



BCIT

2018

CARBON NEUTRAL ACTION REPORT

BRITISH COLUMBIA
INSTITUTE OF TECHNOLOGY

BCIT™



DECLARATION STATEMENT

This Carbon Neutral Action Report for the period January 1st, 2018 to December 31st, 2018 summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2018 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2019 and beyond.

By June 30, 2019, BCIT's final Carbon Neutral Action Report will be posted to our website at bcit.ca/facilities/sustainability/energy

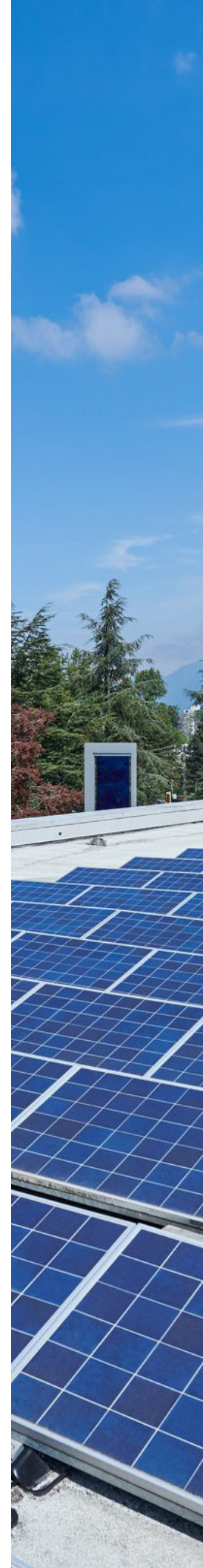
THE OVERVIEW

In 2018, BCIT has laid the groundwork to achieve major greenhouse gas (GHG) reductions through the creation of an Energy Team within Facilities Services. The Energy Team is responsible for reducing the institute's carbon footprint by one-third over the next four years. This will be accomplished through strategic energy efficiency projects, renewable energy sourcing, and de-carbonization of BCIT operations.

One of the first tasks undertaken by the BCIT Energy Team was to create a Strategic Energy Management Plan (SEMP). This plan is a roadmap to guide the Energy Team toward reaching our carbon emission reduction goals.

Retro-commissioning, or "tuning up" of HVAC controls is a core part of the strategic plan to reduce greenhouse gases (GHG) from BCIT operations. The SE12 and Downtown Campus buildings were two buildings selected in 2018, cumulatively resulting in an annual GHG reduction of approximately 150 tonnes CO₂e.

Other projects included: Installation of building-level real-time energy meters; Capacity testing of the Burnaby geoexchange system, revealing additional heating capacity available; Building heating and cooling system schedule alignment with actual occupancy schedules; Upgrades of older natural gas boilers with high-efficiency condensing models in 7 campus buildings; LED lighting retrofits were completed in 4 campus buildings





BCIT EMISSIONS

Over the next four years, we plan to make major investments into aging BCIT infrastructure while ensuring new construction and programming is as low-emission as possible.

EMISSIONS AND OFFSET SUMMARY TABLE

ADJUSTMENTS TO GHG EMISSIONS REPORTED IN PRIOR YEARS

8,324	Total Emissions (tCO ₂ e)*
6.89	Total BioCO ₂ * [†]
8,317	Total Offsets (tCO ₂ e)

ADJUSTMENTS TO GHG EMISSIONS REPORTED IN PRIOR YEARS

509	Total Emissions (tCO ₂ e)
509	Total Offsets (tCO ₂ e)

GRAND TOTAL OFFSETS FOR THE 2018 REPORTING YEAR

8,826	Grand Total Offsets Required (tCO ₂ e)
\$220,650	Total Offset Investment (<i>Grand Total Offsets Required X \$25/tCO₂e</i>) [†]

