



**Justice
Institute**

BRITISH COLUMBIA

LEARNING THAT TAKES YOU BEYOND

JIBC 2023 PSO Climate Change Accountability Report

May 31, 2024

Land Acknowledgement

We respectfully acknowledge that the Justice Institute of British Columbia serves people across the province situated on Traditional, unceded, and Treaty Territories and the many Nations who are represented by the urban Indigenous population in British Columbia.

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Declaration Statement

This Public Sector Organization (PSO) Climate Change Accountability Report for the period January 1, 2023, to December 31, 2023, summarizes the Justice Institute of British Columbia's greenhouse gas (GHG) emissions profile, total offsets to reach net-zero emissions, actions undertaken in 2023 to minimize GHG emissions and plans to continue reducing emissions in 2024 and beyond.

By June 30, 2024, the 2023 Climate Change Accountability Report will be posted on JIBC's website at www.jibc.ca



Executive Summary

Commitment to Energy Management and Carbon Reduction

Justice Institute of British Columbia (JIBC) is Canada's leading public postsecondary safety educator with a mission to develop dynamic justice and public safety professionals through its exceptional applied education, training, and research. Each year, about 36,000 students study online or at one of JIBC's six campuses in New Westminster, Maple Ridge, Chilliwack, Pitt Meadows, Vancouver Island, and the Okanagan.

JIBC is committed to a carbon-neutral future. The organization aims to reduce its carbon footprint and improve its sustainability performance by participating in energy management and sustainability programs. As part of this commitment, JIBC's Strategic Energy Management Plan outlines its goal to reduce total electricity and fuel energy use at its New Westminster and Maple Ridge campuses by 44 % by the 2029/2030 fiscal year, compared to the 2008/2009 baseline year. Energy consumption and greenhouse gas emissions (GHG) measurement, tracking and reporting support these efforts.

2023 Greenhouse Gas Emissions and Offsets

JIBC's emissions come from three categories: stationary sources, including the natural gas and electricity used to operate the institute's buildings; mobile sources, such as vehicles; and paper consumed at all campuses. In 2023, stationary sources accounted for 80.35% of JIBC's total annual emissions, followed by mobile (18.54%) and paper sources (1.11 %). JIBC's total greenhouse gas (GHG) emissions for 2023 equated to 697 tonnes of carbon dioxide equivalent (tCO_{2e}). While total emissions have increased 19.9 % since 2015, avoided GHG emissions at the New Westminster and Maple Ridge campuses total approximately 1,742 tCO_{2e}. Each year JIBC is required to pay the Province an offset value of \$25 per tonne for all eligible emissions. For the 2023 reporting year, JIBC's offset retirement costs equaled \$17,425.

Emissions Reductions Actions

As part of JIBC's commitment to reduce its energy consumption and associated emissions, measures are prioritized and selected based on payback and emissions reduction potential. As a result, most projects in 2023 focused on reducing stationary energy use, JIBC's largest contributing source of GHG emissions, followed by projects in the mobile and paper use categories. Projects planned for 2024 and beyond look at all three sources and build on the work, learning and success of projects to date.

Climate Risk Management

Increasingly, JIBC campuses are experiencing the impacts of climate events, such as flooding, wildfires, and extreme temperatures. Wildfires and associated smoke have particularly affected staff, faculty, and students. Both 2023 and future risk management measures focus on mitigating the impacts of these types of events.

Overview

About JIBC

Justice Institute of British Columbia (JIBC) is a public, postsecondary educational institution founded in 1978. JIBC is Canada's leading public safety educator with a mission to develop dynamic justice and public safety professionals through its exceptional applied education, training, and research. Each year, about 36,000 students' study at one of JIBC's six campuses in British Columbia or through online distance education at locations in more than 130 sites across Canada and worldwide. JIBC's six campuses are located in New Westminster, Maple Ridge, Pitt Meadows, Chilliwack, Vancouver Island, and the Okanagan.

Commitment to Energy Management and Carbon Reduction

JIBC is committed to reducing its carbon footprint and improving sustainability through environmentally responsible practices. Since 2008, JIBC has continued to implement operational changes that significantly reduced energy consumption. Energy consumption is monitored at all campuses to identify usage trends and ensure buildings operate at optimal conditions for the season. Tracking energy usage allows JIBC to gauge the effectiveness of energy-efficiency strategies designed to reduce GHG emissions and ultimately achieve carbon neutrality.

