2022 Climate Change Accountability Report

LANGARA COLLEGE

May 2023

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THE COLLEGE OF HIGHER LEARNING.

Langara.
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Introduction

At Langara College, we are deeply committed to being part of a sustainable society. We understand that the world's resources are finite and need to be used conservatively and wisely. We know that our choices, both big and small, impact our world and future generations. As an educational institution, we have a responsibility to lead initiatives that positively contribute to our community. Our goal is to foster and provide leadership to create more environmentally sound, socially just, and economically vibrant communities.

Our mission is to provide diverse learners with the academic and experiential foundation for further education, career success, and professional and personal development. This is guided by Langara's most recent **Strategic Plan 2025 – Weaving a Shared Future**. This plan includes 2022/23 priorities for advancing sustainability of the organization in the following areas:

- Ensure financial sustainability
- Mitigate climate change through increased sustainability initiatives
- Review/revise Campus Master Plan with respect to organizational space needs and replacement of A Building.

In 2017, Langara College renewed its Sustainability policy to affirm its ongoing commitment to and responsibility for fostering an institutional culture characterized by leadership in environmental, social, and financial sustainability. The College also established a sustainability committee to advise senior leadership and pursue opportunities for all members of the College community to make choices that promote sustainability in the teaching, learning, researching, and working environments in alignment with strategic directions.

Langara College has been reducing, monitoring, and managing greenhouse gases (GHGs) and increasing sustainability since June 2001 when the College's Environmental Responsibility policy was first established. Since 2010, along with all B.C. public sector organizations (PSOs), as mandated under the Greenhouse Gas Reduction Targets Act, Langara has been reporting their annual GHG emissions and investing in offsets to achieve net-zero emissions. The College is proud of our commitment and successes related to our GHG reduction effort. We will continue to increase environmental, financial, and social sustainability at Langara, in our city, and in our world.

In May 2023, Langara College signed the United Nations Sustainable Development Goals Accord, joining learning institutions around the world in a commitment to advance sustainability and to share achievements, goals, and learnings with one another, nationally and internationally. As part of this commitment, the College will report on how it advances the 17 SDGs annually.

Overview

Langara has been able to reduce our energy usage and emissions on campus while we grow. Since 2001, when Langara established its first Environmental Responsibility policy, the campus area has increased by 48%. In 2017, Langara renewed its Sustainability policy to affirm its ongoing commitment to and responsibility for fostering an institutional culture characterized by leadership in environmental, social, and financial sustainability.

In 2019, our new Sciences and Technology building received LEED Gold certification, making it the fourth LEED Gold building on campus. The construction of this building also included phase one of a renewed central heating plant on campus. Construction for the central heating plant expansion, to serve all buildings on campus, began in October 2022 and is now nearing completion. With the existing heating loads, the new hot water plant is expected to operate with seasonal efficiency of above 85%, resulting in fuel savings of approximately 7,840 GJ or 25% of our current fuel usage. By centralizing and modernizing our central heating plant, we not only significantly reduce our GHGs immediately – we also create the opportunity to take advantage renewable energy technologies in the future.

Langara College's GHG emissions for the mandatory reporting categories are summarized in the table below. Comparisons to 2021 calendar year and 2007 (the Ministry base-year for GHG target reduction) are included. The Buildings and Paper emissions are also charted following the table to show how they are trending.

	2022 GHG Emissions (tCO2e)	2022 Results Compared to 2021 *	2021 Results Compared to 2007 Baseline
Buildings – Natural Gas	1,314	7% decrease	29% decrease
Buildings – Electricity	113	35% increase	34% decrease
Supplies	48	75% increase	Not available
Fleet	1.8		
Total	1,477	3 % decrease	29% decrease

As required by the Greenhouse Gas Reduction Targets Act and Carbon Neutral Government Regulation, the results shown above are based on absolute emissions and have not been corrected for the impact of weather conditions or increasing area of campus.

*Note: the fluctuation from 2021 to 2022 is impacted by COVID-19 pandemic.

The total emission offsets applied to become carbon neutral in 2022 was 1,477 tCO2e; it is noteworthy that 97% of Langara's emissions are from building energy use. The table shows that we have decreased our overall campus emissions by 29% compared to 2007 levels, while increasing the campus area; the savings are not adjusted for area.

