2022-23

Task Force on Climate-Related Financial Disclosures Report

Year Ended March 31, 2023

THE UNIVERSITY OF BRITISH COLUMBIA

We begin by acknowledging that UBC's two main campuses are located on the traditional, ancestral and unceded territories of the xwməθkwəy̓əm (Musqueam) and Syilx (Okanagan) peoples, and that UBC's activities take place on Indigenous lands throughout British Columbia and beyond.

sʔi:qəý qeqən (Double-Headed Serpent Post)
Brent Sparrow Jr., xwməθkwəy̓əm
PHOTOGRAPHER:
Paul H. Joseph/UBC Brand & Marketing

COVER:
UBC Brand & Marketing/HoverCollective

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This report was written in collaboration between
UBC VP Finance & Operations (VPFO),
UBC Campus & Community Planning,
UBC Okanagan Campus Planning, and
UBC Office of Enterprise Risk and Assurance (ERA)

Task Force on Climate-Related Financial Disclosures (TCFD)

About This Report

The Task Force on Climate-Related Financial Disclosures (TCFD) recommendations were created by the Financial Stability Board to provide external stakeholders of an organization with the necessary information to assess climate-related risks and make informed investing decisions. In 2017, TCFD released their recommended disclosures focusing on four operational areas—governance, strategy, risk management and metrics and targets— that provide an understanding of how an organization identifies and assesses climate-related risks and opportunities. In 2018, the Canadian government formally endorsed the adoption of TCFD recommendations by all Canadian organizations to support Canada's commitment to the Paris Agreement. Since then, TCFD has been committed to promoting market transparency and encouraging widespread adoption of these disclosures. As more organizations integrate TCFD recommendations into their annual reporting, "companies and investors will have a better understanding of the financial implications of transitioning to a lower carbon economy and how climate-related physical risks will grow; information will become more decision-useful; and risks and opportunities will be more accurately priced, allowing for the more efficient allocation of capital" (TCFD.) More information about the TCFD recommendations can be found *here*.

UBC's TCFD Reporting

UBC, including the Board of Governors and President's Executive Team, endorses the adoption of TCFD recommendations and is committed to producing annual TCFD disclosures alongside supporting TCFD's global mission of market transparency. UBC will use TCFD guidelines as a tool to identify and manage climate-related risks and opportunities. In addition, these guidelines will inform our implementation of mitigation strategies to ensure the operational longevity of the University on both campuses, and to support the resiliency and sustainability of all students, faculty and staff—while also increasing transparency of the University's climate-related risks and opportunities for stakeholders. UBC expects that its disclosures will continue to evolve as the University improves, formalizes and integrates climate-change-related processes at the University.

Summary of TCFD Recommendations

TABLE 1: Summary of TCFD Recommendations

Operations Area	Disclosures
Governance Disclose the organization's governance around climate-related risks and opportunities	a. Describe the Board of Governors' (the Board's) oversight of climate-related risks and opportunities. b. Describe management's role in assessing and managing climate-related risks and opportunities.
Strategy Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy and financial planning, where such information is material.	a. Describe the climate-related risks and opportunities the organization has identified over the short, medium and long term. b. Describe the impact of climate-related risks and opportunities on the organization's business, strategy and financial planning. c. Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a temperature increase of 2°C or lower.
Risk Management Disclose how the organization identifies, assesses and manages climate-related risks.	a. Describe the organization's processes for identifying and assessing climate-related risks. b. Describe the organization's processes for managing climate-related risks. c. Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organization's overall risk management.
Metrics & Targets Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities, where such information is material.	a. Disclose the metrics used by the organization to assess climate-related risks and opportunities, in line with its strategy and risk-management process. b. Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks. c. Describe the targets used by the organization to manage climate-related risks and opportunities, and measure performance against targets.

Introduction

About UBC

The University of British Columbia (UBC) is a global center for teaching, learning and research, consistently ranked among the top 20 public universities in North America. Since 1915, our motto, Tuum Est (It is Yours), has been a declaration of our commitment to attract and support those who have the drive to shape a better world. As a result, UBC students, faculty and staff continue to embrace innovation and challenge the status quo, placing us at the forefront of discovery, learning and engagement. In 2023, the Times Higher Education (THE) Public Institution Rankings ranked UBC 40th in the world and second in Canada. UBC also ranked 26th out of more than 1,500 institutions in the Times Higher Education Impact Rankings for institutional efforts to advance the United Nations sustainable development goals.

UBC has two main campuses in British Columbia (BC): the UBC Vancouver Campus on the Point Grey peninsula on the western edge of Metro Vancouver and the UBC Okanagan Campus in Kelowna. Beyond the two main campuses, the University has multiple sites throughout the province that support research and learning. These include medical clinics distributed throughout the province, the 40,000-hectare Malcolm Knapp research forest in Maple Ridge, and various farms and research sites.

At more than 400 hectares, the UBC Vancouver campus is comparable to a small city; it comprises a mixture of academic and neighbourhood areas supported by world-class educational and cultural facilities, a rich array of services and amenities, parks and open spaces. The campus is situated on the traditional, ancestral and unceded territory of the Musqueam people. UBC holds a unique, quasi-municipal arrangement with the growing residential community on campus, governing and managing neighbourhood development and amenities. Like the rest of the province, the Vancouver region has experienced the devastating effects of climate change, including extreme heat, heavy precipitation and wildfires that have affected operations and day-to-day life on campus.

The UBC Okanagan campus is an innovative hub for teaching, learning and research, situated in the heart of Syilx Okanagan Territory. The campus is a close-knit academic community that has experienced rapid growth. Located in the Okanagan's Ponderosa Pine biogeoclimatic zone, the campus is set in a diverse landscape of pine woodland and open grassland. It is among the driest forested zones in BC and contains ecosystems of at-risk plants

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and wildlife. The Okanagan region has recently experienced extreme climate-change related weather events resulting in catastrophic damage, including unprecedented wildfires, record breaking heat waves and heat dome, Level 5 droughts and spring flood events.

Both campuses have experienced the effects of climate change, underscoring the urgency for leadership, action and investment in climate-change solutions.

UBC also operates UBC Robson Square, the UBC Learning Exchange and is one of four university partners of the Centre for Digital Media, located within the City of Vancouver. In addition, UBC provides clinical education to Faculty of Medicine students at over 80 training sites throughout BC.

The University's teaching, learning and research as well as modelling excellence in operational practices have direct and indirect public socio-economic benefits, all of which contribute to a future-oriented, sustainable economy. UBC's leadership in sustainability and research on climate action are readily shared with partners and other communities to advance sustainable practices that address the climate emergency. UBC uses its unique position as a research-intensive university, with considerable land, assets and utilities in Vancouver and the Okanagan, as a testbed for sustainability. The goal is to enhance the efficiency of the University's operations, improve environmental performance and achieve cost savings, while leveraging our campus infrastructure and environment to demonstrate innovative sustainability solutions at a municipal scale. To do so, UBC's Campus as a Living Lab (CLL) initiative integrates operational and academic sustainability in ways that challenge our campuses to address societal issues to affect real-world change at UBC and in the wider communities. It allows students, faculty, staff and external UBC partners to test and pilot different applied research and learning projects, using campus land, natural resources and other physical assets. The goals of the CLL include:

- **Integrate** UBC's academic mission (research, learning and teaching) with university operations and communities.
- **Collaborate** through partnerships between UBC and the private sector, other public sector organizations, and others.
- **Leverage** UBC's academic community, through both student-led and faculty-led research.
- **Practice** sound financial use of UBC's resources and infrastructure.
- **Create** research with the potential for practical, positive action at both UBC and broader communities.

A History of Climate Leadership

UBC was Canada's first university to adopt a sustainability plan in 1997 and the first to open a sustainability office in 1998. The UBC Sustainability Initiative, now the Sustainability Hub, was created in 2009.

In 2010, UBC introduced the University's first Climate Action Plan, establishing bold targets to reduce Greenhouse Gas (GHG) emissions and outlining investments needed to meet climate-change goals. The University also established the Okanagan Sustainability Office at the UBC Okanagan campus.

In 2013, the Board of Governors approved the University's first Responsible Investing Policy, which integrated environmental, social and governance factors into the University's investment process.

In December 2019, UBC renewed its commitment to climate leadership and declared a climate emergency in a statement made by Prof. Santa J. Ono, the 15th President & Vice Chancellor. The declaration unanimously approved by the Board of Governors, recognized the severity, complexity, disproportionate impacts of, and disproportionate responsibilities for the climate crisis, and committed UBC to developing a collective response that embeds climate justice throughout its activities and priorities. The Board also unanimously passed a motion committing to the full divestment of the $1.71-billion Main Endowment Fund from the fossil-fuel industry. UBC Invesment Management (UBCIM) is supporting the university with this motion and has made a commitment to a full divestment of fossil fuel companies by 2030 in the funds that they manage. UBCIM reports on their progress to the UBCIM Board, the UBC Board of Governors, the Staff Pension Plan (SPP) Board and publicly in their Responsible Investment Report. UBC's TCFD report excludes specific disclosures relating to UBCIM's investments.

Following the climate emergency declaration, nine strategic priorities emerged through engagement with the UBC community, leading to a bold vision for UBC's Climate Emergency Response. Collectively, the priorities outline a vision for UBC's existing leadership to reduce emissions, paired with efforts to drive collective impact in local, regional and international climate action.

At UBC Vancouver, the University has implemented various programs and action plans to combat climate change within the academic and neighbourhood communities. These include energy management, recycling and waste, water, green buildings, food, purchasing and transportation, all of which provide strong examples for surrounding communities on how such programs can be implemented within a large community. More information on these programs can be found *here*. At UBC Okanagan, the University published its Whole Systems Infrastructure Plan in 2016, in response to projected climate impacts, campus and UBC's sustainability goals. This plan provides a foundation for campus growth and development

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over the next 20 years and beyond, and addresses energy, carbon, water, landscape, ecology, biodiversity and and engagement to guide future planning, investment and management in a manner that will support sustainable development, community wellbeing and ecological resilience. More information on UBC Okanagan's Whole Systems Infrastructure Plan can be found *here*.

In 2021, UBC Vancouver and UBC Okanagan introduced separate Climate Action Plans (UBC Vancouver CAP 2030 and UBCO CAP 2030) at each campus, which put the University on an accelerated path to net-zero emissions for buildings and energy supply, as well as a significant reduction in GHG emissions for an extended impact over the next 15 years. UBC Vancouver is also developing a Neighbourhood Climate Action Plan (NCAP) for the campus neighbourhoods that will complement the CAP 2030 and address extended impact areas (also known as Scope 3 emissions). NCAP will also help address emissions associated with future growth of the residential neighbourhoods that is guided by Campus Vision 2050: Shaping the Future of UBV Vancouver.

In 2022, UBC committed to producing an annual TCFD report to increase transparency to stakeholders about climate-related risks and opportunities that affect the University, and to support our efforts in helping to address climate change through mitigation and adaptation strategies by identifying and understanding these risks.

In 2023, UBC approved an updated Statement of Responsible Investing which outlines UBC's responsible investing beliefs and values, sets out responsible investing commitments to guide investment decisions and makes UBC's approach to responsible investing available to the UBC community, its stakeholders and the public.