As part of this commitment, JIBC participates in BC Hydro's Energy Manager Associate Program, which assists JIBC with maintaining its Strategic Energy Management Plan (SEMP). The SEMP supports JIBC's commitment to energy efficiency and conservation by providing a framework for reducing energy consumption and its associated environmental impact.

As part of its SEMP, JIBC is committed to reducing its total electricity and fuel energy use at the New Westminster and Maple Ridge campuses by 44% by the 2029/2030 fiscal year, compared to the 2008/2009 baseline year. These energy consumption reductions will help to reduce GHG emissions from stationary sources, which are currently JIBC's largest source of emissions.

Greenhouse Gas Emissions Overview

Emissions Trends

Figure 1 illustrates JIBC’s total annual GHG emissions trend from 2015 – 2023 in comparison to annual heating degree days (HDDs). The graph shows that energy consumption increased alongside HDDs from 2015 to 2017. While HDDs remained higher in 2017, energy conservation measures in 2018 and 2019 helped to reduce total energy consumption and associated greenhouse gas emissions. In early 2020, the COVID-19 pandemic struck, reducing onsite activity and associated stationary, mobile, and paper GHG emissions. The annual GHG emissions for 2022 and 2023 represent a return to pre-pandemic levels.

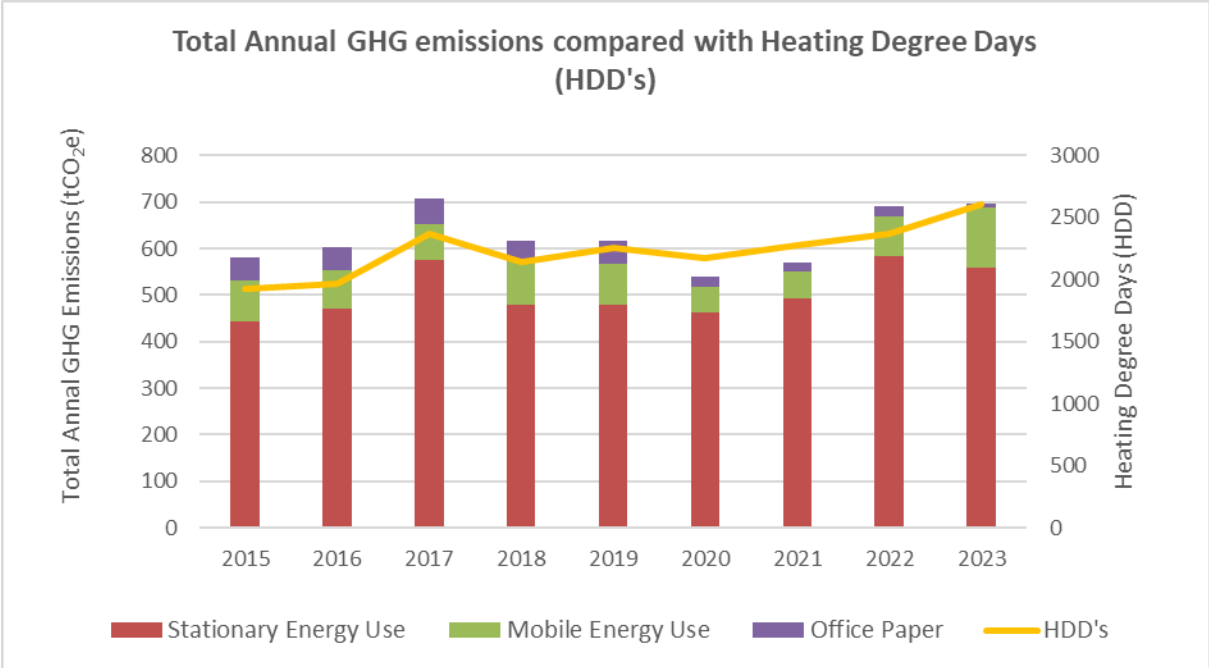


Figure 1. JIBC’s Total Annual GHG Emissions Compared with Heating Degree Days from 2015-2023

Figure 2 illustrates this story from the perspective of annual carbon offsets. While offsets increased in 2023, the overall trend line continues to decrease.

