



2024 PSO Climate Change Accountability Report

The University of British Columbia

May 2025



THE UNIVERSITY OF BRITISH COLUMBIA

Campus + Community Planning



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UBC University Boulevard

Introduction

ABOUT UBC

The University of British Columbia (UBC) is a global center for teaching, learning and research, consistently ranked among one of the top 40 universities in the world and recently recognized as North America's most international university. With sustainability at the core of its identity and mission, UBC also ranks second in Canada and fifth globally according to the QS Sustainability Rankings. 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.

UBC encourages bold thinking, curiosity, and initiative so that one can realize their greatest potential. Our two main campuses, in Vancouver and in the Okanagan, represent over 70,000 students and employ over 20,000 staff and faculty.

SUSTAINABILITY PLANS & PUBLICATIONS

UBC's Vancouver campus sustainability plans and reports, including annual GHG Inventories, Climate Change Accountability Reports, and Annual Sustainability Reports are available at:

sustain.ubc.ca/about/plans-policies-and-reports

UBC's Okanagan campus sustainability plans and reports, including annual GHG Inventories, Climate Change Accountability Reports, and Annual Sustainability Reports are available at:

sustain.ok.ubc.ca/reports

Executive Summary

The UBC Vancouver and Okanagan Climate Action Plans 2030 (CAP 2030) sets a bold vision and pathway for UBC to address the climate emergency and Paris Agreement targets through bold, impactful actions to accelerate and deepen greenhouse gas (GHG) reductions across operations, and expanded action to reduce extended emissions¹. CAP 2030 advances CleanBC's plan on lowering carbon emissions by 40%.

UBC continues to demonstrate innovative approaches to address climate change through strong collaborations between academic researchers, operational staff and partnerships with government, utilities, industry and non-governmental organizations. These partnerships continue to elevate UBC's unique position to use its campus as a living laboratory -- its buildings, infrastructure, public realm and landscapes -- to create place-based solutions that drive innovations at the campus, regional and global scales. UBC's role in affiliations such as UC3, AASHE, ISCN, PICS and Universities Canada also helps facilitate knowledge exchange to support rapid deployment of low carbon solutions.



UBC is uniquely positioned to use its institutional and intellectual capacities toward a bigger collective impact to advance the United Nations Sustainable Development Goals with top-tier thought leadership that inform innovative sustainable development.

UBC's **Climate Emergency Declaration** recognized the severity, complexity, and disproportionate impacts of, and responsibilities for, climate change. This Declaration committed UBC to develop a systematic response that embedded climate justice throughout its activities and priorities. Climate action continues to be a top strategic priority for UBC.

In 2024, UBC achieved a combined 40% reduction in total offsetable GHG emissions across both campuses when compared to 2007 emissions; despite an overall 37% growth in floor space and 55% increase in student enrolment. Overall, UBC has achieved a 61% GHG emissions reduction per full-time equivalent student since 2007.

¹ Extended emissions include emissions from UBC-related commuting, building lifecycle (embodied carbon), solid waste, business flights, and food systems.



UBC Vancouver Campus

As a commitment to advance toward these CAP2030 targets, the campus had put great efforts in 2024 to continue reducing operational GHG emissions. UBC’s Major Capital Projects Process for the electric boiler and thermal storage project was started for transitioning the Academic District Energy System (ADES) to 100% clean and renewable energy. Two high emission buildings, Swing Space and Brimacombe, have been prioritized as decarbonization projects that are currently under way. Several enhancement projects were completed to conserve thermal, electrical and peak demand at UBC. A fleet decarbonization roadmap was also developed this year. Climate Ready Requirements supplemented with UBC’s Resilient Buildings Strategy are helping to advance the Province of BC’s Climate Resilience Framework and Standards for Public Sector Buildings. UBC also developed the embodied carbon reduction pathway under the Green Building Action Plan (GBAP), which includes Whole Building Life-Cycle Assessment Guidelines aligned with the newly released National guidelines to further help address the impacts associated with building materials and construction.

This year, the UBC Vancouver campus achieved a reduction of 44% (26,952 tCO₂e) in GHG emissions² from a 2007 baseline, despite a 45% increase in student enrolment and a 31% growth in campus building floor space. Per student FTE emissions are now 61% below the 2007 level. When compared to last year, a decrease of 11% (4,283 tCO₂e) was noted in UBC Vancouver campus. The reliable operation throughout the year of the Bioenergy Research and Demonstration Facility (BRDF) was the key reason for a decrease in campus emissions.

In 2024, many notable initiatives to reduce extended impact (Scope 3) emissions have been advanced, which included the expansion of e-bike share program to address commuting emissions, the Climate Friendly Food Systems Procurement Guidelines update to provide directions on how UBC can reduce food GHG emissions, community engagement to reduce solid waste, and more. The momentum building behind these efforts is uplifting and speaks to UBC’s commitments to reduce GHG emissions.

Looking forward, UBC Vancouver will continue to work on the electric boiler and thermal storage project to transition the ADES to 100% clean and renewable energy by 2030.

² Fugitive emissions were excluded from offsetable emissions for a more representable comparison with baseline year since there was an updated government reporting requirement starting from this year.

UBC Okanagan Campus

In 2024, the UBC Okanagan campus achieved a 24% reduction (881 tCO₂e) in offsetable GHG emissions compared to a 2013 baseline. This was accomplished despite a 39% increase in student enrolment and a 27% expansion in campus building floor area over the same period. Emissions per student FTE are now 46% lower than in 2013. When compared with last year, a reduction of 6% (145 tCO₂e) in building emissions was noted, demonstrating the effectiveness of ongoing building and energy supply optimization efforts. However, total campus emissions requiring offsetting increased by 16% (369 tCO₂e), largely due to increased refrigerant emissions and updated government reporting requirements and the suspension of the purchase of Renewable Natural Gas (RNG) as part of a broader evaluation of its long-term energy strategy.

UBC Okanagan continued to implement the Strategic Energy Management Plan (SEMP), which provides a structured framework to reduce energy consumption, optimize building operations, and integrate low-carbon energy solutions into the district energy system. A major step in decarbonizing the district energy system is the installation of a 1.5-megawatt CO₂ Air Source Heat Pump, which is expected to reduce GHG emissions by 815 tCO₂e while also delivering long-term cost savings and enhancing system resilience.

Climate resilience is a core element of UBC Okanagan’s sustainability strategy, ensuring the protection of campus assets and continuity of business operations in the face of climate change. UBC Okanagan campus is developing an Infrastructure Resilience Plan to guide data-driven investment decisions and mitigate financial and operational risks associated with climate change and updating the Wildland Fire Management Plan to enhance protection measures against wildfires.

Looking forward, UBC Okanagan will continue to expand its district energy infrastructure, including the integration of distributed low-carbon energy systems (cluster plants) to serve new and existing buildings- such as the new xəl sic snpaḵnwix*tn building currently under construction. These initiatives will enable deep decarbonization at the campus scale, enabling long-term emissions reductions while optimizing operational efficiencies and long-term cost savings.



As a large, research-intensive university, with considerable land, assets and utilities, we are in a unique position to use our campuses as a test bed for climate solutions and deeper progress towards sustainable development. UBC will continue to engage students, faculty and staff to act collectively to reduce GHG emissions and achieve our climate target by 2030.



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Vancouver Campus



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Emissions Overview (Vancouver Campus & Okanagan Campus)

EMISSIONS AND OFFSET SUMMARY (SCOPE 1, 2 AND PAPER)

UBC tracks and reports the total offsetable emissions for each campus since 2007, as shown in Figure 1, to measure performance against our Climate Action Plan targets.

Figure 1: UBC Growth and Emissions for Carbon Offsets, 2007 to 2024

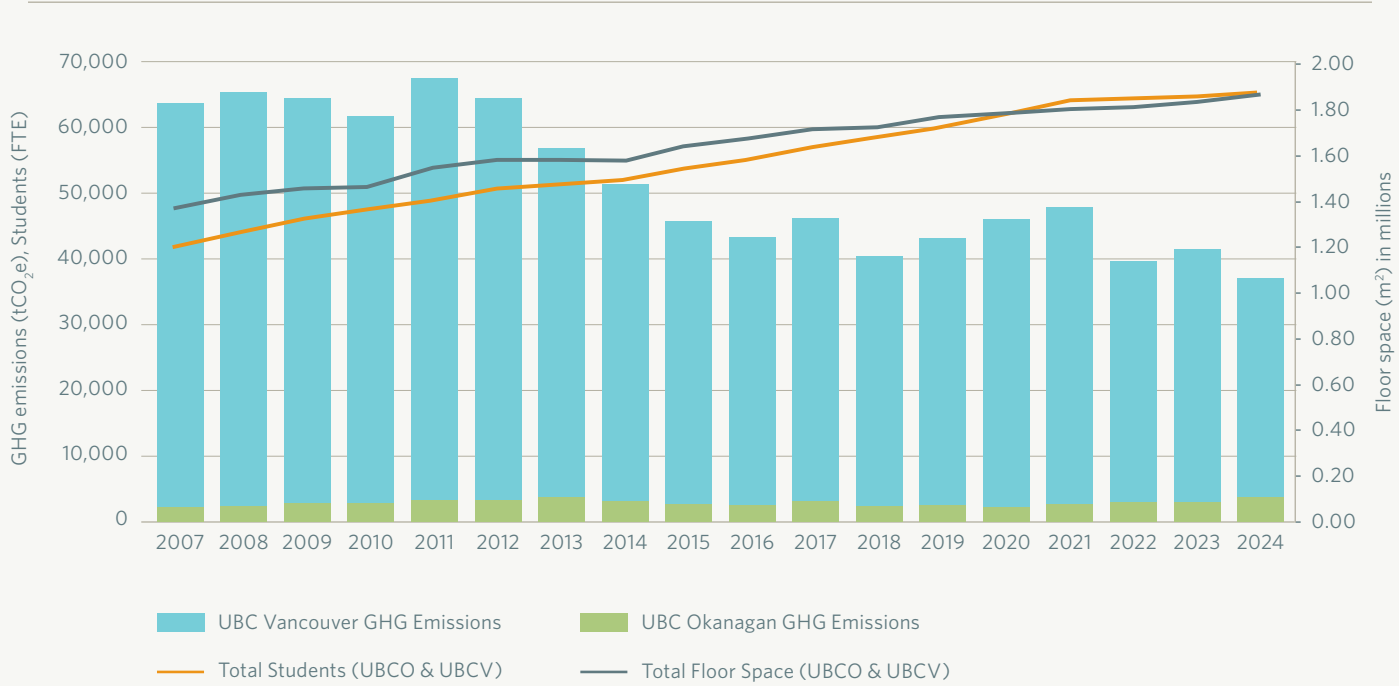
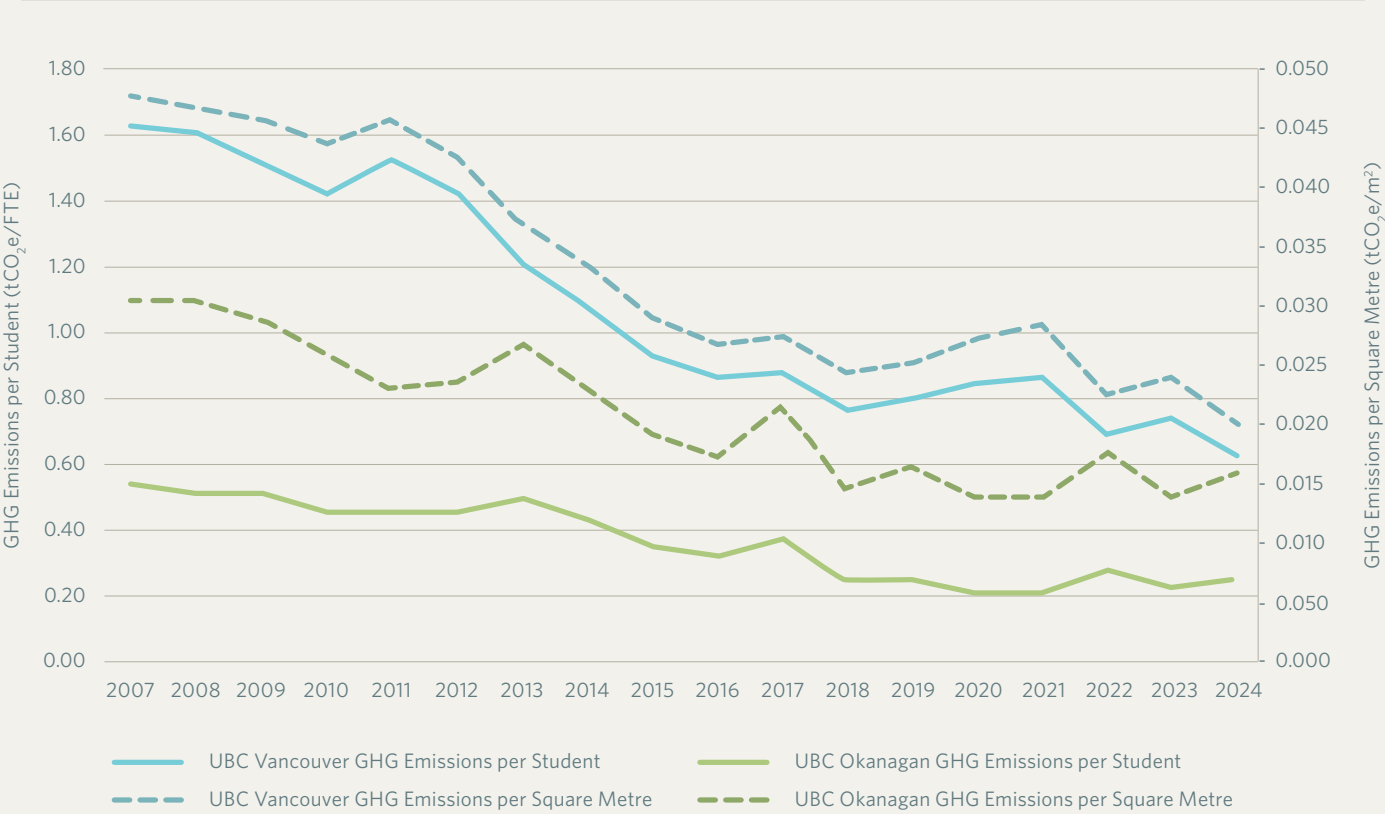


Figure 2 shows the offsetable GHG emissions intensity from 2007 to 2024. UBC’s emissions intensity has been reduced by over 50% since 2007.