Governance

The Board's Oversight of Climate-Related Risks and Opportunities

The University's oversight is governed by the powers granted in the University Act, which provides for the University's bicameral governance structure of four bodies: the Board of Governors (the Board), the Okanagan Senate, the Vancouver Senate and the Council of Senates.

Board of Governors

Manages the University's administration, property and business affairs and has representation from each of the University's Vancouver and Okanagan campuses.

Council of Senates

Reflects the need for a body with membership from each of the Senates and a mandate to establish common University positions on academic matters.

Senates

The University's Okanagan campus and Vancouver campus each have a senate, with comparable categories of members and a similar balance between elected and non-elected members. The Senates administer the University's academic matters. Under Section 3.1 of the Act, the Board of Governors has specified which parts of the University the Okanagan Senate and the Vancouver Senate have academic governance responsibility over.

The Board of Governors

The *University of British Columbia's Board of Governors* (the Board) is responsible for the general oversight of the University; the management, administration and control of the property, revenue, business and affairs of the University; and the appointment of senior officials and faculty members. Due to the University's unique position as a quasi-municipality at UBC Vancouver without a mayor or council, with a growing residential community, the Board also plays a key role in governing the residential areas of the University and the emerging neighbourhood climate action plan.

The Board has formed several committees to provide an efficient mechanism for targeted discussions. The Chair of the Board appoints committee members, balancing effective committee operation with representation from both campuses. Committees are arranged based on the organizational needs of the University and their alignment with its strategic plan. They are to assist the Board in conducting its work efficiently and effectively, reviewing, monitoring and recommending policy alternatives and implications for Board deliberation.

Since 2010, when UBC announced GHG targets and other climate goals, the Board has endorsed a succession of action plans and programs. These include the 2010, 2020 and 2030 Climate Action Plans, aggressive GHG reduction targets across Scope 1, 2 and 3 emissions sources and the 2021 Climate Emergency Response.

The Board is regularly kept informed of climate-related issues and risks affecting the University through formal updates twice a year. They are updated on UBC's Climate Action Plans and the University's progress towards these goals annually in June and UBC's sustainability initiatives and climate emergency in November. The Board reviews operations and decision-making in relation to climate key performance indicators (KPI's) (such as GHG emissions, progress of implementing approved climate plan actions and key milestones) that are linked to UBC's climate strategy and presented in the University's Annual Sustainability Report.

Further, climate-related issues and risks are considered by the Board during the annual budgeting process when University initiatives and funding requests are reviewed and approved including decisions relating to large capital expenditures and future returns of investment funds. There are individual committees within the Board of Governor's that review climate related risks and opportunities in more detail because of their operational area of oversight including; the Audit Committee, Finance Committee, Land Use and Operational Sustainability Committee and Property Committee.

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Audit Committee

The Audit Committee has responsibility for the oversight of the enterprise risk management (ERM) function at UBC and the related overview of institutional wide risks, including new and emerging risks identified by management such as climate-related risks. The Audit Committee meets four times per year.

Finance Committee

The Finance Committee oversees UBC's responsible investing framework, its commitment to full divestment of fossil fuel companies by 2030 and reducing the endowment's carbon emissions footprints by 45% by 2030. UBC IM oversees UBC's investment funds and is working to support UBC in its goals of divestment and reduction of carbon emissions. UBC IM updates the board on these goals regularly during the year.

Property Committee

The Property Committee oversees UBC's capital projects, capital additions and major acquisitions in relation to climate-related risks and opportunities that will affect the university.

Management's role in assessing and managing climate-related risks and opportunities

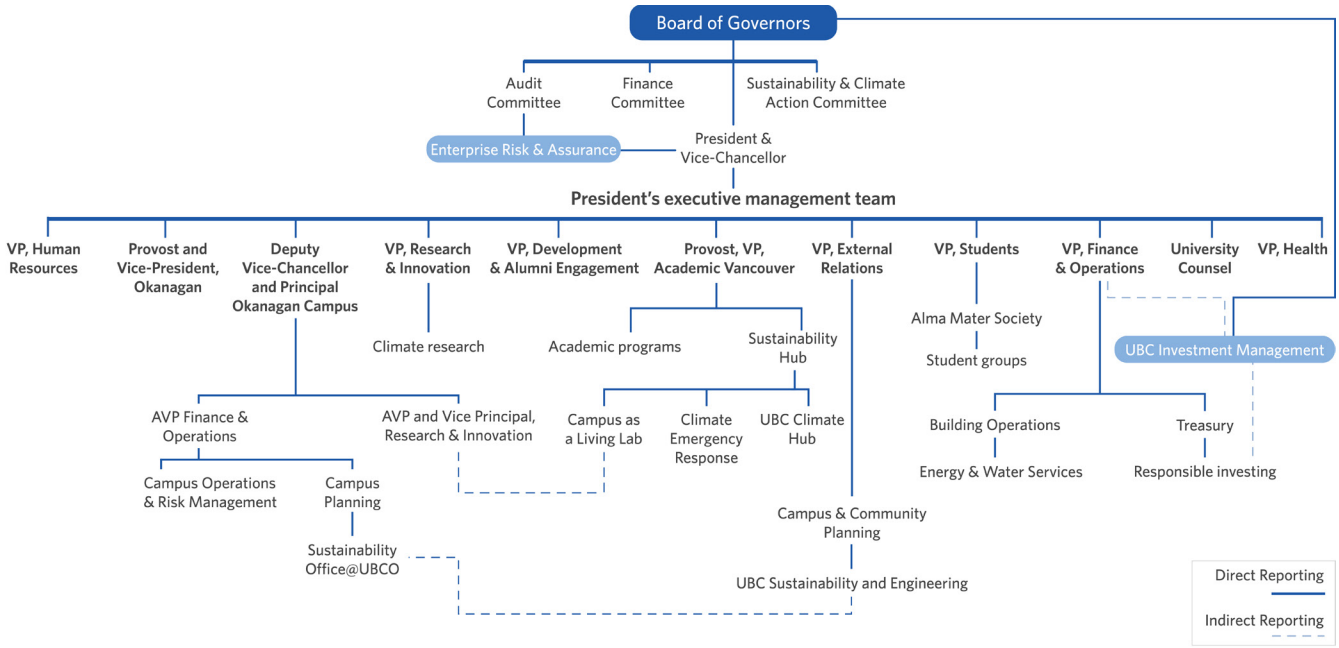
UBC has developed a management structure to guide and lead the University. Each part of the organization has its own specific purpose and priorities to ensure the University's ongoing success and operational efficiency. The President's executive management team sets the *strategic priorities and goals of the University*. Currently, combatting the climate crisis is one of the University's key areas of focus, and it is highlighted in UBC's 10-year strategic plan, Shaping UBC's Next Century. This strategic plan, published in 2018, provides direction to the University and outlines the core principles for determining what initiatives and investments the University should undertake. One of its goals is to lead globally and locally in sustainability and wellbeing across our campuses and communities.

UBC management is responsible for the identification, assessment and management of all risks. There are numerous departments and groups reporting to the executive leadership team focused on identifying, assessing and managing climate-related risks and opportunities of the University, and supporting the University's goal to lead globally and locally in sustainability. When climate-related risks and issues are identified, management assesses the risks and determines appropriate mitigation strategies to reduce their impacts and effects.

The executive leadership team informs the Board about matters relating to the University, including climate-related risks and opportunities affecting operations.

Organizational Chart

FIGURE 1: UBC Board of Governors Organizational Chart



The University has established the *Sustainability Hub* to support the integration of sustainability into academic and student programming. The Hub curates and facilitates academic and student sustainability programs and activities on campus, connecting students, faculty, staff and external partners with sustainability-related research opportunities and projects. They work hand in hand with other groups at the University to integrate sustainability themes into teaching, learning and student activities; support interdisciplinary urban research; advance engagement with sustainability partners; manage UBC's interactive research on sustainability; and host the UBC office of the Pacific Institute of Climate Solutions. The Sustainability Hub, supported by a group of researchers and experts and a leadership team, serves the Vancouver campus.

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Key university operational departments at UBC Vancouver, such as Campus & Community Planning, Facilities (including Building Operations, Infrastructure Development and Energy & Water Services), have leadership positions dedicated to ensuring the University meets its climate-related targets and responds to climate impacts on both campuses. Within Campus & Community Planning, UBC Sustainability and Engineering helps to develop engagement programs that empower students, staff, faculty, and residents to create a more sustainable campus, region and world. The unit offers a wide range of leadership programs, campaigns and awareness building activities to support UBC's goal of being a world-class leader in sustainability- helping to turn policies and plans into action. The programs developed and run by UBC Sustainability and Engineering engage thousands of campus community members each year. The unit's focus area includes advancing resource conservation across campus, promoting sustainable behaviours, building capacity and leadership and supporting implementation of *UBC's operational sustainability plans*. Additionally, the unit oversees the implementation of the Green Building Action Plan and supports delivery of engineering services under the University's Land Use, Permitting and Sustainability Policy (UBC Policy UP12), which oversees UBC's commitment to sustainability.

At UBC Okanagan, the University has established a Sustainability Office focused on advancing sustainability on campus and addressing interconnected issues relating to energy, carbon, water, landscape, ecology, biodiversity and engagement. This office develops policies and plans related to sustainability and infrastructure management on the Okanagan campus, including the Climate Action Plan, Whole Systems Infrastructure Plan, Integrated Rainwater Management Plan and Green Building Standards as well as contributing to the development of the Campus Plan, Design Guidelines (Green Buildings), UBCO LEED Implementation Guidelines, the Transportation Plan and other related plans. The office also contributes to the integration of sustainability into capital planning projects by advising on sustainability requirements and facilitating UBC's Integrated Sustainability Process on the Okanagan campus. In addition, the Sustainability Office is responsible for UBC Okanagan's sustainability and regulatory carbon performance monitoring, reporting and offsetting. Further, sustainability is integrated in the operations of many units across the Okanagan campus. A key outcome of the Whole Systems Infrastructure Plan was the establishment of a dedicated Energy Team within Campus Operations & Risk Management, to focus on energy efficiency and low-carbon district energy solutions. Sustainability is also integrated in the operations of many other UBC Okanagan units, including Facilities Management, Student Housing and Hospitality Services, and Food Services. Campus Operations & Risk Management also has a role in assessing climate risks and decarbonizing operations.

UBC's management team has a resource of highly knowledgeable peers specialized in climate-related risks and opportunities and potential impacts on the University through the Sustainability Hub, Office of Enterprise Risk and Assurance, UBC Sustainability and Engineering within Campus & Community Planning at UBC Vancouver, and the Sustainability Office within Campus Planning at UBC Okanagan. These members of the University carry a diverse range of expertise and specializations to support numerous areas of climate-related risks and opportunities, including space planning, energy conservation, green buildings, policy and climate justice.

Strategy

Climate-Related Risks and Opportunities

The climate crisis introduces several risks for the University that threaten daily operations and the institution's long-term viability. For example, if BC were to experience severe heat waves in the future, many buildings at UBC Vancouver would be unusable due to overheating, causing a massive disruption in day-to-day operations. Further, as UBC's carbon-offset liability increases and more requirements are placed by the provincial and federal governments to combat climate change, it becomes paramount that UBC invest in reducing its climate-related risks, without compromising investments in its academic mission. If necessary, additional government support would be required should the latter be compromised. However, there are several opportunities the University can realize, given its leadership commitment, researchers and experts in all aspects of sustainability and climate, and its community of over 80,000 members invested in addressing the climate crisis.
The following risks and opportunities have been identified by the University in the short, medium and long-term using the risk classification and criteria recommended by the TCFD. UBC considers the short term to be one to three years, the medium term to be three to five years, and the long term to be five to ten years. In addition to the risks identified below, UBC Sustainability and Engineering have also been working with UBC Safety and Risk services to develop a comprehensive list of expected impacts based on localized climate science projections for the UBC Vancouver campus. A risk and vulnerability assessment on these impacts is underway, which will be used to help prioritize and define our adaptation and resiliency response moving forward.

