



# 2021 Climate Change Accountability Report

LANGARA COLLEGE

May 2022

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THE COLLEGE OF HIGHER LEARNING.

Langara.  
THE COLLEGE OF HIGHER LEARNING.

# 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](#). While all outcomes in the plan are important, the thematic priority to support our mission for academic excellence is a focus on college sustainability. Our strategic sustainability priorities include ensuring financial stability, contributing to climate action by increasing sustainability on campus, and integrating and streamlining key business processes.

In 2017, Langara College also 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 (GHG) and increasing sustainability since June 2001 when the College's Environmental Responsibility Policy was first established. Since 2010, along with all BC 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 its 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.

# 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 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.

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. Langara is also upgrading many end-of-life systems to more efficient alternatives including upgrading lighting to LED throughout campus.

The Ministry has established 2007 as the base period year for GHG reductions. As we grow, incorporating area in our reporting is important to understand progress.

2019: Comparing our campus level buildings energy usage and emission per unit area for 2019 compared to 2007\*:

- our energy usage per GSM of campus area has decreased by 23% and
- our GHG emissions in tCo<sub>2</sub>e per GSM of campus area has decreased by 48%.

2021 (includes Covid 19 impacts): Comparing our campus level buildings energy usage and emission per unit area for 2021 compared to 2007:

- our energy usage per GSM of campus area has decreased by 29% and
- our GHG emissions in tCo<sub>2</sub>e per GSM of campus area has decreased by 43%.

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.

\*This is used as reference as the last pre-Covid year.





## 2021 INITIATIVES

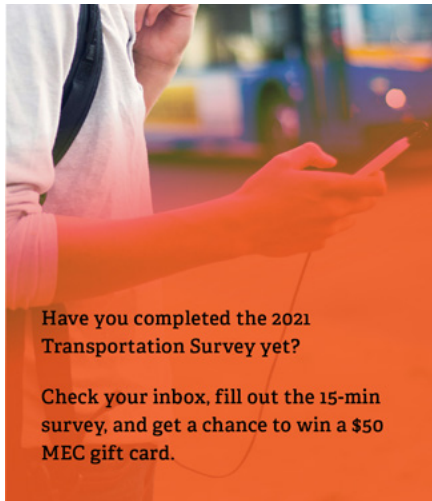
Langara College participated in and implemented multiple sustainability projects and initiatives in 2021:

### Infrastructure

- Additional solar panels added: Langara added 45 solar panels for a total of 83 (complete ahead of schedule). It is now a 30.98 kWp system.
- Additional water fill stations: Installed on campus to eliminate the need for single-use water bottles on campus, with a goal to have one on every floor of every building. We now have 27 water-fill stations across campus, and have collectively saved over 2.4 million plastic bottles to date. To bolster this effort, we also started offering and promoting stainless steel refillable containers in vending machines, cafeteria and bookstore on campus.
- Electric vehicle (EV) charging stations: Added 12 new electric vehicle charging stations for a total of 28 stations. This is in addition to electric bicycle chargers 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 6 x dual-headed chargers with spare capacity for future growth.
- Walk-in coolers project has been completed. The old units used “once through” domestic cold water technology which no longer meets current building codes and standards. In addition to being energy efficient, they will save many liters of water each year. We have seen reduction in water usage on campus; this is one of several projects this year that reduced water usage on campus. Water cost saving from Walk in coolers, IT cooling and major leaks that were repaired are in the \$25,000 - \$35,000 range. Water use equivalent to 2 Olympic sized swimming pools.

### Community Engagement

- Sustaining community partnerships: Continued partnership with KPMG Foundation, who provided funding for a Langara College student to take on the role of Sustainability Student Ambassador (SSA) Coordinator to lead campus sustainability projects.
- Regular communication continues in sustainability news to over 1,600 employees in our employee newsletter *The Langara Post*, sent out weekly, as well as to our students and community members through social media.
- Sustainability Student Ambassador (SSA) Program: the SSA program, now having completed its second year, continues to thrive. This program provides leadership experience for Langara students interested in engaging the community in sustainable practices. Led by the SSA Coordinator, student volunteers work together in small teams to develop and execute sustainability-related events and activities.
- Sustainability Survey: The College conducted its first ever Sustainability Culture Assessment Survey from January 25–February 8, 2021, where we asked students and employees questions related to their perceptions and behavior towards the environment.



- [Sustainability Inspiration Video](#): Communications & Marketing department created a video to highlight different ways students could get involved with sustainability on campus, including becoming a Sustainability Student Ambassador. The video features Langara students, and has been shown at employee and student orientations.

