Carbon Neutral

2023

PSO Climate Change Accountability Report

BCIT™

EDUCATION
FOR A COMPLEX WORLD.

BCIT

Contents

PART 1. Legislative Reporting Requirements

Declaration statement:

This PSO Climate Change Accountability Report for the period January 1, 2023, to December 31, 2023, summarizes our greenhouse gas (GHG) emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2023 to minimize our GHG emissions, and our plans to continue reducing emissions in 2024 and beyond.

Executive Summary

BCIT's commitment to sustainability encompasses advancing the state of practice through education and research, improving campus operations and planning, and strengthening employee and student stewardship and wellness programs. This commitment is formalized in the BCIT Strategic Plan 2019-2023, including the embedded Sustainability Vision, and in BCIT's Economic, Social, and Environmental Sustainability Policy, policy 1010.

In 2023, BCIT has been recognized by the Association for the Advancement of Sustainability in Higher Education (AASHE) as a top performer in the 2023 Sustainable Campus Index (SCI), tying for fifth with the University of California, Berkeley, in the category of Wellbeing and Work.

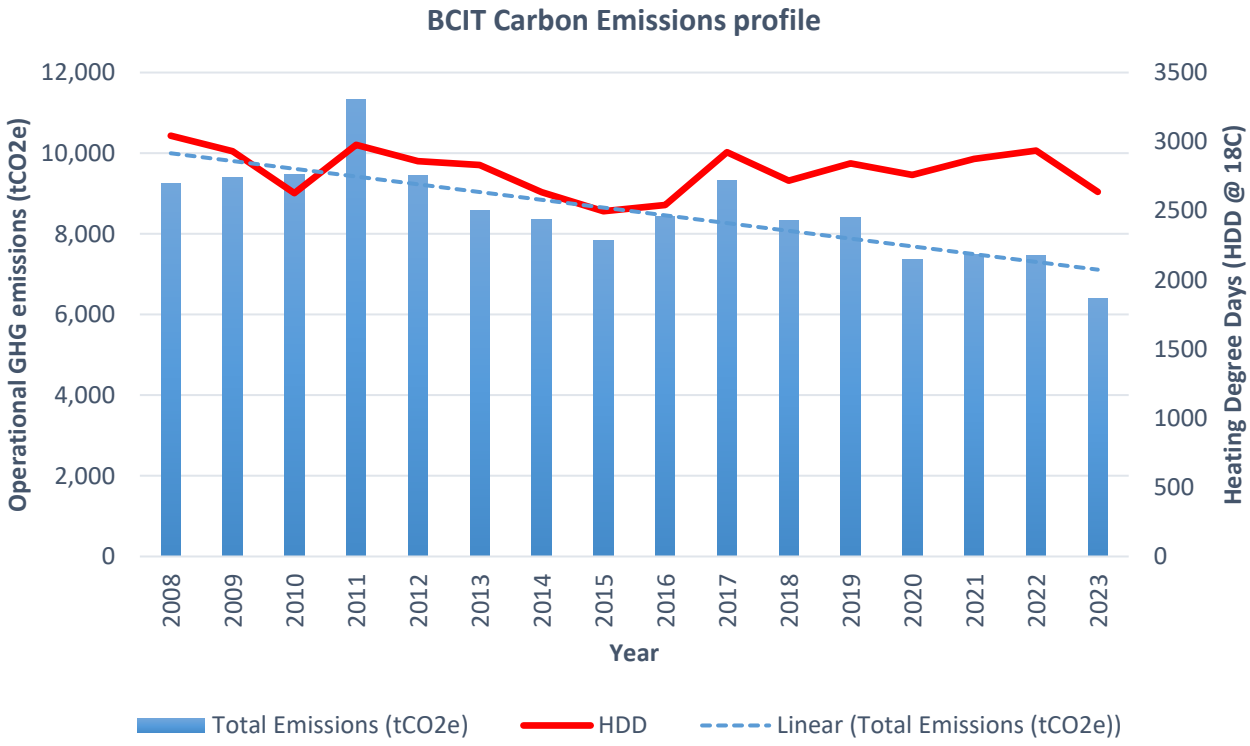
BCIT has a near-term goal of decreasing GHG emissions by 50% by 2030 with further aspirational goal of net-zero carbon and net energy producer by 2050. An important organizational goal of BCIT is to embed sustainability in all campus facilities to support our education and applied research activities, and lead by example. In 2023, BCIT saw a 13.5% reduction in operational GHG emissions compared to 2022 levels. This reduction is in direct correlation with weather experienced during the period along with the energy conservation measures implemented in previous years.