THIS IS THE TOTAL OF EMISSIONS THAT MUST BE
OFFSET FOR REPORTING YEAR 2018

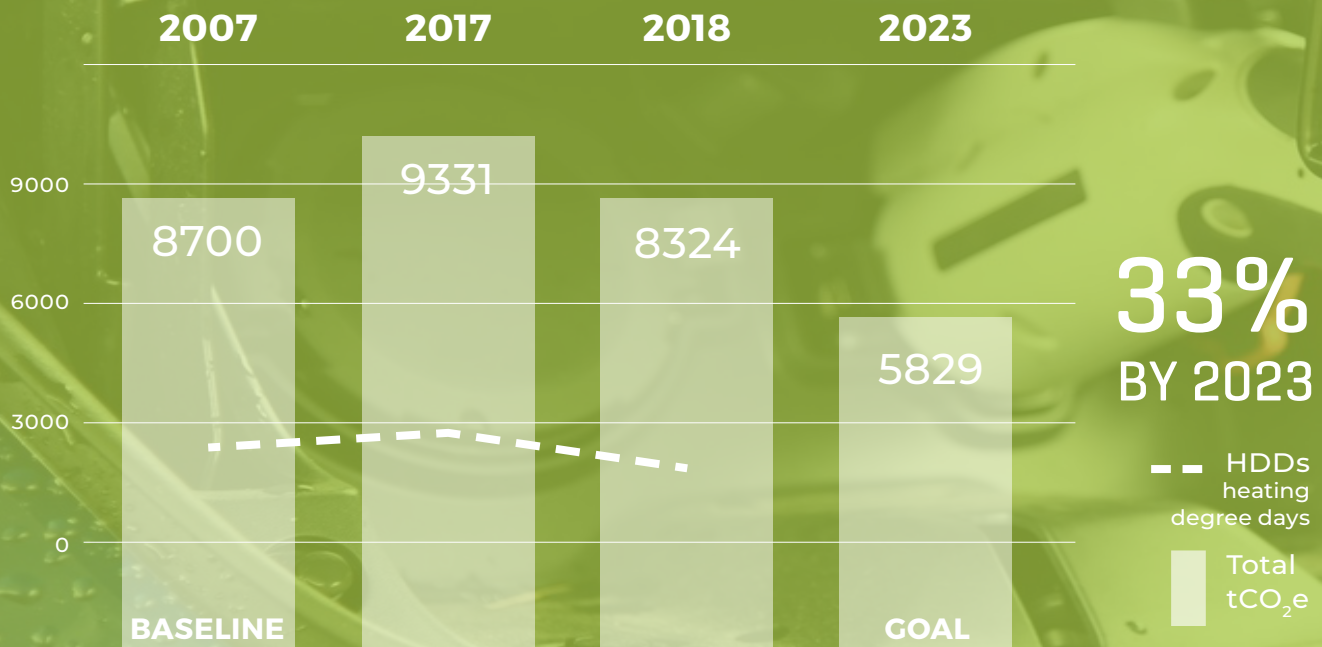
*tCO₂e refers to total carbon dioxide equivalent emissions
†BioCO₂ refers to biofuel components of gasoline and diesel emissions

33% BY 2023

GHG EMISSIONS REDUCTION GOAL

The graph below illustrates BCIT's 2007 greenhouse gas emissions (baseline), 2017, the year we committed to our GHG reduction goal, and 2018, the year the Energy Team was created at BCIT and begun work. By 2023, we will have reduced our emissions by 33% below 2007 levels.

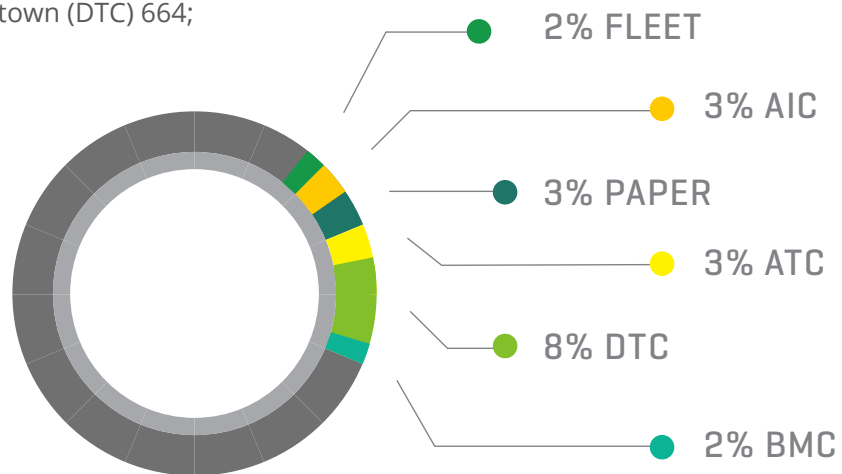
As shown in the chart to the right, 95% of BCIT's GHG emissions come from our buildings. Primary sources of emissions within the building portfolio are heating, hot water, and cooking. Accordingly, these are focus areas for Energy Team projects.