### Supporting Alternative Transportation

- Transportation Survey 2021: The biannual survey has been in effect since 2017. [Our most recent survey](#) concluded in October 2021.
- Cycling amenities: in addition to the transportation survey, we conducted a separate survey to gauge satisfaction with campus amenities meant to support cycling to campus and generate ideas for new initiatives.

### Campus as a Living Laboratory

- Pollinator gardens: Created two new pollinator gardens to attract and feed bees, hummingbirds, and butterflies that will encourage pollination and biodiversity. These gardens are funded in part through the World Wildlife Fund Go Wild Grant. This project also included creation of a [Garden for Pollinators e-book](#).
- New green roof: When replacing the roof over the Langara Global offices, we incorporated new green roof technologies.

## 2021/2022 SPOTLIGHT

**AASHE STARS\***

2025 Strategic Plan: Now in Year 2 of Langara's Strategic Plan 2025, the College continues to support initiatives related to embedding sustainability into multiple layers of the College operations and offering. 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.

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



STARS launch on digital signage

## Reaching for the stars.

### AASHE STARS

Did you know? Langara has been awarded STARS silver rating for its sustainability and energy management on campus.

Learn more about our initiatives and how you can get involved at [langara.ca/sustainability](https://langara.ca/sustainability)





### CENTRAL HEATING PLANT PROJECT

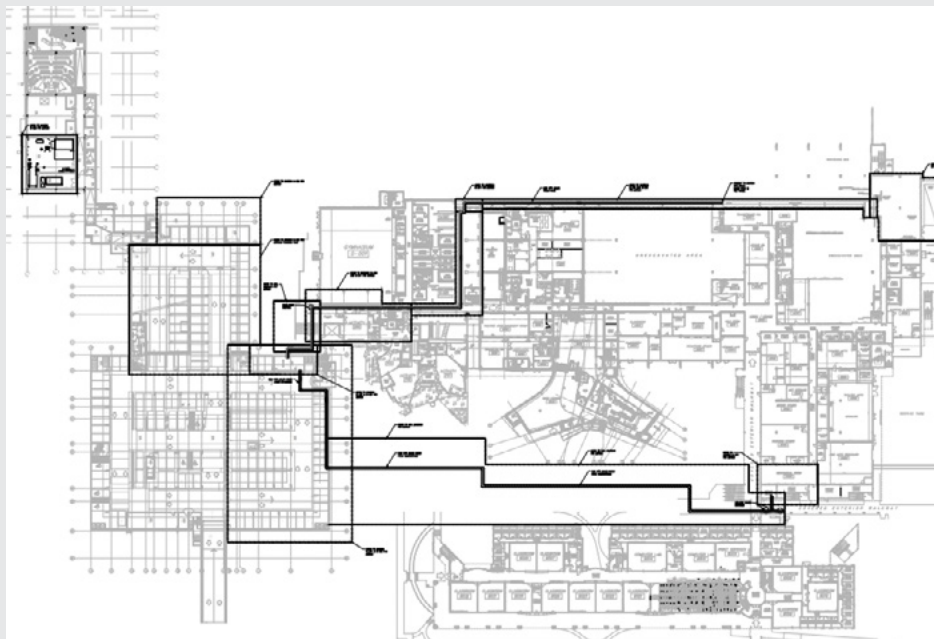
The A Building central heating plant on campus is original (1969) and identified as end of life. It currently serves most of campus (excluding Library building & T Building), including providing heating for the domestic hot water on campus. There is a need to renew building A due to seismic issues, age of building and end of life systems.

In 2014, When in design phase of our New 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 Science and Technology Building (Certified LEED Gold) is beside the Library building (Certified LEED Gold), which also has a heating boiler which is underutilized as it is a Geothermal building. The New Central Heating Plant project was proposed to the Ministry of Education in 2014 as a three-phase project. Funding was awarded for Phase I including \$500,000 in Fortis funding through new construction program. In 2015, we received additional funding for Phase II through the Carbon Neutral Capital Program.

