BCIT™

2017
CARBON NEUTRAL ACTION REPORT

BRITISH COLUMBIA
INSTITUTE OF TECHNOLOGY

DECLARATION STATEMENT

This Carbon Neutral Action Report for the period January 1, 2017 to December 31, 2017 summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2017 to reduce our greenhouse gas emissions, and our plans to continue reducing emissions in 2018 and beyond.

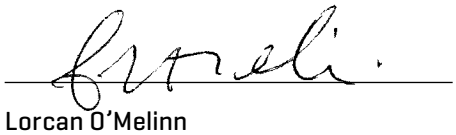
By June 30, 2018, BCIT's final Carbon Neutral Action Report will be posted to our website at **bcit.ca/facilities/sustainability/energy**

EMISSIONS AND OFFSETS SUMMARY TABLE

BCIT GHG Emissions and Offsets for 2017 (tCO_2e)	
GHG emissions created in calendar year 2017	
Total emissions (tCO_2e)	8,915
Total offsets (tCO_2e)	8,910
Adjustments to GHG emissions reported in prior years	
Total emissions (tCO_2e)	0
Total offsets (tCO_2e)	0
Grand Total Offsets for the 2017 Reporting Year	
Grand Total Offsets (tCO_2e)	8,910

RETIREMENT OF OFFSETS

In accordance with the requirements of the Greenhouse Gas Reduction Targets Act and Carbon Neutral Government Regulation, BCIT (the Organization) is responsible for arranging for the retirement of the offsets obligation reported above for the 2017 calendar year, together with any adjustments reported for past calendar years. The Organization hereby agrees that, in exchange for the Ministry of Environment and Climate Change Strategy 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.



May 28, 2018

Lorcan O'Melinn
Vice President, Administration and CFO

Date

OVERVIEW

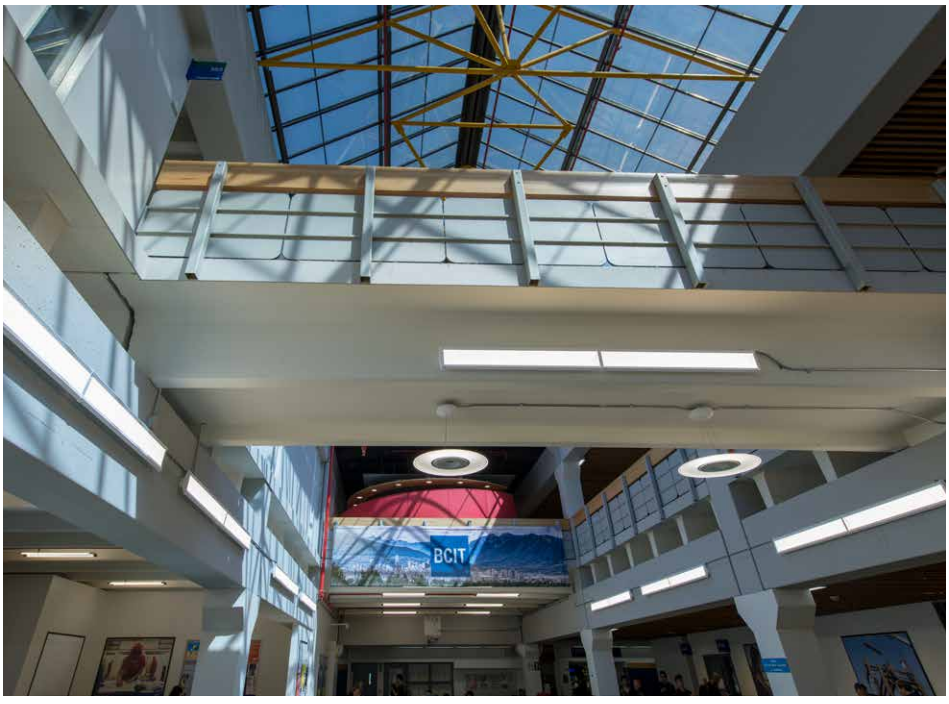
Actions Taken in 2017 to Reduce Greenhouse Gas Emissions

The following key actions were taken between January 1, 2017, and December 31, 2017, to reduce greenhouse gas emissions:

