

KWANTLEN POLYTECHNIC UNIVERSITY

2022 PSO CLIMATE CHANGE ACCOUNTABILITY REPORT

Title: 2022 PSO Climate Change Accountability Report

Organization: Kwantlen Polytechnic University

PART 1. Legislative Reporting Requirements

Declaration statement: This PSO Climate Change Accountability Report for the period January 1, 2022, to December 31, 2022, summarizes our greenhouse gas (GHG) emissions profile, the total offsets to reach net-zero emissions, the actions we took in 2022 to minimize our GHG emissions, and our plans to continue reducing emissions in 2023 and beyond.

Emission Reductions: Actions & Plans

In 2022 Kwantlen Polytechnic University (KPU) produced a total of 2694 tCO₂e, and of this, 2513 tCO₂e, which is approximately 93% of our emissions, were produced by burning natural gas.

As points of reference, emissions from all sources at KPU are as follows:

- Natural Gas: 2513 tCO₂e,
- Electricity: 142 tCO₂e,
- Mobile Energy 35.2 tCO₂e,
- Office Paper 3.49 tCO₂e.

Improving efficiency in heating systems and exploring alternative energy heating sources that can be used instead of natural gas is key to achieving the substantial GHG emissions reductions that are required to meet statutory and internal emissions reduction targets. Post-pandemic working conditions in 2022 required an increase in fresh air in the occupied spaces for health and safety assurances. This had an impact on KPU's overall energy consumption, particularly natural gas consumption for heating.

Stationary Sources

Overview

KPU has undertaken a number of studies prior to 2022 and during 2022 to aid in developing a strategy to minimize reductions from stationary sources and develop plans to continue reducing emissions in 2023 and beyond.

While a final strategy is being developed, KPU has implemented a number of projects to reduce emissions from stationary sources, and we have started to upgrade electrical infrastructure to support the electrification of heating systems where necessary.

Building retrofits (minor, major, deep) include an evaluation of the potential and practicality of reducing emissions as part of the project work.

Studies in 2022

The following studies were initiated in 2022:

Decarbonization/Low-Carbon Electrification Planning Study: This study provides a detailed review and comparison of technologies already explored, and it provides suggestions for additional technologies to be explored to reduce carbon emissions at KPU. It also includes a peer review of approaches used by similar organizations that are working towards the decarbonization of their buildings. The study is intended to assist KPU in developing a roadmap to achieving GHG reduction targets. This study was completed in 2022.

Emerging Technologies White Paper: This study provides a comprehensive analysis of existing and emerging energy efficiency technologies that KPU could consider as KPU develops its comprehensive infrastructure replacement strategies to reduce carbon emissions. The study was completed in 2022.

RNG Study: This study provides a comprehensive analysis of Renewable Natural Gas (RNG) as a large-scale low-carbon replacement for Natural Gas at KPU. The study includes industry information and an overview of the current marketplace opportunities for Renewable Natural Gas, including its alignment with British Columbia's current and future provincial mandates on natural gas supply as well as a marketplace observation of current participants. This study was initiated in 2022 and was completed early in 2023.

Low Carbon Feasibility Study: This study is intended to identify and evaluate practical technical solutions to reduce carbon emissions for each campus location with a primary focus on heating systems. The study will include a comprehensive assessment and subsequent recommendation of viable energy management, infrastructure and technology, and possible partnership opportunity pathways unique to each site. The study will examine a full spectrum of options and recommend those that are deemed most viable and will be informed by smaller sub-studies previously completed or underway currently. This study was initiated in 2022 and will be completed by mid-2023.

Electrical Load Growth Study: This study will build off a previous electrical capacity study that was conducted for all campuses and develop a future electrical capacity forecast for each campus based on future predicted electrification needs that include potential mechanical system electrification as well as EV chargers and future buildings. This study was initiated in 2022 and will be completed by mid-2023.

Actions in 2022

KPU initiated several projects in 2022 or earlier that are still in progress to reduce carbon emissions or support future carbon emissions reduction projects:

Surrey Campus – Interior Lighting: This project replaced interior fluorescent T8 lighting with LED lighting to reduce electrical energy consumption and associated emissions. This project was started in 2021 and completed in 2022.

Langley Campus – Control System: This project added zone motion and CO2 sensors to two main AHU units to reduce electrical and natural gas consumption and associated emissions. This project was started in 2022 and completed early in 2023.

Surrey Cedar – Rooftop Units Replacement: This project will replace five existing natural gas-fired rooftop HVAC units with new units that use Air Source Heat Pump (ASHP) technology. The project design work started in 2021, the project was tendered, and a contractor was selected in 2022. The project implementation is currently in progress in 2023.