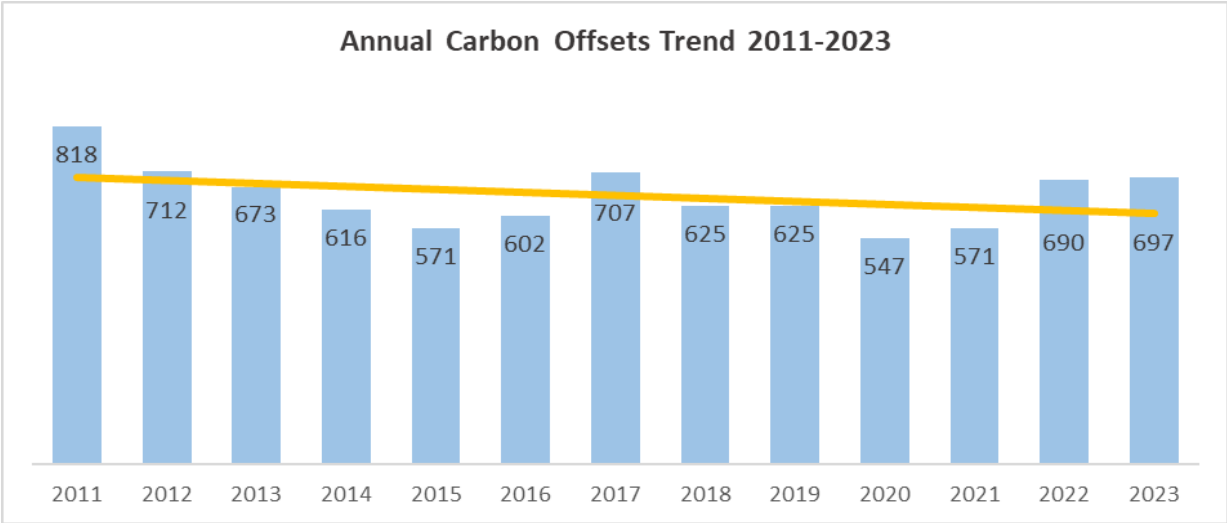


Figure 2. JIBC’s Annual Carbon Offsets Trend from 2011-2023

JIBC’s most recent Strategic Energy Management Plan (SEMP) from November 2023 focuses on the New Westminster and Maple Ridge campuses. Pulled from the SEMP, Figure 3 shows cumulative GHG emissions avoidance for stationary sources at the New Westminster and Maple Ridge campuses since the 2008/09 base period. As can be seen, at the end of Year 2023, the cumulative GHG emissions avoidance since the base period is positive, representing a decrease in emissions in comparison to the base period. By the end of Year 2023, the cumulative GHG emission avoidance totals 1,742 tonnes of carbon dioxide equivalent (tCO₂e). This is largely due to reductions in natural gas usage as a result of past energy conservation measures.