- Through our Solar PV installations, we have generated 191 MWh of electricity. 35 MWh of power has been delivered to vehicles through our Electric Vehicle charging stations.
- A solar hot water system was installed at our Marine campus in North Vancouver to heat the teaching pool and reduce the need for natural gas.
- Several roof-top HVAC units across campus were upgraded to models with high-efficiency motors, variable speed fan drives, and efficient demand-based controls.
- Electricity, natural gas, and thermal energy meters were installed at the building level across the Burnaby Campus to allow for real-time measurement of energy use.
- LED lighting retrofits were completed in several buildings and areas on the Northeast side of the Burnaby Campus, including advanced daylight sensor controls to automatically adjust light levels.
- Remaining T-12 fluorescent fixtures in the Centre for Applied Research & Innovation were upgraded to LED panels, while warehouse and pot light fixtures were also upgraded to LED.
- All HID lamp standards at the Aerospace Campus in Richmond were upgraded to LED.

Left: LED lighting retrofits in the NE1 building cafeteria at the Burnaby Campus.

Right: Real-time natural gas meter, installed at buildings across campus.

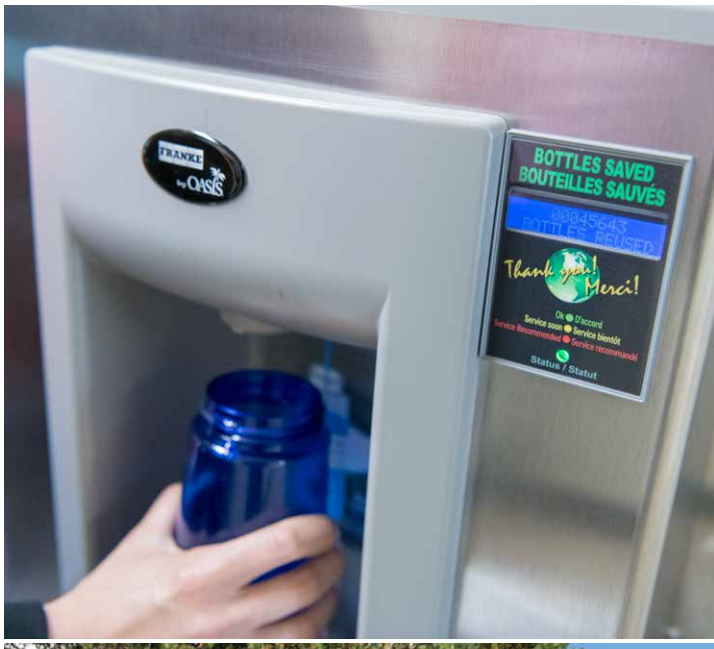


- Several BCIT fleet vehicles were upgraded to low/zero-emission models:
  - Two diesel vans were replaced with natural gas models.
  - Two diesel utility vehicles were replaced with three electric utility vehicles.
  - One gasoline van was replaced with a Kia Soul EV.
- Contracted snow removal equipment was kept on site at BCIT during the snow season to offset transportation from the Maple Ridge facility to BCIT for ice and snow events. This offset return transportation of 100 km per vehicle. Each incident could involve a minimum of two vehicles, thus offsetting the carbon footprint daily.
- Heating controls were optimized in many of the trades buildings at the Burnaby Campus, greatly reducing gas use and associated GHG emissions. This initiative aims to reduce energy waste to the lowest possible levels by only heating buildings when they are occupied and optimizing heating start/stop schedules using weather prediction technology.
- The Bookstore has been encouraging instructors to consider using D2L, BCIT's online learning environment, rather than printing course material that students require.

Examples of electric vehicles in the Burnaby Campus Facilities Services fleet.

