take, then the next weekend for third years etc, or open the items up to other students after first years moved out of residences before donating). I still use every single item that I took from our residence swap room in my first year, and I am now at the end of my fourth. I've always wished I could go to the swaps even after moving out of residence to drop off items I no longer had a use for that someone else might want.

Not really, I would just like to see climate action initiatives that everyone can afford to partake in.

I fully support the draft targets and actions on the website. But how will the plan's implementation be successful with so few sustainability staff at UBCO?

Some groups are very resistant to participation in current initiatives. Participation in climate action should be a requirement of every employee when on campus. I grow frustrated with people who could put items in a recycling bin but don't do so out of spite. There needs to be a mechanism to deal with those actively working against climate initiatives (because unfortunately, they exist).

See my 'other' comments throughout the survey. Sustainability, re-use programs, discounts or rewards for positive actions towards climate action, all great ideas! Especially, reducing air travel and maintaining virtual meetings between campuses. Not entirely as face-to-face connections have their value and more is resolved in a shorter amount of time, but the frequency can definitely be reduced.

Any recommendations that UBC makes need to be science-based. As a research with 15 years' experience in quantifying food system GHG emissions and strategies to reduce emissions, I say with confidence that the evidence does not suggest that local sourcing is an effective strategy. With respect to organic products, evidence is mixed, with some options being more climate friendly and others less so. Nonetheless, this language (local/organic) is persistent.

I usually try to be Newton's 3rd law and try to undo the "progress" and "effort" everyone else puts in. The more you push this down my throat, the more I will resist.

## Appendix D – Resourcing Strategy

Resourcing and funding the UBCO CAP 2030 will help to achieve multiple objectives and outcomes across the campus. It will help to avoid future costs, reduce the campus' carbon liability, advance operational excellence through high performance buildings and behavioral change programs and provide opportunities for operational and academic partnerships to advance innovation in climate action.

With implementation of immediate UBCO CAP 2030 actions underway, incremental funding requirements, cost estimates and funding opportunities will continue to be identified and prioritized over the ten-year horizon of this Plan. In order to achieve continued, demonstrable greenhouse gas (GHG) reduction impacts, various funding opportunities will need to be leveraged. This will require the ongoing engagement of stakeholders involved in supporting or leading actions in this Plan, and leadership guidance provided through the UBCO CAP 2030 implementation governance structures proposed in Appendix E.

This Resourcing Strategy provides a recommended approach for UBCO CAP 2030 stakeholders and lead units involved in planning, resourcing and implementation of the actions identified in this Plan. Several key considerations for implementation include the following.

### Build actions into departmental plans, not something extra

Throughout the development of this Plan, every effort has been made to minimize incremental costs and new funding needs, plans, projects and programs by **leveraging existing human and financial resources wherever possible**. Many units have built UBCO CAP 2030 priorities into existing departmental priorities, workplans and budgets. Aligned with this Plan's distributed leadership model, it is recommended that units best positioned to lead implementation of specific actions in this Plan, play a leading role to ensure continued alignment of UBCO CAP 2030 priorities as a co-benefit to future operational priorities; and where appropriate, identify and seek additional resourcing opportunities to support implementation.

### Prioritize and Phase Projects Strategically

Recognizing that UBC Okanagan has many competing priorities for resourcing, **consideration should be given to projects that achieve significant GHG reductions and other co-benefits relative to level of effort and resourcing** - with each new campus project and initiative. Capital projects, infrastructure expansion, retrofits and equipment renewals present critical decision points to deepen operational and embodied carbon reductions. At UBCO newer campus buildings and a low operational emissions baseline means that incremental improvements and deeper emission reductions are more challenging and costlier to achieve. However, such projects often achieve significant operational savings due to lower energy consumption, etc., that can result in savings when assessing projects from a total cost of ownership lens. Priority should be given to projects that achieve the most significant emission reductions for level of effort and cost, with associated co-benefits (e.g., climate adaptation, resiliency and biodiversity). Priority should also be given to projects that minimize the campus' financial, legal, operational and reputational risks.

## Position Projects for External Funding and Partnerships

Governments and energy utilities across Canada are making strong climate action commitments to enable the low carbon transition. Implementation of key actions in this Plan can provide a pathway to develop and scale low carbon solutions that can support decarbonization efforts across the country. The campus has a strong track record of success and should **continue to pursue external funding and partnerships with federal, provincial, and local governments, and major utilities (such as Fortis BC)** to resource the implementation of actions in this Plan. New and emerging funding and partnership opportunities are developing through collaborative institutes, agencies and prospective partners. The campus should identify and make ready high-impact projects identified in this Plan that can be put forward for the right funding opportunities as they arise.

## Apply New Financial Models and Demonstrate Cost Savings

Climate policy is strengthening rapidly as BC and Canada aggressively pursue their climate goals. Additionally, the price of carbon will need to materially increase beyond 2030 to achieve Canada's net-zero commitments. **At the institutional level, carbon costs are becoming a critical component to consider in any capital and energy intensive application.** The estimated carbon liabilities to the Okanagan campus from already announced policy to 2030 exceeds is anticipated to reach over \$500,000 annually by 2030, and a cumulative total over \$3 million (from 2021-2030), if no new actions are taken.<sup>32</sup> Considering and incorporating forward-looking carbon costs must become a key component in evaluating projects.