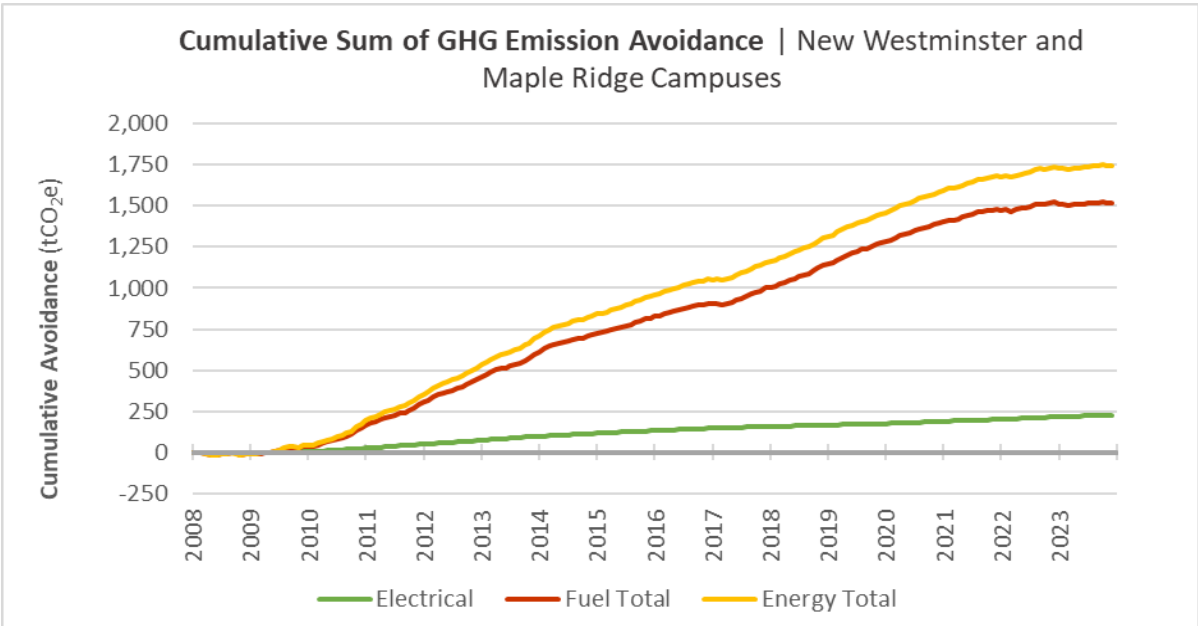


Figure 3. Cumulative Sum of GHG Emissions Avoidance for Stationary Sources at New Westminster and Maple Ridge Campuses

2023 Emissions

As Figure 1 describes, JIBC’s 2023 total GHG emissions increased by 19.9 % compared to 2015 levels and 0.9 % compared to 2022 levels. As Figure 3 helps to illustrate, these numbers are lower than they would have been without the benefit of previously implemented energy conservation measures.

GHG Emissions by Source

Stationary Sources



Stationary sources accounted for 560 tCO₂e, or approximately 80.35 % of JIBC’s total 697 tCO₂e in 2023. This represents the biggest source of GHG emissions for JIBC. Emissions are related to the use of natural gas for building heating, ventilation, kitchen appliances and electricity for building cooling, fans, lighting, elevators, plugs, and server loads.

Mobile Sources



Vehicles were the second greatest source of emissions, accounting for 129.3 tCO₂e, or approximately 18.54 %, of JIBC’s total emissions in 2023. JIBC currently has a 100 % gasoline and diesel-powered fleet, with most vehicles used for instructional purposes and a smaller portion used for maintenance and support roles.

Paper



Paper consumption accounted for 7.7 tCO₂e, or approximately 1.11 % of JIBC’s total emissions in 2023. This represents the smallest source of JIBC’s total emissions. JIBC’s Administrative Services Group monitors large volume paper users.

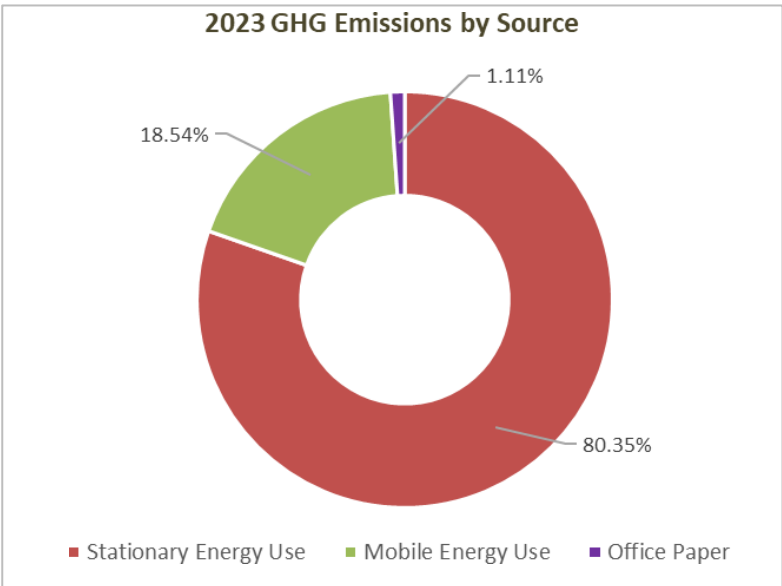



Figure 4. Breakdown of JIBC’s 2023 GHG Emissions by Source

Summary of 2023 Greenhouse Gas Emission Reduction Actions

As part of JIBC’s commitment to reduce its energy consumption and associated emissions, measures are prioritized and selected based on payback and emissions reduction potential. As a result, most projects in 2023 focused on reducing stationary energy use, JIBC’s largest contributing source of GHG emissions, followed by projects in the mobile and paper use categories. These projects are described in the tables below.