2018 EMISSIONS BY SOURCE

Total emissions breakdown in tCO₂e : Burnaby 6589;
Fleet 132; Annacis (AIC) 290; Paper 251;
Aerospace (ATC) 260; Downtown (DTC) 664;
Marine (BMC) 138.

79%
BURNABY



RETIREMENT OF OFFSETS

In accordance with the requirements of the Greenhouse Gas Reduction Targets 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 2018 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.

Signature Date

LORCAN O'MELINN

Name (please print) Vice President Title
Administration and CFO
British Columbia Institute of Technology



BRITISH COLUMBIA
INSTITUTE OF TECHNOLOGY

Part 1: CNAR Survey

1. General Information

Name: Colin Chan

Contact Email: cchan462@bcit.ca

Organization Name: British Columbia Institute of Technology

Sector: Post Secondary

Role - Please select your role(s) below.

If more than one individual completed the survey, multiple categories may be selected:

Energy Manager: Yes

Sustainability Coordinator: No

Administrative Assistant: No

Facilities/Operations Manager/Coordinator: No

CEO/President/Exec Director: No

Treasurer/Accounting: No

Superintendent: No

A. Stationary Sources (e.g. Buildings, Power Generators): Fuel Combustion, Electricity use, Fugitive Emissions.

1. Actions taken by your organization in 2018 to support emissions reductions from buildings.

a) Do you have a strategy to reduce emissions from stationary sources?

Yes

If yes above, what are the main goals?: 1. Minimize waste

2. Improve energy efficiency

3. Decarbonize energy sources

b) Whether you have a strategy or not (1.a), briefly describe your organization's plans to continue reducing emissions from stationary sources:

I. Over the medium-term term (1-5 years)

1. Minimize waste through building HVAC, lighting and occupancy schedule alignment

2. Retrocommission least efficient HVAC buildings

3. Upgrade end-of-life equipment with high-efficiency, low-emission replacements

II. Over the long term (6-10 years)

Look towards expanding renewable energy generation on campus

c) Please describe your strategy's goals (if any) related to [energy audits](#).

We have now conducted energy audits on all of the large buildings across our campuses. We will continue to do targeted energy audits when building renewal projects are in the definition stage, and when opportunities for large equipment upgrades arise.

I. What % on average of your building portfolio has an energy audit completed each year (if any)?: 10

d) Please describe your strategy's goals (if any) related to building retrofits.

We are looking at buildings that require significant changes from a seismic readiness perspective, and/or buildings that have changed use type.

I. What % on average of your building portfolio is retrofitted each year in the following categories (if any) - click [here](#) for further information:

Minor retrofits (e.g., low cost, easy to implement measures including caulking, lighting, adding roof insulation, etc.) (%): 20

Major retrofits (e.g., replacing windows and doors, equipment replacement such as boilers, etc.) (%): 10

Deep retrofits (e.g., replacing roof, replacing the heating, ventilation and air-conditioning system with a renewable technology like a ground-source heat pump, etc.) (%): 4

e) Please describe your strategy's [re/retro-commissioning](#) goals (if any)?

Starting with the worst performing buildings from an energy efficiency perspective as well as an occupant comfort perspective, and continuing on from there through the building portfolio. Removing all pneumatic controls from buildings.

I. What % on average of your building portfolio do you recommission each year?: 4

f) Do you keep records of Refrigerant gases category and refilling volumes?

No

I. If yes, have you included the associated emissions in your reporting?

No

g) How many newly constructed buildings received at least LEED Gold certification in 2018: 0

I. How many newly constructed buildings did not receive LEED Gold certification?: 0

B. Mobile Sources (Vehicles, Off-road/portable Equipment): Fuel Combustion:**3. Actions taken by your organization in 2018 to support emissions reductions from mobile sources.****a) Do you have a strategy to reduce emissions from mobile sources?**

Yes

I. If yes, what are its goals?

Replace end-of-life fleet vehicles with low or zero emission alternatives.

b) Whether you have a strategy or not (3.a), briefly describe your organization's plans to continue reducing emissions from mobile sources:

I. Over the medium-term term (1-5 years)

Continuing to replace end-of-life fleet vehicles with electric versions, or high-efficiency fossil fuel versions. Investigating opportunities to use renewable diesel.