- **Identify cost savings and financial benefits:** Clean energy projects often come with higher upfront costs, but can potentially enable operational savings from lower energy consumption or fuel costs. **For example, in F2020-21, UBCO's total utility cost savings was \$923,000 compared to 2013 BAU of \$191,000, though energy efficiency incentives and carbon tax savings<sup>33</sup>.**
- **Integrate internal carbon pricing policy:** In many cases, projects to reduce GHG emissions will not have acceptable financial paybacks using existing financial analysis models. Going forward, investment decisions will apply Life Cycle Costing (LCC) that includes capital and operating expenditures over the lifespan of the project and fully factors in accelerating government and other carbon costs to the energy supply component of operational expenditures. Leveraging UBC's proposed Internal Carbon Pricing (ICP) in conjunction with LCC (as outlined in UBC's Internal Carbon Pricing Policy Guideline) will help the campus identify the best projects to achieve UBCO's operational GHG reduction targets.
- **Address decentralized savings:** Many UBCO CAP 2030 actions can lead to campus and university wide cost savings, such as reducing air travel with virtual alternatives, programs for reusing furniture and equipment assets, and optimizing space use in buildings to avoid new building projects. A key opportunity for UBCO is to realize these savings and attribute them toward implementation of actions in this Plan.

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<sup>32</sup> The carbon liability estimate assumes that UBCO continues to purchase offsets at \$25 per tonne CO<sub>2</sub>e (under the provincial carbon neutral public sector initiative), and that the carbon tax increases annually by \$15 per tonne CO<sub>2</sub>e, reaching \$170 per tonne CO<sub>2</sub>e by 2030 (under proposed federal carbon tax).

<sup>33</sup> UBCO Energy Operations Annual Report for FY 20-21

The following table presents preliminary UBCO CAP 2030 funding needs by project type, benefits, and potential funding sources. The UBCO CAP 2030 implementation resourcing requirements will continue to be refined/identified over the ten year horizon of this Plan, in order to successfully implement this Plan.

Focus Area	Implementation Benefits	Resource	Potential Funding Sources
<b>Campus Operations</b>			
<b>Low Carbon Energy Strategy</b>	<ul style="list-style-type: none"> <li>• Reduce carbon liabilities created by escalating external carbon costs</li> <li>• Diversify energy supply to reduce supply risk</li> </ul>	<ul style="list-style-type: none"> <li>• Funding</li> </ul>	<ul style="list-style-type: none"> <li>• Fortis BC contributions</li> <li>• Government grants</li> <li>• Campus as a Living Lab (CLL) opportunities</li> </ul>
<b>10-Year Strategic Energy Management Plan</b>	<ul style="list-style-type: none"> <li>• Leverage and align with other retrofit needs: deferred maintenance, seismic upgrades, heating equipment end of life</li> <li>• Apply Life Cycle Costing with internal carbon pricing as guidance for decision making</li> <li>• Avoid installing new fossil fuel-based equipment: more cost effective than retrofitting equipment prior to end of life</li> </ul>	<ul style="list-style-type: none"> <li>• Funding</li> </ul>	<ul style="list-style-type: none"> <li>• Clean BC funding</li> <li>• FortisBC incentives and partnership</li> <li>• Future Provincial funding related to Step Code</li> </ul>
<b>New building incremental capital costs to meet GHG targets</b>	<ul style="list-style-type: none"> <li>• Avoid installing new fossil fuel equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Funding</li> </ul>	<ul style="list-style-type: none"> <li>• Explore develop new funding models</li> </ul>
<b>Extended Impacts Emissions</b>	<b>Implementation Benefits</b>		<b>Potential funding sources</b>
<p><b>Scope, establish and/or adapt new UBC programs to UBCO</b></p> <p>Planning, program development &amp; coordination, communications planning, capacity building, engagement and communications support</p>	<ul style="list-style-type: none"> <li>• <u>System Level Actions</u> - Okanagan staff required to coordinate, leverage and adapt UBCV programs to UBCO; including emerging UBC system policies and actions, such as air travel, food, waste and embodied carbon</li> <li>• <u>UBCO Specific Actions</u> - Opportunities for cost savings/avoided costs – (e.g., it is estimated that a 50% reduction in annual travel could result in \$700K in annual travel savings)</li> <li>• Financial savings from capturing/recovering value of rescuable lost and wasted food</li> <li>• Reuse generates savings or revenue to departments</li> <li>• Supports UBC's leadership position and global sustainability reputation</li> <li>• Significant co-benefits on other intersectional campus sustainability and wellbeing commitments, including human and ecological health and wellbeing.</li> </ul>	<ul style="list-style-type: none"> <li>• Staff Time / Funding</li> </ul>	<ul style="list-style-type: none"> <li>• Leverage and integrate within existing staff resources wherever possible</li> <li>• GPO (general purpose operating)/central funding needed for core program development and capacity building</li> <li>• Potential opportunities for alternative or self-funded, funding models</li> <li>• Future potential for alternative funding sources</li> <li>• CLL opportunities</li> <li>• Resourcing opportunities from other planning and policy processes that support mutual/synergistic priorities (i.e. Wellbeing Strategic Framework)</li> <li>• Identify and utilize price signals to incentivize GHG reduction behaviors (i.e. transportation,</li> </ul>