Other benefits of energy saving initiatives, beyond energy, emissions, and cost savings, include upgrades to aging infrastructure, and occupant comfort from improved controls. We are currently in the process of developing our next Strategic Energy Management Plan to align with the new 2025 Strategic Plan – Weaving a Shared Future.

2022 INITIATIVES

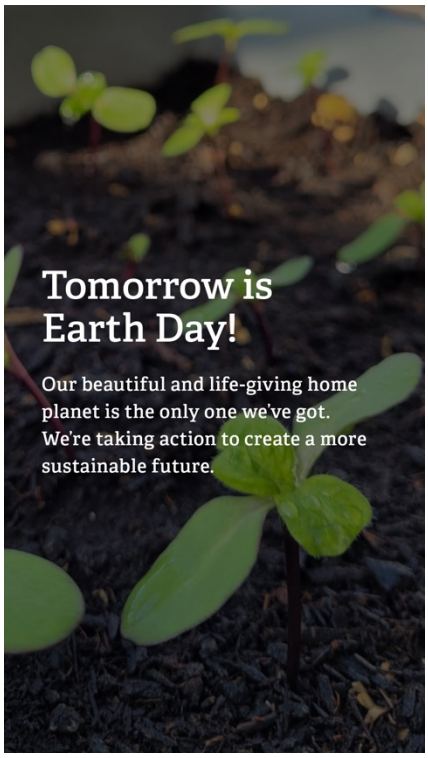
Langara College participated in and implemented multiple sustainability projects and initiatives in 2022:

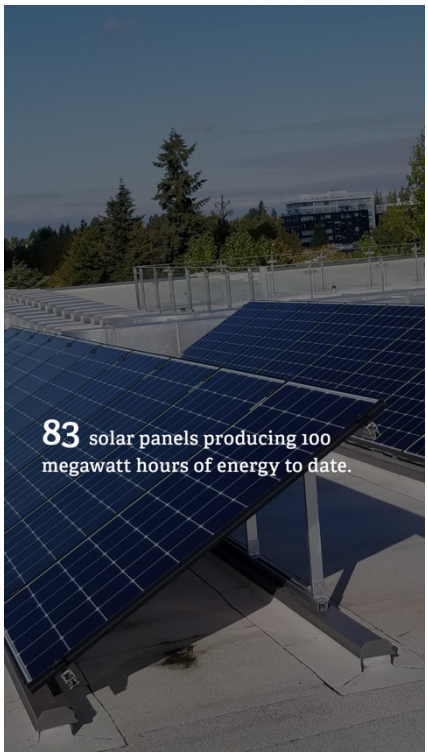
Infrastructure

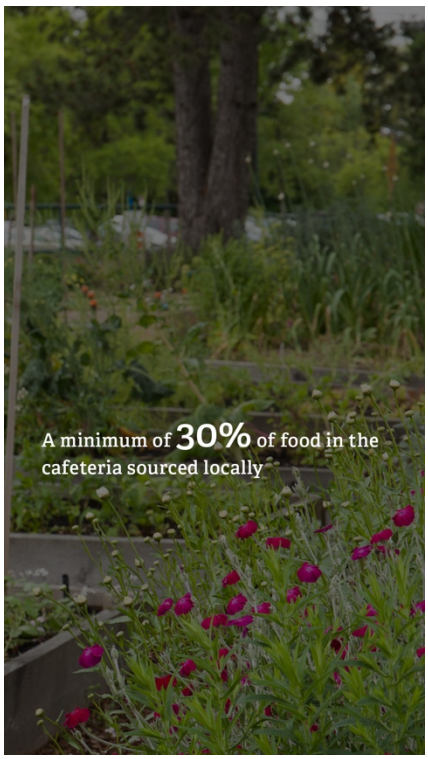
- Construction began in October 2022 for the next phase of the central heating plant project, which will relocate our central heating plant and remove our existing one. This major campus improvement represents the potential for a 25% reduction in GHGs. By centralizing and modernizing our central heating plant, we not only significantly reduce our GHGs immediately – we also create the opportunity to take advantage renewable energy technologies in the future.
- Electric vehicle (EV) charging stations: We added 12 new EV charging stations for a total of 28 stations. This is in addition to electric bicycle plugins available in our cycling facilities. As part of the installation of 6 dual-headed chargers in the library, a new 150KVA, 600V:208Y/120V transformer and a 400A, 208Y/120V panel c/w main breaker were installed. This transformer and panel accommodated the dual-headed chargers with spare capacity for future growth.
- Various LED lighting upgrades throughout campus.
- Added 4 water-fill stations across campus.
- Installation of 5 new pollinator gardens to be used as a research project for our Biology department.
- Added a new 10-stream recycling centre to our cafeteria area to aid with recycling across campus.