Figure 2: UBC Offsetable GHG Emissions Intensity, 2007 to 2024



2024 EMISSIONS AND OFFSETS

Under the Climate Change Accountability Act (formerly titled Greenhouse Gas Reductions Target Act), UBC has been required to report and offset Scope 1, 2 and paper emissions since 2010, including emissions from all properties owned and leased by UBC and its subsidiaries, UBC Properties Trust.

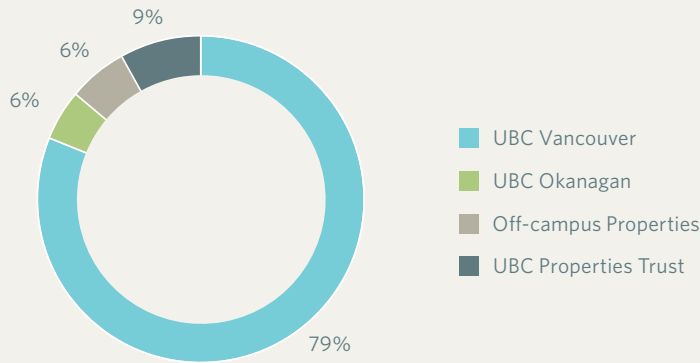
A summary of emissions attributed to UBC’s two campuses, off-campus properties, and UBC Properties Trust are provided in Table 1 and Figure 3. UBC’s total emissions for 2024 amounted to 73,205 tCO₂e, including 28,246 tCO₂e of biogenic emissions³. The biogenic emissions (BioCO₂) from biomass combustion are reported separately and not included in the emission totals for offset in accordance with Provincial reporting guidelines as the BioCO₂ released is part of the biogenic carbon cycle and would be released naturally during decomposition. Among those offsetable GHG emissions, UBC Vancouver Campus accounted for 79%.

³ Biogenic emissions arise from biomass combustion, including wood waste, renewable natural gas and biofuels. The UBC Bioenergy Research and Demonstration Facility (BRDF) only uses clean wood waste from regional wood product manufacturing and municipal plant trimmings.

Table 1: 2024 UBC Total GHG Emissions by Location (in tCO₂e)

Location	2024 Emissions for offset	Emissions not required to be offset ⁴	Total GHG Emissions
UBC Vancouver Campus	35,480	28,220	63,701
UBC Okanagan Campus	2,748	13	2,761
Off-campus Properties	2,634	4	2,638
UBC Properties Trust	4,096	9	4,105
UBC Total	44,958	28,246	73,205

Figure 3: 2024 UBC Offsetable GHG Emissions Distribution by Location



⁴ The biogenic emissions (BioCO₂) from biomass combustion are reported separately and not included in the emission totals for offset in accordance with Provincial reporting guidelines as the BioCO₂ released is part of the biogenic carbon cycle and would be released naturally during decomposition.

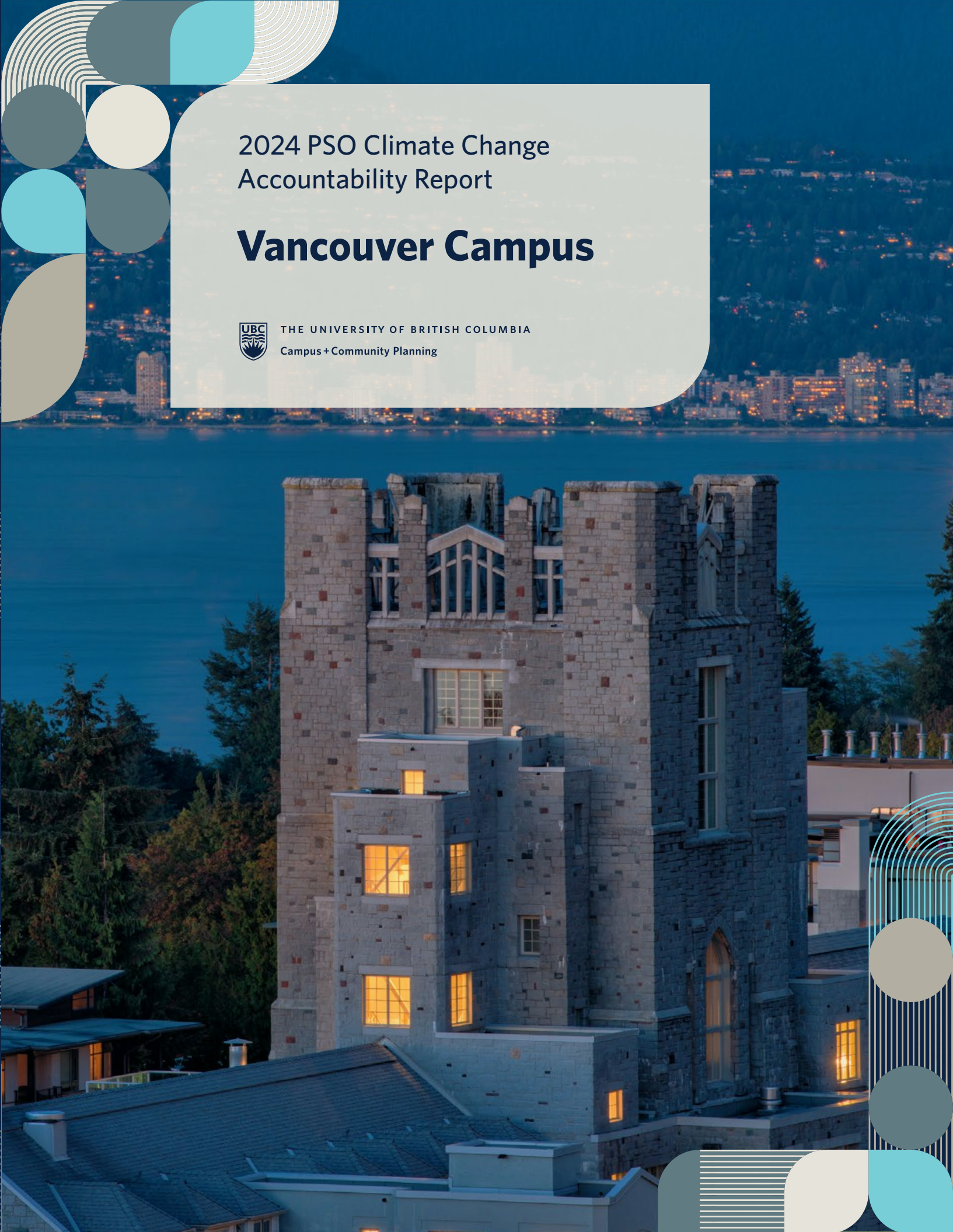


2024 PSO Climate Change
Accountability Report

Vancouver Campus



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ACKNOWLEDGMENT

We acknowledge that the Vancouver campus is situated on the traditional, ancestral, and unceded territory 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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Vancouver Campus Summary

The UBC Vancouver Climate Action Plan 2030 (CAP 2030) provides the impetus for UBC to accelerate climate action and commit to align the [Paris Agreement](#) 1.5°C emissions reductions target and support CleanBC’s plan on lowering carbon emissions by 40% by 2030. CAP 2030 sets ambitious targets for the Vancouver campus; an 85% Greenhouse gas (GHG) reduction for operational emissions and a 45% GHG reduction for extended impact emissions by 2030, reaching net zero operational emissions by 2035. UBC’s commitment to achieving these ambitious targets continues to elevate UBC’s global leadership and demonstrates how strategic investments in addressing climate action enable UBC to be more climate resilient in delivering top-tier teaching, learning and research despite increasing and more intense impacts associated with a changing climate. UBC’s climate investments support core operations while also creating innovative platforms for teaching, learning and research — the foundation of leveraging our campus as a living lab.

As a commitment to advance toward these CAP2030 targets, the campus had put significant efforts to continue reducing GHG emissions:

- A key 2024 milestone was the official launch of the Neighborhood Climate Action Plan (NCAP) for UBC’s residential neighborhoods. NCAP ensures future development supports UBC’s Campus Vision 2050 and sustainability goals.
- UBC improved the reliability of the Bioenergy Research and Demonstration Facility (BRDF), increasing the use of renewable energy.
- Progress continues to be made to transition the Academic District Energy System (ADES) to 100% clean and renewable energy by 2030. Last year, staff officially started the Major Capital Projects Process for the future installation of a 10 MW electric boiler and thermal storage project as part of the Campus Energy Centre (CEC) This project is the "Big Lift" decarbonization project to achieve the CAP2030 operational goals.
- Two building scale decarbonization projects are under way (Swing Space and Brimacombe), reducing building level emissions by over 350 tCO₂e per year.
- Energy and Water Services (EWS) completed a number of enhancement projects to conserve thermal, electrical and peak demand at UBC such as installing occupancy sensors in a lab building to turn down the HVAC system when unoccupied, installing a variable speed drive on the supply fan in the Morris and Helen Belkin Art Gallery to reduce the building heating load, etc.
- The Lower Mall Precinct Phase One Project, currently in design stage, aims to set new standards for sustainability and inclusivity on campus. The buildings within this precinct will target net zero emissions by 2035.
- A fleet decarbonization roadmap was developed for exploring the vehicle types to be acquiring as part of the transition to electric vehicles and preparing the replacement schedule.
- To recognize UBC’s outstanding contribution to battery recycling, UBC was named a Call2Recycle® Leader in Sustainability Award winner in 2024.

- UBC developed its embodied carbon reduction policy which currently requires all new capital projects and major retrofits to achieve a 10% reduction below a defined baseline. Its Whole Building Life-cycle Assessment Guidelines was also updated to align with the recent release of the National Guidelines. To recognize UBC’s work on advancing reductions in embodied carbon, the Carbon Leadership Forum of BC awarded UBC the Public Sector Leadership Award.
- Many high-impact initiatives to reduce extended impact (Scope 3) were advanced, including the expansion of e-bike share program integrating with the City of Vancouver’s shared bike and e-bike program, updating the Climate Friendly Food Systems Procurement Guidelines, expanding the Climate Friendly Food Labels, and more.

In 2024, the UBC Vancouver campus achieved an operational GHG emissions reduction of 44% to 34,130 tCO₂e from a 2007 baseline, despite a 45% increase in student enrolment and a 31% growth in campus building floor space. Per student FTE emissions are now 61% below the 2007 level. When compared to 2023, a decrease of 11% (4,283 tCO₂e) was noted in UBC Vancouver campus. The reliable operation throughout the year of the Bioenergy Research and Demonstration Facility (BRDF) was the key reason for a decrease in campus emissions in 2024. This brought the share of renewable energy supply further up to 63% of total building energy consumed on campus in 2024 from 37% in 2007.

We forecast that with the continuous implementation of CAP 2030, Green Building Action Plan (GBAP), full commissioning of the BRDF expansion, as well as campus and community engagement, our campus will continue reducing emissions and demonstrate our leadership in responding to the climate crisis.

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DECLARATION STATEMENT

This PSO Climate Change Accountability Report for the period January 1, 2024 to December 31, 2024 summarizes our greenhouse gas (GHG) emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2024 to minimize our GHG emissions, and our plans to continue reducing emissions in 2025 and beyond.

By June 30, 2025, University of British Columbia Vancouver campus’ 2024 PSO Climate Change Accountability Report will be posted to our website at: <https://sustain.ubc.ca/about/plans-policies-and-reports>.

EMISSIONS AND OFFSETS SUMMARY

Table 1: UBC Vancouver 2024 GHG Emissions and Offsets Summary Table¹

UBC Vancouver 2024 GHG Emissions and Offsets Summary	
GHG Emissions for the Period January 1 – December 31, 2024	
Total BioCO ₂ ²	28,234
Total Emissions (tCO ₂ e) ³	70,444
Total Offsets (tCO ₂ e)	42,210
Adjustments to Offset Required GHG Emissions Reported in Prior Years	
Total Offsets Adjustment (tCO ₂ e) ⁴	-6
Grand Total Offsets for the 2024 Reporting Year	
Grand Total Offsets to be Retired for 2024 Reporting Year (tCO ₂ e)	42,204
Offset Investment (\$25 per tCO ₂ e)	\$1,055,100

RETIREMENT OF OFFSETS

In accordance with the requirements of the Climate Change Accountability Act and the Carbon Neutral Government Regulation, UBC Vancouver (the Organization) is responsible for arranging for the retirement of the offsets obligation reported above for the 2024 calendar year, together with any adjustments reported for past calendar years (if applicable). The Organization hereby agrees that, in exchange for the Ministry of Environment and Climate Solutions (the Ministry) ensuring that these offsets are retired on the Organization’s behalf, the Organization will pay within 30 days, the associated invoice to be issued by the Ministry in an amount equal to \$25 per tonne of offsets retired on its behalf plus GST.

¹ This table includes combined details of Vancouver Campus, Off-Campus Properties, and UBC Properties Trust.
² The biogenic emissions (BioCO₂) from biomass combustion are reported separately and not required for offset in accordance with Provincial reporting guidelines as the BioCO₂ released is part of the biogenic carbon cycle and would be released naturally during decomposition.
³ Total emissions include total offsetable emissions and total biogenic emissions.
⁴ The adjustments to offsetable GHG emissions in 2023 was due to the GHG emissions adjustment for the Centre for Gender & Sexual Health Equity.

2024 Emissions Overview

OVERVIEW

Greenhouse gas (GHG) emissions were quantified using the BC Provincial Government's Clean Government Reporting Tool (CGRT). Table 2 provides a source breakdown of Vancouver campus GHG Inventory emissions from buildings, fleet, paper, and fugitive⁵. The Vancouver campus total emissions for offsets amounted to 35,480 tCO₂e in 2024, a decrease of 10% from 2023.