			business air travel, waste., etc.) to provide funding streams to support implementation of CAP actions.
<p><b>Commuting</b></p> <p><b>Implementation of UBCO Transportation Plan</b></p> <p>Program costs: to be partially offset by proposed parking levy</p>	<ul style="list-style-type: none"> <li>• Commuting emissions are the largest extended emissions area for the campus, and the largest source of emissions under a BAU scenario.</li> <li>• Significant impact on campus wellness for active transportation modes.</li> <li>• Efficient land use, as over time less space will need to be reserved for parking</li> <li>• Required to implement UBCO Transportation Plan strategies and actions</li> <li>• Required to achieve UBCO CAP 2030 40% GHG reduction target - and address the largest extended emissions area.</li> <li>• Co-benefits health and wellness/active transportation</li> </ul>	<ul style="list-style-type: none"> <li>• Staff Time / Funding</li> </ul>	<ul style="list-style-type: none"> <li>• Proposed Sustainable Transportation Levy from parking to generate funding</li> </ul>
<b>Climate Adaptation, Resilience &amp; Biodiversity</b>	<b>Implementation Benefits</b>		<b>Potential funding sources</b>
<b>Climate Resilience &amp; Nature-Based Adaptation Solutions</b>	<ul style="list-style-type: none"> <li>• Nature-based solutions to climate mitigation and adaptation (through biodiverse ecosystems and ecosystem services like shading, carbon sequestration) present a low-cost alternative for climate action</li> <li>• Climate resilient ecosystems require less maintenance and irrigation, thus lowering operational costs to maintain campus landscapes.</li> </ul>	<ul style="list-style-type: none"> <li>• Staff Time / Funding</li> </ul>	<ul style="list-style-type: none"> <li>• Future potential climate adaptation funding opportunities for PSO's (Public Sector Organizations)</li> <li>• Leverage opportunities to advance within existing campus plans (e.g. UBCO Integrated Rainwater Management Plan)</li> <li>• CLL opportunities</li> </ul>

# Appendix E – Unit Accountability Framework

## Context and purpose

Implementation of the UBCO Climate Action Plan 2030 requires a 'whole campus' distributed leadership approach. Every unit has a role and responsibility to ensure it is integrating climate action into day to day decision making, work programs and business processes.

This Framework outlines expectations for Plan monitoring and reporting for UBC Okanagan units to report on their progress and achievements toward UBCO's CAP 2030 Board-approved targets. Actions and detailed sub-actions identified through the UBCO CAP 2030 process include strategies, projects, programs, activities, processes and campus development. Measurement of progress to advance these areas over time will help evaluate progress toward achieving our targets, and help to identify areas where support or change is needed.

Each operational unit and department has a responsibility to evaluate its day to day business processes, while undertaking their core mandate and determine how they may be aligned to address the strategic priority of addressing climate change by reducing greenhouse gas (GHG) emissions. This Framework is similar in concept to BC's Public Sector Climate Change Accountability Reporting process, which requires Public Sector Organizations, including UBC, to submit reports to the Province annually to demonstrate progress and future actions toward carbon neutrality through a four-step process: Implement actions that reduce GHG emissions; account for scope 1 & 2 GHG emissions; offset remaining emissions; and report.

## Who will prepare and submit the UBCO CAP 2030 progress reports?

UBC Okanagan departments or business units that are leading or playing significant roles in actions identified in the UBCO CAP 2030 will prepare and submit reports. These units have already been involved in development of the UBCO CAP 2030 actions.

## How will the process work?

- The Campus Planning Sustainability Office will work with units to confirm UBCO CAP 2030 actions and sub-actions they have identified through the CAP process, and will develop tools (i.e. spreadsheets/dashboards) to assist units to complete annual action plans and accountability reports.
- Units will work with managers to integrate actions into workplans, allocating staff time and resources as appropriate.
- Units will manage and advance implementation of actions.
- Units will complete and submit an accountability report annually. The Campus Planning Sustainability Office will confirm the timing requirements, and be available to assist and support as needed.

## What will be in the report?

- Area of responsibility.
- Progress and status of actions.

- Identification of implementation success factors, barriers or limitations, as well as recommendations to facilitate implementation progress.
- Key performance metrics, where applicable (identified in the unit action plan). These may be quantitative or qualitative, as appropriate and based on what can be reported easily and efficiently; qualitative elements can also include stories or case studies.
- Updated priority action plan for the following year.

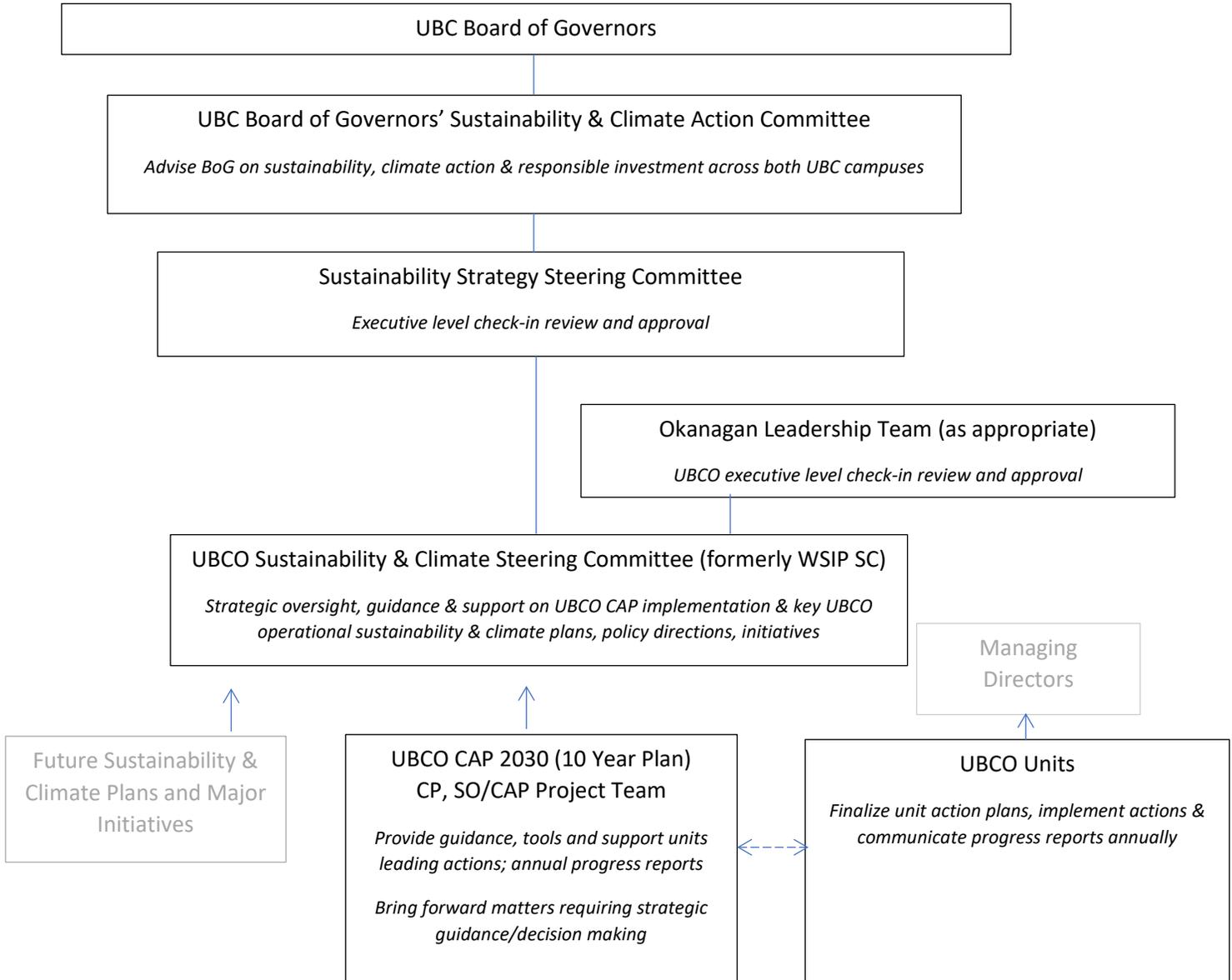
### Who are units accountable to?