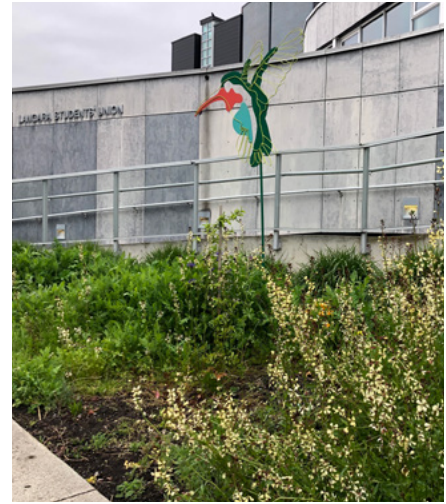
We have completed phase I & II of this project; in 2020, we issued ITT for Consultants for Design and Analysis – included detailed design scope from L to B. In Nov 2020 – Fortis Energy Study Approval Letter – \$75,000 in funding to do a more detailed energy analysis of options. The Detailed Thermal Study recommends we integrate the central plant with the newer plant installed in L Building instead of upgrading the A Building Heating Plant. To integrate the plants, two new supply and return loops will be installed from Plant “L to B” and Plant “L to A” (to the utility tunnel serving A, C and G buildings).

The detailed design and tendering is complete and we plan to start construction in summer 2022.

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.



Schematic of Central Heating Plant Piping Design

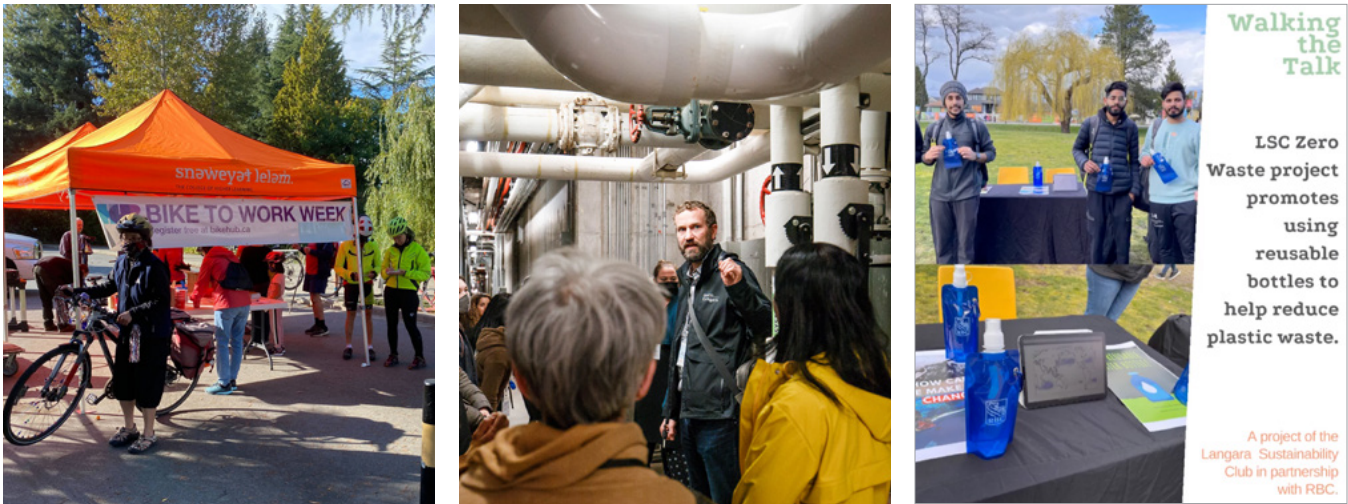


### STUDENT-LED INITIATIVES

Langara College students participated in and implemented multiple sustainability projects and initiatives in 2021:

- Our Student Sustainability Ambassadors (SSAs) launched several initiatives including:
  - Meatless Mondays Blog: recipes and tips to living a healthier environmentally-conscious lifestyle.
  - Green Bridges Event (May 21, 2021) - networking event to connect students with employers and professionals working in the sustainability field.
  - [Small Actions, Big Impact e-book](#) - handy tips for everyday changes that can help the environment.
  - Revitalized the north side of B Building with new pollinator plants to attract pollinators such as bees, hummingbirds and butterflies. This project is through the support of the WWF Go Wild School Grant.
  - Started a [Sustainability at Langara Instagram account](#). This account is managed by Sustainability Student Ambassadors.
- [Still Creek restoration project](#): Langara College Environmental Studies students participated in the restoration of East Vancouver's Still Creek.





## OTHER 2022 INITIATIVES

Langara College is planning/has completed the following sustainability projects and initiatives in 2022:

### Infrastructure

- Additional EVs including infrastructure plan.
- Metering review.