 Stationary Sources	
Electrical	
New Westminster Campus	<ul style="list-style-type: none"> Replaced light fixtures in mechanical and storage rooms from fluorescent to LED-type lighting.
Computers and Equipment	
New Westminster Campus	<ul style="list-style-type: none"> Ongoing replacement of physical servers with virtual servers. Ongoing upgrading of network switches to energy-efficient types. Ongoing replacement of computers with more energy-efficient models.
Mechanical	
Maple Ridge Campus	<ul style="list-style-type: none"> Installed overhead door and unit heater interlocks tied to building controls to prevent heaters from running when doors are left open.
Strategic Energy Management	
All Campuses	<ul style="list-style-type: none"> Participated in BC Hydro's Energy Manager Associate Program, which supports a strategic approach to energy management and organizational change to reduce energy waste and costs and improve energy efficiency. Participated in BC Hydro's Energy Wise Network Program, which supports organizational behaviour change.



Mobile Sources

EV's & Infrastructure

New Westminster Campus

- Completed design for the installation of EV charging stations.



Paper Consumption

Reduction

All Campuses

- Conducted ongoing review of administrative processes to reduce unnecessary paper-based filing and forms.

Summary of Future Greenhouse Gas Emission Reduction Actions

Projects planned for 2024 and beyond will examine all three sources and build on the work, learning, and success of projects to date. In addition to energy savings potential and impact on emissions, the initiatives taken will also be selected based on benefits, including occupant comfort, equipment reliability, maintenance costs, and operational improvements. These projects are described in the tables below.



Stationary Sources

Electrical

New Westminster Campus

- Replace fluorescent light fixtures with LED type.
- Install photovoltaic (PV) solar panels.

Computers and Equipment

- Ongoing replacement of physical servers with virtual servers.
- Ongoing upgrading of network switches to energy-efficient types.
- Ongoing replacement of computers with more energy-efficient models.

Mechanical


Maple Ridge Campus


- Conduct a second round of continuous optimization.
- Conduct a decarbonization study.
- Upgrade Water Treatment Plant A System to replace 150HP electric motor-driven pump with 30HP pump package system with variable speed drive control.
- Replace existing air handling units serving various buildings.

New Westminster Campus

- Conduct a second round of continuous optimization.
- Conduct decarbonization study.
- Install variable speed drives to chilled water pumps.

Strategic Energy Management	
All Campuses	<ul style="list-style-type: none"> • No longer participate in the Energy Manager Associate program, as BC Hydro has discontinued the program. • Continue to annually update the SEMP. • Continue to participate in BC Hydro's Energy Wise Network Program, which supports organizational behaviour change.

 Mobile Sources	
EV's & Infrastructure	
New Westminster Campus	<ul style="list-style-type: none"> • Install EV charging stations.

 Paper Consumption	
Reduction	
All Campuses	<ul style="list-style-type: none"> • Conduct ongoing review of administrative processes to reduce unnecessary paper-based filing and forms.

2023 GHG Emissions and Offset Summary Table

In accordance with the Carbon Neutral Government Regulation, JIBC recorded activities generating direct and indirect greenhouse gas emissions. In 2023, JIBC realized direct and indirect greenhouse gas emissions measured in tonnes per carbon dioxide equivalent (tCO₂e) in the categories of stationary fuel combustion, mobile fuel combustion and office paper.