- Units are ultimately accountable to their VP's, AVPs and via UBC's Sustainability, Strategy Steering Committee (Committee of Board) within existing reporting structures to advance climate actions and associated budgets.
- Calibration of climate actions to resourcing will be achieved through budget and human resources processes.
- Units will work collaboratively with the Campus Planning Sustainability Office to ensure that annual action plans and reporting requirements are met.
- Annual progress reports will be provided to the **UBCO Sustainability & Climate Steering Committee** (proposed structure, p. 3) as a way to monitor overall UBCO CAP 2030 implementation progress, and to address any areas that require strategic guidance or decision making, beyond the unit level.

### Co-benefits of Unit Accountability, Action Planning and Reporting

- Ability to efficiently track UBCO CAP 2030 progress across the campus as a whole
- Recognition and celebration of achievements made by staff, faculty and students
- Ability to capture and integrate UBCO CAP 2030 success in sustainability and climate reporting for multiple purposes/audiences (UBC Board of Governors Reports, Provincial Government Reports).

## UBCO CAP 2030 Accountability and Implementation Framework for Review and Direction





THE UNIVERSITY OF BRITISH COLUMBIA

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# **CLIMATE ACTION PLAN 2030** **UBCV & UBCO**

*SUSTAINABILITY AND CLIMATE ACTION COMMITTEE*  
*NOVEMBER 2021*



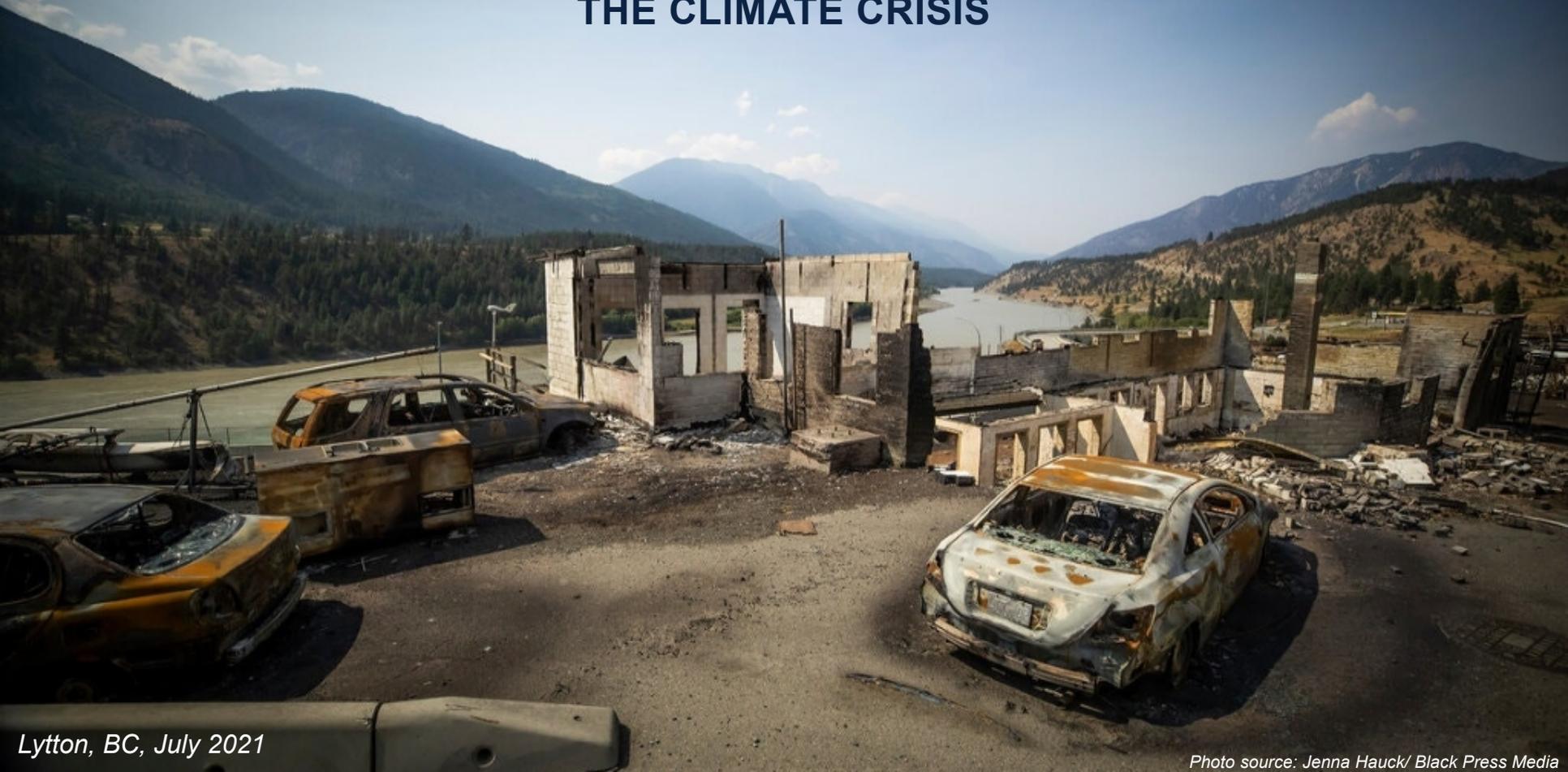


## AGENDA: UBC CLIMATE ACTION PLAN (CAP) 2030

- The Climate Crisis
- UBC Vancouver CAP 2030
- UBC Okanagan CAP 2030
- System Wide Implementation – UBCV & UBCO
  - Resourcing Strategy
  - Accountability Framework
  - Internal Carbon Pricing
  - Budgeting
- Next Steps