This Climate Change Accountability Report (CCAR) details some of the many activities that we have undertaken to reduce our carbon footprint in 2023.

BCIT emissions trend and high-level strategy

The graph below illustrates BCIT's carbon emissions profile from 2008 to 2023, highlighting a consistent and significant declining trend. Over this 15-year period, BCIT has implemented numerous initiatives aimed at reducing greenhouse gas emissions, including energy efficiency upgrades, continuous building optimization, and adoption of renewable energy sources. The decreasing emissions reflect the effectiveness of these efforts and BCIT's ongoing commitment to sustainability. Each data point on the graph represents annual emissions, showcasing the progress made year after year towards achieving our long-term environmental goals.

95% of BCIT's GHG emissions come from our buildings. Primary sources of emissions within the building portfolio are heating, hot water, and cooking. Accordingly, these are focus areas for Energy Team's projects and initiatives.



Our high-level decarbonization energy strategy addresses multiple aspects of energy consumption and production, focusing on the following key areas:

1. Energy Efficiency Measures
    - Conducting demand-side audits to identify high consumption areas and inefficiencies.
    - Implementing energy-efficient technologies in buildings, lighting, and HVAC systems.
    - Utilizing smart building technologies, including occupancy monitoring, demand-controlled ventilation, and variable frequency drives (VFDs).
2. District Energy Strategy
    - Addressing 36% of the Institute's emissions with supply-side measures.
    - Recommissioning biomass boiler plant.
    - Targeted electrification and connecting standalone buildings to district energy.
3. Modernization and Renewal
    - Managing an asset database and strategically scheduling modernization projects in alignment with campus growth to minimize capital costs while ensuring long-term sustainability.
4. Sustainable Transportation
    - Electrifying the campus fleet and promoting sustainable commutes.
    - Expanding EV charging infrastructure with a campus-wide electrical master plan.
5. Research and Innovation
    - Collaborating with researchers on innovative technologies and optimization projects.
    - Under Campus as a living lab initiative engaging students, faculty, and staff in solving real-world challenges through a collaborative, campus-wide approach to hands-on learning.
6. Policy Advocacy
    - Developing and maintaining a green building action plan and updating technical guidelines to latest standards.
7. Community partnerships
    - Establishing partnerships with various BCIT schools, utilities, government agencies, and community stakeholders to enhance sustainability efforts.
8. Financial incentives
    - Leveraging external funding sources to offset the upfront costs and premiums associated with implementing energy efficiency and emissions reduction measures.

This comprehensive strategy underscores our commitment to sustainability, aiming for significant emission reductions and long-term environmental benefits.

Emission Reductions: Actions & Plans

A. Stationary Sources (e.g. buildings, power generation)

In FY22-23, BCIT undertook a campus level decarbonization study project where a detailed implementation plan has been created for BCIT to meet its near-term and long-term GHG reduction targets. Below describes the two main areas for GHG reduction.