UBC Identified Climate-Related Risks

TABLE 2: Climate-Related Risks

	Short-Term	Medium-Term	Long-Term
Policy & Legal	X	X	
Technology	X		
Market	X	X	
Reputation	X	X	
Physical	X	X	

UBC Identified Climate-Related Opportunities

TABLE 3: Climate-Related Opportunities

	Short-Term	Medium-Term	Long-Term
Resource Efficiency	X	X	X
Energy Source	X	X	X
Products & Services	X	X	
Markets	X	X	X
Resilience		X	

The following climate-related risks have implications for delivering teaching and research activities, supporting UBC community members and making a positive contribution to the region. The University has multiple opportunities to mitigate risks through its policies, plans and long-standing leadership in sustainability.

Risks

Policy & Legal

- UBC is aware of the volatility of conventional energy costs and the security of fuel supply. The impacts of cost and supply volatility include disruptions to operations associated with heating and cooling of campus buildings and the future investments needed to develop diverse and resilient sources of energy supply.
- Capital investments in new and existing buildings are required to meet BC's future building codes, Provincial requirements, LEED standards and UBC's climate-action targets. It is expected that recent Provincial ESG requirements to address climate resiliency for government funded projects are estimated to add approximately 11-12% increase in capital costs for buildings. Failure to comply with rapidly changing provincial and federal policies that discourage pollution-intensive investments and increase the affordability of cleaner options can have a negative financial impact for the University. These include:
    - **Carbon Price and Taxes**: As the provincial and federal governments continue to increase the carbon tax associated with fossil-fuel purchases, and with the ongoing mandate to purchase carbon offsets to maintain a carbon-neutral public sector in BC, the University's carbon liability will continue to grow over time without further action. From April 2023, UBC will pay a carbon price of $90/tonnes CO_2e emitted ($65/tonnes CO_2e for BC Carbon Tax and $25/tonnes CO_2e

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for public sector offset requirements). This cost will continue to rise as the federal and provincial governments continue to increase the price on carbon pollution, reaching $170/tonnes CO_2e in 2030 ($195/tonnes CO_2e when including public sector offsets). The provincial Low Carbon Fuel Standard and Renewable Natural Gas Standard will further add to these costs. Without UBC's past climate action and demand side management, this liability would be significantly higher.

- **The Province of BC's Zero-Emission Vehicle Act**: 100% of new vehicle sales are to be zero-emission vehicles by 2040, including 10% by 2025 and 30% by 2030. Currently, 7% of the fleet on UBC Vancouver campus are electric vehicles. Another two hydrogen fuel cell vehicles were purchased in 2022. There are 93 Level 2 and 7 Level 3 electric vehicle charging stations on UBC Vancouver campus. At UBC Okanagan, the University's golf cart fleet is 100% electric and there are 14 Level 2 electric vehicle charging stations. UBC will continue to invest in electric vehicle charging infrastructure across campus to support the transition to electric vehicles and needs to significantly invest in fleet replacement to achieve GHG goals.

Technology Risk

- Substantial investment is needed to transition to lower emissions technology throughout both campuses to reduce UBC's carbon impact as technologies improve or innovative technologies are introduced.
- Significant investments in buildings and landscapes using innovative technologies to support their resilience to the impacts of climate change—including heat waves, fires and associated smoke, storms and floods—are required to mitigate the climate-related risks in these areas.

Physical Risks

- UBC is in the process of ensuring that buildings are designed to withstand the most significant impacts of climate change. The *Green Building Action Plan* and *Climate Ready Building Requirements* provides guidelines for the retrofit of existing buildings and the design of new buildings, the financial implications of compliance and bringing all buildings to appropriate standards is significant.

Opportunities

Resource Efficiency & Low Carbon Energy Supply

Climate Action Plan 2030 – Vancouver and Okanagan Campus Plans

The University has committed to accelerated emission reductions that align with, and in some cases exceed, GHG savings needed to meet the Paris Agreement of limiting global warming to 1.5°C. To support these ambitious targets, the Board endorsed climate action plans for the Vancouver and Okanagan campuses, which set accelerated actions to drive emission levels down in 10 priority areas within Scope 1, 2 and 3.

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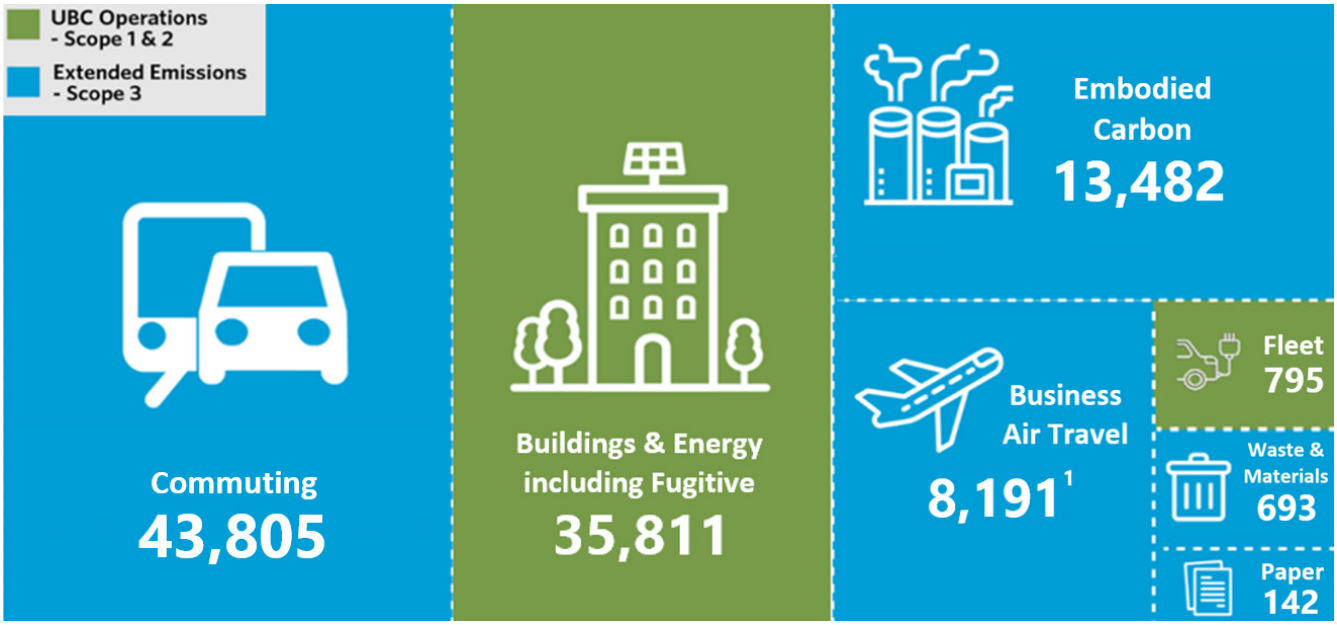
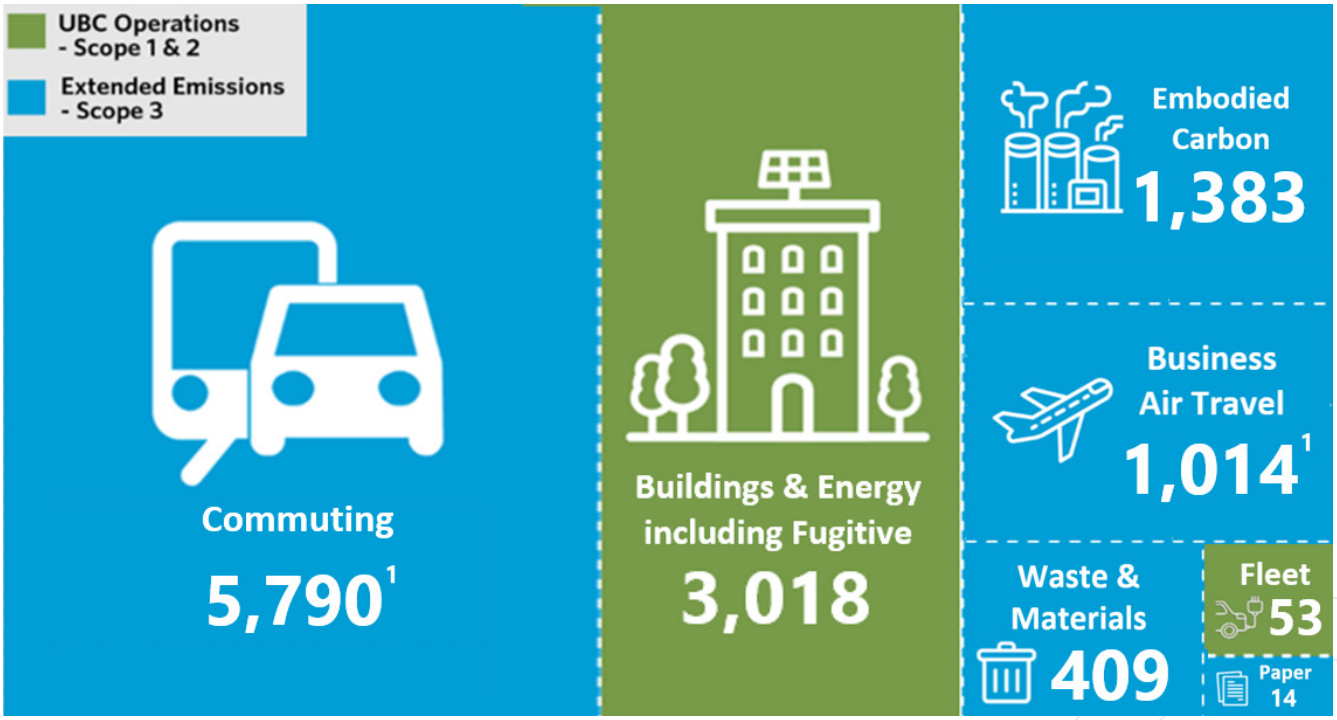
UBC Vancouver & UBC Okanagan GHG Emissions By Source