Community Engagement

- Reinvigorated our Zero Waste Event certification program with a promotional campaign. Langara hosts hundreds of events each year, and this program incentivizes organizers to reduce the amount of materials consumed, re-use items wherever possible, and encourages recycling throughout the event.
- We have new landscaping policy based on LEED building maintenance practices which requires the use of electric or other carbon neutral equipment, does not allow for pesticides, and limits watering to time of plant establishment, among other guidelines.
- Student Sustainability Ambassadors: In early 2022 we supported recruitment for the Sustainability Student Ambassadors program, to build momentum for sustainability initiatives among the student population. The SSA coordinator left the College in 2022 and this program is on hiatus until a new coordinator can relaunch it.
- Academic Plan Mini-Conference: We introduced two new tours for the College's academic conference to increase education and awareness for energy management. This included a "Hidden Langara" tour, bringing guests to the inner workings of mechanical equipment required for energy management, as well as a Passive House Bike Tour where participants were led on a two-hour bike tour to learn about energy management principles in construction.
- Sustainability communications: Our Strategic Communications & Marketing department has developed a sustainability storytelling communications strategy that includes a website refresh, an editorial calendar, and cross-departmental collaboration initiatives that will be executed throughout 2023. Samples from our 2023 Earth Day campaign included below.







Local Food Sourcing

- Langara College is proud to be a partner in Feed BC, joining fellow public post-secondary institutions throughout B.C. to ensure local, sustainable food is available now and for future generations.
- Through its food services provider Chartwells, Langara provides a minimum of 30% B.C.-based food expenditures by buying locally sourced foods and supporting local food providers. Students and employees can access safe, healthy, and diverse food options that not only reflect the global representation on campus, but also the dietary preferences of the population (e.g., vegetarian options).
- Langara is also home to many green spaces, including a fruit garden, a community garden with apiary, and five pollinator gardens that are used for educational purposes and to enrich the community. Visitors are welcome to immerse themselves in the environment and encouraged to pick-and-eat. Garden plots are open to and cared for by students, employees and neighbouring residents. One plot is dedicated for use by the Langara Child Development Centre as a way for children to learn about where food comes from at an early age.
- Some of Langara's current local food suppliers and partners include Fresh BC, Windset Farms, and Farmers Fresh Mushrooms.

2022/2023 SPOTLIGHT

AASHE STARS*

2025 Strategic Plan: Now in Year 3 of Langara's Strategic Plan 2025, the College continues to support initiatives related to embedding sustainability into multiple layers of the College operations and offerings. Langara's Sustainability Committee continued to meet and discuss campus needs. Its current priority is to build on areas of opportunity identified in the certification process for AASHE STARS, particularly in understanding sustainability content in academic offerings.

AASHE STARS: The Association for the Advancement of Sustainability in Higher Education (AASHE) offers campuses a voluntary, self-assessment tool/system by which higher education institutions can benchmark where they are today and set goals for the future around sustainability. This tool looks at all facets of our institutions – curriculum and research, campus operations, planning and institutional capacity – with the goal of aiding strategic planning, fostering cross-sector dialogue about sustainability on campus, and stimulating conversations and learning between institutions. Langara exceeded its goal of reaching a bronze level AASHE STARS (Sustainability Tracking Assessment Rating System) set out in the Strategic Plan. The College achieved silver level certification in September 2021. We are now working on the roadmap to Gold in 2024.

*The Association for the Advancement of Sustainability in Higher Education (AASHE). Sustainability Tracking, Assessment & Rating System™ (STARS).