# THE CLIMATE CRISIS



Lytton, BC, July 2021

Photo source: Jenna Hauck/ Black Press Media

# UBC VANCOUVER – CAP 2030



# UBCV: GHG EMISSIONS – UBC VANCOUVER CAMPUS



- UBC Operations - Scope 1 & 2
- Extended Emissions - Scope 3



UBC Buildings & Energy

**38,988**



Commuting

**35,114**



Food

**29,625**



Business Air Travel

**17,694**



Fleet

**1,093**



Waste & Materials

**1,093**



Embodied Carbon

**13,241**



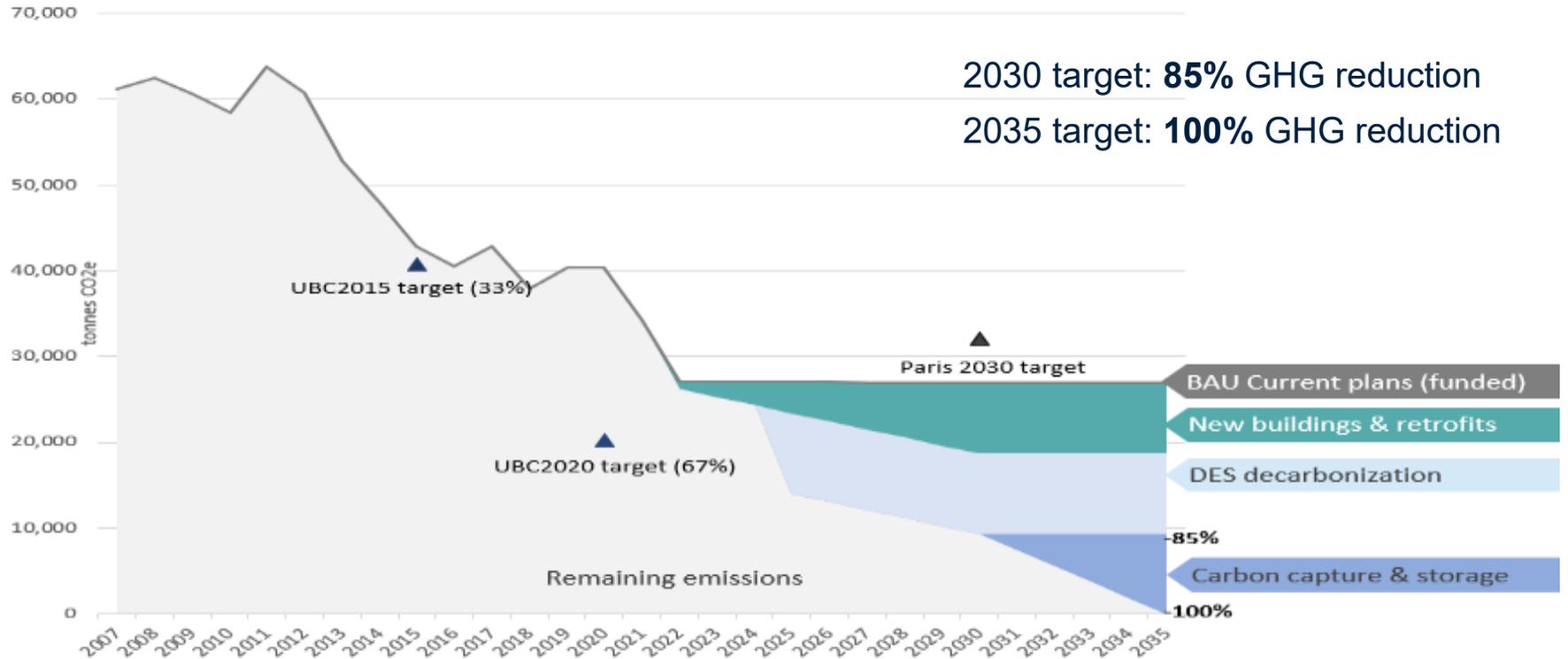
Paper

**320**



# UBCV: EMISSION REDUCTION SCENARIO – OPERATIONS

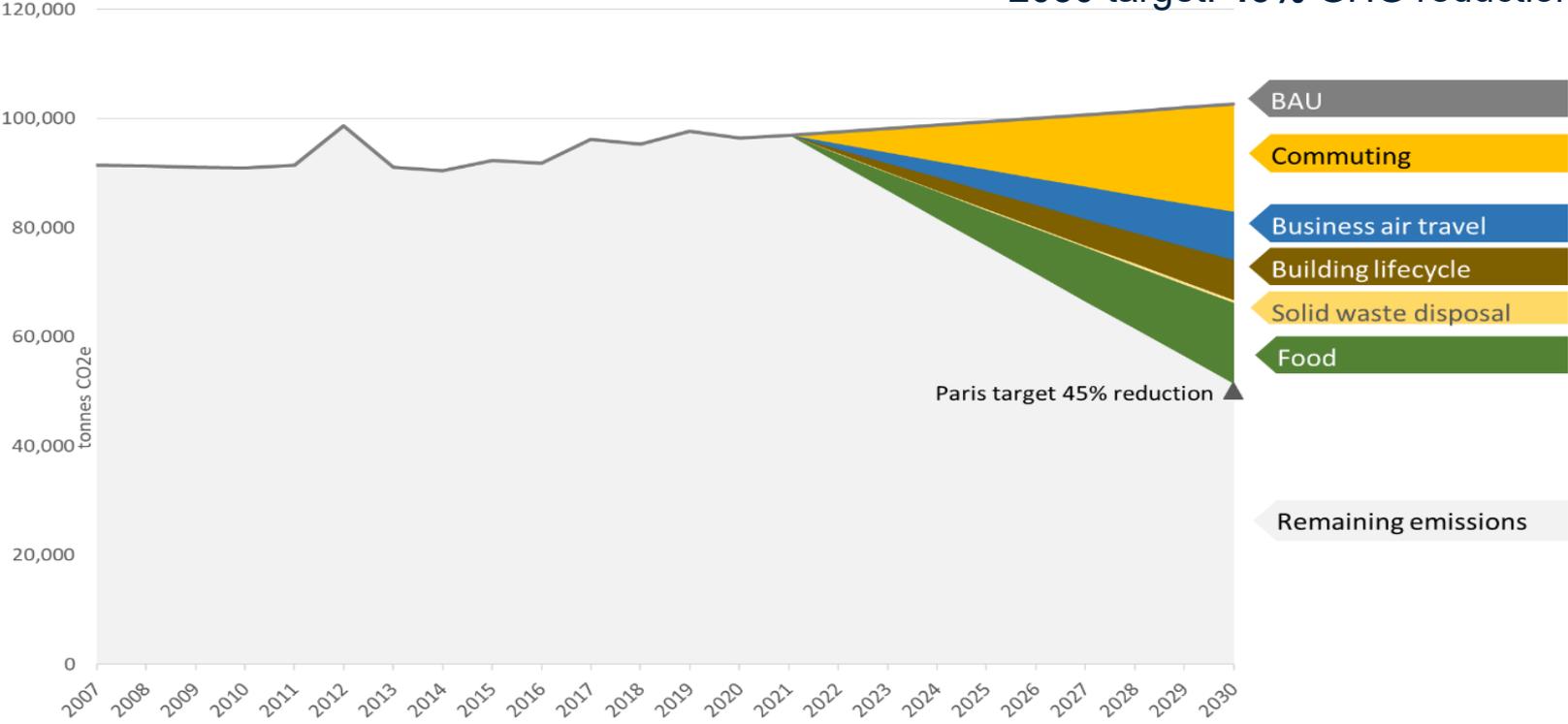
2030 target: **85%** GHG reduction  