Table 2: Vancouver Campus Offsetable Emissions Comparison by Source (in tCO₂e), 2007, 2023 & 2024

Source	2007 Emissions	2023 Emissions	2024 Emissions	% Change from 2007
Buildings	58,105	37,312	33,105	-43%
Fleet	1,973	922	869	-56%
Paper	1,003	179	156	-84%
Fugitive	-	1,180	1,350	N/A
Total Vancouver Campus Emissions	61,082	39,593	35,480	-42%
Vancouver Campus Emissions, excluding fugitive emissions	61,082	38,413	34,130	-44%

UBC Vancouver campus has only reported fugitive emissions since 2020. When fugitive emissions were excluded for direct comparison, UBC Vancouver campus emitted 44% (26,952 tCO₂e) less GHG emissions compared to the 2007 baseline.

A detailed breakdown of the campus emission sources is provided in Table 3 (following page). Core academic buildings include teaching and learning spaces, lecture theatres and laboratories, while ancillary buildings include athletics, student housing residences and the bookstore. Tenants in UBC owned buildings are combined with the core buildings in this Table.

⁵ Fugitive emissions are determined by the amount of refrigerants used to replenish refrigeration equipment, such as building chillers during servicing.

Table 3: 2024 Offsetable Emissions for the UBC Vancouver Campus (in tCO₂e)

Source	2007 Emissions	2023 Emissions	2024 Emissions	% of 2024 Total
UBC Vancouver Campus – Core buildings ⁶	46,478	26,559	24,365	69%
DES (natural gas and light fuel oil) ⁷	40,106	17,306	15,152	43%
Natural gas (direct burn)	3,515	7,514	7,492	21%
Electricity	2,856	1,556	1,238	3%
Biomass facility ⁸	N/A	165	467	1%
Renewable Natural Gas ⁹	N/A	19	17	0.05%
UBC Vancouver Campus – Ancillary buildings¹⁰	11,405	10,685	8,682	24%
DES (natural gas and light fuel oil)	7,311	5,980	4,406	12%
Natural gas (direct burn)	3,108	3,871	3,448	10%
Electricity	986	783	676	2%
Biomass facility	N/A	52	152	0.43%
TRIUMF¹¹	222	67	58	0.16%
Fleet	1,973	922	869	2%
Paper	1,003	179	156	0.44%
Fugitive	-	1,180	1,350	4%
Total Vancouver Campus Offsetable Emissions	61,082	39,593	35,480	100%

⁶ Core buildings comprise academic and administrative buildings. Tenants in UBC owned buildings are included with Core buildings in this table.

⁷ District Energy System (DES)

⁸ UBC is required to offset the CH₄ and N₂O portions of biomass combustion from the BRDF. In addition, the BRDF burns a small amount of natural gas.

⁹ UBC is required to offset the CH₄ and N₂O portions of renewable natural gas.

¹⁰ Ancillary buildings include student housing, conference, athletics and parking facilities.

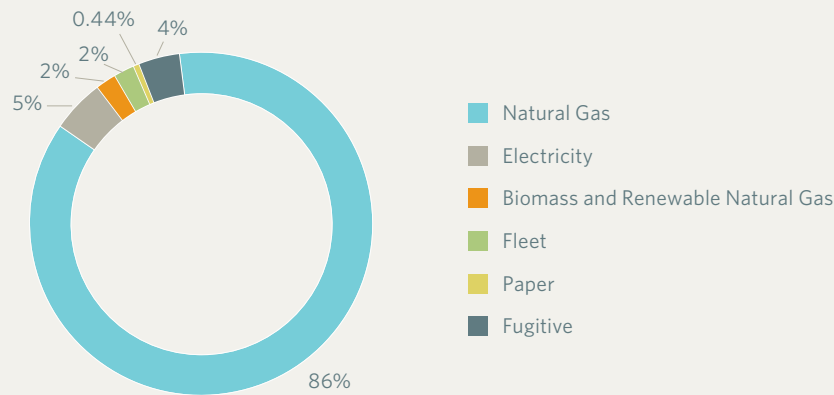
¹¹ TRIUMF Inc. is a federal not for profit corporation. It has historically been included in the UBC Vancouver campus inventory since it is located on campus. UBC accounts for 1/21st of the TRIUMF emissions.

Ensuring reliable operation throughout the year of the Bioenergy Research and Demonstration Facility (BRDF) was the key reason for a decrease in campus emissions in 2024. The BRDF has grown increasingly important to UBC's low-carbon energy supply, evolving from a research and demonstration project in 2012 that was expanded in 2020 to provide much of the District Energy System (DES) heat.

In previous years, UBC Vancouver campus reported fugitive emissions based on mass balance method which only covered refrigeration equipment with regular maintenance. GHG emissions were calculated based on the mass of the refrigerant required to refill to full charge when there was leakage. This year, all public sector organizations (PSOs) were required to report fugitive emissions in a more comprehensive way to cover refrigeration equipment as far as possible. UBC Vancouver campus adopted a mixed approach of using the mass balance method and the nameplate method. The mass balance method covered the refrigeration equipment which required regular maintenance. The nameplate method was adopted for small refrigeration equipment which does not require refrigerant refills. GHG emissions were estimated based on the type of refrigerant used and the full charge mass listed in the nameplate as well as applying the appropriate leak rate, as defined by the provincial methodology. In 2024, 843 tCO₂e (62%) were calculated based on the mass of refrigerant refilled, representing 29% decrease from last year. Another 507 tCO₂e (38%) were estimated based on the nameplate method which was the new requirement from the B.C. provincial government. With the best efforts made by UBC Vancouver campus, the fugitive emissions estimation covered most of the refrigeration equipment managed by UBC Facilities and UBC Student Housing and Community Services. However, laboratory refrigerators managed by faculties have not been included yet and will be included in future reporting where possible.

Figure 1 shows the distribution of major offsetable emissions from UBC’s Vancouver campus.

Figure 1: 2024 Offsetable Emissions Distribution for the UBC Vancouver Campus



COMPARISON TO BASELINE YEAR

UBC Vancouver campus tracks and reports our relative emissions against a 2007 baseline to measure and demonstrate performance against our *Climate Action Plan 2030* (CAP 2030) targets. For a more representable comparison with the baseline year, fugitive emissions were excluded.

Even with significant growth in buildings and student enrollment, UBC has made strategic investments to reduce its operational GHG emissions and reliance on fossil fuels. In 2024, per student FTE emissions were 0.63 tCO₂e, a 61% decrease since 2007. Table 4 outlines key performance indicators for the UBC Vancouver campus.

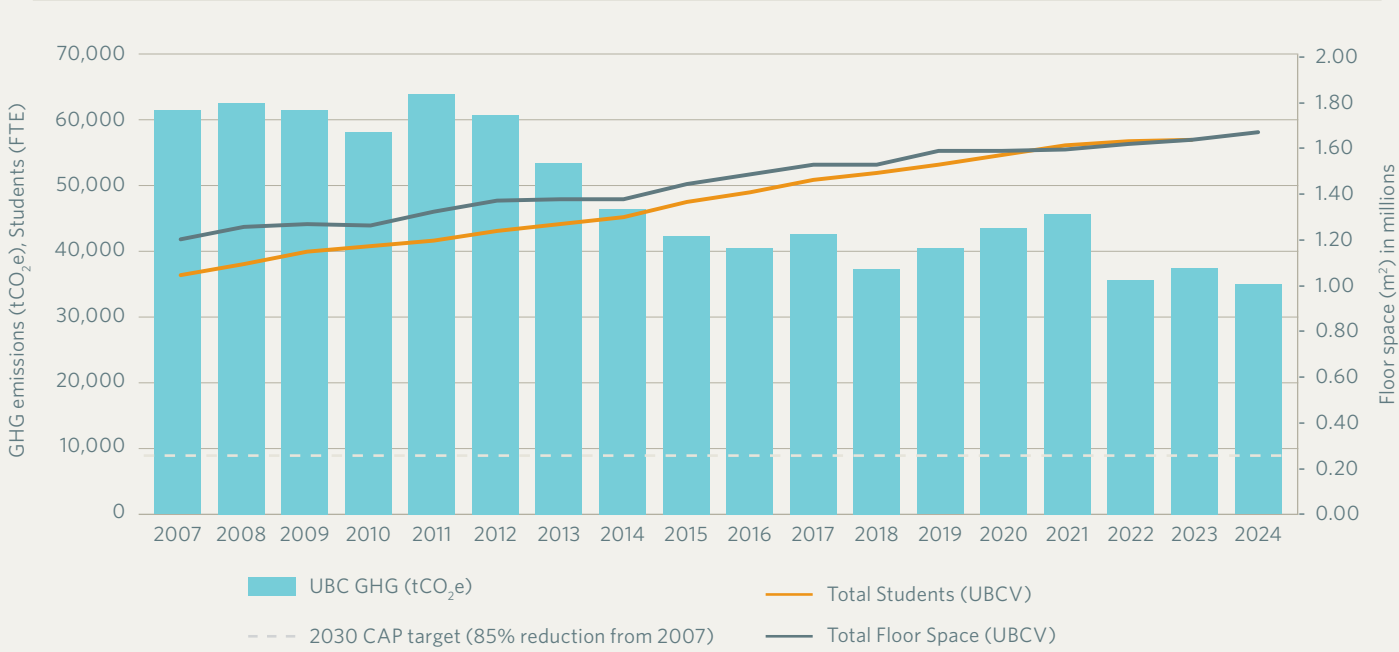
Table 4: 2024 UBC Vancouver Campus Key Performance Indicators

Key Performance Indicator	2007	2024 (excluding fugitive emissions)	% Change from 2007
GHG Emissions (tCO ₂ e)	61,082	34,130	-44%
GHG Emissions per Student (tCO ₂ e/FTE)	1.62	0.63	-61%
GHG Emissions per square meter (tCO ₂ e/m ²)	0.048	0.020	-57%
Floor Space (m ²)	1,284,482	1679,070	31%
Student Enrolment (FTE)	37,589	54,449	45%
Staff and Faculty Employees (FTE)	10,509	15,368	46%

COMPARING EMISSIONS TO GROWTH

Figure 2 below illustrates the change in campus emissions since the 2007 baseline year, along with some key indicators of Vancouver campus growth and CAP 2030 targets.

Figure 2: UBC Vancouver Campus Growth and Emissions Reduction



SCOPE 3 EMISSIONS

Under current Provincial legislation, UBC is not responsible for carbon offset payments associated with Scope 3 emissions (except paper). Despite this, UBC has made an explicit target in CAP 2030 to reduce extended impact emissions by 45% by 2030, aligned with the reduction needed to achieve the 1.5°C target of the Paris Agreement. The Vancouver campus GHG inventory quantifies the optional Scope 3 emissions which are outlined in Table 5 (following page).

This year, UBC put great efforts in establishing food emissions which are challenging given the complexity of the supply chain data. Based on the 2023/24 fiscal year food procurement data, the food GHG emissions were estimated to be 7,348 tCO₂e, including the franchised stores operated and managed by UBC Vancouver campus. UBC is currently working on different targets such as absolute and intensity targets for food systems which would be helpful for monitoring the emissions reduction progress in the future.

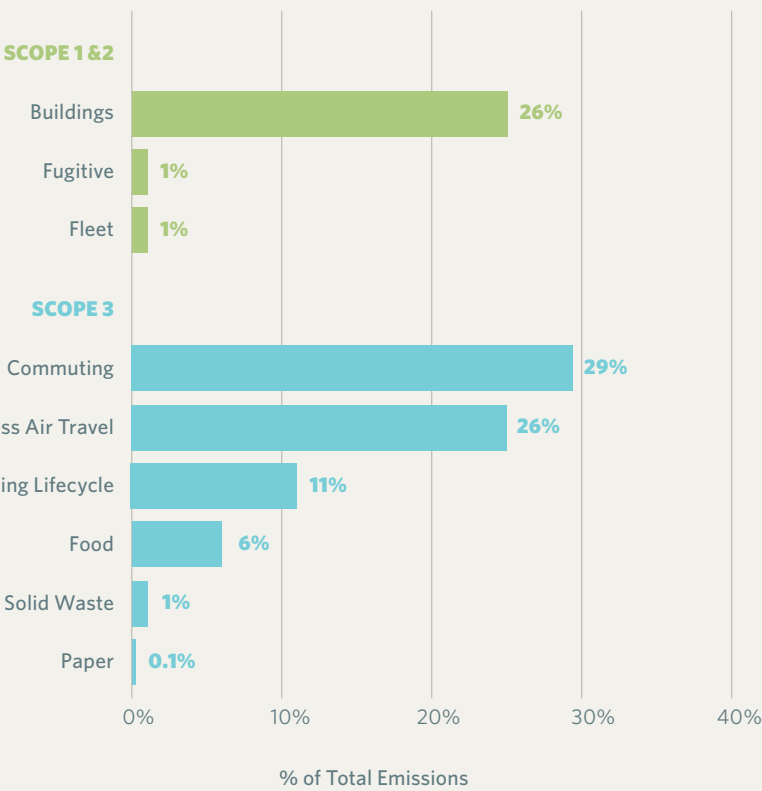
Figure 3 (following page) shows the comparative proportions of GHG emissions for the Vancouver campus. The top three GHG emissions sources are from commuting, building operations and business air travel.



