Vancouver Coastal Health

2019 Carbon Neutral Action Report

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Vancouver Coastal Health

Declaration Statement

This Carbon Neutral Action Report for the period January 1, 2019 to December 31st, 2019 summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2019 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2020 and beyond. In 2010, Vancouver Coastal Health, Fraser Health, Providence Health Care and Provincial Health Services Authority consolidated their efforts towards environmental sustainability to create the GreenCare Community. By June 30, 2020, Vancouver Coastal Health's final Carbon Neutral Action Report will be posted to the GreenCare Community website at bcgreencare.ca

Retirement of Offsets

In accordance with the requirements of the Climate Change Accountability Act and Carbon Neutral Government Regulation, Vancouver Coastal Health (the Organization) is responsible for arranging for the retirement of the offsets obligation reported for the 2019 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 (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.

The cover graphic is a modified aerial photo of the Vancouver General Hospital campus (photo credit – VGH and UBC Foundation).

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COVID-19 Pandemic Statement

Due to the COVID-19 pandemic, the following Directive was issued on March 31, 2020:

"Under my authority as the Director for the purposes of the Act, and under the authority delegated to me in Section 6 of the Carbon Neutral Government Regulation, I hereby direct that all ministries and Public Sector Organizations covered by the Carbon Neutral Government requirement shall use their 2018 GHG emissions as a temporary estimate for their actual 2019 GHG emissions, for the purposes of the 2019 Carbon Neutral Action Reports and 2019 Carbon Neutral Government reporting required under the Climate Change Accountability Act."

Neil Dobson, Executive Director, Clean BC Implementation
Climate Action Secretariat

Although 2018 emissions data will be used as a placeholder for 2019, all other qualitative components of this Carbon Neutral Action Report (CNAR) are completed with information from 2019.

This document provides guidance to provincial public sector organizations (PSOs) to help them prepare their 2019 CNAR in accordance with BC's Climate Change Accountability Act and the Carbon Neutral Government Regulation.

Executive Summary

Vancouver Coastal Health

2019 Carbon Neutral Action Report

I am pleased to present the Vancouver Coastal Health (VCH) 2019 Carbon Neutral Action Report. VCH has now achieved carbon neutrality for the tenth consecutive year.

In 2019, VCH's emissions footprint was 40,672 tCO2e (tonnes of carbon dioxide equivalents), equating to an 18.8 per cent decrease since 2007. VCH purchased carbon offsets through the Climate Investment Branch of the Ministry of Environment and Climate Change Strategy at a total cost of $1,015,725 to maintain carbon neutral status.

As the lungs of our planet, the health of our oceans is at a critical state. Warming temperatures are creating extreme weather events around the world causing heat-related illnesses and dangerous wildfire seasons, resulting in diminished air quality for longer periods.

As health care providers, we know all too well the need to act swiftly in an emergent situation. Furthermore, in public health, we have immense opportunities to work more sustainably to align to the provincial CleanBC Strategy.

VCH continues to implement an effective response to climate change by monitoring and reducing our emissions, moving forward on a range of energy and emission reduction projects, and developing climate resilience and adaptation strategies to inform our future facilities and campus planning. In 2019, this work is projected to reduce electricity consumption by over 1,100,000 kilowatt-hours (equivalent to the annual electricity consumption of 42 CT scanners) and natural gas consumption by over 18,800 gigajoules (equivalent to the annual natural gas consumption of 204 homes). This will directly reduce our carbon footprint by over 800 tCO2e per year and makes progress towards the provincial 2030 emission reduction targets (50 per cent reduction by 2030).

I am proud to state that I, along with over 1,799 other Vancouver Coastal Health staff, have joined our internal GreenCare Community in pursuit of reducing our operational energy and environmental impact. Reducing our impact will ultimately add to the health of our clients, staff, facilities, and benefit the wellbeing of the extended communities we serve.

As 2020 progresses, I will continue to support our innovative and collaborative approach towards reducing VCH's environmental and carbon footprint, which drives our commitment to create sustainable health care.

Mary Ackenhusen, President and Chief Executive Officer

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Our CO_2 Footprint

As per the Directive issued March 31, 2020 by the Climate Action Secretariat, Vancouver Coastal Health will use the 2018 GHG Emission data as a placeholder for the purposes of their 2019 CNAR.