FIGURE 2: 2022 UBC Vancouver GHG Emissions By Source



[1] *The figure included business air travel emissions from UBC Okanagan.*

FIGURE 3: 2022 UBC Okanagan GHG Emissions By Source



[1] *These figures were impacted by the Covid-19 pandemic.*

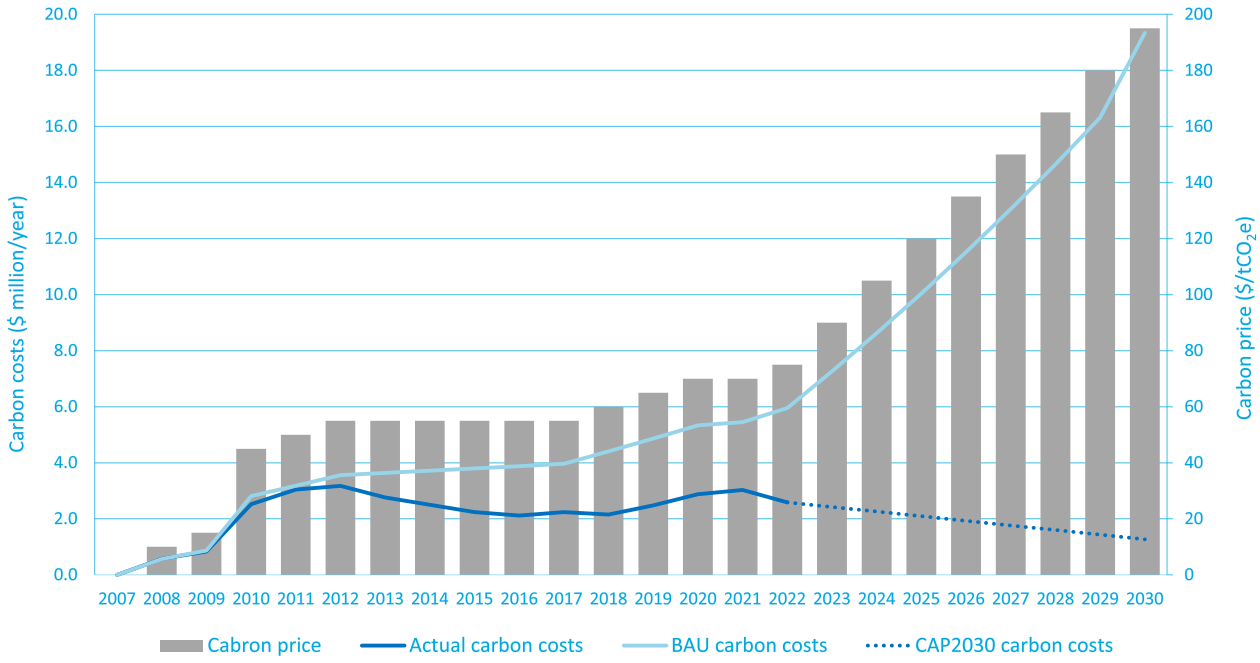
Scope 1 & Scope 2 Emissions

The University's Scope 1 and Scope 2 GHG emissions targets associated with buildings and fleet vehicles, established through the UBC Vancouver and UBC Okanagan CAP 2030, are an 85% reduction for the Vancouver Campus and a 65% reduction for the Okanagan Campus by 2030. Active programs aimed at achieving these targets at the Vancouver campus include:

- New buildings and building renewals will target near-zero operational emissions, and existing building emissions will be reduced through the implementation of demand-side energy conservation measures.
- UBC Vancouver is currently expanding the capacity of the *Bioenergy Research Demonstration Facility (BRDF)*. Once fully functional, two-thirds of UBC's academic district energy system will be supplied with renewable energy sources. Solutions to further decarbonize UBC's district energy system are currently being developed, to be deployed by 2030.

With the price on carbon emissions set to increase significantly over the next seven years, UBC's efforts to increase energy efficiency and drive down carbon emissions will increasingly provide financial benefits. It is estimated that achieving UBC Vancouver's climate target of an 85% reduction below 2007 levels by 2030 would reduce carbon tax and carbon offset liabilities by approximately **$18 million per year** when compared to a business-as-usual scenario (see Figure 1).

FIGURE 4: Forecasted carbon tax savings from UBC climate action



Active programs aimed at achieving these targets at the Okanagan campus include:

- Implementation of the UBC Okanagan Low Carbon Energy Strategy and Strategic Energy Management Plan to decarbonize energy supply to new buildings and reduce energy demand in existing buildings.
- Development of Green Building Standards to enable stronger alignment between green building policies and the UBC Okanagan CAP 2030.

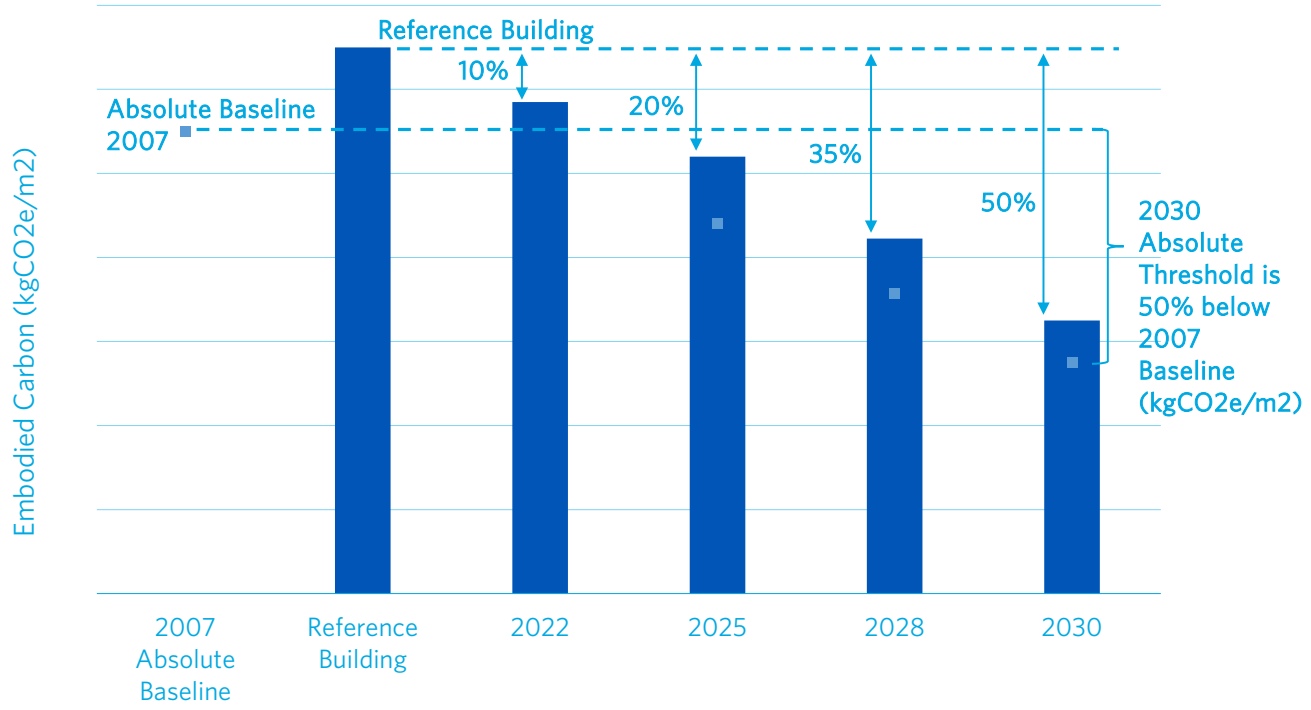
Scope 3 Emissions

UBC is developing processes and programs to reduce Scope 3 emissions. The target for Scope 3 emissions, established through CAP 2030 will be a 45% reduction by 2030 for both campuses in areas that include emissions associated with commuting, embodied carbon, business air travel, food, and waste. Active programs and success stories related to these are reported annually in *UBC's Climate Change Accountability Report*.

Embodied Carbon in Buildings

UBC has developed a policy to reduce embodied carbon in buildings in order to reduce Scope 3 emissions related to building materials and products and achieve extended impact targets set in CAP 2030. Embodied carbon represents a significant impact and, as operational carbon are reduced, it represents an even greater proportional share of the impact, especially in the BC context, where the emissions factor for electrical power is already very low. Stepped reductions, shown in the diagram below, will achieve the 50% reduction target for embodied carbon in 2030 and allow the construction industry to increase capacity and for supply chains to improve, while adjusting to lower carbon solutions gradually. Reduction in embodied carbon can be achieved by using a combination of design strategies such as: designing efficient buildings that use less material or choosing materials that have lower embodied carbon (for example low carbon concrete).

FIGURE 5: Proposed Policy Pathway



The chart above shows the recommended incremental reduction targets to align with CAP 2030 goals (Vancouver & Okanagan).

Products & Services

Campus as a Living Lab

UBC is leveraging its reputation and resources to transform the campus through the Campus as a Living Lab (CLL) initiative. This initiative responds to the challenges of the climate emergency, ecosystem destruction, global urban migration, pandemics and economic change by integrating academic research and teaching with campus planning, infrastructure, operations and community development. UBC is able to use the campus as a sandbox to explore opportunities and test new ideas in our local context, and to learn from both our successes and failures. CLL functions in conjunction with the philosophy of the University as an agent of change. Many projects are developed with industry and government partners interested in testing technologies and ideas at a community scale, which will allow translation to broader applications. The learning through CLL is shared through our partners with other communities and organizations and creates a broader knowledge-exchange initiative. This enables UBC to engage and learn from community members beyond its borders, as part of an ecosystem of innovation and learning. CLL has supported research in the following areas:

- **Low Carbon and Resilient Neighbourhoods**
  UBC Vancouver is working to advance sustainable development in residential neighbourhoods to create healthy and vibrant communities with low (or no) carbon footprints that support residents in adapting to a changing climate and world. These neighbourhoods offer insights on how new policy goals and performance targets can improve the sustainability and resiliency of communities across BC. UBC Vancouver is developing a Neighbourhood Climate Action Plan (NCAP) which will provide an accelerated pathway to net zero emissions while increasing resilience to the effects of climate change in the university neighbourhoods.

- **Zero Emissions Building Exchange Partnership**
  UBC is partnering with the Zero Emissions Building Exchange (ZEBx) to leverage academic expertise, in collaboration with local industry partners, to develop solutions for zero-emission buildings.

- **Bioenergy Research and Demonstration Facility**
  UBC is leveraging external funding and partnerships to advance key research and innovation priorities, such as the University's Bioenergy Research Demonstration Facility (BRDF) that reduces GHG emissions by turning waste-wood biomass into clean energy and supports research on alternative energy technology.

- **Brock Commons Tallwood**
  UBC's innovation in sustainable construction of student residential buildings has been leveraged globally following the successful implementation of these buildings on campus. Brock Commons Tallwood is constructed from an innovative hybrid structure composed of concrete, steel and mass timber: cross-laminated timber (CLT) floor panels and glue-laminated timber columns.

- **x̌əl sic snpax̌nwix̌ʷtn**
  At UBC Okanagan, x̌əl sic snpax̌nwix̌ʷtn final building design integrates passive design principles with innovative measures to reduce operational energy and carbon emissions. x̌əl sic snpax̌nwix̌ʷtn will be used for interdisciplinary collaboration and innovation where researchers across UBCO's entire research spectrum can share space to research and help solve complex societal challenges from multiple perspectives, leveraging the expertise already assembled on campus and helping to recruit new talent. Among the building's innovative design strategies, the project incorporates the longest earth tube system in Canada — one of the longest in the world - to cool and heat air passively. It also incorporates a low carbon energy supply, high-performance envelope, heat recovery chiller, and efficient lighting design. The building is projected to consume 63% less energy and emit 92% fewer emissions compared to a LEED® baseline facility.