### Community Engagement

- SSA: With two years concluded, the program is now reviewing its practices to ensure sustained growth. The SSAs have also increased their communication reach through launching accounts on LinkedIn and FaceBook in addition to their Instagram account.
- Digital communications strategy: Communications & Marketing is working on creating a comprehensive communications strategy to support the sustainability work that is ongoing. The strategy includes a website refresh, and an editorial calendar that will be executed in a multi-level communications approach (social media, e-newsletter, etc.).
- Academic Plan Mini Conference: 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 2-hour bike tour to learn about energy management principles in construction.

### 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.
- Accessible garden: The College has added a new "accessible" garden which creates inclusion through providing raised beds suitable for individuals who are either wheelchair bound or have limited mobility, including older individuals. This project is gratefully funded through the support of the WWF Go Wild School Grant.

# Emissions Summary

The total emission offsets applied to become carbon neutral in 2021 was 1,527 tCO<sub>2</sub>e. As indicated in the chart below, 98% (93% + 5%) of Langara's tracked emissions are from building energy use.

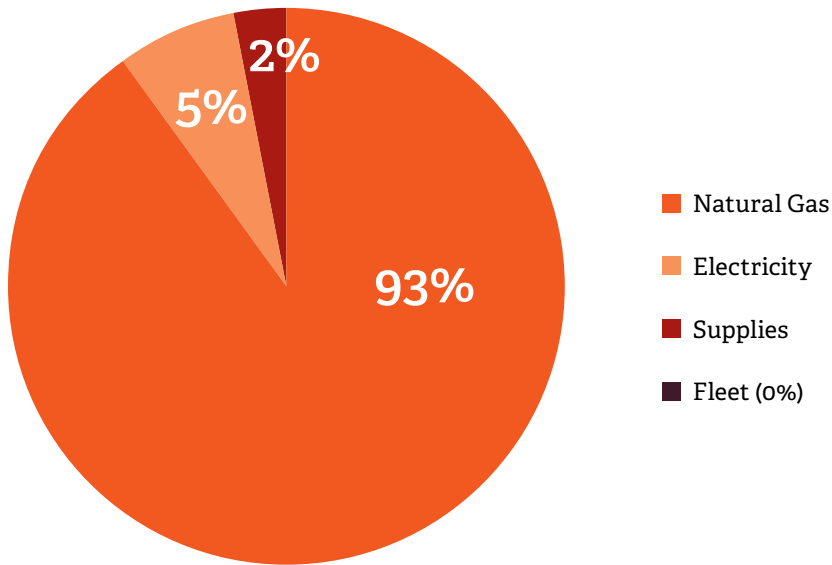


Figure 1: 2021 Estimated Emissions Breakdown

The table below is a summary of the Langara's emissions data for the 2007 government reporting baseline and 2015–2021 in tCO<sub>2</sub>e.

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

Table 1: Emissions Summary

Langara College's GHG emissions for the mandatory reporting categories are summarized in the table below. Comparisons to 2019 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.

	2021 GHG Emissions (tCO <sub>2</sub> e)	2021 Results Compared to 2019 (last pre-Covid year)	2021 Results Compared to 2007 Baseline
Buildings – Natural Gas	1,414	13% increase *	23% decrease
Buildings – Electricity	83.9	30% decrease	51% decrease
Supplies	27.2	76% decrease	Not Available
Fleet	1.8		
Total	1,527	9 % increase *	26% Decrease

Table 2: 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: increase in gas usage is due to increased levels of ventilation in response to Covid-19.

The chart below (Figure 2) shows the trend in GHG emissions for our Buildings in 2021 compared to the base period year of 2007 and the previous six reporting years.

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. Covid19 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.