All Campuses – Exterior Lighting Upgrade: This project will improve exterior lighting while at the same time reducing energy consumption and associated emissions by using improved lighting technology. The design work started in 2022, and the project is currently in progress.

Surrey – Main Transformer Equipment: The main transformer equipment at the Surrey campus is being increased in electrical capacity to support increased electrification of the main heating systems to reduce emissions and to support the addition of future electric car charging stations. Design work started in 2021, and the project is currently in progress.

Richmond Campus – Domestic Hot Water Tank: The natural gas-fired domestic hot water boiler used for summer domestic hot water when the main boiler plant is not in service during the summer months was replaced with an electric hot water boiler in 2022. Some fine-tuning is in progress in 2023 to ensure optimal operation.

Interior Lighting: This project is to replace interior fluorescent T8 lighting with LED lighting to reduce electrical energy consumption and associated emissions at three main campus locations; one campus was already converted in 2022. A consultant was retained to develop a fixture count, which will be used to apply for possible incentive funding and for tender documents to provide an inventory of lighting to be replaced. Project development is in progress in 2023, and project implementation may be phased dependent on available funding.

Richmond Campus – Building Management System Replacement: The existing BMS system is obsolete and will be replaced with a new system that will be enhanced to reduce energy consumption and associated carbon emissions. Design work includes replacing the entire existing BMS system along with installing additional zone occupancy and CO2 sensors and optimizing control strategies where possible and practical. It also includes expanding the system to control some areas of the building with stand-alone controls, such as stairwells and main entrances, and enhancing and optimizing the atrium ventilation control to increase free cooling in the summer and reduce energy consumption. Design work started in 2022 and is currently in progress.

Richmond Campus – Exterior Glazing: The existing exterior windows, glazing system, and seals are over 30 years old and at the end of their useful life. They will be replaced with new energy-efficient windows, glazing systems, and seals which will have upgraded technology/features to reduce energy consumption and associated carbon emissions. Design work was tendered in 2022, and the design work is currently in progress in 2023.

A. Mobile Sources

Overview

In 2022 KPU has taken actions to support emission reductions which have a focus on EV charging infrastructure and electrical capacity to support adding EV charging stations.

Actions in 2022

KPU engaged with a consultant for the development of an EV charging infrastructure strategy that will expand our current EV charging capabilities at the Richmond, Surrey, Langley, and Cloverdale campuses.

In addition to this, there is a project in progress to upgrade and increase the capacity of the electrical infrastructure at Surrey Campus to support the electrification of the heating system as well as provide capacity to add future EV charging stations.

The university has not acquired any zero-emissions vehicles in 2022 as current procurement timelines for EVs are well over 12 months, and this will also require a creative financial approach as we review our fleet vehicle life span and replacement schedule.

B. Paper Consumption

Overview

In 2022 KPU has taken actions to support emission reductions from paper supplies which have a focus on reducing paper use, increasing the recycled content of paper where possible and using alternative sources of paper. We have plans to continue to reduce paper consumption in 2023 and beyond.

Actions in 2022

The fleet of copiers and printers throughout the five campuses are all set to default double-sided printing to reduce paper consumption. Printers and copiers are placed strategically within KPU for more shared copiers and printers.

Paper supplies that are purchased are sourced to contain recycled content and is from FSC-certified suppliers. As products with an increased percentage of recycled content come on the market, we test in our Print Shop before implementing University-wide.

We purchase Sugar Sheet as an alternative source of paper. It is made from sugar cane fibre and is being purchased by the pallet for each Campus to stock and be used in all copiers in offices and classrooms.

Future Plans

One approach we have implemented to reduce future paper consumption is to provide increased online services for marketing and advertisement, presentations, and meetings, which will reduce future printing requirements.

2022 GHG Emissions and Offsets Summary Table

Kwantlen Polytechnic University 2022 GHG Emissions and Offsets Summary	
GHG emissions for the period January 1 - December 31, 2022	
Total BioCO ₂	1.23
Total Emissions (tCO ₂ e)	2694
Total Offsets (tCO ₂ e)	2693
Adjustments to Offset Required GHG Emissions Reported in Prior Years	
Total Offsets Adjustment (tCO ₂ e)	0
Grand Total Offsets for the 2022 Reporting Year	
Grand Total Offsets to be Retired for 2022 Reporting Year (tCO ₂ e)	2693
Offset Investment (\$)	\$67,325

Retirement of Offsets:

In accordance with the requirements of the *Climate Change Accountability Act* and Carbon Neutral Government Regulation, Kwantlen Polytechnic University (**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.