- **Centre for Interactive Research on Sustainability (CIRS)**
  UBC is leveraging its partners in technology, innovation, research and development through CIRS to serve as both a hub for sustainability to work on campus as well as a sustainable building research subject. CIRS embodies UBC's Campus as a Living Lab approach to testing new ideas and sharing knowledge about sustainable building technologies and performance. The building is equipped with a robust network of sensors and controls to optimize and document building performance, and the data supports research projects on topics such as renewable-energy technology, system optimization, water reuse, performance gaps and inhabitant behaviour.

- **BC Hydro Continuous Optimization Program**
  UBC Energy and Water Systems has participated in BC Hydro's Continuous Optimization Program (C.Op) over the past decade to identify energy conservation measures.

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- **Social Ecological Economic Development Studies (SEEDS)**
  The *SEEDS* program creates applied research and interdisciplinary partnerships between students, faculty, staff and the community to advance sustainability ideas, inform policies and practices, and to create societal impacts by using the Campus as a Living Lab. Previous SEEDS studies have helped to advance many areas of climate action, including business air travel, climate-friendly food and biodiversity initiatives.

- **University Climate Change Coalition (UC3)**
  UBC shares and amplifies the University's place-based climate research and solutions that help accelerate climate action at a local, regional and global scale as a founding member and current member of the University Climate Change Coalition (UC3). This coalition brought together 23 universities from across the United States, Canada and Mexico to share their expertise, knowledge and resources to tackle and accelerate climate action. By fostering cross-sectional collaboration, the initiative hopes to solve the multifaceted problems of climate change, including meeting the ambitious goals of the Paris Agreement.

- **Academic Programs**
  UBC has increased its offering of academic programs that focus on sustainability, including a *Bachelor of Sustainability* at the UBC Okanagan Campus and *major and minors* offered by the Faculties of Applied Science, Arts, Education, Forestry, Land and Food Systems, Science and Sauder School of Business at the UBC Vancouver Campus.

- **Student Sustainability Initiatives**
  UBC senior administration supports student sustainability initiatives such as the UBC Climate Hub, a group of full-time staff and student leaders that connect and empower university and community stakeholders to take bold climate action for a just future. Their projects include the Youth Climate Ambassadors Project, Climate Justice Research Collaborative and advocating for the wellbeing of local communities.

Markets

- UBC has been globally recognized as a sustainability leader in higher education. In 2023, UBC placed 26th overall (out of more than 1,500 institutions) in the 2023 Times Higher Education (THE) Impact ranking for institutional efforts to advance the United Nations sustainable development goals, and specifically tied for fourth in the Sustainability Development Goal 13 (Climate Action) ranking, which examines research on universities' research on climate change, their use of energy and preparations for dealing with the consequences of climate change.
- UBC equips and supports community members to act on climate change, which strengthens the University community's resilience and sense of individual and collective agency.

Resilience

- As part of UBC's CAP 2030 implementation, a climate adaptation resiliency and biodiversity strategy will be developed by each campus to act as a hub and link with other existing and future plans, policies and initiatives across the institution. This strategy will focus on the development of just, equitable and accessible adaptation strategies to reduce the impacts associated with the increasing frequency and severity of climate-change events.

Impacts from Climate Risk & Opportunities

UBC is already experiencing climate change, disrupting campus operations. For example, in the past couple of years BC has experienced numerous significant climate events including extreme heat, extreme cold, wildfire smoke, thunderstorms and heavy precipitation—all symptomatic of the loss of climate stability due to climate change. These unusual weather patterns present a major challenge for UBC's teaching and research objectives, as well as impact community health on both of UBC's campuses. In August 2023, the UBC Okanagan campus issued an evacuation order due to wildfire risk to the campus community.

UBC is currently undertaking a detailed climate risk and vulnerability assessment for the Vancouver campus and the adjacent neighbourhoods. This work will identify priority actions to better protect against more extreme weather events in the future. In 2022, UBC Okanagan completed a multi-hazards assessment identifying key climate-related risks to campus buildings and infrastructure to advance actions to mitigate impacts. The outcome of this work will help inform existing policy updates and set the foundation for a future Resilience Plan and implementation projects. Increasingly, one of our top priorities is to ensure our university community is kept safe through climate related extreme weather events.

UBC's Climate Emergency Declaration in December 2019 recognized the severity, complexity and disproportionate impacts of, and responsibilities for, climate change. This declaration committed UBC to developing a response system that embeds climate justice throughout its activities and priorities. By establishing the UBC Climate Emergency Task Force in 2020 and endorsing the new climate action plans, the UBC Board of Governors confirmed that climate action continues to be a top strategic priority for the University.

In 2022, UBC achieved a 37% reduction in Scope 1 and 2 GHG emissions at both campuses (since 2007), despite an overall 33% growth in floor space and 53% increase in student enrolment over the same period. Overall, UBC has achieved a 59% GHG emissions reduction per full-time equivalent student since 2007.

Implementation of the CAP 2030 and its recommendations to accelerate a path to net-zero emissions for building and energy supply will reduce medium- to longer-term operational costs associated with increased carbon liabilities, increase the future resiliency of the campus to withstand the impacts of acute climate shocks and events resulting from climate change, and continue to demonstrate UBC's commitment and leadership to address climate change through a climate justice lens.

UBC Climate Change Accountability Report

UBC reports annually on GHG emissions associated with Scope 1, 2, and 3 each year in the *Climate Change Accountability Report (CCAR)*. CCAR tracks UBC's actions and progress in reducing GHG emissions on both campuses, and its specific achievements toward reaching the CAP 2030 goals.

Scenario Analysis

UBC currently does not complete a scenario analysis for a global rise in average temperature of 2^{0}C or lower but will in the future. UBC has actioned other scenario analyses associated with climate-related risks and opportunities for the University. These include:

- **Climate Ready Design Requirements:** UBC is continuously innovating to decarbonize its buildings and energy supply. Increased investments in expanding clean-energy supply and energy-efficient technologies provide opportunities to partner with faculty researchers devoted to helping advance innovation in these areas. Along with such innovations, we acknowledge the need to future proof UBC's buildings to the impacts of climate change including heat waves, fires, smoke, storms and floods. UBC has started to achieve this through the UBC Climate Ready Building Design Requirements, which are outlined in the climate-adaptation component of UBC's Green Building Action Plan. These requirements provide guidance to project teams to incorporate key design strategies and identify future retrofits needed to reduce climate risk. Climate-adaptive building design guidance for the Okanagan campus is provided in the UBC Okanagan Design Guidelines, Green Buildings. Additionally, the UBC Climate Ready Building Design Requirements apply to the Okanagan campus. The UBC Okanagan Integrated Rainwater Management Plan provides rainwater retention targets based on predicted climate-change impacts for all future building projects and development, protecting the campus from flood risk.

- **Financial Review of Carbon Offsets and Taxes:** As a public institution in BC, the University is required to comply with provincial legislation, including maintaining carbon neutrality in its operations (Scope 1, 2 and paper). Since 2010, UBC Vancouver and UBC Okanagan campuses have purchased carbon offsets to achieve carbon neutrality. The province also taxes carbon emissions on fossil fuels, including natural gas, which impacts the University's finances. As part of CAP 2030, UBC accounted for the uncertainty in external carbon-pricing policy (including taxes and offsets) by evaluating future carbon liabilities associated with campus operations.

- **GHG Reductions**: The University closely tracks a GHG-mitigation scenario associated with achieving CAP 2030 climate targets which are equal, and in some cases surpass, the GHG savings required to meet the global 1.5^{0} C Paris Agreement target. This analysis is undertaken by each campus, respectively.

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- **District Energy System Decarbonization**: UBC is undertaking a comprehensive technical and financial feasibility analysis to identify the most promising low-carbon energy supply option(s) for the UBC Vancouver District Energy System by reviewing various technologies against a set of key criteria associated with CAP 2030. The Okanagan Campus is implementing an Integrated Energy Strategy to accelerate decarbonization of the campus' core operations in support of the UBC Okanagan CAP 2030. The strategy takes a three-pronged approach focusing on energy demand reductions for new and existing buildings, decarbonization of the centralized district energy system and implementation of enabling infrastructure to connect existing and new buildings to district energy.

- **Energy Supply**: To mitigate present and future risks associated with changing climates and an evolving policy landscape, UBC has been taking actions to secure against volatility in conventional energy supply through the expansion of renewable and low carbon fuels for district energy to provide fuel diversity and resilience.

Risk Management

Identifying, Assessesing, and Managing Climate-Related Risks.

UBC's Office of Enterprise Risk and Assurance (ERA) strives to advance the University's ability to deliver its strategies, goals and objectives through risk-informed decision-making. Through its Enterprise Risk Management (ERM) program, ERA provides the framework and capabilities to support management in its identification, assessment and management of risks and opportunities. The University's ERM approach is informed by international best practices and recognized standards (e.g., ISO 31000 Risk Management and COSO Enterprise Risk Management).

ERA partners with UBC senior leaders, including the Executive Management Team and the President, to identify and assess institutional-level risks that have the potential to adversely affect the achievement of the University's goals and objectives. These include risks that relate to natural disasters, which cover forest fires, floods and seismic activity and financial risks associated with deferred maintenance on buildings.

Institutional-wide risks are assessed using the UBC ERM framework, including risk-rating scales for probability of occurrence and severity of impact. This allows the significance of climate-related risks relative to others to be determined and aids prioritization of mitigations by management.

In addition to the above, UBC Sustainability and Engineering has created a process to identify climate-related risks using the risk categories from TCFD, disclosed in the Strategy section of this report. Work is ongoing to assess and prioritize each of these risks.

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Consideration of existing and emerging regulatory requirements related to climate change (e.g., limits on emissions) are a function of UBC Sustainability and Engineering at UBC Vancouver and the Sustainability Office at UBC Okanagan. Specific future requirements being considered include carbon reporting, green buildings and transportation. For example, Sustainability and Engineering reports UBC Vancouver and Okanagan Scope 1 and 2 GHG emissions annually to the provincial government under requirements set forth by the BC Carbon Neutral Government Program.

Processes for Managing Climate-Related Risks

Once institutional risks have been identified and assessed, risk mitigation plans are determined by the responsible executive lead and their teams. Several factors are considered by management when preparing risk mitigation plans: e.g, the level of risk exposure, or management's risk appetite, etc. ERA facilitates discussions on risk mitigation plans, monitors progress on these and provides risk reports to the Executive Leadership Team, the Audit Committee and the Board.

For the specific climate-related risks identified in the Strategy section of this report, decisions on UBC's risk mitigation plans will be formalized when the TCFD climate-related risks identified by UBC Sustainability and Engineering are fully assessed and prioritized.

Integrated Climate-Related Risks into Overall Risk Management

The current process for managing climate-related risks, as identified in the Strategy section using the TCFD risk categories, runs parallel to the ERM process, and requires integration to ensure a consistent approach to identifying, assessing and managing climate-related risks.

Metrics & Targets

Greenhouse Gas Emission Disclosures

Greenhouse Gas Emissions

UBC assesses climate-related risks and opportunities using industry-standard metrics, such as Scope 1, 2 and 3 GHG emissions and offsets. These can be found in the following *annual reports*;

- **Annual Sustainability Report**
  Provides an overview of sustainability activities, and highlights achievements at *UBC's Vancouver and Okanagan campuses*.

- **UBC Dashboards**
  UBC has introduced live dashboards which monitor the University's progress in relation to targets set against GHG emissions: Teaching, Learning and Research; Operations and Infrastructure; and Community. These dashboards support UBC's monitoring of climate-related risks relating to physical and policy and legal factors, as well as opportunities relating to resource efficiency, low-carbon energy supply and products and services. These dashboards can be found *here*.