II. Over the long term (6-10 years)

Replacing all fossil fuel vehicles with zero or low-emission versions.

c) How many fleet vehicles did you purchase from the following categories:

Electric Vehicle – EV - (e.g., Nissan Leaf, Chevy Bolt): 6

“Plug In” Electric Vehicle – PHEV (e.g., plug-in Prius, Chevy Volt): 0

Hybrid vehicle – HEV – non “Plug In”- (e.g., Toyota Highlander Hybrid): 0

Hydrogen fuel cell vehicle : 0

Natural gas/propane: 0

Gas/diesel vehicle: 4

I. If you purchased new gas/diesel vehicles, can you briefly explain why vehicles from the other categories were not chosen?

No suitable options were available in the pickup truck and cargo van categories.

d) How many existing EV charging stations does your organization have in each category:

level 2: 22

level 3: 2

How many level 2 stations (if any) are specifically for your fleet vehicles: 1

How many level 3 stations (if any) are specifically for your fleet vehicles: 0

e) How many EV charging station(s) did you install in 2018 in each category:

level 2: 1

level 3: 1

How many level 2 stations (if any) were installed specifically for your fleet vehicles: 1

How many level 3 stations (if any) were installed specifically for your fleet vehicles: 0

4. Please indicate the number of the vehicles in the following vehicle classes that are in your current fleet (including any purchased in 2018):

Definitions:

- Light duty vehicles (LDVs) are designated primarily for transport of passengers <13 and GVWR<3900kg
- Light duty trucks (LDTs) are designated primarily for transport of light-weight cargo or that are equipped with special features such as four-wheel drive for off-road operation (include SUVs, vans, trucks with a GVWR<3,900kg)
- Heavy duty vehicles (HDV) includes vehicles with a GVWR>3,900 kg (e.g. ¾ tonne pick-up truck, transport trucks)

a) Light duty vehicles (LDVs)

Electric Vehicles – EV - (e.g., Nissan Leaf, Chevy Bolt): 41

“Plug In” Electric Vehicle – PHEV -- (e.g., plug-in Prius, Chevy Volt) : 0

Hybrid vehicles – HEV – (e.g., non “Plug In”- older Toyota Prius, Toyota Camry hybrid): 0

Hydrogen fuel cell vehicles: 0

Natural gas/propane: 0

Gas/diesel: 3

b) Light duty trucks (LDTs)

Electric Vehicles – EV : 0

“Plug In” Electric Vehicle – PHEV: 0

Hybrid vehicles – HEV – (e.g., non “Plug In”- older Ford Escape Hybrid, older Chevrolet Silverado pickup hybrid etc): 0

Hydrogen fuel cell vehicles: 0

Natural Gas/propane: 0

Gas/diesel: 12

c) Heavy duty vehicles (HDV)

Electric Vehicles – EV : 0

"Plug In" Electric Vehicle – PHEV : 0

Hybrid vehicles – HEV – (e.g., non "Plug In"): 0

Hydrogen fuel cell vehicles: 0

Natural Gas/propane: 0

Gas/diesel: 3

5. Please indicate the number of the vehicles you plan to replace in your fleet:

How much do you budget per LDV?: 40000

How many LDVs do you plan to procure annually over the next 5 years?: 5

How much do you budget per LDT?: 60000

How many LDTs do you plan to replace annually over the next 5 years?: 2

How much do you plan to spend per HDV?: 60000

How many HDVs do you plan to replace annually over the next 5 years?: 1

C. Office Paper: Indicate which actions your PSO took in 2018:

6. Actions taken by your organization in 2018 to support emissions reductions from paper supplies.

a) Do you have an Office Paper strategy?

Yes

I. If yes, what are its goals?

1. Eliminate wasted/abandoned printouts
2. Shift to digital documents where applicable

b) Whether you have a strategy or not (6.a), briefly describe your organization's plans to continue reducing emissions from paper use:

I. Over the medium-term (1-5 years)

1. Continue roll-out of "Papercut" system that requires print jobs to be released at printers before they are printed to limit wasted/abandoned printouts.
2. Continue migration to digital student and office documents

II. Over the long term (6-10 years)

1. Continue roll-out of "Papercut" system that requires print jobs to be released at printers before they are printed to limit wasted/abandoned printouts.
2. Continue migration to digital student and office documents

c) Have an awareness campaign focused on reducing office paper use

No

d) Purchased alternate source paper (bamboo, hemp, wheat, etc.)

No