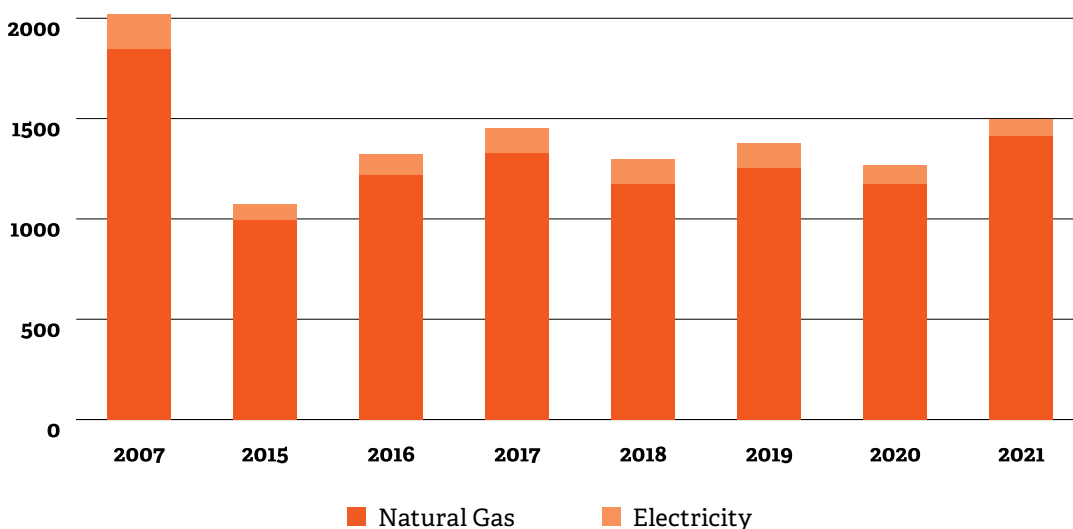


Figure 2: Building Emissions Trend (tCO<sub>2</sub>e) – Electricity & Natural Gas Emissions Combined



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). Langara is happy to note that we have completed the installation of our new fleet of multi-function devices and printers across campus. With the addition of these new units we now have an accurate tool to track the consumption of paper and related resources. This information gathered will help us make better decisions and develop targeted reduction campaigns in an effort to reduce emissions and utilize our resources efficiently.

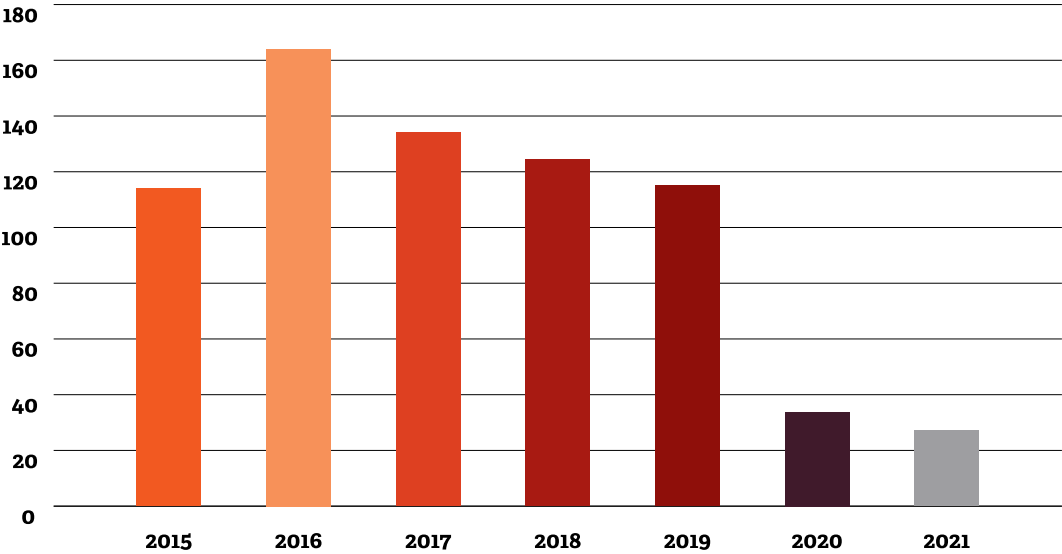


Figure 3: Paper Supplies Emissions Trend (tCO2e)

# 2021 GHG Emissions and Offsets Summary Table

Langara College 2021 GHG Emissions and Offsets Summary	
<b>GHG Emissions created in Calendar Year 2021</b>	
Total Emissions (tCO <sub>2</sub> e)	1,527
Total BioCO <sub>2</sub>	
Total Offsets (tCO <sub>2</sub> e)	1,527
<b>Adjustments to Offset Required GHG Emissions Reported in Prior Years</b>	
Total Offsets Adjustment (tCO <sub>2</sub> e)	
<b>Grand Total Offsets for the 2021 Reporting Year</b>	
Grand Total Offsets (tCO <sub>2</sub> e) to be Retired for 2021 Reporting Year	1,527
Offset Investment (\$25 per tCO <sub>2</sub> e)	1527 x \$25 = \$38,175.00 + GST
<i>[Grand Total Offsets to be Retired x \$25/tCO<sub>2</sub>e]</i>	@5% = \$40,083.75

## RETIREMENT OF OFFSETS

In accordance with the requirements of the Climate Change Accountability Act and Carbon Neutral Government Regulation, Langara College is responsible for arranging for the retirement of the offsets obligation reported above for the 2021 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



May 31, 2022

**Paula Burns**  
President and CEO

**Date**