2024

PSO Climate Change Accountability Report

UBC Okanagan

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.

Photography: Darren Hull, Paul Joseph, Erika Lachance, Geoff Lister, Margo Yacheshyn

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Executive summary

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.

In 2024, ongoing energy efficiency improvements led to a **145 tCO_2e (six per cent) reduction** in building emissions, demonstrating the effectiveness of ongoing building and energy supply optimization efforts. However, total campus emissions requiring offsetting increased by **369 tCO_2e (16 per cent)**, largely due to increased refrigerant emissions and updated government reporting requirements. Additionally, the campus suspended the purchase of renewable natural gas (RNG) as part of a broader evaluation of its long-term energy strategy.

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 CO_2 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 tCO_2e** while also delivering long-term cost savings and enhancing system resilience.

Complementing infrastructure projects, UBCO continues to advance **targeted change management programs**, in collaboration with funding partners, with a focus on high-energy-use labs and other key areas. These initiatives embed sustainability into daily operations and deliver measurable **cost savings and operational efficiencies**.

Climate resilience is a core element of UBCO's sustainability strategy, ensuring the protection of campus assets and continuity of business operations in the face of climate change. The **UBC Resilient Buildings Project** is aligning UBC policies across both campuses with **CleanBC's Climate Resilience Framework and Standards for Public Sector Buildings**, supporting the development of cost-effective adaptation strategies to future-proof campus buildings that also support GHG emissions reductions. In parallel, the campus is developing an **Infrastructure Resilience Plan** to guide data-driven investment decisions and mitigate financial and operational risks associated with climate change.

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.

Looking forward, UBCO 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 **x̌əl sic snpax̌nwixʷtn** 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**.

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.

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DECLARATION STATEMENT

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.

By June 30, 2025, UBCO's final 2024 PSO Climate Change Accountability Report will be posted to our website at sustain.ok.ubc.ca/reports.

2024 Emissions overview

Greenhouse gas emission and offsets summary

GHG emissions created in calendar year 2024	
Total BioCO_2e (tCO_2e)	13
Total emissions (tCO_2e)	2,761
Total offsets (tCO_2e)	2,748
Adjustments to offset required GHG emissions reported in prior years	
Total offsets adjustment (tCO_2e)	0
Grand total offsets for 2024 reporting year	
Grand total offsets (tCO_2e) to be retired for 2024 reporting year	2,748
Offset investment ($25 per tCO_2e)	$68,700

Retirement of offsets

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

The following GHG emissions have been qualified using the BC Provincial Government's Clean Government Reporting Tool Reporting Framework.

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 tCO_2e 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.

Measures to support ongoing emissions reductions over the previous year and for future years are detailed in the 'Actions Taken in 2024 to Minimize Emissions' and 'Plans to Continue to Reducing Emissions in 2025 and Beyond' sections of this report.

table 1 GHG COMPARISON BY SOURCE BETWEEN 2023-2024

Source	2023 emissions (tonnes CO_2e)		2024 emissions (tonnes CO_2e)		Changes from 2023 to 2024	
Buildings	2,382	94%	2,237	81%	-6%	-145 tCO_2e
Fleet	52	2.1%	40	1.4%	-23%	-12 tCO_2e
Paper	13	0.5%	23	0.8%	+77%	+10 tCO_2e
Fugitive emissions	87	3.4%	461	17%	+430%	+374 tCO_2e
Total emissions *	**2,534**	**100%**	**2,761**	**100%**	**+9%**	**+227 tCO_2e**
Total offsets	**2,379**	**100%**	**2,748**	**100%**	**+16%**	**+369 tCO_2e**

** Totals may not sum due to rounding*

Carbon neutral offsets in 2024

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 tCO_2e. As part of the UBCO's 2024 GHG emissions profile, 13 tCO_2e 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 tCO_2e (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 **x̌əl sic snpax̌nwixʷtn** to expand heating and cooling to additional buildings with water source heat pumps;
- **CO_2 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 tCO_2e 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 tCO_2e 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 x̌əl sic snpax̌nwixʷtn, it is envisioned to provide services to the potential 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 tCO_2e 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 CO_2 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 kgCO_2e** 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 tCO_2e**.

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.

x̌əl sic snpax̌nwixʷtn 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 Aircuity 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 **spəqmix**, 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 tCO_2e, 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 tCO_2e 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 tCO_2e (1.4 per cent)** of total campus emissions, a 12 tCO_2e (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 tCO_2e (<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 tCO_2e 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 $kgCO_2e$ and saved 3.4 trees.

D. Fugitive emissions

Hydrofluorocarbon (HFC) emissions accounted for **461 tCO_2e (17 per cent)** of the total campus emissions in 2024, an increase of 374 tCO_2e, 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 CO_2 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 CO_2 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 x̌əl sic snpax̌nwixʷtn 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 x̌əl sic snpax̌nwixʷtn, 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 CO_2 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