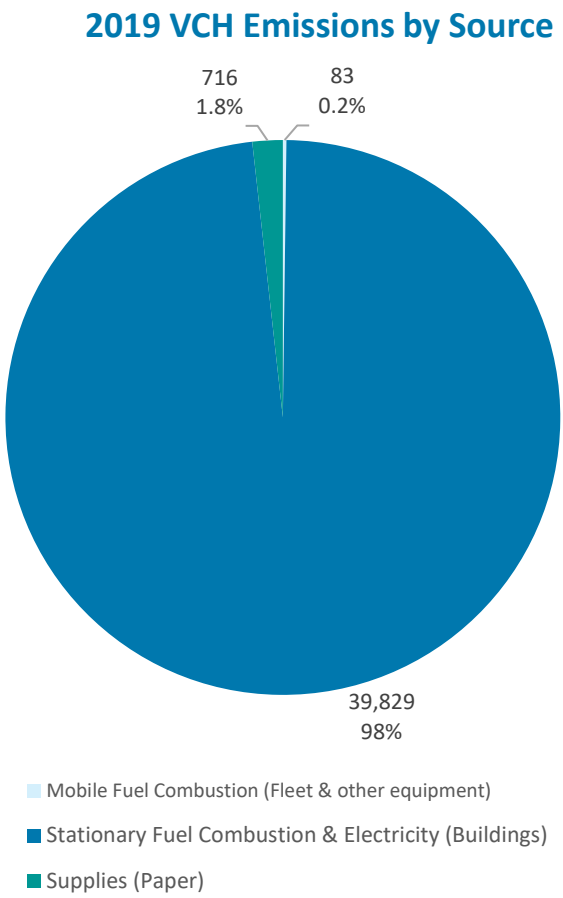
2019 GREENHOUSE GAS EMISSIONS BREAKDOWN

Vancouver Coastal Health reports its organizational carbon footprint based on guidelines provided by the Carbon Neutral Government Regulation and Climate Action Secretariat (CAS).

CAS uses various elements of reporting, based on the GHG Protocol Corporate Standard, which has classified carbon reporting into three scopes. Of these three scopes and various elements within each, CAS has determined Vancouver Coastal Health's carbon footprint to comprise of six different greenhouse gases, which are converted to tonnes of carbon dioxide equivalent (tCO_2e). These main sources of emissions are categorized in three main groupings: Stationary Combustion and Purchased Energy (buildings), Mobile Combustion (Fleet), and Supply (Paper).

As shown in the chart on the right, 98 per cent of Vancouver Coastal Health's in-scope emissions are attributed to the owned and leased buildings stationary combustion, and purchased energy; the largest area to focus our mitigation efforts.

Vancouver Coastal Health's 2019 carbon emissions were 40,672 tCO_2e. To become carbon neutral in 2019, Vancouver Coastal Health purchased carbon offsets offsets through the Climate Investment Branch of the Ministry of Environment and Climate Change Strategy at a total cost $1,015,725



"The environmental impact from healthcare facilities, operations, and services affects the health of the populations and patients they are meant to serve."

- Adapted from World Health Organisation & Healthcare without Harm

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Natural gas is the predominant fossil fuel used for space heating, hot water and process loads. The carbon emissions associated with our natural gas use is approximately 94 per cent of the total building emissions. Although our priority climate mitigation actions are focused on our natural gas combustion reductions, there are many drivers to continue reducing purchased energy and other emission sources.

There has been an 18.8 per cent decrease in the carbon footprint since 2007. The table below shows the breakdown of emission and offset for 2019.

VCH GHG Emissions and Offsets for 2019	
As per the Directive issued March 31, 2020, each PSO will use their 2018 GHG Emissions as a placeholder for the purposes of their 2019 CNAR.	
Total Emissions (tCO_2e)[1,2,3]	40,672
Total $BioCO_2$[4]	43.4
Total Offsets (tCO_2e)	40,629
Offset Investment ($25 per tCO_2e) [Total Offsets x $25/$tCO_2e$]	$1,015,725 ($1,066,511 including GST)

When reporting on absolute emissions, there is no consideration of weather impacts, portfolio growth, or other external drivers that affect emissions in a given reporting cycle. Depending on these independent variables, the year-over-year change in emissions may not fully reflect the mitigation efforts, emission avoidance projects and initiatives across the portfolio.

[1] Prior Year Adjustments (PYAs) are not applicable as emissions and offsets are based on 2018 alone.

[2] Total emissions and offset invoice amounts will be validated by CAS prior to distributing invoices.

[3] Due to a variety of influences including historical data corrections and conversion factors, there may be minor discrepancies between data existing in CGRT vs SMARTTool.

[4] BioCO2 is reported in Total Emissions but not Total Offsets.

Actions Taken To Reduce Our CO_2 Footprint

2019 ACTIONS

Stationary Emissions (Buildings)

Vancouver Coastal Health moved forward with multiple energy and emission mitigation projects that reduced energy consumption by 1,100,000 kilowatt hours and natural gas by 18,800 gigajoules; resulting in a carbon footprint reduction of over 800 tCO2e and significant operational savings. To support our long-term emission reduction and prioritize our efforts, multiple energy studies and planning efforts to embed sustainability practices were in progress or initiated in 2019.