Table 5: 2023 UBC Vancouver Campus Scope 3 Emissions (in tCO₂e)

Source	Baseline Year	Baseline Year Emissions	2024 Emissions	% Change from Baseline year
Commuting ¹²	2010	42,248	35,944	-15%
Business Air Travel ¹³	2019	40,653	32,429	-20%
Building Lifecycle	2010	10,179	13,852	36%
Solid Waste	2019	1,021	926	-9%

Figure 3: UBC Vancouver Campus Total Emissions for Scope 1, 2 and 3, 2024



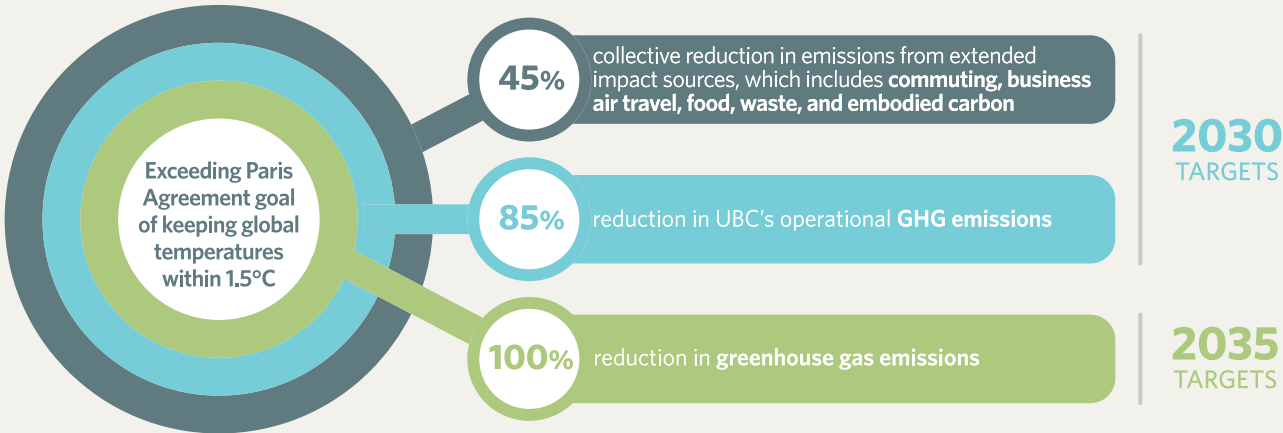
¹² An updated methodology has been implemented since 2021 reporting year to better track commuting GHG emissions. The baseline year number was revised accordingly.

¹³ An updated methodology has been implemented since 2023 reporting year to better track business air travel GHG emissions. radiative force factors (RFFs) are applied. The baseline year number was revised accordingly.

2024 Emissions Reduction: Actions and Plan

UBC is the largest post-secondary institution in BC and plays a key role in helping to advance CleanBC goals while also forging a path to net zero emissions for other higher education institutions to follow. The UBC Vancouver CAP 2030 endorsed by the Board of Governors in 2021 provides the impetus for UBC to accelerate decarbonization of its core operations. This includes expanding the scope of action to address extended (indirect) emissions that UBC has influence over. CAP 2030 charts an accelerated path to net zero emissions for buildings and energy supply, and to significantly reduce GHG emissions for extended impact areas (scope 3 emissions).

Figure 4: UBC Vancouver CAP 2030 Targets



A key 2024 milestone was the official launch of the [Neighborhood Climate Action Plan](#) (NCAP) for UBC's residential neighborhoods. With substantial growth anticipated under [Campus Vision 2050](#), NCAP ensures future development supports UBC's sustainability goals. The plan establishes climate goals and targets with supporting climate actions and measures that enable advancing towards meeting those goals and targets. This includes developing an accelerated pathway to net zero emissions and outlining an adaptation roadmap to prepare for the impacts of an already changing climate such as a 40% reduction in embodied carbon in new residential buildings by 2030 and net zero operational emissions in all neighborhood buildings by 2050.



Bioenergy Research and Demonstration Facility

A. STATIONARY SOURCES (BUILDINGS)

UBC is continuously innovating to decarbonize its buildings and energy supply. Increased investments in expanding clean energy supply and energy-efficient technologies provide an opportunity for partnering with faculty researchers devoted to help advance innovation in these areas. UBC's role in affiliations (e.g. UC3, AASHE, ISCN, PICS)¹⁴ helps facilitate knowledge exchange to support rapid deployment of low carbon solutions. Continued financial support from the government, utilities, and industry is also crucial for UBC to make deeper emission reductions with the increasing incremental cost of abatement of carbon.

Along with such innovation, we acknowledge there is also a need for future proofing UBC's buildings to the impacts of climate change including heat waves, fires and floods, as made clear by the heat dome,

devastating floods and UBC tornado-cyclone events. The [Green Building Action Plan](#) (GBAP) includes many actions to accelerate higher levels of performance and commits UBC to a vision that by 2035, our buildings will make net positive contributions to human and natural systems. Under the GBAP, an embodied carbon pathway was developed for new academic buildings and renewals to meet an ambitious reduction target, 50% below a reference building by 2030.

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 costs and changes in provincial and federal policy through a variety of projects in 2024. These projects build on past work to transition away from fossil fuels to cleaner sources of energy. In 2024,

around 37% of total building energy consumed on campus was provided by fossil fuels, down from about 63% in 2007.

Bioenergy Research and Demonstration Facility – Biomass Expansion

ACTIONS:

Since its start-up in 2012, the BRDF has been pivotal in reducing UBC's GHG emissions. With the Campus Energy Centre, BRDF generates thermal energy for heating campus buildings. The BRDF is unique as the first project of this scale in North America capable of generating both clean heat and power using biomass waste, a plant-based, renewable energy alternative to fossil fuels. By replacing conventional fossil fuels, primarily natural gas, with biomass (clean and regional wood waste), the BRDF produces electricity and hot water that is distributed underground for use in campus buildings.

Based on this success, UBC has expanded the capacity of the BRDF. Once the new boiler is fully commissioned, UBC will triple the capacity of its overall biomass plant, energizing two thirds of the ADES with renewable energy sources. This increase in capacity will further reduce UBC's reliance on fossil fuels and lead to the reduction of an additional 13,000 to 15,000 tCO₂e each year.

PLAN:

Moving forward, further recommissioning and optimization of the grate-fired biomass boiler continues to progress. Continued reliable operation at 75% capacity is expected. After completing the routine gasifier maintenance, the unit will operate at full capacity.

Bioenergy Research and Demonstration Facility – Heat Recovery Project

ACTIONS:

Although the BRDF has been pivotal in UBC's decarbonization of its DES, exhaust gases leaving the plant are at fairly high temperatures, producing heat that escapes into the atmosphere. In 2021, Energy and Water Services (EWS) started a project to capture this wasted heat and recycle it back into the DES. Two condensing economizers and heat pumps

will be installed to capture and reuse wasted heat. A heat pump of this scale is a rarity in North America, and so the project has garnered funding from many sources: federal and provincial governments, and both FortisBC and BC Hydro. Installation of the condensing economizers is ongoing and expected to start operating in summer 2025.

PLAN:

Upon resolving a few deficiencies, the unit will be operational in 2025. This initiative is expected to reduce natural gas and biomass consumption by 33,000 GJ each. This will reduce GHG emissions by a further 1,600 tCO₂e per year.

Academic District Energy System Decarbonization

ACTIONS:

To advance toward CAP 2030 net zero emission goals, UBC is undertaking detailed design work to transition the ADES to 100% clean and renewable energy by 2030, advancing one of the key commitments from the CAP 2030 strategy. Over the past year, UBC has been developing the funding strategy and continuing to advance the project through UBC's Major Capital Projects process. Staff is also actively engaging with external partners for funding support, to successfully advance this "Big Lift" decarbonization project and help UBC achieve its climate goals while also forging an accelerated path for other higher educational institutions to follow.

PLAN:

With the completion of the BRDF and the heat recovery system described above, natural gas consumption will be further reduced to less than 250,000 GJ per year (equivalent to the annual average natural gas consumption for around 3,000 households), which will bring down the GHG emissions to 12,000 tCO₂e. UBC will continue to advance the electric boiler and thermal storage project as well as a third waste heat recovery project to transition the DES system to 100% clean energy by 2030.

¹⁴ UC3 – University Climate Change Coalition; AASHE – The Association for the Advancement of Sustainability in Higher Education; ISCN – The International Sustainable Campus Network; PICS – The Pacific Institute for Climate Solutions

Existing Buildings

ACTIONS:

Many UBC buildings have undergone retrofits over the years which provide pedagogical updates and significantly improve building seismic performance, target energy, operational and embodied emissions reductions and improve occupant thermal comfort considering future climate change events (i.e. heat domes). The renewal of the Anthropology and Sociology (ANSO) complex, targeting LEED Gold, will include all new energy-efficient and high-performance building envelope and systems in support of UBC’s CAP 2030; seismic upgrade to meet UBC’s targets for resilience performance; replacement of end-of-life building finishes & systems; accessibility, code, and fire and life safety upgrades; prioritizing tree retention wherever feasible and maximizes biodiversity; and increasing Musqueam presence in the landscape. The construction work is anticipated to begin in early 2026.

In 2024, a number of projects to conserve thermal, electrical, and peak demand at UBC were also completed. The first involved upgrading the controls system, replacing all heating valves, and installing occupancy sensors in one of our lab buildings so the HVAC system could be turned down when unoccupied. This saved 240 MWh of electricity and 1,850 GJ of natural gas. EWS also installed a variable speed drive on the supply fan of the Morris and Helen Belkin Art



Morris and Helen Belkin Art Gallery

Gallery allowing us to balance the air in the building and significantly reduce the building heating load. UBC installed a number of occupancy sensors in a wood working lab and variable speed drives on air handling units serving the Forestry building. Lastly, two major building decarbonization projects are ongoing at Swing Space and Brimacombe and expected to be completed in fall 2025. This will reduce GHG emissions by an additional 350 tCO₂e per year.

UBC also undertook a multi-phase fluorescent to LED retrofit project. To date UBC Vancouver Campus has replaced over 77,000 fluorescent lamps with LED in 468 buildings. The new LEDs provide improved lighting quality to building occupants, significantly reduce campus energy consumption, provide longer lifespans that decrease building maintenance over the long term. The project has decreased UBC’s electrical energy consumption by 400 MWh/year and reduced peak electrical demand on campus.

PLAN:

To inform the implementation and resource requirements of the CAP 2030, UBC is undertaking several consulting studies, including a partnership with CleanBC and BC Hydro, examining low-carbon electrification pathways for a variety of UBC buildings. UBC EWS continues to update the Strategic Energy Management Plan (SEMP) outlining future energy conservation projects within existing buildings which include:

- Continuing LED re-lamping; and further participation in BC Hydro’s Continuous Optimization Program;
- Pursuing additional building retrofits and renewals (e.g. through seismic upgrades) to achieve further reductions in GHG emissions, energy and water;
- Supporting UBC Sustainability & Engineering to deliver climate action and engagement programming to students, staff, and faculty to encourage energy conservation within buildings and to advance a culture of sustainability across the UBC community;
- Advancing technical studies and designs to decarbonize the remaining carbon intensive buildings on campus. The goal is to have a "shovel ready" list of projects, to be able to take advantage of end-of-life replacement opportunities. It is our experience that there is often not enough time to do the

design work and identify incremental funding once equipment starts to show signs of failure, risking locking-in new fossil fuel replacement equipment for several decades.

New Buildings

ACTIONS:

Under the GBAP, the following has been developed. New building designs and major renovation projects will follow these guidelines which will help reduce future building energy use and emissions over time and support CAP 2030.

- UBC has developed energy and emissions targets for new buildings which align with CAP 2030 and will significantly reduce campus emissions in the future.
- An embodied carbon pathway was developed for new academic buildings and renewals to meet an ambitious reduction target, 50% below a reference building by 2030. Currently, UBC’s embodied carbon reduction policy requires all new capital projects and major retrofits to achieve a 10% reduction below a defined baseline. To align with this pathway, UBC will also re-visit the GHG accounting methodology for building lifecycle in the near future.
- UBC updated its Whole Building Life-cycle Assessment Guidelines to align with the recent release of the National Guidelines.
- UBC has Climate Ready Requirements and new UBC Resilient Building Design standards (informed by the Provincial Climate Resilience Framework and Standards for Public Sector Buildings) to ensure buildings are designed to be adaptable to the future climate.

The Gateway building project at the corner of Wesbrook Mall and University Boulevard, is nearing completion. It has achieved Zero Carbon Building Certification (Design) which demonstrates the building is designed to achieve highest standards of performance in advancing towards zero carbon. The embodied carbon has been reduced by 27% compared to a reference building thanks to the hybrid wood structure and careful choice of low embodied carbon materials.

The Lower Mall Precinct Phase One Project, a new student residence complex providing approximately



1,500 graduate student focused beds was supported with significant Provincial funding. It is currently in design stage and aims to set new standards for sustainability and inclusivity on campus. The buildings will target net zero emissions by 2035, achieve LEED Gold certification, and adhere to the UBC LEED Implementation Guide. They will be zero waste ready, achieving a 10% reduction in embodied carbon. Climate resilience and biodiversity are integral, aligning with provincial frameworks and UBC guidelines for climate adaptation and bird friendly design.

PLAN:

Through the GBAP, new buildings are required to meet operational emissions and embodied carbon reduction targets to support CAP 2030 and be designed to address occupant comfort, health and safety in future climate. Sustainability in new market and non-market residential neighbourhood developments will be strengthened through upcoming updates to the Residential Environment Assessment Program REAP (Version 3.3). This includes a reduction in operational emissions and embodied carbon. The REAP (Version 4.0) is anticipated to come into effect in June 2025.



Fleet vehicle/electric charger

B. MOBILE SOURCES (FLEET)

ACTIONS:

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 and internal combustion engine vehicles create local air quality impacts. Responding to emerging technologies and transportation options, UBC has developed a fleet decarbonization roadmap this year. Besides, UBC continues to support the transition to electric and hydrogen vehicles and prepare for autonomous vehicles by continuing to invest in electric vehicle charging infrastructure across campus including fast chargers, evolving parking management practices, and supporting research collaborations and pilots exploring autonomous vehicles and related technologies.

UBC Vancouver campus now has over 119 Electric Vehicle Level 2 and seven Level 3 charging stations. Electric vehicle charging at UBC Vancouver campus grew by 12% compared to 2023, increasing to about 432,000 kWh.

PLAN:

UBC aims to develop a Zero Emission Fleet policy as part of the CAP 2030 implementation. With the fleet decarbonization roadmap developed this year, UBC will explore the vehicle types to be focusing on in the transition to electric vehicles as well as the replacement

schedule based on the current age of the vehicles and when certain vehicle types are expected to enter the market.