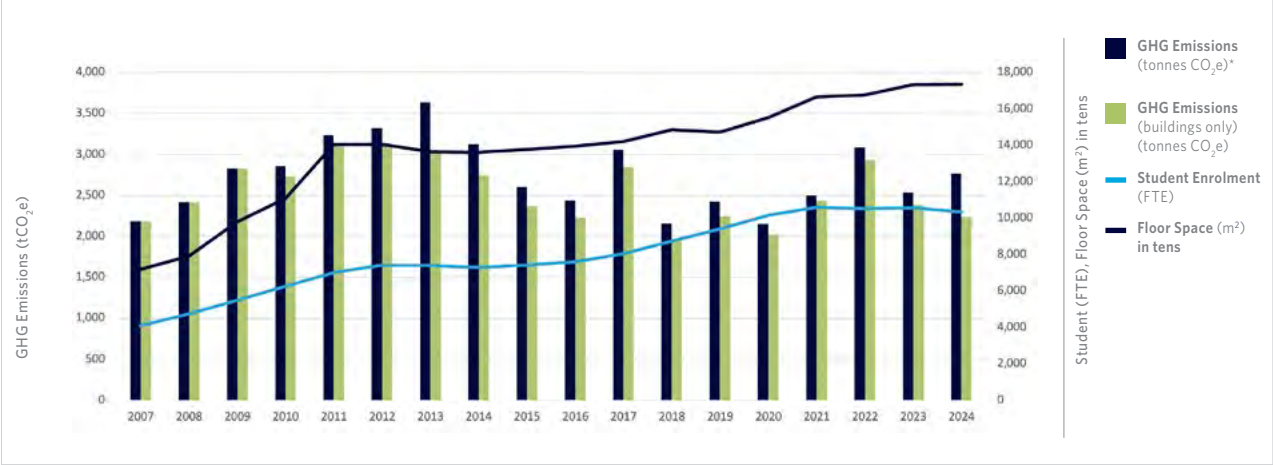
Comparing emissions to growth

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 tCO_2e (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.

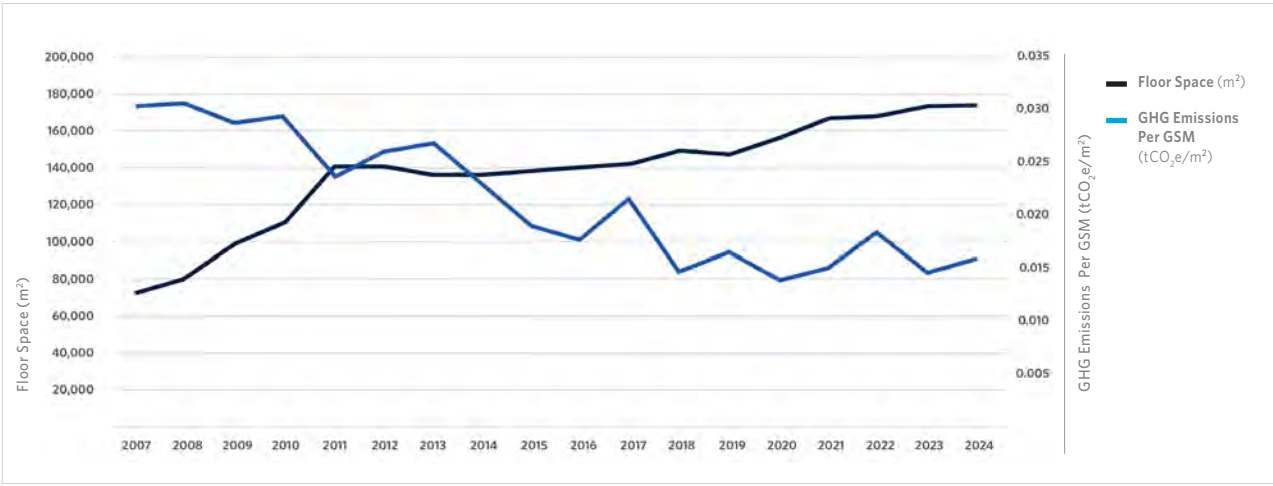
An alternative way to assess emission performance while accounting for changes in growth is through intensity-based metrics. **Figure 2** highlights the emissions intensity relative to campus growth in floor area, demonstrating a decline in GHG emissions per building gross square meter (m^2), decreasing 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

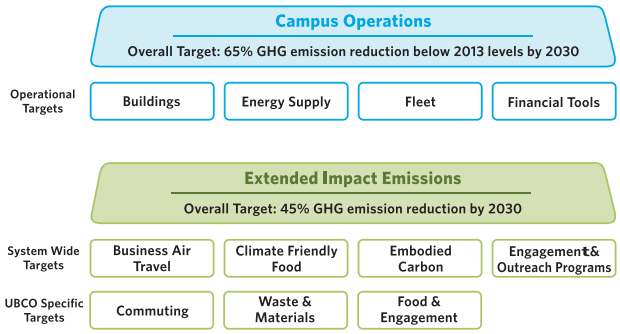
Over the last decade UBC's Okanagan campus has demonstrated climate leadership through the development and implementation of policies that focus on climate mitigation and adaptation strategies.

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.

UBCO CLIMATE ACTION PLAN 2030 TARGETS



Commuting

CAP target: 40 per cent reduction in emissions from 2013 by 2030

In 2024, commuting emissions accounted for 8,442 tCO_2e, 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 tCO_2e or 47.7 $kgCO_2e$/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 $kgCO_2e$, 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 (tCO_2e*)

Buildings 2,237 tCO_2e	81%
Fugitive Emissions 461 tCO_2e	17%
Fleet 40 tCO_2e	1.4%
Paper 23 tCO_2e	0.8%

Total Emissions

2,761 tCO_2e

Offsets applied to become carbon neutral in 2024

Total offsets required: **2,748** tCO_2e

Total offset investment: **$68,700**

(Generated March 10, 2025)

Emissions which do not require offsets: 13 tCO_2e**.

* Tonnes of carbon dioxide equivalent (tCO_2e) 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.

2024

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UBC Okanagan

THE UNIVERSITY OF BRITISH COLUMBIA

Office of Sustainability
Okanagan Campus