In additional to our project specific emission reduction work, an increased effort to inform climate mitigation and adaptation priorities in new developments is progressing. In 2019, support for energy and climate-related actions for two new construction projects – in the Lions Gate Hospital Redevelopment and Pearson Dogwood Redevelopment – were undertaken and will continue towards construction.

Vancouver Coastal Health continues to work to embed sustainability across the organization by supporting staff engagement initiatives such as the GreenCare Community website, which provides tips and toolkits on energy reduction and other environmental initiatives. The Green+Leaders (G+L) program continues to train Vancouver Coastal Health staff as sustainability champions, along with the BC Hydro Energy Wise Network (EWN) Program. Other awareness initiatives, such as our Facilities Maintenance and Operations Engagement Strategy, are evolving to meet the operational needs of VCH.

Mobile Fleet Combustion (Fleet and other vehicles)

Vancouver Coastal Health is continually working to improve, promote and establish alternative transportation opportunities for Vancouver Coastal Health staff.

Supplies (Paper)

In collaboration with Health Shared Services British Columbia (Supply Chain), Vancouver Coastal Health has continued to make progress toward increasing the post-consumer recycled content in our paper, minimizing VCH's virgin paper purchasing. There are ongoing efforts across the VCH to assess how to minimize our paper purchases and develop a culture around how we use paper in our day-to-day workflow.

ONGOING ACTIONS

Vancouver Coastal Health will continue to act as leaders in environmental stewardship and emission mitigation in the following ways:

- Planning and implementing energy and emission reduction projects in our building portfolio by utilizing the Carbon Neutral Capital Program funds, internal capital funds, and utility incentive programs;
- Developing site energy infrastructure strategies and capital decision aids;
- Engaging with design engineers to ensure our new builds adopt energy efficient design principles;
- Continue to explore low emission energy supply options, opportunities for demand reduction, and leading technology applications;
- Engaging and educating our staff, via the G+L program, GreenCare Community and other opportunities

Feature Emission Reduction Project

Minimizing Environmental Impact through Facilities Collaboration at Vancouver General Hospital: Heat Recovery Chiller Project (Phase 2)

The Energy and Environmental Sustainability team, in close partnership with the VGH Facilities team, were able to deliver a progressive solution that considered both the operational requirements of the Vancouver General Hospital (VGH) chiller plant, while minimizing environmental impact.

Heat recovery chiller and pumps installed at Vancouver General Hospital.

The centralized chiller plant, serving multiple buildings on campus was in need of additional cooling capacity to meet the peak temperature on warm summer days and minimize the use of a low efficiency steam absorption chiller overall.

Previous energy studies identified that the absorption chiller consumed 43 per cent of the total chiller plant energy, even though it was only in operation 25 per cent of the time compared to the two other main chillers. Through extensive trend analysis, additional opportunities to optimize the operation and chiller sequencing of the remaining chiller plant were uncovered. In this complex environment, with a variety of acute care needs and heat generating equipment, there is a year round cooling load; the heat generated from this equipment and process was rejected through the cooling towers into the atmosphere.

Technology:
Heat Recovery Chiller (Heat Pump)

Natural Gas Avoidance:
14,500 GJ

GHG Reductions:
723 tonnes

Total Project Cost:
$1,163,020

Annual Energy and Emission Savings:
>$75,000 (net)

Co-Benefits:

- Increased cooling capacity
- Water Savings
- Reduced cooling tower maintenance

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Several different heat recovery chiller configurations were assessed, and the installation of a second heat recovery chiller in parallel with the existing heat recovery chiller was selected. This captured the waste heat generated by the chilled water plant and converted it into thermal energy for the operational use in building heating. To utilize the full capacity of the new heat recovery chiller, additional waste heat will be captured by connecting the exhaust air glycol run around loop into the new system.

With a high level of project support and engagement from the VGH Facilities Maintenance and Operations team, the project design moved forward. This collaborative approach assisted with early risk identification and improved overall project coordination.

"This smart and low risk design is an ideal application of heat recovery technology. The complete design will support the peak cooling load and recover waste heat from the cooling process, improving the plants operation and minimizing this sites environmental impact. "

– Kori Jones, Energy and Emissions Manager, Lower Mainland Facilities Management

Considering the complexity of this cooling plant, a commissioning and optimization plan is in place to ensure the plant operates as designed over the shoulder seasons. The energy and emission savings will be monitored and verified going forward.

This project will result in an annual energy savings of 14,500 GJ, annual cost saving of $75,380 in energy savings, and will mitigate 723 tCO_2e each year.