C. PAPER CONSUMPTION

ACTIONS:

UBC applies the sustainability vision and goals to all UBC business decisions affecting the supply of services, goods and equipment for operational needs and related transactions. UBC has established a Sustainable Purchasing Guide, a Supplier Code of Conduct, and is working to integrate sustainability into scoring criteria for all major bids. The Sustainability Purchasing Guide is designed to help UBC staff and faculty members or students to purchase sustainable goods and services. The guide supports the adoption of UBC’s Sustainability Priorities and reflects a triple-bottom-line approach that balances best value, social equity and environmental protection.

The UBC Vancouver campus community is encouraged to procure paper made from alternative fibre paper or paper with a minimum of 30% recycled content and eco-certified. In 2024, Around 60% of paper sourced for UBC Vancouver Campus consisted of 30-100% recycled content.

PLAN:

UBC continues to promote the Sustainable Purchasing Guide to the campus community, especially for the departmental and unit administrators, and the network of Sustainability Coordinators across campus.

D. FUGITIVE EMISSIONS

ACTIONS:

The UBC Technical Guidelines address mitigation for leak detection and prevention of refrigerant loss, which are leading causes of fugitive GHG emissions. UBC Safety and Risk Services has developed specific pollution prevention policies, procedures and forms which aim to ensure compliance with the Environmental Management Act, Ozone Depleting Substances and Other Halocarbons Regulation, and Environmental Code of Practice for the Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems. This has improved communication with UBC operational departments/teams who manage refrigeration/air conditioning equipment on campus. UBC keeps comprehensive, up-to date inventories of refrigeration equipment, and refrigerant releases, including annual top-up volumes. In 2024, regular maintenance helped identifying and rectifying leaks to minimize emissions. This year, annual top-up volumes were reduced, resulting in a 29% emissions reduction from refrigeration equipment which requires refrigerant refilled.

In addition, a student-led applied research project recently assessed the opportunities and challenges for deploying and scaling low global warming potential (GWP) refrigerants at UBC, helping to inform the university’s capital investments into sustainable solutions as it deploys more heat pumps and air conditioning units.

PLAN:

With increasing heat pump and air conditioning adoption, refrigerant leaks present an upward pressure on GHG emissions. Due to their long refrigerant lines, Variable Refrigerant Flow systems pose a particular challenge. This increases the amount of total refrigerant in the system while also increasing the risk of a leak due to puncture or other failures. UBC is committed to working with internal and external partners to identify

installation and maintenance protocols to reduce the risk of leaks and to transition to lower GWP refrigerants. It is important to address this as heat pumps are seen as a key technology for successful decarbonization. Meanwhile, UBC will continue to replace inefficient and older equipment and upgrades to refrigeration/air conditioning equipment.



Beaty Biodiversity Museum

Public Sector Leadership

A. Climate Risk Management

UBC studies climate risk or takes actions to manage such climate risk in capital planning, asset management, infrastructure upgrades and strategic planning. Consideration is taken when determining strategy for end-of-life assets, while asset management risk assessment is considered for upsizing of infrastructure to deal with climate-related changes. Furthermore, climate change is incorporated into the assessment of infrastructure for capital works and is included in building design.

UBC has undertaken several climate action planning processes in the past that have focused primarily on climate mitigation. The new CAP 2030 commits to the development of a climate adaptation resiliency, and biodiversity strategy. Specific actions have also

been identified in the GBAP to assess issues from a coordinated climate mitigation and adaptation lens. For example, considerations for campus cooling strategies are being investigated in addition to future demand on UBC’s district energy system. Also, UBC Technical Guidelines include a variety of ventilation strategies that include passive (or natural systems) as part of UBC’s passive-first approach, adding active mechanical systems where needed.

UBC’s Enterprise Risk Assurance (ERA) Group provides trusted and impactful risk and assurance insights to enhance and protect the institution, and to advance a culture of risk informed decision making. They work in conjunction with specific groups to provide an overarching risk assessment portfolio. The ERA Group maintains the University’s Major Risk Register which

identifies, assesses and manages all major risks – The Major Risk Registry will be updated with significant climate related risks as they are identified.

UBC is developing a Climate Resilient Buildings Strategy which aims to align UBC’s policy with CleanBC’s Climate Resilience Framework and Standards for Public Sector Buildings. The project will identify cost-effective strategies to future-proof UBC’s buildings against climate change while reducing GHG emissions. These strategies will be integrated into UBC’s Technical Guidelines in the near future.

UBC is currently in the process of updating its Integrated Rainwater Management Plan to further reduce the risk of flooding, cliff erosion and managing the volume and quality of rainwater sent directly to the ocean. An assessment of critical service infrastructure has also been undertaken in relation to natural catastrophe and redundancy in certain areas, such as potable water, firefighting water and emergency diesel fuel.

UBC’s transportation network is reviewed from a priority access perspective annually, and recent climate events flagged critical access points and the need to ensure emergency and public transit access. Providing more affordable and climate resilient housing on campus for students, staff and faculty is also a priority that reduces the demands on a constrained regional transportation system.

B. Other Sustainability Initiatives & Success Stories

A number of broader sustainability initiatives are underway at UBC Vancouver, with a specific focus on reducing Scope 3 emissions to achieve the new CAP 2030 target of a 45% overall reduction in these emissions by 2030. Key 2024 highlights and successes include:

Planning and Advocacy for SkyTrain to UBC

The UBC SkyTrain Extension is a well-supported and much needed rapid transit project that will advance regional climate action. Ongoing advocacy efforts have led to the UBC Extension being named as a priority in Minister of Transportation and Transit mandate letter. Rapid transit is a key measure for UBC to achieve

its target of having at least two thirds of trips to and from campus be made by walking, cycling or transit by 2040. SkyTrain to UBC will increase sustainable transit usage along the entire length of the Broadway corridor, reducing congestion, GHG emissions and air contaminants while improving personal health and wellbeing. Importantly, the project will provide access to greater affordable housing opportunities for UBC students, as the SkyTrain extension will increase travel speeds and broaden the radius to access affordable housing with similar commuting times. This, together with greater on-campus housing are the key initiatives to mitigating the impacts of the student housing crisis.

Commute Smart UBC

Commute Smart UBC is an ongoing initiative to encourage the UBC community to make smart, sustainable and healthy commute choices. The program includes an on-line trip planning tool, regular outreach via social media channels and engagement programs such as:

- UBC’s campus-wide bike share programs were further expanded in 2024 with an additional 5 electrified Mobi stations. There are now 11 Mobi bike share stations on campus, with space for over 238 bikes, fully integrated with the City of Vancouver’s shared bike and e-bike program. This is in addition to the



on-campus HOPR program which now includes 80 e-bikes. The programs offer a sustainable and active way for residents, students, workers and visitors to get to, from and around UBC's 400-hectare campus. In 2024 over 450 people have taken advantage of discounted e-bike inclusive annual memberships exclusively available to UBC staff, faculty and students.

- **Go by Bike Week** is a bi-annual initiative that celebrates cycling and encourages everyone in Metro Vancouver to shift their commute via cycling. UBC workplace units compete as teams for awards. In 2024, roughly 600 UBC riders across 34 teams participated in each Go by Bike Week event, logging over 57,000 kilometres total. UBC consistently ranks as a top organization regionally for its high level of participation.
- UBC's Carpooling Program aims to bring more people to campus in fewer vehicles by helping drivers and riders to connect and commute together. UBC works with Liftango to incentivize carpooling. The service is free to the UBC community and UBC has created reserved stalls around campus for people who use Liftango to carpool to campus.



UBC Go by Bike Week

Business Air Travel

The UBC Sustainable Travel Program supports the goal of reducing UBC's business air travel emissions by 50% from pre-COVID levels by 2030 and aims to inspire other organizations to take similar actions. Outreach and engagement activities feature sustainable travel best practices and involve a diverse network of staff and faculty.

Climate Friendly Food Systems

The **SEEDS** sustainability team within UBC Campus and Community Planning are collaborating on many climate friendly food research initiatives in partnership with UBC Food Services and AMS. UBC aims to develop a Food Systems Resilience & Climate Action strategy to advance climate-friendly foods and introduce an updated procurement guideline for campus food providers. **Climate Friendly Food Systems Procurement Guidelines** were created to help inform UBC's food purchasing decisions with the goals of: 1) reducing food GHG emissions, 2) promoting biodiverse, resilient & regenerative food systems, and 3) supporting just, sovereign and resilient communities.

This year, UBC's **Climate Friendly Food (CFF) Labels** were further expanded across UBC Vancouver Campus, providing the campus community with information on how their food choices can help reduce the GHG emissions and help create a more sustainable food systems. More than 1,900 recipes evaluated for their GHG emissions as well as other environmental impacts, including water use, land-use footprint and nitrogen footprint.

The Climate -Friendly Food System (CFFS) Toolkit was developed this year through student-led research and collaborations with UBC staff, faculty, and community partners. This toolkit provides resources to promote sustainable dietary choices and habits.

Zero Waste Action Plan - Community Engagement

Zero Waste Action Plan 2030 (ZWAP 2030): towards a Circular Economy was endorsed in 2023, setting out new targets of reducing operational waste by 50% by 2030, and progressing towards a zero-waste community. Community engagement to support ZWAP 2030 continued through 2024, including a novel approach to engaging community members through "talking" recycling bins, that interact with users via phone text. Zero Waste student staff and Zero Waste Squad volunteers continued their outreach and support of many groups and events across campus to foster waste reduction and diversion. UBC also engaged with the community on reducing food waste, a significant source of greenhouse emissions.

UBC continues to promote single-use item reduction through the **Let's Choose to Reuse** campaign, supporting the Zero Waste Food Ware Strategy. Faculty, staff and students are encouraged to choose reusable cups, bags, foodware, and cutlery. The campaign is part of UBC's broader effort to keep as many single-use items out of landfills and the environment as possible.

The **reuse-it!** UBC online warehouse that allows UBCV employees to find and exchange items such as furniture, lab equipment, office supplies, and more from other departments. A study is planned to identify opportunities to increase use and enable surplus equipment owners to donate or sell them to organizations outside UBC. Besides, the **Furniture Reuse Program and Zero Waste Market** launched in 2023 has kept over 1,500 furniture items from disposal, avoided 95 tonnes CO₂e and saved around one million dollars in cost-avoidance. continue and started to identify opportunities to increase sales and donation of surplus items as well as IT or other higher-value items.

UBC was an early adopter in rolling out a new battery collection program, featuring wifi-enabled automated collection bins. This provides a safer, more convenient and visible system for both users and staff supporting the program to recycle batteries. In 2024, UBC was named a Call2Recycle® Leader in Sustainability Award winner for its outstanding contribution to battery recycling, recognizing our commitment to protecting the environment and our remarkable battery collection results.



Green Labs Program

Green Labs Program helps researchers to take climate action and combat the high level of energy consumption of laboratories. It provides lab recycling options to help segregate lab-specific waste, promotes sustainable purchasing, and hosts interactive challenges between lab buildings:

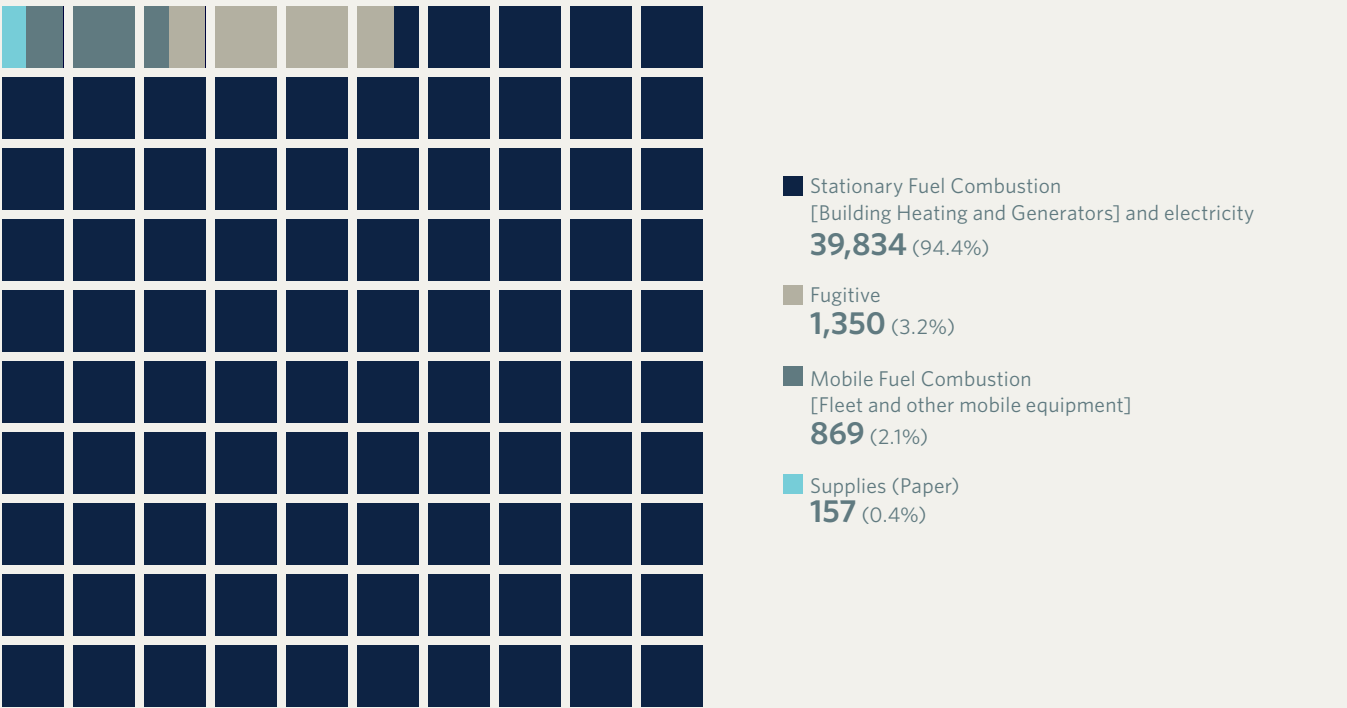
- Green Labs has conducted the **Green Lab Certification pilot program** in 2024 to engage people who work in or support labs on a journey towards a more sustainable laboratory. This UBC pilot program included 8 labs and over 90 individuals. These labs have achieved certification levels from Gold to Green (the highest).
- Green Labs launched the **Lab Sustainability Course** designed to help researchers take climate action and improve the sustainability of their labs. To date, 190 people have enrolled in the course since its launch in 2023.
- The Green Labs Fund granted a total of \$13,000 to support 4 new projects in 2024 to reduce chemical waste and to address environmental impact.