Actions to Reduce Provincial Emissions and Improve Sustainability

- Facilities Services replaced approximately 50 old drinking fountains with new canteen filling models to reduce disposable bottle use
- Purchased SnowEx 2000 Brine maker, a 5000 gallon brine holding storage tank and a truck mounted applicator system to mitigate ice formation on concrete and asphalt surfaces. This system allows Facilities Services the potential to reduce salt application by up to 75%. This will lower the carbon footprint by using less vehicles to apply product, as well as reduce the salt runoff in winter months.
- Several green space initiatives were undertaken this year:
  - A new rock garden on the stair landing of SE12. This Japanese maple specimen garden includes a new irrigation system equipped with rain sensors and a drip line component to reduce water consumption.
  - A new courtyard between SW01 and SW03. The new garden includes a variety of bee-friendly plants and a water-wise irrigation system equipped with rain sensors.
  - Removal of a large portion of the Willingdon concrete staircase. By removing two-thirds of this large concrete staircase, we created a new, wheelchair-accessible seating area and reclaimed approximately 800 square feet of green space, which was landscaped with bee-friendly, drought-tolerant plantings.
  - On the north side of SE10, we created a 900-square-foot concrete patio, home to the Institute's first exterior wheelchair-accessible tables, self-watering planters, a redesigned front entrance rock garden and over 200 square feet of new drought-tolerant planted beds.
  - In early 2017, we added 200 new mason bee cocoons to our shelter. Those bees successfully hatched in early spring and had a busy summer pollinating.
- A project to replace all urinal flush tanks with sensor flush valves is almost complete, greatly reducing the amount of water used in washrooms.
- The Institute's custodial contractor uses Canadian professional cleaning products which are UL EcoLogo certified. This means the organic ingredients in the products are all readily biodegradable in accordance with OECD standard. The cleaning products also do not require the use of hot water.



Top: A student fills a water bottle at a new canteen filling drinking fountain.

Bottom: A BCIT Burnaby Campus garden is landscaped with bee-friendly and drought-tolerant planting.

Plans to Further Reduce Greenhouse Gas Emissions and Improve Sustainability in 2018 and Beyond

- Continued modernizing of BCIT fleet vehicles with low- or zero-emission models.
- The Smart Microgrid Applied Research Team will complete a research, development, and demonstration initiative aimed at solutions that will reduce barriers to adoption of Electric Vehicles (EVs). The EVID Project has installed six EV chargers on the BCIT Aerospace Technology Campus (ATC). They are installed on the existing streetlight network and share electricity with lamp posts that have been switched over to LED lighting. ATC serves as a model for municipalities to apply this same technique to provide increased, cost-effective opportunities for adding EV charging to the community.
- LED lighting upgrades at Downtown Campus and more buildings at Burnaby Campus.
- Partnering with BC Hydro and FortisBC, BCIT will be undertaking several large HVAC retrofit and efficient control strategy projects.
- Facilities Services plans to replace 50-year-old inefficient boilers with new high-efficiency condensing models.
- Facilities Services is piloting a novel water-treatment technology with the potential to improve energy performance of closed-loop hydronic heating systems.
- Introduction of five new bike stations that will provide repair and pump resources for staff and students at BCIT who take advantage of the health and financial benefits of bicycle commuting.

BCIT Carpentry students work in a shop retrofitted with advanced LED lighting, daylight-controlled to automatically adjust light levels.

The Gateway building at the Burnaby Campus contains bike commuting facilities and a geoexchange system.

- Replacing old window glazing with new, double-glazed windows at two buildings on campus. This will improve the insulation in the winter and the amount of radiated heat in the summer months. This will also help reduce the amount of ambient noise from outdoors.
- Dedicated organics waste streams will be provided in washrooms for paper towels. This will reduce the amount of material sent to landfill.
- Installing more underground irrigation systems with sensors on campus. Rain sensors determine whether enough rainfall has occurred to save water by skipping an irrigation cycle.
- Introducing flowering fruit trees at different locations on campus. This green addition will not only lower carbon, it will benefit the BCIT community and help support the BCIT bee population.
- Facilities Services will be piloting a new measure to improve our waste management system through the installation of in-ground containers manufactured from recycled plastic that take waste streams through above-ground receptacles. The receptacles look like regular waste containers. This cuts down on waste hauling and volume.
- BCIT Imaging has set up a system called Papercut that will require staff to go to printers to "release" their print jobs. This cuts down on abandoned printing.
- The online work request system will be further expanded, reducing the need for printed paper.

Electrical foundation students test Solar PV installations that power electrical vehicle charging stations at the Burnaby Campus.