2035 target: **100%** GHG reduction





# UBCV: EMISSION REDUCTION SCENARIO – EXTENDED EMISSIONS

2030 target: **45%** GHG reduction



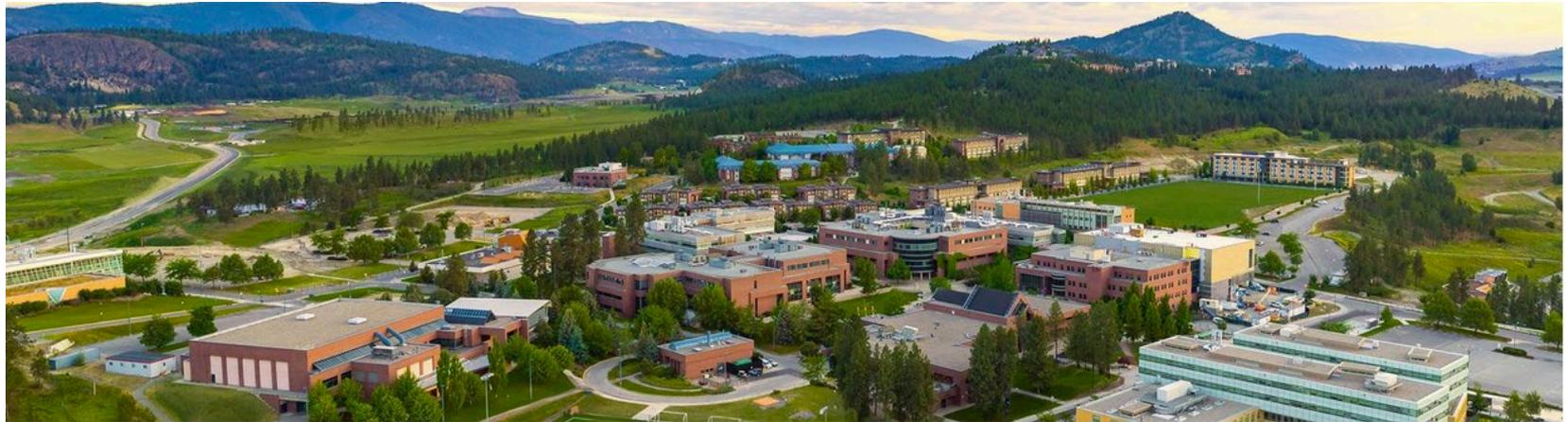
# UBCV RESOURCING STRATEGY - KEY AREAS OF RESOURCING



Area	Scope	GHG Impact	Cost*
Energy Supply	Operational	High	\$\$\$\$
Buildings	Operational	High	\$\$\$
Fleet	Operational	Low	\$\$
Commuting	Extended	High	N/A – Covered in separate process
Engagement & Outreach	Extended	Medium	\$\$
Business Air Travel	Extended	Medium	\$
Climate Friendly Food Systems	Extended	Medium	\$\$
Waste & Materials	Extended	Medium	\$
Adaptation & Resiliency Planning	N/A	N/A	\$