Green Labs also drives UBC laboratories to reduce waste and save energy through different programs, including:

- **Styrofoam Recycling Program** is a program for UBC core research laboratories, aiming to reduce Styrofoam packaging by working with suppliers to find Styrofoam alternatives, and by providing a convenient means of recycling Styrofoam on campus. In 2024, 5,670 kg of Styrofoam was recycled through the program.
- **Amber Glass Recycling Program** helps reduce UBC’s solid waste stream and its associated GHG emissions. Non-hazardous amber glass bottles are collected by labs and recycled into bottles or ground into sand-blasting material. In total, 7,900 kg of amber glass from UBCV campus was diverted from landfill in 2024.
- Gloves are one of the highest contributors to plastic waste coming from laboratories at UBC. In 2024, through this **Glove Recycling Program**, roughly 487,000 gloves were collected and recycled into plastic pellets used for building and construction supplies, diverting around 2,700 kg of waste from landfills.
- An estimated 128 tonnes of plastics are generated by UBC Vancouver laboratories each year. The **Lab Plastics Recycling Program** helps divert it from the landfill by encouraging recycling of accepted plastic products. In 2024, 18 additional recycling bins were added to lab buildings around campus.
- Gel Ice Pack Recycling program diverts ice packs received with scientific supply shipments from landfill each year. In collaboration with Spud, the ice packs are collected in the Life Sciences Centre and donated to third parties, ensuring that sanitized packs can be reused indefinitely. In 2024, 5,375 ice packs were donated through this program. Around 22,875 packs in total were diverted since inception.
- **International Freezer Challenge** is an annual competition for researchers to promote energy efficiency in cold storage management. The challenge covers all forms of cold storage, including refrigerators, freezers and cold rooms. In 2024, participating labs saved the equivalent energy consumption of 738 standard chest freezers, and emissions reductions of 1,825 kg CO₂e.

Emissions Profile 2024

Figure 5: UBC Vancouver Total Emissions by Source (Vancouver Campus, Off-campus Properties, and UBCPT) for the 2024 Calendar Year (tCO₂e*)



TOTAL EMISSIONS: 70,444

Offsets Applied to Become Carbon Neutral in 2024 (Generated on April 17, 2025)
Total offsets required: 42,210
Total offset investment (inc. GST): \$1,108,013
Emissions which do not require offset**: 28,234

* Tonnes of carbon dioxide equivalent (tCO₂e) is a standard unit measure in which all types of greenhouse gases are expressed based on their global warming potential relative to carbon dioxide.
** Under the Carbon Neutral Government Regulation of the Greenhouse Gas ReductionTargets Act, all emissions from the sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.



2024

PSO Climate Change Accountability Report

UBC Okanagan

2024 PSO Climate Change Accountability Report **Vancouver Campus**



THE UNIVERSITY OF BRITISH COLUMBIA
Campus + Community Planning



THE UNIVERSITY OF BRITISH COLUMBIA

Office of Sustainability
Okanagan Campus



Acknowledgement

The UBC Okanagan campus is situated on the traditional, ancestral and unceded territory of the Syilx Okanagan people.

For millennia, the Syilx Okanagan people have been the stewards and caretakers of the lands upon which UBC is now located. In September 2005, the Okanagan Nation Alliance officially welcomed UBC to traditional Syilx Okanagan territory in an official ceremony, Knaqs npi’lsmist, where UBC signed a Memorandum of Understanding with the Okanagan Nation.

UBC strives toward building meaningful, reciprocal and mutually beneficial partnerships with the Syilx Okanagan Nation, and works with the Okanagan Nation to ensure they are partners in the pursuit of campus plans for UBC Okanagan.

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UBC Okanagan remains committed to climate action and the implementation of its **Climate Action Plan (CAP2030)**, in alignment with **CleanBC's** mandate to reduce greenhouse gas (GHG) emissions. This report outlines key initiatives undertaken by the campus to deliver cost-effective energy and carbon reductions, while enhancing the resilience of campus buildings and infrastructure against climate-related risks.

The cornerstone of UBCO's approach to meeting CAP2030 operational targets is the **Strategic Energy Management Plan (SEMP)**, which provides a structured framework to reduce energy consumption, optimize building operations, and integrate low-carbon energy solutions into the district energy system. This system supplies centralized heating and cooling to multiple campus buildings. A major step in decarbonizing this system is the installation of a **1.5-megawatt CO₂ air source heat pump**, which is expected to improve the system efficiency from **72 per cent to 174 per cent**. This upgrade is projected to reduce GHG emissions by **815 tCO₂e** while also delivering long-term cost savings and enhancing system resilience.

Climate resilience is a core element of UBCO's sustainability strategy, ensuring the protection of campus assets and continuity

In response to the **growing threat of wildfires**, UBCO is updating its **Wildland Fire Management Plan** to enhance protection measures and mitigate the financial and operational risks associated with wildfires.

Through these coordinated actions, UBCO is reinforcing its leadership in climate action while ensuring **greater energy security, cost efficiency, and long-term resilience** for the university.

Associate Vice-President Finance and Operations
UBC Okanagan

Director Campus Planning
UBC Okanagan

This PSO Climate Change Accountability Report for the period January 1, 2024, to December 31, 2024, summarizes our GHG emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2024 to reduce our emissions, and our plans to continue reducing emissions in 2025 and beyond.

Greenhouse gas emission and offsets summary

In accordance with the requirements of the Climate Change Accountability Act and Carbon Neutral Government Regulation, UBC Okanagan (the Organization) is responsible for arranging for the retirement of the offsets obligation reported above for the 2024 calendar year and any adjustments reported for past calendar years (if applicable). The Organization hereby agrees that—in exchange for the Ministry of Environment and Climate Change Strategy (the Ministry) ensuring that these offsets are retired on the Organization's behalf—the Organization will pay the associated invoice to be issued by the Ministry within 30 days in an amount equal to \$25 per tonne of offsets retired on its behalf plus GST.

Greenhouse gas emissions

Table 1 shows a breakdown of UBCO's GHG emissions by source from 2023 to 2024. Notably, GHG emissions for offsets increased by 16 per cent, increasing UBCO's carbon offset liability by \$9,225 (excl. tax) over the previous year. This increase can be attributed to an additional 374 tCO₂e from fugitive emissions resulting from increased HVAC servicing caused by manufacturing defects and updated provincial government reporting requirements. Additionally, the campus suspended the purchase of RNG, a carbon-neutral energy source, as it evaluates its long-term energy strategy.

Source	2023 GHG Emissions (tCO ₂ e)	2024 GHG Emissions (tCO ₂ e)	% Change
Scope 1	1,200	1,150	-4.2%
Scope 2	3,500	3,400	-2.9%
Scope 3	15,000	14,800	-1.3%
Total	19,700	19,350	-1.8%

* Totals may not sum due to rounding

In accordance with the Clean Government Reporting Tool, and as required by the Climate Change Accountability Act, offsets required to achieve carbon neutrality in 2024 total 2,748 tCO₂e. As part of the UBCO's 2024 GHG emissions profile, 13 tCO₂e do not require offsets.

Emission reduction activities

Actions taken in 2024 to minimize emissions

The following provides an overview and plans reported in the CCAR Actions Form, Part 1.

A. Stationary sources
(e.g. buildings, power generation)

Building emissions account for 81 per cent of UBCO's in-scope GHG emissions. In 2024, these emissions decreased by **145 tCO₂e (six per cent)** due to energy efficiency projects and initiatives described in this section of the report.

Planning and policy development

The **UBC Resilient Buildings Project** is a key policy initiative initiated in 2024 to align UBC's green building policies across both campuses with **CleanBC's Climate Resilience Framework and Standards for Public Sector Buildings**. This initiative identifies cost-effective adaptation strategies to future-proof campus buildings while simultaneously reducing GHG emissions from buildings.



Key energy and emission reduction initiatives

The **SEMP** continues to drive campus decarbonization, focusing on demand-side management, district energy system upgrades, and infrastructure improvements to reduce GHG emissions from buildings.

As identified within the SEMP, campus-wide decarbonization projects advanced this year include:

- **4-pipe cluster plant** design integrated into the development of **ǰǰ sic snpaǰnwǰ^{tn}** to expand heating and cooling to additional buildings with water source heat pumps;
- **CO₂ Air Source Heat Pump (ASHP) Project:** This project integrates an ASHP into the UBCO district energy system at the Geothermal Exchange Building. This project provides significant **improvements in system efficiency (from 72 per cent to 174 per cent)** and is expected to **reduce campus GHG emissions by 815 tCO₂e annually**. It also addresses environmental concerns by removing the need to use traditional refrigerants for cooling;

- **Geothermal Exchange Building Boiler Efficiency Project:** Two new condensing boilers were installed in the district energy system to meet campus peak demand. This upgrade **improved boiler efficiency by 8-10 per cent, reducing natural gas consumption by 750 GJ and cutting GHG emissions by 37 tCO₂e annually**; and,
- **Residence Cluster Plant Feasibility and Cost Study:** The completed study explores the feasibility of a future cluster plant analyzing capital costs, equipment sizing, and space savings. Modeled after the plant being integrated into the new and existing residences situated to the north of campus.

As identified within the SEMP, demand-side management projects advanced this year include:

- Upgrading the **LED lighting within the Plant Growth Facility**, which is estimated to **reduce energy by 150 MWH and GHG emissions by 1.5 tCO₂e annually**;
- Initiating campus-wide **lab demand-controlled ventilation programs**:
 - IAQ-based demand-controlled ventilation for campus AHUs and/ or MUAs through projects implemented in the Science Building;
 - Studies to review occupancy-based demand controlled ventilation for campus AHUs and/ or MUAs were completed in the Arts & Sciences Centre and the Charles E. Fipke Centre for Innovative Research.

Supplemental strategies

UBCO's High-Level Net-Zero Carbon District Energy Strategy outlines a path to decarbonize the campus's district energy system through low-carbon energy solutions. The **1.5 MWh CO₂ ASHP project** plays a key role in advancing this effort.

Completed in 2024, the **Campus-Wide High Voltage Master Electric Plan** provides a roadmap for a sustainable electrical distribution system on campus to meet current and future needs, while advancing UBCO's goal of achieving net positive performance in operational energy and carbon by 2050. It provides recommendations for developing critical infrastructure, implementing renewable energy solutions such as a campus microgrid, and promoting low-carbon initiatives like EV charging infrastructure.

UBCO also continued to update the **Infrastructure HVAC Asset Management Database**, developed to identify equipment nearing renewal. This project streamlines asset management by migrating data from localized spreadsheets into **SkySpark**, an advanced analytics software platform that enables intelligent

monitoring and analysis of building systems and energy data. The utilization of SkySpark enhances key units' abilities to identify energy efficiency and optimization opportunities and supports building performance monitoring.

Change management strategies

UBCO continues to strengthen its change management programs that integrate sustainability into daily campus operations, while also achieving **cost savings and operational efficiencies**.

In the last year, energy efficiency programs implemented on campus and funded by FortisBC have delivered measurable savings. The **Shut the Sash** program was expanded to 18 additional labs (for a total of 22 participating labs) resulting in an energy reduction of **3,015.52 kWh and 11.21 GJ**, cutting emissions by **593 kgCO₂e** and contributing to lower operational costs.

The **Cozy Campus** winter energy conservation campaign resulted in an estimated energy savings of **116,172 kWh and 65.6 GJ**, reducing emissions by **4.6 tCO₂e**.

Together, these two programs **lowered utility costs by approximately \$12,600**, demonstrating the financial benefits of behaviour-based energy conservation.

Additionally, in support of the **Lights Out** and **Cozy & Closed** initiatives, operational departments continued to conduct voluntary energy audits during nightly rounds to enhance campus-wide energy savings. Their efforts successfully led to turning off 8,157 lights, shutting down 364 projectors and screens, and closing 227 windows during the evening. These actions collectively resulted in an estimated energy reduction of **740 kWh**.

New Buildings

UBCO continued the construction of major capital projects in 2024.

UBCO Downtown, targeting LEED® Gold Certification and Step 3 of the BC Energy Step Code, integrates sustainable design features like a solar wall for preheating outdoor air. This mixed-use facility will expand UBC's presence in Kelowna while offering academic, research, and residential space alongside collaborative community areas.

xel sic snpañwix™tn is targeting LEED® Gold certification upon its completion, setting a new standard for sustainability in energy-intensive research facilities. Designed **using passive strategies**, the building design will incorporate **one of the longest earth tubes in Canada—and the world**—utilizing ground-source energy to pre-condition incoming ventilation. This innovative approach will significantly reduce operational energy and carbon emissions. Additional key energy-saving measures include integration with UBCO's low-carbon district energy system, a high-performance building envelope, active heat recovery via a heat recovery chiller, and efficient lighting with occupancy and daylight controls. Lab ventilation will be optimized using Aircurity demand-based controls, while wind dispersion will enhance exhaust fan efficiency. Additionally, this building is serving as a pilot project to achieve a 10 per cent embodied carbon reduction

in its construction. Collectively, these innovations are projected to reduce energy consumption by 63 per cent and carbon emissions by 92 per cent compared to a LEED® baseline facility.

UBCO recently completed construction of a new **Child Care Facility**, adding 37 spaces to the existing 57 within the adjacent original centre. The new facility was designed to achieve a high level of sustainable performance through a passive design approach that includes an electric air-source heat pump, a central energy recovery ventilator, and on-site rainwater management. Upon completion, both the new and existing facilities were honoured with gifted Syilx names. The newer facility received **sʔitwənx**, meaning Crane, and the existing **spaəqmix**, meaning swan. The gifted names reflect UBCO's substantive commitment to UBC's truth and reconciliation commitments and partnerships with the Syilx Okanagan Nation.