PART 2. Public Sector Climate Leadership

Overview

At KPU, energy conservation and reducing carbon emissions are core considerations when completing new expansions, renovating buildings, upgrading ageing infrastructure, and optimizing daily operations. KPU recognizes that organizations need to reduce their impact on the natural environment. From a global perspective, KPU signed the Global Universities and Colleges Climate Letter in 2019, committing to achieve carbon neutrality no later than 2050. Vision 2026 reconfirms previous KPU Mission and Vision statements and continues to describe a future where environmental impacts such as global climate change require significant adaptation in the way we work and live. A specific goal from Vision 2026 is articulated as Fostering environmental sustainability through our offerings, research, and operations. Progress on this goal will be made by offering formal education programs and courses that address sustainability, conducting research that addresses sustainability issues, and ensuring our operations are environmentally sustainable.

To that end, along with the numerous curricular offerings, KPU strives for efficient and sustainable outcomes in all its service delivery; examples include: green procurement practices and product selections such as enhanced recycled paper content; a comprehensive waste management program; technological solutions for meeting rooms and office PC's (the addition of cameras) to reduce the need for travel between campuses; promoting alternative transportation such as an intercampus shuttle, bike lockers, bike repair stations, and showers.

KPU strives to reduce water, electricity, and natural gas consumption so that KPU is a leader to others in our sector and the community. Continued partnerships contribute to KPU's energy conservation success. These efforts have been achieved through the support of our many partners, including design professionals, service technicians, building operators, BC Hydro, NRCan, the Province of British Columbia and more. Much of the energy efficiency work we have performed has been funded by either future avoided energy costs or from financial assistance from BC Hydro, and our most valued partner, the Province of British Columbia.

KPU has developed the **KPU2050 Official Campus Plan**, which outlines the actions needed in formalizing a holistically sustainable KPU. In the interest of reducing campus GHG emissions, the Plan outlines directions to pursue phased electrification of existing building systems and establishes a zero-emissions commitment for new buildings. The Plan builds upon an existing foundation of employee and student-led sustainability commitments and initiatives that already positively shape KPU's campus culture, identity, and impacts.

2A. Climate Risk Management

Overview

KPU retained a consultant to provide preliminary climate adaptation study in 2022 to aid in understanding climate risk exposure to KPU in 2022. This study will aid in developing a strategy and plans to reduce the impact of climate change. Future considerations in developing a strategy to deal with some of the impacts of climate change may need to include any changes required to operational procedures that may be necessary due to heat waves, droughts, wildfires, and floods.

Future building retrofits (minor, major, deep) will need to include an evaluation of the climate risks that may be associated, which may need to include mitigation measures in the project design.

In 2022, KPU began to see short-term needs to change operational procedures or changes to the way services are delivered related to climate change issues. Extreme heat and fire smoke required adjustments to mechanical systems to support interior space occupant comfort/activities, and exterior work routines were curtailed during an extended heat dome to safeguard workers.

Studies in 2022

The following study was completed in 2022:

Climate Adaption Study: This study will provide both an overview of regional predicted trends as well as specific considerations and risks for KPU's Surrey, Richmond, Langley, and Tech campuses. This is a preliminary study to help the KPU community understand potential risks at its sites related to climate change predictions. Following the completion of this study, KPU will have the opportunity to delve more comprehensively into climate adaptation with organization-wide engagement. The study started in 2022 and is underway and nearing completion.

2B. Other Sustainability Initiatives

Embedded within KPU's service area deliverables are a number of sustainable initiatives that have become standard practice. Briefly, as high-level overviews, here are some examples:

- Fully integrated green cleaning products and energy reduction cleaning routine strategies for custodial services.
- Comprehensive solid waste management program that diverts recyclable and compostable, and hazardous waste generated by common areas and academic areas items from landfill.
- Integrated drinking fountain and waterfilz features to reduce plastics on campus.
- Leased Multi-Function (Copier/Scanner) Equipment reduces technological waste through efficient deployment and recoverable equipment strategies. Common area shared printer stations are used to reduce technological and energy needs.
- KPU also deploys paper use reduction strategies that include print release, monthly individual reporting, and overall consumption records (PaperCut) for individuals, departments, and enterprise wide data.
- KPU's IT laptop recycling program ensures appropriate recycling and repurposing of equipment through service contracts to reduce technological waste and promote re-use opportunities.
- Increasing department and vendor interactions/invoicing moves to electronic file management and workflows.
- Embedded Procurement tender processes that ensure points evaluation strategies measuring vendor commitments to sustainability and social justice.
- Integrated mechanical and leading-edge automated building controls approaches to optimize building operations.

- Sustainable furniture selection strategies, including reallocation of furnishings where appropriate.
- Intercampus shuttle services to promote alternate transportation models; comprehensive alternate transportation strategies and promotions include transit, bike to work, carpooling, and bike to work suggestions.

Executive Sign-off:



May 29, 2023

Signature

Date

Peter Smailes

VP, Administration

Name (please print)

Title