STARS launch on digital signage

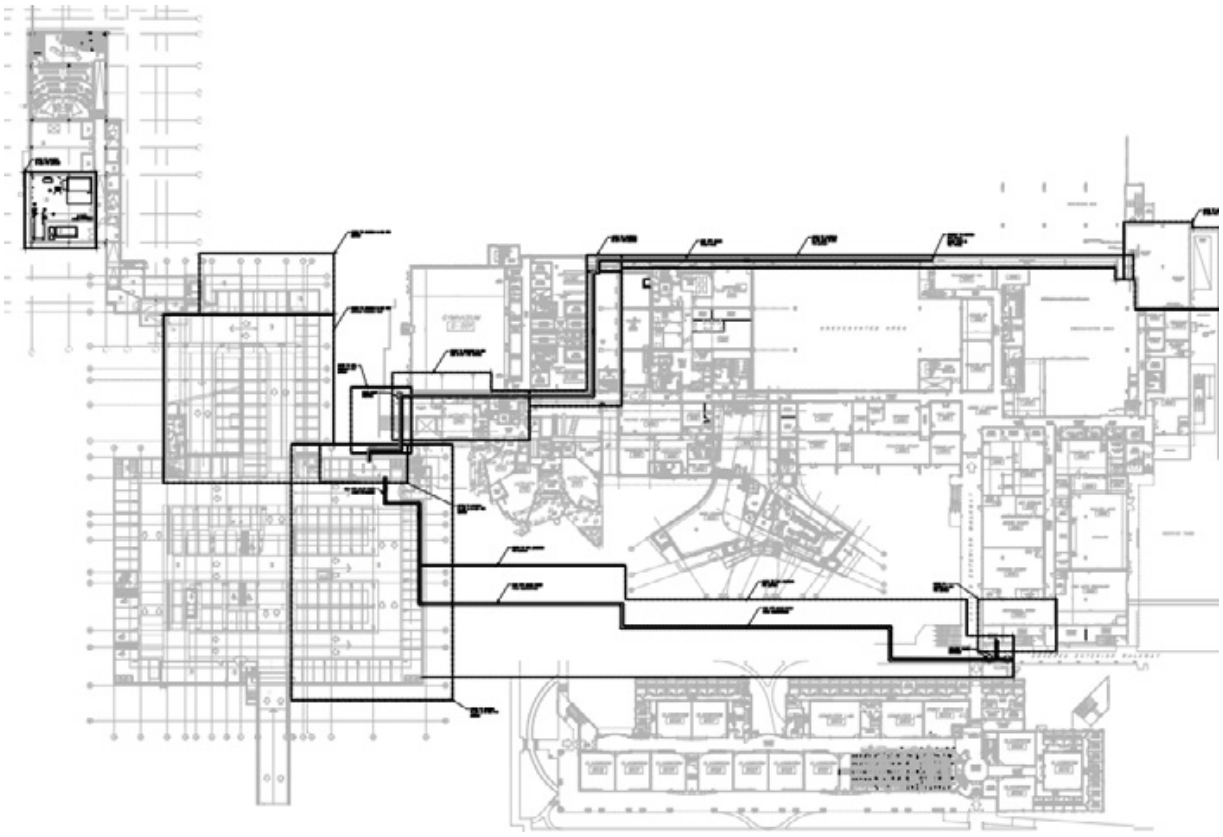
CENTRAL HEATING PLANT PROJECT

In 2022 we began construction in the central heating plant project. Our existing central heating plant dated to 1969 and was identified as end of life. It served most of campus (excluding Library Building and T Building), including providing heating for the domestic hot water on campus.

When designing our Science and Technology Building, it was identified that the building required a large heating plant to meet code requirements (lab buildings are particularly energy intensive), however, the heat recovery systems in the building made the actual load much less than typical buildings. The new building also has a heating boiler which is underutilized as it is a geothermal building. A detailed thermal study recommended that we integrate all campus buildings with the newer plant and decommission our existing one.

Construction for the central heating plant expansion, to serve all buildings on campus, began in October 2022 and is now nearing completion. With the existing heating loads, the new hot water plant is expected to operate with seasonal efficiency of above 85%, resulting in fuel savings of approximately 7,840 GJ or 25% of our current fuel usage.

By centralizing and modernizing our central heating plant, we not only significantly reduce our GHGs immediately – we also create the opportunity to take advantage renewable energy technologies in the future, reducing emissions further.



Schematic of Central Heating Plant Piping Design

OTHER 2022 INITIATIVES

Langara College completed the following sustainability projects and initiatives in 2022:

Policy & Procedures

- Sustainability in operations: in our efforts to embed sustainability on multiple levels, we are working with Financial Services to create new guidelines on more sustainable purchasing, including "green vendor" lists.