- **Climate Change Accountability Report**
  UBC's Climate Change Accountability Reports (formerly Carbon Neutral Action Reports) are required under the *province's carbon neutral regulation*. The reports track UBC's actions and progress towards reaching carbon neutrality, and our achievements toward the goals of *UBC's Climate Action Plan* and *UBC Okanagan's Climate Action Plan.*

- **GHG Inventories (2006-Present)**
  Inventories for *Vancouver campus* and the *Okanagan campus.*

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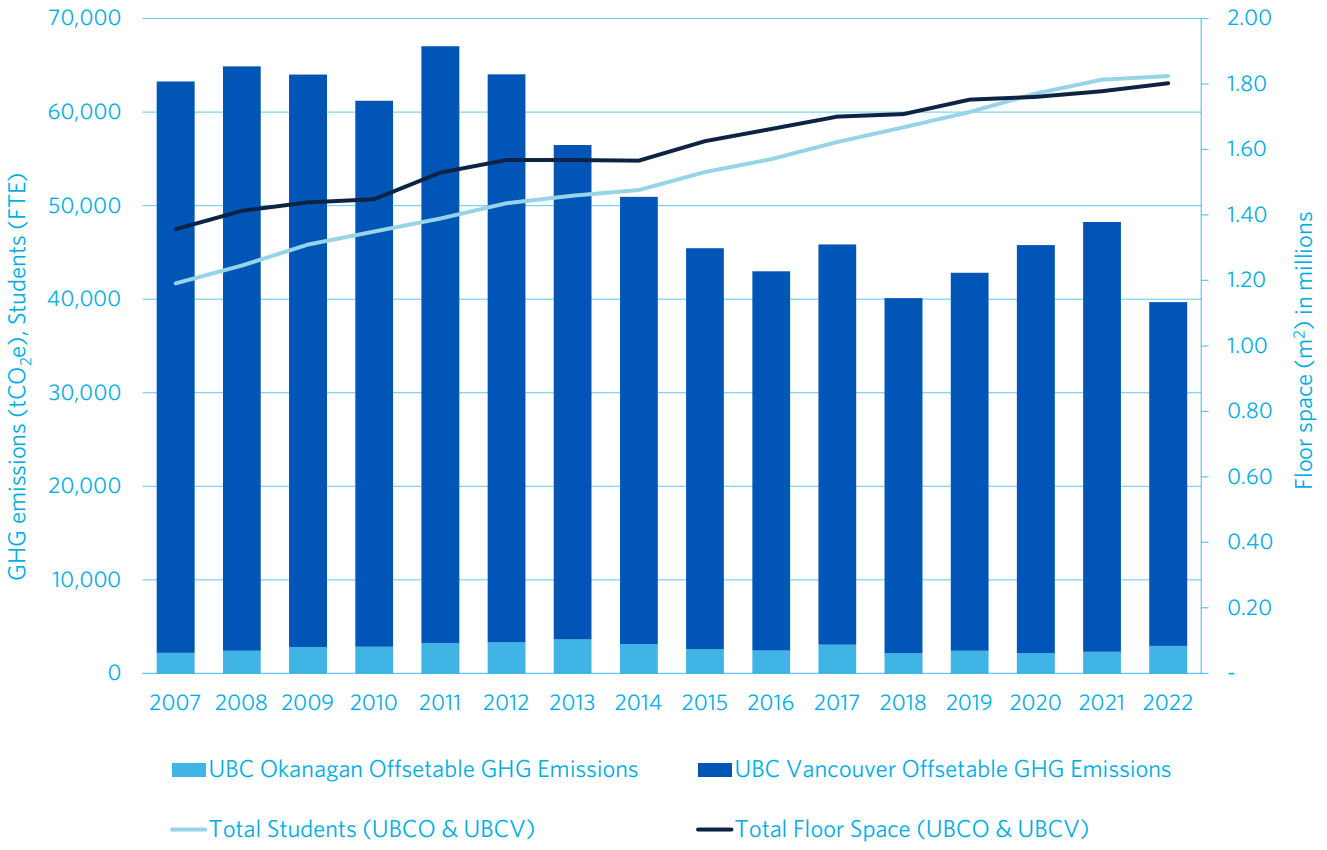
- **GHG Emissions**
  UBC has tracked and reported Scope 1 and Scope 2 GHG emissions since 2010 in accordance with the GHG Protocol Methodology as defined in BC's Methodology for Quantifying GHG Emissions shown in the Figure below:

FIGURE 6: UBC Growth and Emissions for Carbon Offsets, 2007 to 2022



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2022 UBC Total GHG Emissions by Location

TABLE 4: 2021 UBC Total GHG Emissions by Location (in tonnes CO_2e)

Location	2022 Emissions for offset	Emissions not required to be offset	Total GHG Emissions
UBC Vancouver Campus	36,746	21,969[1]	58,715
UBC Okanagan Campus	2,930	155	3,085
Off-campus Properties	3,160	1	3,161
UBC Properties Trust	3,781	0	3,781
UBC Total	**46,617**	**22,126**	**68,743**

[1] The emissions not required to be offset at UBC Vancouver relate to biogenic emissions from biomass combustion in Bioenergy Research Demonstration Facility (BRDF). In 2021, BRDF was temporarily shut down for expansion construction, resulting in less biomass combustion and thus less biogenic emissions. The facility resumed operation at about half of its design capacity in 2022, resulting in more biomass combustion compared to the previous year.

Offsetable Emissions and Key Indicators for UBC Vancouver and UBC Okanagan

TABLE 5: 2022 Offsetable Emissions and Key Indicators for UBC Vancouver and UBC Okanagan

Key Performance Indicator	Vancouver Campus	Okanagan Campus	UBC 2021 total
GHG Emissions (tonnes CO_2e)	36,746	2,930	39,676
Floor Space (m^2)	1,634,194	167,626	1,803,820
GHG Emissions per Square Metre (tonnes CO_2e/m^2)	0.022	0.017	0.022
Student Enrolment (FTE)	53.311	10,514	63,825
GHG Emissions per Student (tonnes CO_2e/FTE)	0.69	0.28	0.62

In addition to operational emissions reporting, UBC also tracks and reports specific Scope 3 emissions, including commuting, embodied carbon, waste, business air travel and paper.

Metrics Used to Assess Climate-Related Risks and Opportunities

Land Use

UBC has a formal land use policy (UP12) that sets out the rules of land use, permitting and sustainability at UBC. UP12 establishes that:

- UBC must follow the Land Use Plan
- Development at UBC must follow federal, provincial and local rules
- UBC is committed to sustainability
- Plans are approved by the Board of Governors' Property Committee
- Guidelines (and changes to the guidelines) are approved by the Associate Vice-President of Campus & Community Planning

At UBC Okanagan the City of Kelowna (the City) has jurisdiction over land use governance and regulation through its Official Community Plan 2040 and Zoning Bylaw, both adopted in 2022, and UBC and the City have developed a collaborative working relationship on land use and planning issues.

UBC has entered into various Memoranda of Understanding with the City of Vancouver, the City of Kelowna, and other parties that set out various principles and expectations regarding the steps to be pursued by the parties to reach the common goals of sustainability, energy conservation, and efficient infrastructure development in order to create and maintain a livable, prosperous and sustainable community.

Through UBC's campus development initiatives and its commitment to sustainability, the University is recognized as a leader in sustainability and both campuses are recognized as living laboratories for sustainability initiatives.

UBC has set forth various plans to guide sustainability practices as UBC continues to develop University lands. The metrics determined in the following plans will be used to guide UBC's Land Use goals. These include;

- UBC Vancouver Climate Action Plan 2030
- Neighbourhood Climate Action Plan (completion expected summer of 2024)
- Green Building Action Plan
- Integrated Stormwater Management Plan (currently being updated)
- Water Action Plan
- Zero Waste Action Plan
- UBCO Campus Plan (2015)
- UBCO Whole Systems Infrastructure Plan (2016)
- UBCO Integrated Rainwater Management Plan (2017)
- UBCO Design Guidelines – Green Buildings (2019)
- UBC Okanagan Climate Action Plan 2030

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UBC has set forth various methods to measure land use at the university, including;

- Designing with resilience to protect community and infrastructure from the changing climate
- Maintaining and enhancing urban biodiversity as a tool for climate action through nature-based solutions such as increased tree canopy
- Fostering sustainable food systems through farming and research at UBC Farm and community gardens across campus and learning from Indigenous practices
- Preserving and enhance green space
- Providing healthy, comfortable environments in the face of climate change, such as wildfire smoke and extreme heat events through resilient building design
- Prioritizing sustainable modes of transportation including active and sustainable modes over less sustainable modes (single occupancy vehicles, ride-hailing, taxi)

Water

In 2019, UBC Vancouver completed the Water Action Plan to manage water use responsibly by advancing water conservation and efficiency practices; encouraging innovative, alternative water system solutions; and building water supply resiliency at the Vancouver Campus.

The goals of the Water Action plan are;

1. Support UBC in meeting regional water management expectations
2. Reduce UBC's water consumption and water costs
3. Contribute to community water supply resiliency, considering future climate conditions
4. Mitigate climate impacts through reducing energy consumption and GHG emissions associated with water use
5. Strengthen UBC's sustainability profile and help build a culture of sustainability on campus through engagement
6. Create teaching, learning and research opportunities wherever possible

To improve water consumption data, UBC is implementing a new Metering and Reporting Strategy which includes ensuring all new buildings include water metering, maintain or replace existing meters as required and adding meters where economically viable over the next five years.

UBC Okanagan has specific water conservation recommendations as part of its Whole System Infrastructure Plan. This plan supports UBC Okanagan in;

1. Using more efficient water fixtures and appliances, fine tune operating pressures and leakage issues, and continue with water efficient landscaping and irrigation systems.
2. Recommending a potential future reclaimed water system that provides reclaimed water for toilet flushing, landscape irrigation, wash-down and cooling tower make up

UBC Okanagan uses a system of water meters on buildings, estimates and ad hoc audits to measure water usage on the Okanagan Campus.

Waste

The Zero Waste Action Plan (*ZWAP 2030*) for UBC Vancouver was updated in May 2023. The first iteration was developed in and included overall waste diversion targets of 70% by 2016 and 80% by 2020. For construction waste projects generating over two tonnes of waste, ZWAP 2030 sets targets of achieving a 90% waste diversion rate by 2024. ZWAP 2030 also focuses on waste reduction, not just diversion. UBC will apply a circular economy to enable a 50% reduction in operational waste disposal (relative to 2019), meeting or exceeding the Paris agreement reductions required to limit global temperature rise by 1.5^{0}C. The circularity approach enables UBC to reallocate valuable material resources for upcycling and recycling which has a benefit of avoided embodied carbon emissions as well as avoiding extraction of virgin raw resources from our natural environment. For example, UBC has introduced the Furniture Reuse platform which has reimagined furniture waste as a reusable and valuable resource and has kept over 1,500 furniture items (51 garbage trucks) from disposal, avoided 95 tonnes CO_2e of carbon emissions and saved over $900,000 in cost-avoidance.

UBC measures waste as the amount disposed of in landfills, the amount diverted from landfills to be recycled, reused or composted and the % of total waste diverted.