\* **Estimated cost (total, 2022 to 2030).** \$: 0 to 250k, \$\$: 250k to 2m, \$\$\$ 2m to 50m, \$\$\$\$ 50m to 200m

# UBC OKANAGAN – CAP 2030



# UBCO: GHG EMISSIONS BY SOURCE (tonnes CO2e)



- UBCO Operations - Scope 1 & 2
- Extended Emissions - Scope 3



Commuting

**9,188**



Business  
Air Travel

**3,528**



UBCO Buildings  
& Energy

**2,240**



Embodied  
Carbon

**1,215**

Waste &  
Materials

**435**

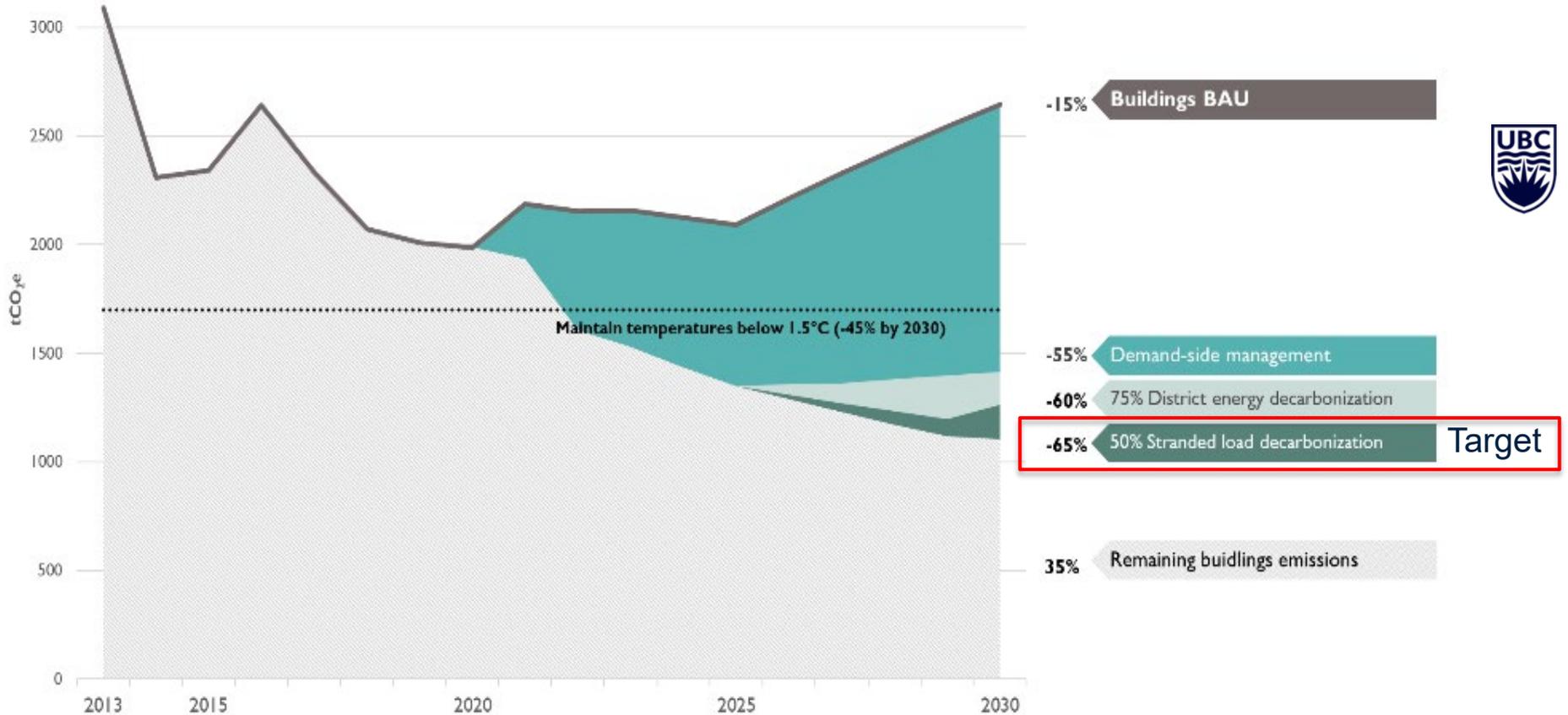


Paper  
**54**

Fleet  
**64**

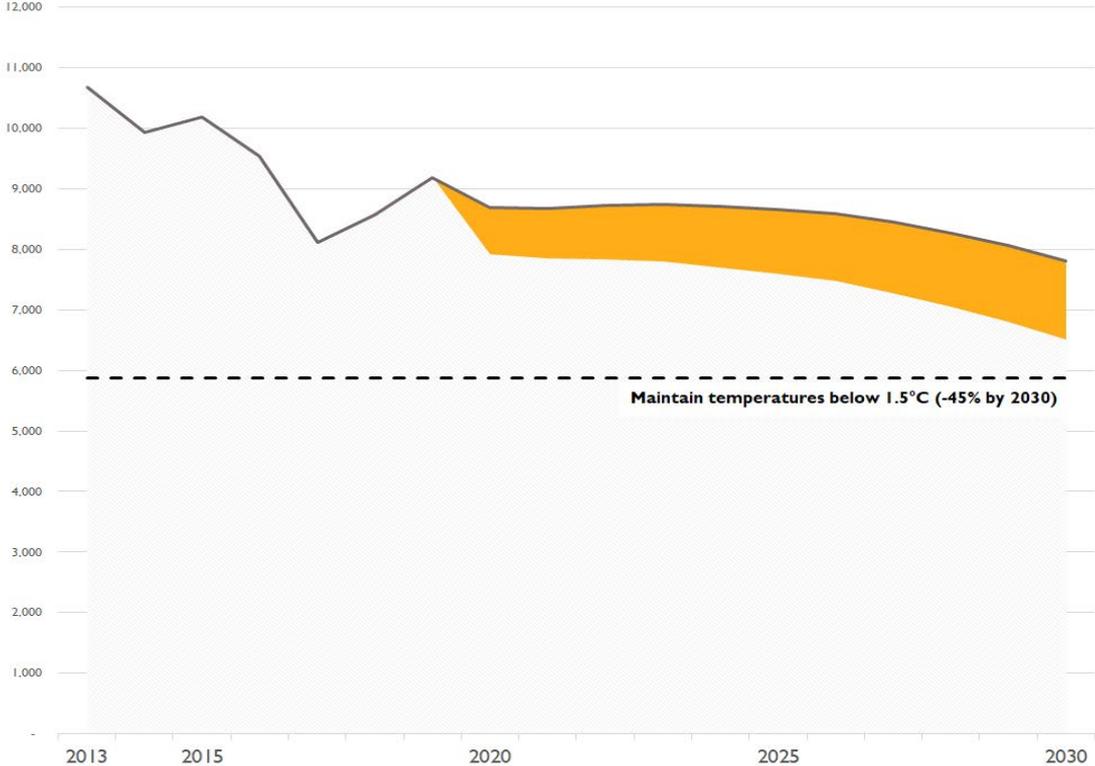


# UBCO: EMISSION REDUCTION SCENARIO - BUILDINGS



\* Assumes constant emissions factor for electricity 2020 onward. Assumes gradual decrease in natural gas emissions factor (-15% by 2030) in line with Provincial Clean BC commitment

# UBCO: EMISSION REDUCTION SCENARIO - COMMUTING



-27% Commuting BAU\*

-40% Commuting TDM Scenario

Target

61% Remaining commuting emissions

Maintain temperatures below 1.5°C (-45% by 2030)

\* UBCO BAU assumes the implementation of BC Transit's Low Carbon Fleet Program, the Provincial Zero Emissions Vehicle Regulation (30% of new vehicle sales are ZEV by 2030), and the Provincial Low Carbon Fuel Standard (gasoline in 2030 is 20% less carbon intensive than 2010).

# UBCO RESOURCING STRATEGY - KEY AREAS OF RESOURCING



Area	Scope	GHG Impact	Cost*
Energy Demand, Supply & Renewals	Operational	High	\$\$\$
Fleet	Operational	Low	N/A at this time
Commuting	Extended	High	\$\$
Engagement & Outreach	Extended	Medium	\$-\$\$
Waste & Materials	Extended	Medium	N/A at this time
Adaptation & Resiliency Planning	N/A	N/A	\$

\* *Estimated cost (total, 2022 to 2030). \$: 0 to 250k, \$\$: 250k to 2m, \$\$\$ 2m to 50m*



## **SYSTEM-WIDE IMPLEMENTATION – UBCV & UBCO**

# CAP 2030: UNIT ACCOUNTABILITY FRAMEWORK



CAP 2030 **implementation model** based on **distributed leadership**, where **every unit has a role to play to advance and integrate climate action**

- **Who:** Units/departments that are **leading or playing a significant role** to develop and implement UBC CAP 2030 actions (identified during the CAP 2030 process)