Campus as a Living Laboratory

- Pollinator gardens: five new pollinator gardens were added to the campus through a collaboration between students and various campus departments. Aside from providing food for pollinator species, the gardens are also being used for research on the pollinators as part of a biodiversity assessment review. You can view the project history and learn more about the pollinator species in the *Garden for Pollinators* ebook that our students created.
- Accessible garden: The College has added a new accessible garden which provides raised beds suitable for gardeners who use wheelchairs or have limited mobility, including older individuals. We were grateful to receive funding through the support of the WWF Go Wild School Grant for this project.

Supporting Alternative Transportation

- We conduct transportation surveys biannually. Our most recent survey concluded in October 2021.
- In 2022 we additionally surveyed our community about on-campus cycling facilities to inform future improvements to these amenities.

Emissions Summary

The total emission offsets applied to become carbon neutral in 2022 was 1,476 tCO2e. As indicated in the chart below, 97% (89% + 8%) of Langara's tracked emissions are from building energy use.

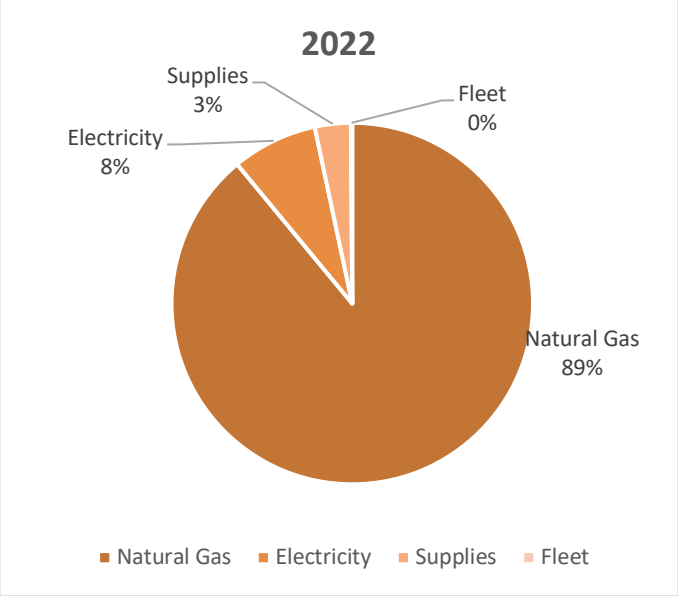


Figure 1: 2021 Estimated Emissions Breakdown

Langara College's GHG emissions for the mandatory reporting categories are summarized in the table below. Comparisons to 2021 calendar year and 2007 (the Ministry base year for GHG target reduction) are included. The Buildings and Paper emissions are also charted following the table to show how they are trending.

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Table1: Emissions Breakdown for 2021 Compared to Previous Year and Baseline (2007)

As required by the Greenhouse Gas Reduction Targets Act and Carbon Neutral Government Regulation, the results shown above are based on absolute emissions and have not been corrected for the impact of weather conditions or increasing area of campus.

*Note: the fluctuation from 2021 to 2022 is impacted by COVID-19 pandemic.

The table below is a summary of the Langara's emissions data for the 2007 government reporting baseline and 2015–2022 in tCo2e.

	2007	2015	2016	2017	2018	2019	2020	2021	2022
Natural Gas	1,848	994	1,219	1,327	1,174	1,254	1,175	1,414	1,314
Electricity	172	79	103	124	124	120.0	94.0	83.9	113
Supplies		114	164	134	124.5	115.0	33.8	27.2	48
Fleet		1.5	1.7	1.7	1.7	1.7	1.8	1.8	1.6
Total	2,020	1,189	1,487	1,587	1,425	1,491	1,305	1,527	1,477

Table 2: Emissions Summary

The chart below (Figure 2) shows the trend in GHG emissions for our buildings in 2022 compared to the base period year of 2007 and the previous 7 reporting years.

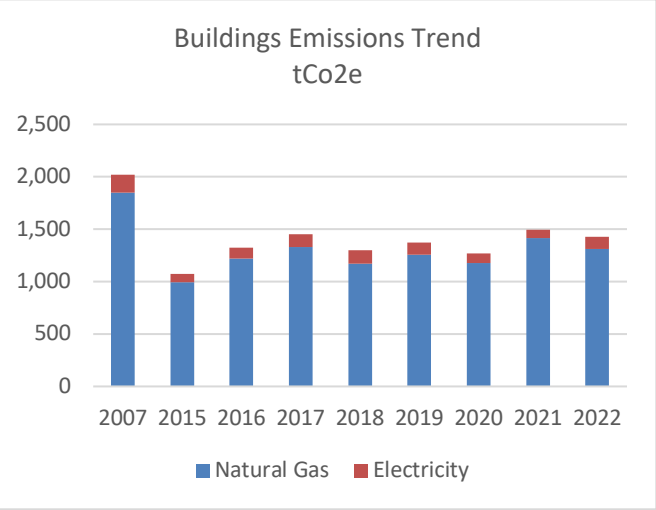

Figure 2: Building Emissions Trend (tCO2e) – Electricity & Natural Gas Emissions Combined