Existing buildings

Projects implemented within existing campus buildings to reduce energy demand and associated emissions in the last year include:

- **Science Heat Recovery Project:** Completed to increase the efficiency of heating in the building by using heat recovered from exhaust air to pre-heat water used by the water source heat pumps. This project is projected to reduce energy consumption by 1,500 GJ and emissions by 70 tCO₂e, saving an estimated \$20,000 in heating costs annually;
- Projects completed within the **Engineering, Management and Education Building** include:
 - Completing a comprehensive investigation of its systems. This study identified deficiencies and opportunities for optimization in the facilities energy systems and controls. The identified solutions were implemented to address the identified deficiencies in the operation of the building that were wasting energy, increasing equipment wear and tear, or decreasing occupant comfort; and,
 - Implementing lab ventilation improvements that included adjusting set points and installing motion sensors to adjust air flow based on room occupancy. Upgrades were in response to reports identifying deficiencies in HRV and strobic fume exhaust equipment;
- **Commons Energy Recovery Ventilator Project:** Upon completion, updates to the air handler unit that serves the building's lecture theatre from 24/7 operation to a schedule based on room occupancy resulted in savings of approximately 150 MWh electricity, reducing emission by 1.5 tCO₂e per year;
- **Library Recommissioning Study:** Undertaken to identify inefficiencies and opportunities to enhance the performance of existing equipment while requiring minimal repairs and upgrades. Once completed, the assessment is anticipated to highlight opportunities for potential retrofits to improve overall energy efficiency and functionality; and,

- Developing a **sequence of operations to enable a night-time flush in buildings**. This procedure pre-cools buildings in order to reduce loads on mechanical cooling systems and delays the cooling peak to later in the day, increasing energy efficiency.

Student resident buildings

Key departments completed a full lighting upgrade in the Kalamalka Residence, replacing a significant number of inefficient fixtures with energy-efficient alternatives. This initiative is expected to result in measurable annual reductions in both energy consumption and greenhouse gas emissions.

IT infrastructure actions

IT projects designed to streamline efficiencies and reduce energy consumption completed in 2024 include:

- Ongoing replacement of desktop computers with laptops that are newer and more efficient;
- Phasing out desktop towers with docking stations to reduce power consumption;
- Applying a phase-in approach to replace step-down transformer uninterruptible power supply units with power sharing, splice devices; and,
- Installing new storage racks which require considerably less power than the older systems in place before.

Key departments continued developing lifecycle plans for IT-related infrastructure to maintain optimal performance and replace hardware with energy-efficient technology. Power consumption remains a priority in purchasing decisions, ensuring lower energy use and reduced cooling needs for IT facilities.

B. Mobile sources (e.g. fleet vehicles, off-road/portable equipment)

In 2024, fleet emissions accounted for **40 tCO₂e (1.4 per cent)** of total campus emissions, a 12 tCO₂e (23 per cent) reduction from 2023 due to decreased vehicle use. Long-term fleet emission reduction efforts included:

- Consolidating off-campus trips, promoting fleet carpooling, walking, and cycling;
- Adhering to sustainable fleet procedures, replacing retired vehicles with electric/efficient models, and providing training on sustainable fleet use; and,
- Continuing the plan to purchase two electric golf carts annually to replace older stock.

C. Paper consumption

Paper related emissions accounted for **23 tCO₂e (<1 per cent)** of total campus emissions in the last year. The continued return to pre-pandemic activities by the campus paired with an increase in the purchase of low-recycled content paper are factors that contributed to the 10 tCO₂e increase in emissions over the last year.

Despite this increase, ongoing paper reduction activities continued to be implemented this year, which included:

- Promoting the purchase of 30 per cent or greater post-consumer recycled content paper on the UBCO procurement website;
- Ongoing use of digital screens and related communications platforms to share news, activities and events to reduce the reliance on paper-based promotional materials; and,
- Continuing to use the Find-Me printing option through the PaperCut™ print-tracking software on all campus printers. The software delivers reports to clients on print volumes; generates consumption awareness; promotes printing alternatives; and allows users to print from any device on campus but users must release their job within four hours of submission by tapping their campus ID card.
 - In 2024, 442,000 pages were submitted to be printed, but not released within the allotted time. This was a five per cent increase over 2023 that reduced GHG emissions by 1,240 kgCO₂e and saved 3.4 trees.

D. Fugitive emissions

Hydrofluorocarbon (HFC) emissions accounted for **461 tCO₂e (17 per cent)** of the total campus emissions in 2024, an increase of 374 tCO₂e, over the previous year. Factors contributing to this change include unforeseen maintenance demands for air conditioning systems, which were compounded by manufacturing issues, and an update to the fugitive emission reporting requirements introduced through the BC Carbon Neutral Government Program. These updated guidelines outline that PSOs compile and report an inventory of all campus equipment using HFCs. The collection process follows the methodologies set out in the [2024 BC Best Practices Methodology for Quantifying Greenhouse Gas Emissions](#).

Since 2013, UBCO has tracked fugitive emissions from large HVAC systems using the **mass balance method**, which uses service reports to directly measure and report the amount and type of refrigerant that has leaked. In 2024, both mass balance and estimation methods were used to calculate the year's fugitive emissions profile.

To address rising emissions, key units are implementing a range of emission reduction measures, which include:

- Continuing to research and identify alternative refrigerants for those being phased out;
- Implementing the use of district-scale CO₂ heat pumps to replace HVAC equipment, which relies on traditional fossil fuels and refrigerants to heat and cool campus buildings;
- Continuing to centralize cooling loads from buildings to reduce the amount of equipment requiring refrigerant on campus, where possible;
- Continuing to replace inefficient and older equipment identified while performing preventative maintenance and upgrades to existing HVAC systems and associated appliances; and,
- Replacing individual packaged terminal air conditioner units in residences, on an as-needed basis.

Plans to continue reducing emissions in 2025 and beyond

This section describes planned actions across buildings, fleet, fugitive emissions, and procurement in the coming years.

A. Stationary sources (e.g., buildings, power generation)

Planning and policy development

In the coming year, UBCO will continue implementing CAP2030 to advance the reduction of operational and extended GHG emissions, aiming to meet 2030 targets and achieve long-term net-positive campus performance.

Building on 2024 advancements, key initiatives progressing will include:

- Updating the **UBC Okanagan Design Guidelines**, including the **Green Building section**;
- Collaborating with UBC Vancouver on the continued advancement of an **embodied carbon policy pathway**; and,
- Completing the **UBC Resilient Buildings Project** and implementing outcomes, such as updating UBC's Technical Guidelines and the UBC Climate Ready Building Requirements for new construction at both campuses.

Energy and emission reduction initiatives

In the coming year, key departments will continue to implement and complete projects with a focus on energy and emission reductions that advance the CAP2030 targets, including:

- Completing the installation of the **1.5 MW CO₂ Air Source Heat Pump** in 2025, which will reduce the reliance of the campus' District Energy System on gas-fired boilers;
- Completing a feasibility study on the integration of **Thermal Energy Storage (TES)** for both the 4-pipe cluster plant in the ʔəl síc snpaʔnwix*tn building as well as the District Energy System. The use of Thermal Energy Storage (TES) can reduce peak electrical demand charges as well as the amount of equipment required to manage peak loads; and,
- Undertaking an **Arts Building Energy Study** to assess multiple controls upgrades and end-of-life equipment replacements that could be initiated to further decarbonize the building's operations.

UBCO will also continue to advance and update the **Infrastructure HVAC Asset Management database**, which has the potential to link major on-campus capital retrofit projects in the near future.

New building projects

UBCO will continue construction on major capital projects in 2025 that integrate key sustainability features outlined earlier in this report.

Located adjacent to ʔəl síc snpaʔnwix*tn, the **Outdoor Gathering Space**, currently in development, will further Indigenous teaching and research by supporting land-based learning, teaching, and nature interpretation in the nsyilxcn language. The project also incorporates landscape design that integrates resilient native species.

The development of a new **on-campus neighbourhood** at UBCO is a key step toward creating a more complete, inclusive, and sustainable university community. By providing up to 1,500 housing units over the next 20 years—aligned with the City of Kelowna's 2040 Official Community Plan—and reserving land for an additional 1,000 units in the longer term, the neighbourhood will expand access to diverse, affordable housing for students, faculty, and staff. This increased on-campus housing supply will help reduce reliance on commuting, which currently represents the largest source of GHG emissions associated with the campus, thereby contributing to climate action goals. Designed with integrated amenities and open spaces, the neighbourhood will also promote sustainable living and support community wellbeing. In the long term, it will generate financial returns through the creation of an endowment that supports UBC's academic mission and strategic priorities.

UBCO is planning the first phase of a new **upper-year and graduate student housing precinct** located southwest of the Nonis Sports Field. Proposed as an eight-storey hybrid mass timber and wood-frame building it will add 273 beds to address growing demand for student housing. Designed for sustainability, the residence will incorporate cross-laminated timber and light-wood framing, aligning with the province's Mass Timber Action Plan and UBC's commitment to low-carbon construction. The project will offer a range of unit types, to accommodate both single students and those with families. Connected to the UBCO District Energy System, the residence will provide a sustainable, climate-responsive living environment that supports student well-being and strengthens the campus community.

Student residence buildings

The student residence portfolio will continue to implement energy and emission reduction projects in the coming year that include:

- Continuing to conduct the LED light switch-out program on a failure-based need, focusing on the lights in Similkameen Residence and buildings E & F of Cascades; as well as,
- Implementing a limit on the temperature controls for heating to 24°C.

IT infrastructure actions

UBCO will continue to implement projects that support energy reduction, including:

- Replacing desktop computers with laptops and more efficient devices as part of UBCO's IT Computer Replacement Program;
- Phasing out desktop towers with docking stations to reduce power consumption; and,
- Applying a phase-in approach to replace step-down transformer uninterruptible power supply units with power sharing and splice devices.

B. Mobile sources (e.g., fleet vehicles, off-road/portable equipment)

In the coming years, UBCO will continue reducing its reliance on fleet vehicles by consolidating off-campus trips and decreasing the number of trips taken by encouraging fleet carpooling, walking or cycling.

The campus will also continue to encourage sustainable mobile-fuel combustion by:

- Adhering to internal sustainable fleet procedures;
- Considering electric and energy-efficient models when purchasing new fleet vehicles;
- Replacing retired fleet vehicles with electric and energy-efficient models; and,
- Conducting ongoing staff training and education to support sustainable fleet use.

C. Paper consumption

UBCO will continue to implement projects that support emissions reductions from paper consumption in the coming years, which include:

- Continuing to display messaging prompts through the PaperCut™ print-tracking software to increase user awareness about reducing paper consumption behaviours to align with implementation of printing charge increases;
- Continuing to promote the purchase of 30 per cent or greater post-consumer recycled content paper, as well as alternative, tree-free options, including Sugar Sheet;

- Continuing to increase the use of digital signs and related communications platforms within buildings to share news, activities and events to reduce the reliance on paper-based promotional materials; and,
- Ongoing investment in improved and more sustainable technologies, which provide better performance with a reduced environmental effects.

D. Fugitive emissions

Looking ahead, fugitive emission reductions will be supported through implementation of projects that include:

- Researching and identifying alternative refrigerants for those being phased out;
- Implementing the use of district-scale CO₂ heat pumps to replace HVAC equipment, which relies on traditional fossil fuels and refrigerants to heat and cool campus buildings;
- Continuing to centralize cooling loads from buildings to reduce the amount of equipment requiring refrigerant on campus, where possible;
- Replacing inefficient and older equipment;
- Conducting preventative maintenance and upgrades to HVAC systems and associated appliances; and,
- Replacing individual packaged terminal air conditioner units in residences, on an as-needed basis.

Campus emission trends

Comparing emissions to growth

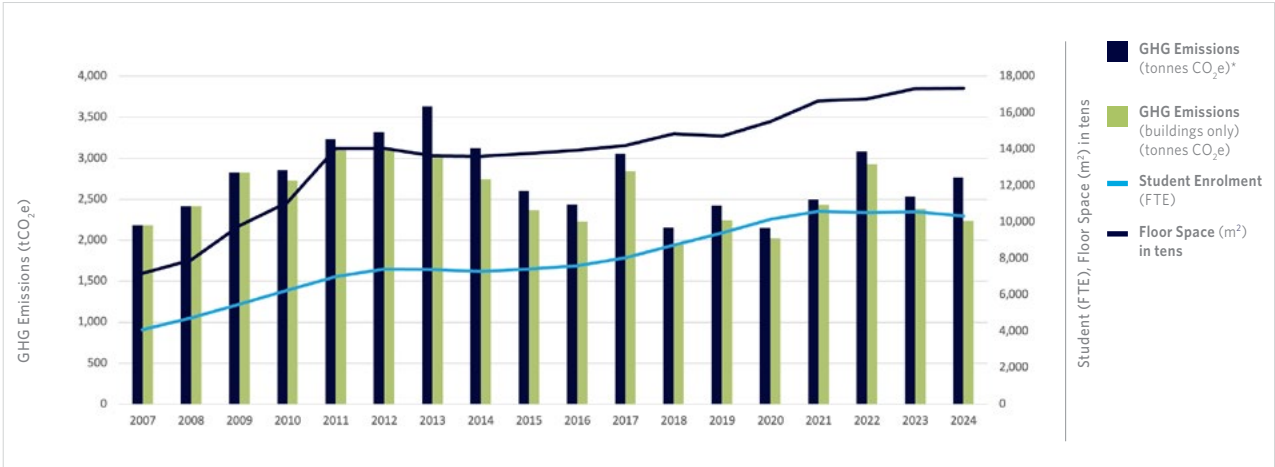
Figure 1 illustrates UBCO's GHG emissions trends (2007-2024) relative to campus growth. Despite 141 per cent floor area and 153 per cent student enrolment increases since 2007, total GHG emissions have remained stable and improved post-pandemic.

In 2024, UBCO reported a 227 tCO₂e (nine per cent) increase in total emissions compared to the previous year. The contributing factors for this outcome include an increase in required maintenance on refrigeration equipment and an update to fugitive emission reporting requirements introduced by the provincial government for the 2024 reporting year. Despite this increase, the campus did obtain reductions in both the

building and fleet portfolios through the implementation of projects identified in the Emission Reduction Activities section of this report.