- **Rationale:** Enables lead units/departments to **report progress** on UBCO CAP 2030 actions (support from UBCV Campus Planning / UBCO Sustainability Office)
- **What is Required:** Responsible units/department to **submit progress reports annually** against specific UBC CAP 2030 actions – **accountable to specific a UBCV/UBCO committee**

# CAP 2030: INTERNAL CARBON PRICING - BENEFITS



- Demonstrates **UBC's leadership**: UBC Strategic Plan, Paris Agreement & UN SDGs
- Builds upon similar **regional success** at the City of Vancouver and Metro Vancouver
- **De-risks University investments** against current and future **carbon pricing legislation**
- Guides **low carbon decision-making** through a **rigorous and consistent process**
- Facilitates unpriced **co-benefits of climate action to** shift campus behavior and thinking

# CAP 2030: BUDGETING



- **Sustained funding will be required** to operationalize CAP 2030
  - Initial **resourcing priorities** advanced through **FY 22-23 budget process** (\$1.5m to \$2m)
- **Overall Approach**
  - Reduces UBC's exposure to an estimated **\$100m carbon liability** by identifying **strategic high-impact** projects.
  - CAP Actions have **co-benefits**
    - Helps **future proof the university** against climate change impacts as costs of inaction increase
  - **Detailed review process** to understand capital costs & minimize risks
  - A number of **studies are underway** with a strategic focus on district energy, building retrofits, and transportation
  - **Capital requests** to go through **standard BoG process**
  - Annual **operating budgets** to identify **climate priorities**



## CAP 2030: NEXT STEPS

Pending Board endorsement of CAP 2030, staff will continue to advance detailed capital project and operating program requirements for reducing GHGs in operational and extended emission areas.

### CAP 2030 Implementation

- Quick start actions related to climate friendly food & sustainable business travel
- Detailed planning and studies for decarbonization of district energy and buildings
- Roadmap to implement all actions contained in the Plan

# DISCUSSION