- **Capital projects:**
  - Whole-Building Life Cycle Assessment: All future capital projects and major building renewals are to undertake a whole-building life cycle assessment to estimate embodied carbon emissions and to understand and benchmark the embodied emissions of future projects.
  - Energy Efficiency and Decarbonization: All major retrofit and deep retrofit projects consider energy efficiency and decarbonization opportunities. For example, when a rooftop unit reaches the end of its service life, an electric heat pump option will be considered first.
  - New Construction Standards: New construction projects consider low carbon energy sources first and will aim to meet the Passive House standard to minimize future energy inputs.
  - District Energy System decarbonization: Planned replacement of inefficient district heating gas boilers with a primary electric boiler in 2025 will significantly reduce GHGs from the eight buildings on the district system.
  - District Energy System Modernization: In FY24-25, we plan to develop a strategy to modernize distribution system for district energy system and connect standalone buildings to district energy system.
  - Tall Timber Student Housing: This project will provide sustainable, affordable housing for 470 students with mass timber construction and fully electric systems. It is expected to meet LEED Gold standard, BC Energy Step Code 4 (highest for this archetype), and CAGBC's Zero Carbon Building (ZCB) standard.
  - Trades and Technology Complex: This project will establish a cutting-edge learning environment for 21st-century trades education. The project integrates innovation in skilled trades, engineering, applied learning, research, and industry collaboration, featuring carpentry, marine, and mass timber workshops, along with a campus services center. Efforts are underway to secure external funding for solar panels across the complex, which will advance the project towards achieving net-zero energy consumption.

- **Operational opportunities:**
  - Continuous optimization program: Re-commissioning, or "tuning up" of HVAC controls is a critical part of the strategic plan to reduce greenhouse gases (GHG) from BCIT operations. To advance this program, in 2023 BCIT hired a BAS Specialist, creating an in-house Building

Automation System expert working in partnership with facility operators to lead optimization of facility's controls.

- Implement fault detection and diagnostic software to better track the performance of equipment. This will allow us to quickly identify and rectify issues such as malfunctioning valves, overridden variables, and equipment running outside of schedule.
- Environmental awareness is fostered through sharing information about sustainability issues, events, and energy initiatives with the community. Employees and students are educated about environmental impacts and best practices, empowering them to contribute to institution-wide efforts to reduce our environmental footprint. A few awareness campaigns led by the BCIT's Green Team in 2023:
  - How well do you know Recycling Quiz – Nov 2023
  - ImpAct-Climate Challenge at BCIT – Oct 2023
  - WWF National Sweater Day – Feb 2023
  - Go by Bike! Lunch and Learn – Oct 2023
  - Green newsletters – throughout 2023 and 2024
- Plans to create a refrigerant inventory to manage and track refrigerant use across its facilities, ensuring efficient handling, reducing leakage, and managing the transition from phased-out refrigerants.
- Additionally, BCIT has continued ongoing initiatives to reduce greenhouse gas emissions, such as building pneumatic upgrades, heat recovery projects, building recommissioning, lighting upgrades, targeted electrification, building heating & cooling schedule alignment with actual occupancy schedules, and extending seasonal setbacks of unoccupied buildings.

B. Mobile Sources (e.g. fleet vehicles, off-road/portable equipment)

- 50% of BCIT's fleet is already made up of zero emission vehicles. As older vehicles reach the end of their service life, they will be replaced with electric vehicles where available.
- New campus service center designs include adequate charging infrastructure to support the growing EV fleet.
- BCIT has committed to 100% Electric Vehicle (EV) charging ready for all new residential developments on campus including student housing. In addition, BCIT has further committed to provide 50% EV charging ready parking stalls for all visitor and underground parking.

C. Paper Consumption

- BCIT already uses sugar sheet for all white 8.5" x 11" paper, which make up over 95% of our total paper usage. Currently there is no active paper usage reduction campaign as many staff and students continue to work from home.

2023 GHG Emissions and Offsets Summary Table

British Columbia Institute of Technology 2023 GHG Emissions and Offsets Summary	
GHG emissions for the period January 1 - December 31, 2023	
Total $BioCO_2$	0
Total Emissions (tCO_2e)	6,400
Total Offsets (tCO_2e)	6,400
Adjustments to Offset Required GHG Emissions Reported in Prior Years	
Total Offsets Adjustment (tCO_2e)	26
Grand Total Offsets for the 2023 Reporting Year	
Grand Total Offsets to be Retired for 2023 Reporting Year (tCO_2e)	6426
Offset Investment ($)	**$160,650**

Retirement of Offsets:

In accordance with the requirements of the Climate Change Accountability Act and Carbon Neutral Government Regulation, British Columbia Institute of Technology (**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

2A. Climate Risk Management

BCIT's climate risk management involves proactive measures to mitigate climate change impacts on campus facilities and operations. It includes assessing vulnerabilities, implementing adaptation measures, and integrating sustainability into all operations to enhance resilience, reduce greenhouse gas emissions, and promote energy efficiency. This approach aims to protect physical assets and support a sustainable campus environment conducive to learning, research, and innovation in energy management and related fields.