UBC Okanagan also has a Zero Waste strategy and has set a specific waste reduction target and actions to achieve it in their Climate Action Plan 2030. They use the same measurement criteria as UBC Vancouver.

Transportation

UBC established a Transportation Plan for its Vancouver Campus in 2014 with the goal to reduce automobile trips to and from the UBC Vancouver Campus by encouraging the use of sustainable modes of transportation, including transit, carpooling, cycling and walking. To date, UBC has implemented several initiatives to support non automobile modes of transportation, including the U-Pass program, bicycle infrastructure and end of trip facilities, bikeshare, carshare parking, a vanpool pilot program and carpooling programs.

Travel patterns to and from UBC are monitored on an on-going basis through a variety of different data collection methods. Data is collected each fall from the end of October to early November to enable consistent year to year comparisons of travel patterns, mode shares, and traffic volumes. Additional data collection activities may be undertaken at other times of the year to obtain information regarding specific modes of travel, seasonal variations and localized traffic volumes, but are not documented in this report. The annual monitoring results are used to assess progress towards meeting UBC's transportation targets and guide future implementation priorities.

UBC Okanagan has detailed Sustainable Commuting goals in the UBC Okanagan Climate Action Plan 2030 and in the 2021 UBC Okanagan Transportation Plan. UBC Okanagan measures transportation goals through total trips to and from campus, trips via active and sustainable modes (walking, cycling and transit) and emissions from transportation.

The actions identified in the Transportation Plan are central to UBCO's efforts to reduce greenhouse gas emissions and respond to the climate emergency. Implementation of the Plan will result in a dramatically reduced need for additional parking spaces on campus and reduced greenhouse gas emissions from commuting.

Proportion of Assets or Operating, Investing or Financing Activities Exposed to Climate Risks

UBCIM manages UBC's working capital and endowment funds and is committed to ensuring the principles of responsible investing are embedded in our investment decision making. UBC is a signatory to the United Nations supported Principles of Responsible Investment (PRI) and continually try to enhance the integration of responsible investing and ESG considerations throughout the investment process, from the asset mix and portfolio construction to manager selection and monitoring. For our Main Endowment Pool, UBC approved updated Statements on Responsible Investing in 2023 to guide our investment decisions in this pool of funds, outlining our commitment to divestment, reduction in carbon emissions and alignment with Responsible Investing Frameworks.

UBCIM considers climate change an existential threat to the planet and is focused on reducing the carbon emissions exposure of the portfolios to mitigate risks to long term investment returns and align the portfolio with the opportunities arising out of the transition to a more sustainable economy.

UBC does not have a formal metric to measure climate risk exposure of its various investment portfolios which is consistent with industry. As social and governance considerations are an emerging area of risk management for institutional investing there are not yet well-established metrics with strong consistency and coverage across public markets to allow investment managers to build a critical mass of investment models seen through these issues.

However, as this is an important issue for the university, UBCIM is using the Leadership lever of the Responsible Investing Strategy to advance its work in this area. In 2022, it began building a foundation by conducting peer reviews to establish best practices, as well as beginning testing of different data platforms as a first step in establishing metrics that can be used to further develop an approach to monitor non-climate responsible investment related risks.

Currently, UBCIM has worked to formalize a new Investment Risk Framework that provides the investment team and UBC's Board with a holistic view of investment risks facing each of the funds we manage. It includes the following categories:

- Payout Risk
- Asset Allocation Risk
- Liquidity Risk
- Manager Risk

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Given the nature of ESG factors and their impact on the broader investment decision making process, from risk tolerance and asset class selection to manager security selection, UBCIM believes investment risk related to ESG factors should not be treated as a standalone bucket, but rather integrated into an analysis across the framework.

For example, when assessing Payout Risk, ESG risks are incorporated into the forward-looking modelling of investment portfolio returns and scenario testing to understand the future risks to achieving our internal partners' long-term financial objectives. When assessing Manager Risk, the initial due diligence process and annual Manager ESG Assessments are designed to inform the team of the materiality of ESG risk in each strategy, the strength of each manager's ESG integration to mitigate risks, and the level of reporting transparency provided to investors.

Revenue from Products or Services Designed for a Lower Carbon Economy

UBC is a global centre for teaching, learning and research and as a result UBC's revenue is generated by being a place of learning through tuition, government and research grants.

Across UBC, faculty and students are teaching, learning and exploring sustainability through hundreds of courses and programs that look at issues like the climate emergency, biodiversity, food systems, racial equity and social justice. To encourage students to continue to explore sustainability UBC curates and promotes a wide range of sustainability learning opportunities via tools like the climate change courses listing. The University also supports teaching and curriculum innovation through education grants and the Climate Teaching Connector program.

UBC has started measuring specific indicators relating sustainability which include;

1. Climate emergency funding to enhance curriculum – measures the amount of Climate Education Grants made by UBC Sustainability Initiative in the fiscal year to support faculty with the depth and delivery of climate change content and teach approaches in existing courses.
2. Providing sustainability courses.
3. Providing sustainability related degree programs.

Avoided GHG Emissions Through Entire Product Lifecycle

UBC has a Green Building Action (GBAP) for UBC buildings to make a net positive contribution to human and natural systems by 2035. The GBAP is intended to provide guidance to ensure the design and construction of new buildings, renovations and retrofits to achieve high levels of performance that advance the campus toward the net positive vision and lower the total cost of ownership.

UBC will use the following indicators to measure targets in buildings related to the GBAP:

- **Energy**: Increase energy efficiency of existing residential buildings through standards and programs (residential only).
- **Water**: Increase infiltration, retention and detention of rainwater on campus.
- **Materials & Resources**: Embodied carbon is calculated for all construction projects (institutional only)
- **Biodiversity**: Increase opportunities to provide habitat for birds, pollinators and other species.

Carbon Pricing

Both of UBC's Climate Action Plans propose 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 guide 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.

Since Fall 2021, UBC has;

- Selected an internal carbon price level of $250/tCO2e based upon carbon price escalation seen at the provincial and federal levels. Using this ICP 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.

Climate Targets Used to Manage Climate-Related Risks and Opportunities and Performance Against Targets

Greenhouse Gas Emissions

The University has committed to accelerated emissions reduction that aligns and exceeds the Paris Agreement of limiting global warming to 1.5°C, including a target of reducing Scope 1 and 2 GHG emissions relating to operational emissions of 85% for the Vancouver Campus and 65% for the Okanagan Campus by 2030. UBC has developed actions to drive emission levels down for each campus covering key Scope 1, 2 and 3 areas.

Land Use

UBC approved a new land use plan in December 2023 that outlines the long-term land use intentions for UBC Vancouver. This new plan is subject to Province of BC approval. It implements Campus Vision 2050- UBC's comprehensive public planning process to update key land use policy documents for the campus- enabling UBC to achieve a level of excellence in support of the university's academic mission. It also guides the future direction for the campus, building on what makes it a special place. It enhances the livability, sustainability and character of the campus within its unique context, and helps address affordability, climate action and reconciliation. The December 2023 Land Use Plan outlines specific Climate and Resilience policies for UBC Vancouver, including;

- Commit to a net zero operational and community and greenhouse gas emission reductions by 2050, in support of the Intergovernmental Panel on Climate Change commitment to limit global warming to 1.5°C including;
    - Working towards the targets and policies of UBC's Climate Action Plan in support of a 100% reduction in operational greenhouse gas emissions by 2035;
    - Working towards the targets and policies of an updated Neighbourhood Climate Action Plan, including defining a pathway to achieve net zero operational emissions in new Neighbourhood buildings no later than 2030.

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- Work towards the targets and policies of an updated Rainwater Management Plan for campus that addresses future climate impacts and incorporates green infrastructure strategies.
- Work with Metro Vancovuer Regional District, the BC Ministry of Transporation and Infrastructure, and the BC Ministry of Municipal Affairs to jointly address slope stability and erosion.
- Work towards the targets and policies of UBC's Green Building Action Plan in support of the vision for UBC's buildings to make net positive contributions to human and natural systems by 2035 (see following sections).
- Work towards the targets and policies of UBC's Water Action Plan (see following sections).
- Work towards the targets and policies of UBC's Zero Waste Action Plan (see following sections).

Climate Action Plan 2030

UBC Vancouver has set out specific targets to be accomplished by 2030 relating to campus operations in the CAP 2030. These include;

- **Academic District Energy System**: 100% of the energy used by the Academic District Energy System will come from low carbon sources.
- **Buildings**: New buildings and building renewals will target near zero operational emissions, and existing building emissions will be reduced to reach a target developed as part of the Existing Building Decarbonization Plan.
- **Commuting**: Achieve a 45% reduction in commuting emissions from 2010 levels.
- **Food Systems**: Achieve a 50% GHG emission reduction of food systems.
- **Waste & Materials**: Achieve a 50% reduction in waste, progressing toward a zero-waste community.
- **Business Air Travel**: Reduce business air travel emissions by 50% from 2019 pre-COVID-19 levels.
- **Embodied Carbon**: Establish an embodied carbon baseline and align new buildings and renewal designs with a 50% reduction target.

UBC Okanagan has set out specific targets to be reached by 2030 relating to campus operations university in CAP 2030. These include;

- **Buildings & Energy Supply**: Reduce GHG emissions by 65% of 2013 levels.
- **Commuting**: Reduce commuting emissions by 40% from 2013 levels
- **Waste & Materials**: Reduce waste (per capita) by 50% compared to 2020, progressing to a zero-waste community.

Water

The Water Action Plan has one main target, to maintain UBC's total water consumption at or below 2017 levels despite anticipated growth.

Assuming a growth rate of approximately 2% per year, this target translates to a decrease in campus water use intensity relative to 2017, and:

- 16% decrease in water use intensity by 2025
- 24% decrease in water use intensity by 2030

Note, since water use is linked more strongly to people than floor space, water use intensity is defined here as the amount of water used per unit of population, currently indicated by Full Time Equivalent (FTE) Student Enrolment.

UBC Okanagan has a multi-pronged approach to reach the following targets;

- By 2025 achieve a 40% water use reduction to Business-as-Usual Case
- By 2030 achieve a 64% water use reduction as compared to Business-as-Usual Case

The 2030 business as usual case is estimated to be 317,000,000L.

Material and Waste

The updated Zero Waste Action Plan proposes to apply a circular economy lens to enable a 50% reduction in waste disposal by 2030 progressing towards a zero-waste community. There may be further goals and targets set forth during the plan update process.

Increasing waste diversion toward our targets has been challenging. However, disposal rates of waste to landfill has held steady despite campus growth, which is a positive indicator.

UBC Okanagan has set a Zero Waste target of a 50% reduction in waste (per capita) by 2030, progressing toward a zero-waste community. The University will be identifying and implementing high impact actions and supportive policies that reduce volumes of waste on campus, maximize recycling and re-use and increase diversion of organics from waste streams. They are also looking at increasing campus community engagement around separation of waste streams.

Transportation

UBC Vancouver has set the following targets through the 2014 Transportation Plan.

- **Target 1**: By 2040 at least two-thirds of all trips to and from UBC will be made by walking, cycling or transit and maintain at least 50% of all trips to and from the campus on public transit.
- **Target 2**: Reduce single occupant vehicle trips to and from UBC by 20% from 1997 levels and reduce single occupancy vehicle trips per person to and from UBC by 30% from 1997 levels.
- **Target 3**: Maintain daily private automobile traffic at or less than 1997 levels.