JIBC 2023 GHG Emissions and Offsets	
GHG Emissions created in Calendar Year 2023	
Total BioCO ₂	4.46
Total Emissions (tCO ₂ e)	702
Total Offsets (tCO ₂ e)	697
Adjustments to Offset Required GHG Emissions Reported in Prior Years	
Total Offsets Adjustment (tCO ₂ e)	0
Grand Total Offsets for the 2023 Reporting Year	
Grand Total Offsets (tCO ₂ e) to be Retired for 2023 Reporting Year	697
Offset Investment (\$25 per tCO ₂ e)	\$17,425

Retirement of Offsets

As per the requirements of the Climate Change Accountability Act and Carbon Neutral Government Regulation, JIBC is responsible for arranging for the retirement of the offset obligation reported above for the 2023 calendar year, together with any adjustments reported for past calendar years. JIBC hereby agrees that in exchange for the Ministry of Environment and Climate Change Strategy (the Ministry) ensuring that these offsets are retired on JIBC’s behalf, JIBC 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.

Climate Risk Management

JIBC is aware of and has felt the impact of climate events such as flooding, wildfires, and extreme temperatures. Wildfires and associated smoke have particularly affected campus staff, faculty, and students.

In 2024, JIBC plans to continue mitigating risks related to wildfire and smoke events. The Institute is considering developing the following foundations for Climate Risk Management:

- Identify internal stakeholders and build an internal team with representatives from risk management, sustainability, capital upgrade/ asset planning, and operations.
- Conduct climate change vulnerability risk assessments at all campuses and incorporate the findings into building renewal as part of the end-of-life upgrades.
- Conduct indoor air quality assessments of all campuses during both routine periods, and wildfire smoke events to determine HVAC filtration effectiveness, and identify mitigation actions and system upgrades.
- Review assets up for renewal (e.g., mechanical equipment) and consider assessing their capacity for future climate (up to 2050 or asset life).
- Consider whether to develop an adaptation plan or incorporate adaptation into existing policies.

Other Sustainability Initiatives

In 2023, JIBC continued its recycling collection and pickup programs at all campuses. A comprehensive plan to track environmental aspects will be developed starting in 2024.

Participation in the STARS program, the Sustainability Tracking and Assessment Rating System administered by the Association for the Advancement of Sustainability in Higher Education (AASHE), was ongoing in 2023. Data collection to support JIBC's participation in the STARS program will continue in 2024 and include a gap analysis to inform the development of an environmental strategy for the Institute.

JIBC's path to net zero will involve various projects in the following three categories:

Energy Efficiency and Behavioural

The majority of JIBC's net zero projects completed to date fall into the "Energy Efficiency and Behavioural" category. JIBC has successfully achieved significant energy and emissions reductions and will continue to pursue additional energy efficiency opportunities across all campuses.

Fuel Switching

Fuel-switching projects at JIBC primarily contribute to reducing emissions. However, they can also lead to energy reduction, such as switching from gas-fired systems to electric heat pumps, where the efficiency of the electric system is higher than that of the gas-fired system

Renewable Energy

Renewable energy sources can be either on-site or provided by a utility. At JIBC, there is an opportunity to install photovoltaic (PV) solar panels on the roof of the main building at the New Westminster campus to generate electricity on-site.

Success Story

At the Maple Ridge Campus, the overhead doors in the Water Treatment Plant B System Pumphouse were occasionally left open, causing the unit heater to run continuously. This resulted in significantly high energy consumption, as the heater struggled to compensate for the influx of cold outside air.

JIBC implemented an innovative solution to address this issue by interlocking the two overhead doors with the unit heater. This interlock system automatically switches off the heater if either of the doors is left open for more than five minutes. By preventing the heater from operating unnecessarily, this measure reduced energy consumption.

In addition to the interlock system, JIBC integrated the doors and unit heater into the direct digital control (DDC) and building management systems (BMS). This integration allows for generating alarms if the doors are left open, ensuring prompt corrective action. Furthermore, trend logs are created to monitor the status of the doors and unit heater, providing valuable data for ongoing energy management and optimization.

The solution at the Water Treatment Plant B System Pumphouse has resulted in energy savings and enhanced operational efficiency.

This project highlights JIBC's commitment to sustainability and demonstrates a proactive approach to energy conservation and resource management.



Executive Sign-off

**Mike
Proud**

Digitally signed by
Mike Proud
Date: 2024.05.28
13:52:11 -0700

May 28, 2024

Signature

Date

Mike Proud

Vice President, Finance & Operations

Name (please print)

Title