This section presents some of the highlights that BCIT is working towards that creates a positive impact not just at BCIT but for the broader community. BCIT's initiatives span a wide range, from sustainability projects to community partnerships, all aimed at making a meaningful difference in the wider world.

- Climate-Resilient Infrastructure: BCIT has committed to using the Envision Framework for all infrastructure projects. BCIT's approach to climate-resilient infrastructure involves holistic consideration to meet goals of reducing greenhouse gas emissions, decreasing off-site energy demand, enhancing campus development resilience, utilizing future forecast climate data and integrating infrastructure with natural ecological systems. All future capital and major renewal projects aim to be net-zero energy ready, accommodating both distributed low carbon campus district energy systems and on-site renewable energy sources.
- Mass Timber Education: BCIT is expanding opportunities for training in B.C.’s growing mass-timber sector, contributing to the province’s workforce development and construction of climate-smart buildings. Partnering with BCIT, the Province is investing $3.3 million to establish a mass timber training hub as part of the StrongerBC: Future Ready Action Plan.
- A Zero Emissions Future: BCIT is actively raising EV awareness in underrepresented communities through the “Fueling Change – Education for a Zero Emissions Future” project. This initiative, launched in May 2023, collaborates with researchers, faculty, and partners to identify barriers to EV adoption among persons with disabilities, Indigenous communities, and youth in rural and remote areas. In line with this initiative, BCIT also launched first pilot micro-credential program for EV Maintenance Training in 2019 for tenured Red Seal Automotive Technicians, and a partnership with Tesla START that offers a specialized EV training pathway program.
- Campus as Living Labs: The initiative focuses on providing sustainable living lab opportunities, allowing all stakeholders—students, faculty, staff, and visitors—to participate in applied demonstration projects. This includes showcasing sustainable infrastructure and building systems both within buildings and in public realm, turning these spaces into educational tools.
- Green Spaces and Landscaping: The Burnaby campus is noted for its extensive green spaces and native plant landscaping. These areas not only enhance the aesthetic appeal of the campus but also contribute to biodiversity, provide natural habitats, and promote ecological sustainability.

2B. Other Sustainability Initiatives

BCIT is committed to a comprehensive approach to sustainability, with a focus on energy efficiency, greenhouse gas (GHG) reduction, and waste management.

- Green Team Engagement: The Green Team at BCIT plays a pivotal role in promoting sustainability at a grassroots level. This team leads various staff and student engagement campaigns and organizes events to foster a culture of environmental responsibility within the BCIT community.
- Waste Management Program: BCIT has established a robust waste management program aimed at achieving higher waste diversion rates. Efforts include comprehensive recycling, composting initiatives, and educational programs to encourage responsible waste disposal among the campus community.
- Electric Vehicle (EV) Infrastructure: As a leader in EV charger infrastructure, BCIT has made significant investments to support the adoption of electric vehicles. The new Health Sciences Centre is equipped with 60 new Level 2 EV chargers, enhancing accessibility for electric vehicle users, and promoting sustainable transportation options.

2C. Success Stories

In 2023, BCIT completed a multi-year electrification project for one of the 1961 trades buildings, NW06, to displace 1,737 GJ of natural gas annually. This initiative resulted in an annual GHG reduction of 84 tCO_2e and a total reduction of 1,442 tCO_2e over the life of the measures, while also enhancing thermal comfort.

Executive Sign-off:

Danica Djurkovic	May 27, 2024
Signature	Date
Danica Djurkovic	Associate Vice President, CPF
Name (please print)	Title