UBC Okanagan has set the following targets through its CAP 2030 and Transportation Plan.

- **Target 1**: Increase Sustainable Transportation Mode Share: By 2040 at least 55% of all trips to and from campus will be by sustainable modes of transportation (walking, cycling and transit)
- **Target 2**: Reduce GHG Emissions – by 2030 total annual GHG emissions associated with commuting will be reduced by 40% of 2013 levels (originating from the UBC Okanagan Climate Action Plan 2030 as the commuting target)
- **Target 3**: Increase Transit Use – by 2040 at least 35% of all trips to and from campus will be by transit.
- **Target 4**: Increase Walking and Cycling – by 2040 at least 20% of all trips to and from campus will be by active modes (cycling and walking)
- **Target 5**: Minimize Automobile Traffic – Through 2040 total daily automobile traffic to and from campus will not exceed 14,000 vehicle trips per day.
- **Target 6**: Increase the Share of Auto Trips made by Carpooling, Vanpooling and Ride-sharing – by 2040 at least 35% of all automobile trips to and from campus will be by these means.

UBC Fleet

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

UBC Okanagan will take significant steps to pursue fleet optimization and efficiency including electrifying the fleet by procuring hybrid electric vehicles and rightsizing vehicles, including electric golf carts for on-campus travel. Further UBC Okanagan will be developing an EV Charging Infrastructure Plan in 2024 that may help advance policy for new zero emissions fleet vehicle and equipment requirements.

Proportion of Assets, Financing Activities or Capital Expenditures Exposed to Climate-Related Risks or Portfolio Temperature Alignment

UBC Board of Governors manages UBC endowment and working capital funds and is supporting UBC in reaching and exceeding the following targets.

- **UBC Endowment**: 45% Carbon Emissions Reduction Target. As a key goal of the Responsible Investment Strategy, UBC Board of Governors set a goal to reduce UBC Endowment's carbon emissions by 45% by 2030.

- **UBC Endowment**: Full divestment of fossil fuel companies by 2030. UBC Board of Governors has also set a goal to achieve full divestment of fossil fuel companies by 2030.

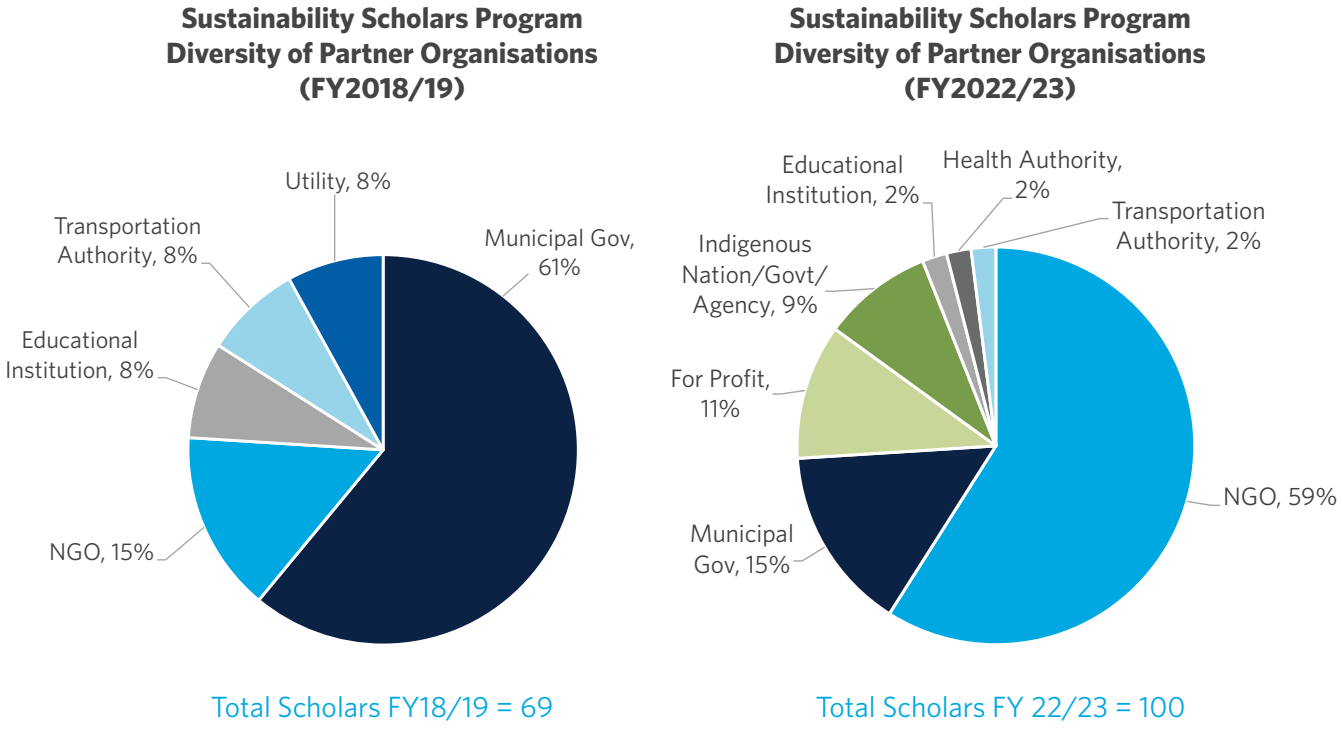
Amount of Revenue from Products/Services Designed for a Lower Carbon Economy

UBC has the following targets related to sustainable course curriculum;

- Provide each student, regardless of their degree program, access to sustainability education no matter what their field of study.

(Continued on next page)

FIGURE 7: Participants in the Sustainability Scholars Program



Avoided GHG Emissions Through Entire Product Lifecycle

The following targets for institutional buildings have been noted in the GBAP:

Process

- 100% of projects will conduct life cycle costing by 2025.

Energy

- New institutional buildings will meet incremental reduced energy targets to be net positive ready by 2030.
- Reduce average building thermal energy use intensity for campus buildings by 50% to 75kwh/m²/yr by 2050.
- Reduce the performance gap between modelled and metered energy use in new institutional buildings by 75% with three years of occupancy by 2020.

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Water

- Reduce the water use intensity on campus by 16% in 2025 and 24% in 2030 (relative to a 2017 baseline), resulting in total water consumption remaining at or below 2017 levels despite growth.
- Meter and report on water consumption for individual UBC buildings to enhance our ability to make strategic decisions on water conservation by 1) ensuring all new buildings include water metering, 2) maintaining or replacing existing meters as required, and 3) adding meters where economically viable, over the next five years.
- Maximize rainwater management using low-impact development on building sites that are more than 300m from cliffs.

Materials & Resources

- Eliminate 100% of UBC-identified building materials in new construction that are known to be detrimental to human health by 2035.
- Require all new buildings to be Zero Waste Ready by 2020.
- Divert 100% of construction and demolition waste from landfill by 2035.

Biodiversity

- Require 100% compliance with UBC Bird Friendly Design Guidelines for Buildings for new institutional buildings by 2020.

Quality

- Major projects track and achieve their design brief sustainability goals by 2020 (subject to approved changes during design process).
- Achieve 100% compliance with UBC Technical Guidelines by 2025 (compliance allows for approved variances).
- Achieve 100% compliance with UBC sustainability submission requirements by 2025 (compliance allows for approved variances).

(Continued on next page)

The following targets for residential buildings have been noted in the GBAP:

Energy

- New residential buildings will meet energy targets to be Net Zero Ready by 2032 in alignment with the BC Energy Step Code.

Water

- Maximize rainwater management using low-impact development on building sites that are more than 300 m from cliffs.

Materials & Resources

- Eliminate 100% of UBC-identified building materials in new construction that are known to be detrimental to human health by 2035.
- Require all new buildings to be Zero Waste Ready by 2020.
- Divert 100% of construction and demolition waste from landfill by 2035.

Biodiversity

- Require 100% compliance to UBC Bird Friendly Design Guidelines for Buildings for new residential buildings by 2025.

Quality

- Achieve 100% compliance with REAP Gold requirements by 2020.

Residential Environmental Assessment Program (REAP)

UBC Vancouver has implemented REAP, a comprehensive, UBC-specific green building rating system for all multi-unit residential construction in the neighbourhoods. All new multi-unit residential buildings must achieve a minimum REAP Gold certification.

Compared to standard residential buildings, REAP ensures a lower carbon impact, improved energy efficiency and reduced water consumption. REAP ensures a higher-quality indoor environment, improved amenities, more ecologically based landscapes and better construction practices. REAP building standards also reduce the environmental impact on both the building site and larger community.

After meeting all mandatory measures, developers select from a wide range of optional measures, in any of the performance categories, to earn a REAP certification.

These categories include;

1. Energy & Emissions
2. Biodiversity
3. Water
4. Place & Experience
5. Materials & Resources
6. Climate Adaptation
7. Quality
8. Health & Wellbeing
9. Innovation & Research

Further, REAP advances the goals and targets set out in the UBC Green Building Action Plan and introduces higher levels of performance that reduce operational and embodied emissions, including advancing UBC's requirements for the provincial Energy Step Code and a new commitment to the Zero Carbon Step Code, aligning with the Province of BC's goal that all new buildings be net zero energy ready before 2032.

Links to UBC Sustainability and Climate-Related Plans

UBC Vancouver Climate Action Plan 2030
planning.ubc.ca/cap2030

UBC Okanagan Climate Action Plan 2030
sustain.ok.ubc.ca/policies/cap/

UBC Zero Waste Action Plan
planning.ubc.ca/zero-waste-action-plan

UBC Water Action Plan
planning.ubc.ca/sustainability/sustainability-action-plans/water-action-plan

UBC Green Building Action Plan
planning.ubc.ca/sustainability/sustainability-action-plans/green-building-action-plan

UBC Transportation Plan
planning.ubc.ca/sites/default/files/2019-11/PLANS_UBC_TransportationPlan.pdf

UBC Okanagan Whole Systems Infrastructure Plan
sustain.ok.ubc.ca/policies/whole-systems-plan/

UBC Okanagan Integrated Rainwater Management Plan
sustain.ok.ubc.ca/wp-content/uploads/sites/70/2018/02/IRMP_Part_159649.compressed.pdf

UBC Okanagan Transportation Plan
campusplanning.ok.ubc.ca/transportation/ubc-okanagan-transportationplan/

UBC Okanagan Design Guidelines (Part 4, Green Buildings)
campusplanning.ok.ubc.ca/wp-content/uploads/sites/64/2020/04/2019-01-10-UBCO-Design-Guidelines-R19-v4_FINAL-1.pdf

UBC Okanagan Strategic Energy Management Plan
facilities.ok.ubc.ca/wp-content/uploads/sites/87/2021/03/UBCO-2020-SEMP-Update-Report-2020-07-30-Final-Rev1-Sealed.pdf

UBC Okanagan District Energy Decarbonization Strategy
facilities.ok.ubc.ca/wp-content/uploads/sites/87/2021/03/UBCO-Decarbonization-Strategy-v1.1-Dec-18-2020.pdf

UBC Investment Management Responsible Investing Report
ubcim.ca/reports/

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View from the UBC Rose Garden
Paul H. Joseph / UBC Brand & Marketing

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