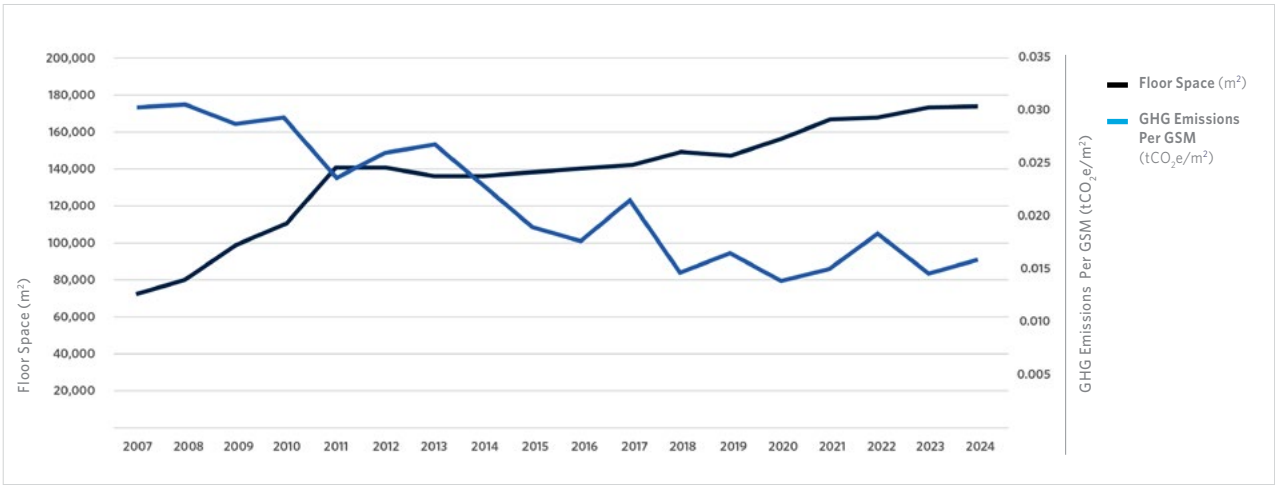
An alternative way to assess emission performance while accounting for changes in growth is through intensity-based metrics. Figure 2 highlights the emissions intensity relative to campus growth in floor area, demonstrating a decline in GHG emissions per building gross square meter (m²), decreasing from 0.030 in 2007 to 0.016 in 2024—a reduction of 48 per cent despite significant expansion.

Figure 1 Total GHG emissions relative to growth: 2007-2024



* Total GHG Emissions for 2007-2009 reported buildings only emissions; 2010-2024 includes all in-scope emissions.

Figure 2 GHG emissions intensity relative to building GSM: 2007-2024



* Total GHG Emissions for 2007-2009 reported buildings only emissions; 2010-2024 includes all in-scope emissions.



Public sector leadership

Climate resilience

UBCO recognizes climate resilience is a key element of its sustainability strategy, essential to protecting campus assets and maintaining operational continuity in the face of climate-related risks.

As part of these efforts, UBCO continued its collaboration with UBC Vancouver in the development of the **UBC Resilient Buildings Project**. This joint initiative aligns institutional policies with **CleanBC's Climate Resilience Framework and Standards for Public Sector Buildings**, identifying cost-effective adaptation strategies that both future-proof UBCO infrastructure and support GHG emissions reduction goals. In parallel, UBCO initiated the development of an **Infrastructure Resilience Plan** with a focus to guide data-driven investment decisions and reduce financial and operational risks associated with climate effects.

Additionally, in response to the growing threat of wildfires in the region, UBCO initiated an update to its **Wildland Fire Management Plan**. The updated plan will include enhanced forest management practices and revised FireSmart community design recommendations to strengthen campus protection and minimize potential disruptions.



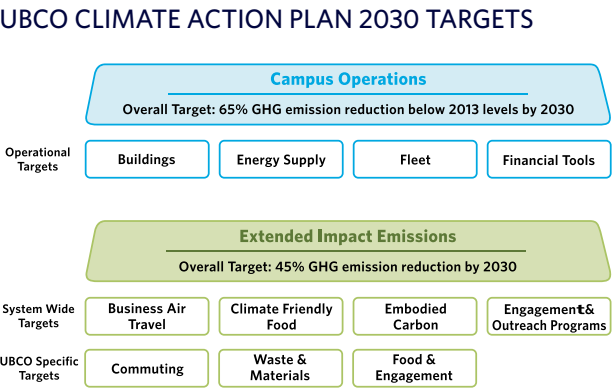
UBC Okanagan policies that incorporate climate adaptation

Over the last decade UBC's Okanagan campus has demonstrated climate leadership through the development and implementation of policies that focus on climate mitigation and adaptation strategies.

Whole Systems Infrastructure Plan (WSIP, 2016)	Integrated Rainwater Management Plan (IRMP, 2017)	Climate Action Plan 2030 (UBCO CAP2030, 2021)
The UBCO Whole Systems Infrastructure Plan provides a foundation for campus growth and development beyond the next 20 years, and 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 UBCO Integrated Rainwater Management Plan provides minimum rainwater retention targets—informed by stormwater modelling that incorporates predicted climate change—to achieve 100 per cent diversion of rainwater from the municipal system. The plan supports resiliency through best practices in green infrastructure and low impact development, while supporting the natural hydrological cycle and achieving important co-benefits to the campus ecology and biodiversity.	The UBCO CAP2030 establishes a course of action to accelerate the reduction of operational emissions by 2030 and identifies measures to reduce emissions in areas of extended effects, including commuting, food, waste and business air travel. The CAP2030 acknowledges that addressing climate and ecological crises simultaneously is critical to adapt to climate change and sets forth immediate priority areas for adaptation in campus planning and operations.

UBCO CAP2030 implementation and change management programs

UBCO continues to develop and implement **targeted campus-wide change management programs** that support the advancement of the CAP2030 emission reduction targets while driving **cost savings and operational efficiencies**. Programs and initiatives implemented over the last year with an aim to enhance Scope 3's extended emission reductions from commuting, waste and materials, and food systems, are highlighted in the following section. Scope 1 and 2 emissions reduction actions, including those from campus operations, have been identified in the previous sections of the 2024 CCAR.



Commuting

- CAP target: 40 per cent reduction in emissions from 2013 by 2030**
- In 2024, commuting emissions accounted for 8,442 tCO₂e, demonstrating a 21 per cent reduction from the baseline. Measures implemented to support this achievement include:
- Launch of the **Sustainable Transportation Office** to facilitate the implementation of the **UBCO Transportation Plan**;
 - The continued delivery of the **faculty and staff ProPass** program, which provides a 50 per cent subsidized monthly pass to transit commuters. An average of 217 UBCO community members utilized the program each term in the last year; and,
 - The ongoing implementation of the **Bike Share e-bike/scooter program**, which provides active commuting alternatives to community members, and recorded over 61,000 trips taken to and from UBCO in 2024.



Waste and materials

- CAP target: 50 per cent less waste (per capita) from 2020 by 2030, progressing to a zero-waste community**
- In 2024, operational waste and materials emissions totaled 570 tCO₂e or 47.7 kgCO₂e/FTE, reporting a 16 per cent increase from the baseline. Despite this year's increase, programs continued to be implemented that support reductions, including:
- Continued implementation of three discrete recycling programs in laboratories and selected departments to **divert non-hazardous hard-to-recycle plastics from the landfill**.
 - Participation grew to include 22 labs and three departments
 - Participants successfully diverted 366 kg of material from the landfill, reducing emissions by an estimated 228.8 kgCO₂e, which is equivalent to driving a gasoline-powered vehicle over 938 kms or a round-trip from UBCO to Red Deer, AB.

- Continued to offer the **Reusable Mug Eco-Discount**, a program introduced to reduce single-use coffee cup use. The discount was applied to over 15,200 transactions in the last year, an increase of 24 per cent over 2023;
- Pilot of an **Eat-In Discount** program at select UBCO Food Services locations, which was applied to 127 transactions;
- Implementing measures within the Pritchard Dining Hall that continue to advance the campus towards its zero waste goals, including an “All You Care to Eat” meal plan, full composting services, and the ongoing use of reusable foodwares; and,
- Ongoing diversion of food waste through the Spa Hills Compost facility, which supports offset of carbon emissions by removing the material from the landfill.
 - In 2024, over 162,794 kgs of material was composted, an increase of 10 per cent over 2023.

Food systems

CAP target: 50 per cent reduction in GHG emission from food systems by 2030

Programs implemented by key units to support reductions in the last year include:

- Continuing to offer the **\$5 Smart Meals** program, which was established to promote plant-based meals to the campus community at a reduced price. The program served 7,445 plant-based meals to students in 2024;
- Continuing to offer plant-based menu options in all UBCO Food Services locations, campus-wide—noting that over 55 per cent of Pritchard Dining Hall’s menu options are plant-based;

- UBCO Food Services continuing to purchase 50 per cent of food from local farms and suppliers; and,
- Scaling up the UBCO Food Services hosted “farmer spotlight” food tasting events. These events will feature local farmers as well as additional BC suppliers moving forward.

Finally, the [UBC Climate-Friendly Food System Procurement Guidelines](#) were complete in 2024. The guidelines establish a roadmap on how the university can reduce food GHG emissions, promote biodiverse, resilient and regenerative food systems, and support just, sovereign and resilient communities. In the coming year, UBCO will undertake a review of actions for implementation at the Okanagan campus.

Outreach and engagement

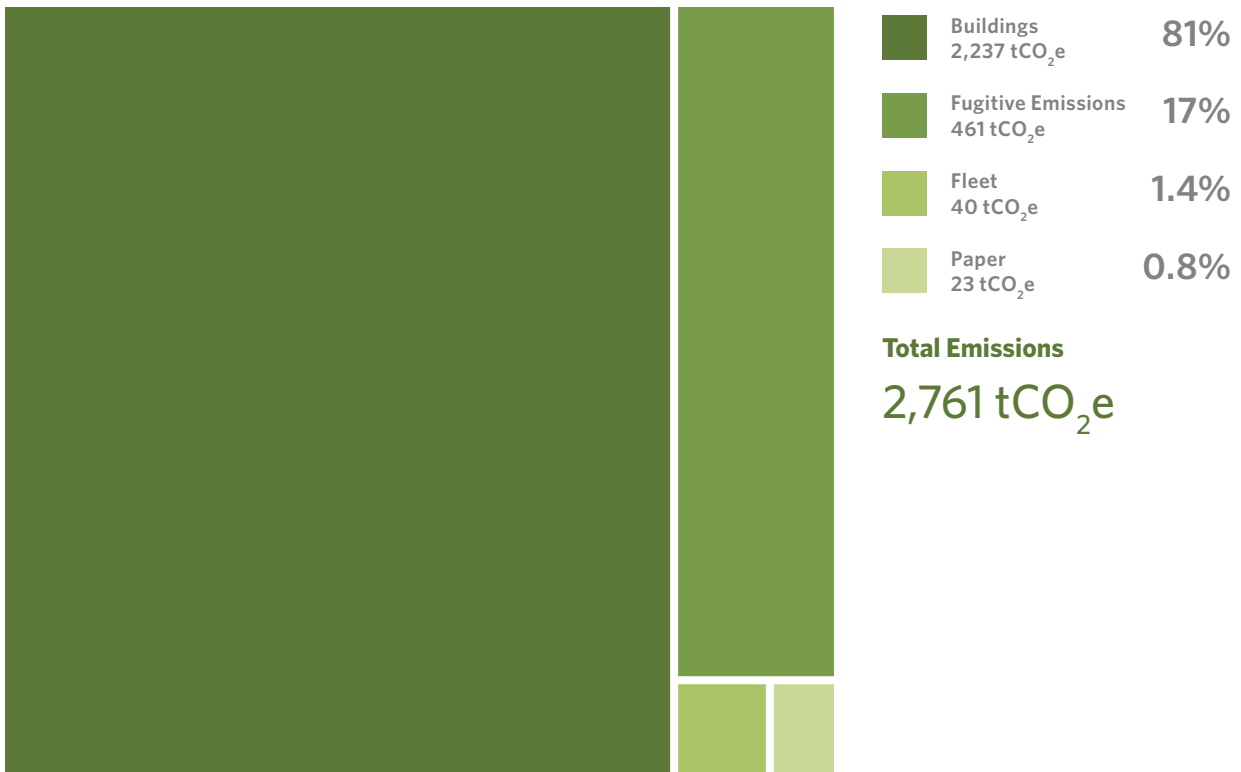
CAP target: 75 per cent of UBC students, faculty and staff will be aware of UBC’s climate action goals by 2030

In March 2024, UBCO hosted its third Teach-In on Climate and Justice as part of the Worldwide Teach-In. Organized by the faculty-led CAP-E group, the event brought together 70+ students, faculty, and staff to discuss climate solutions and action. Highlights included a climate/justice info fair, networking opportunities, presentations from the City of Kelowna and UBCO Sustainability Office, and discussions on advocacy, community care, and CAP2030’s extended emissions targets.

More information can be found at sustain.ok.ubc.ca/teach-in.

Emissions profile 2024

UBC Okanagan GHG emissions by source for the 2024 Calendar Year (tCO₂e*)



Offsets applied to become carbon neutral in 2024

Total offsets required: 2,748 tCO₂e

Total offset investment: \$68,700

Emissions which do not require offsets**: 13 tCO₂e

*Tonnes of carbon dioxide equivalent (tCO₂e) is a standard unit of measure in which all types of GHG are expressed based on their global warming potential relative to carbon dioxide.

** Under the Carbon Neutral Government Regulation of the Greenhouse Gas Reduction Targets Act, all emissions from the sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.

(Generated March 10, 2025)



2024

PSO Climate Change
Accountability Report
UBC Okanagan



THE UNIVERSITY OF BRITISH COLUMBIA

Office of Sustainability
Okanagan Campus



THE UNIVERSITY OF BRITISH COLUMBIA
Campus + Community Planning

2024 PSO Climate Change Accountability Report

The University of British Columbia