As you can see in the bar graph and summarized in the previous Table 1, the emissions from buildings (natural gas and electricity combined) have increased from 2015 to 2017. This is expected as our new Science & Technology Building opened in September 2016, increasing the campus area by 20%; 2017 is the first full year of occupied operation for this new building.

In 2019, our emissions were trending down as a result of optimizing building operations post-occupancy. COVID-19 resulted in additional decreases in emissions as many buildings were adjusted to save energy with minimal occupancy. When we returned to campus, ventilation rates were increased in response to COVID-19, resulting in increased gas usage and emissions. 2022 gas usage is trending down again as a result of adjustments to mechanical systems and ongoing retrofits. We anticipate seeing additional savings next year as a result of our central heating plant upgrade, with further savings the following year as we realize a full year of energy/emissions savings.

Figure 3 below shows the trend in emissions for paper purchases on campus. The bar graph shows a steady decline in paper usage on campus, in particular during 2020 (COVID-19 impact of remote work). Comparing 2021 to 2022 paper use data shows an increase from the 2020 and 2021 levels.

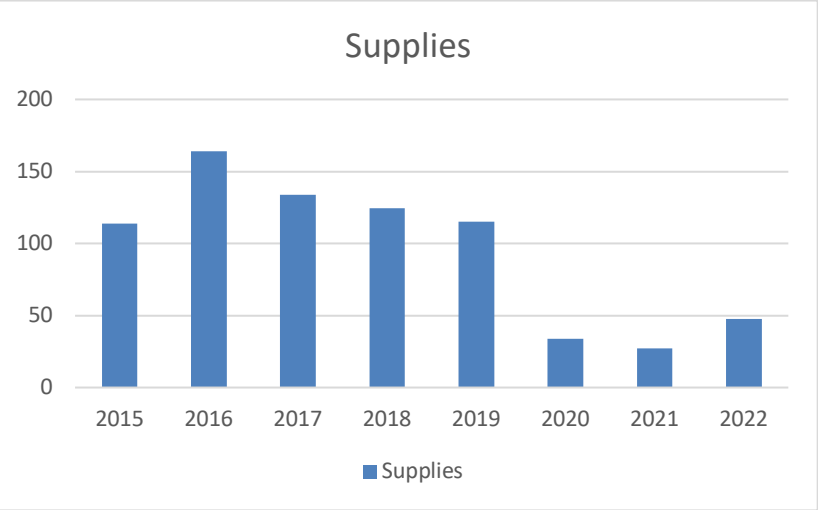

Figure 3: Paper Supplies Emissions Trend (tCO2e)

2022 GHG Emissions and Offsets Summary Table

Langara College 2022 GHG Emissions and Offsets Summary	
GHG Emissions created in Calendar Year 2022	
Total Emissions (tCO2e)	1,477
Total BioCO2	
Total Offsets (tCO2e)	1,477
Adjustments to Offset Required GHG Emissions Reported in Prior Years	
Total Offsets Adjustment (tCO2e)	
Grand Total Offsets for the 2022 Reporting Year	
Grand Total Offsets (tCO2e) to be Retired for 2022 Reporting Year	1,477
Offset Investment ($25 per tCO2e) *[Grand Total Offsets to be Retired x $25/tCO2e]*	1,477 x $25 = $36,925 + GST @5% = $38,771.25
	Invoice Date: May 19, 2023 Invoice Number: CAI582446

RETIREMENT OF OFFSETS

In accordance with the requirements of the Climate Change Accountability Act and Carbon Neutral Government Regulation, Langara College (the Organization) is responsible for arranging for the retirement of the offsets obligation reported above for the 2022 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 Change Strategy (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.

EXECUTIVE SIGN-OFF

Paula Burns

May 31, 2023

Paula Burns
President and CEO

Date