

# Providence Health Care's 2019 Carbon Neutral Action Report



# Table of Contents

EXECUTIVE SUMMARY .....	3
OUR CO <sub>2</sub> FOOTPRINT .....	4
ACTIONS TAKEN TO REDUCE OUR CO <sub>2</sub> FOOTPRINT .....	6
FUTURE ACTIONS TO REDUCE OUR CO <sub>2</sub> FOOTPRINT .....	8
FEATURE PROJECT .....	9
FEATURE INITIATIVE .....	10

## Declaration Statement

This Carbon Neutral Action Report for the period January 1, 2019 to December 31, 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 Providence Health Care’s final Carbon Neutral Action Report will be posted to our website at [bcgreencare.ca](http://bcgreencare.ca)

## Retirement of Offsets

In accordance with the requirements of the **Climate Change Accountability Act** and Carbon Neutral Government Regulation, Providence Health Care (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 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 photo is the exterior of the St. Vincent’s: Brock Fahrni Long Term Care home in Vancouver.

# 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 CNAR are to be completed with information from 2019.

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

# Executive Summary



## Executive Summary: Providence Health Care, CNAR 2019

Fiona Dalton, President & Chief Executive Officer

It gives me great pleasure to present Providence Health Care's (PHC) tenth annual Carbon Neutral Action Report (CNAR) for 2019. For ten consecutive years, Providence has been proud to be carbon neutral, through our purchasing of carbon offsets. As an organization driven by innovation and social justice, we believe that our role as health care providers goes beyond caring for individuals and to caring for the environment, too.

Stewardship is one of our key organizational values and throughout our 125 years of providing compassionate and innovative care, teaching and research, we have been responsible and accountable stewards. For us, that includes taking personal responsibility for the carbon footprint produced by our operations and facilities.

In 2019, Providence had a carbon footprint of 11,948 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e), which was offset at a total cost of \$313,635.00. This represents a 3.6 per cent decrease in carbon emissions relative to the 2007 baseline year.

In 2019, Providence reached substantial completion for the St. Paul's Hospital Chiller 2 & Heat Recovery project, which received an incentive of \$428,546 from FortisBC in recognition of the significant carbon reduction achieved. Also worth highlighting is a project underway at St. Vincent's: Brock Fahrni which will add cooling and synergistically reduce carbon emissions and operating costs. This project will utilize Carbon Neutral Capital Program funding and take advantage of a \$313,000 incentive from FortisBC, thus minimizing any investment required by Providence.

PHC's Energy Manager played a key role in bringing Dr. Stephanie Taylor back to Vancouver for a healthcare specific audience. Dr. Taylor's research presents compelling evidence that highlights the importance of maintaining indoor relative humidity carefully between 40% and 60% to reduce the spread of infectious agents and to create a healing indoor environment. Humidification can result in significant energy and carbon emissions; therefore a low carbon approach is essential. These ideas are especially relevant as we prepare to respond appropriately to our new reality, post COVID-19.

In 2020, we will continue to improve our environmental performance through improved energy efficiency, coordinated efforts, and education. These projects have a positive impact; saving energy, decreasing air pollution, and ultimately adding to the health and wellness of facilities, workplaces and the communities we serve.

Date: May 29<sup>th</sup>, 2020

Fiona Dalton  
President & Chief Executive Officer  
Providence Health Care



# Our CO<sub>2</sub> Footprint

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.

## 2019 GREENHOUSE GAS EMISSIONS BREAKDOWN AND OFFSETS APPLIED TO BECOME CARBON NEUTRAL

Providence Health Care reports its organizational carbon footprint based on guidelines provided by the Carbon Neutral Government Regulation (CNGR) and B.C. Climate Action Secretariat (CAS).

CAS developed reporting guidance based on the GHG Protocol Corporate Standard. Based on these guidelines, Providence Health Care's carbon footprint is comprised of six different greenhouse gases, which are converted into a common metric of tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e). In scope carbon emissions are categorized in three main categories:

1. Stationary Fuel Combustion
2. Mobile Fleet Combustion
3. Supplies (Paper)

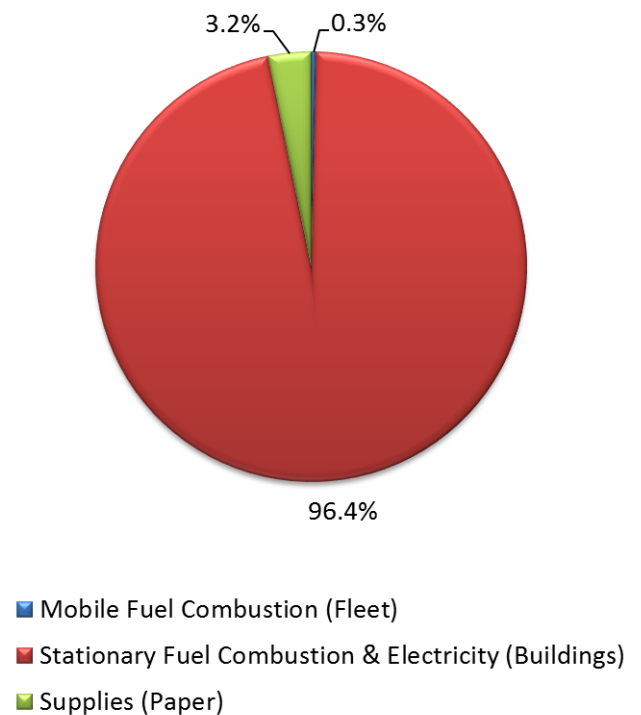
PHC's 2019 Carbon footprint offset was 11,948 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e). That represents a 3.6 per cent decrease in PHC's carbon footprint since 2007.

Over 95 per cent of Providence Health Care's in-scope emissions are attributed to the building portfolio. Within the building portfolio, over 80 per cent of emissions are due to the use of fossil fuels.

To become carbon neutral in 2019, Providence Health Care purchased carbon offsets at a total cost of \$313,635.00.

**“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

**2019 Providence Health Care's Greenhouse Gas (In-Scope) Emissions by Source**



### Providence Health Care 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 (tCO2e)	11,952.20
Total BioCO2	4.20
Total Offsets (tCO2e)	11,948.00
Offset Investment (\$25 per tCO2e)	\$298,700.00
[Total Offsets x \$25/tCO2e]	(\$313,635.00 including GST)

Notes for above table:

- i. Note, BioCO2 is reported in Total Emissions but not Total Offsets
- ii. Prior Year Adjustments (PYAs) are not applicable as emissions and offsets are based on 2018 alone
- iii. Total emissions and offset invoice amounts will be validated by CAS prior to distributing invoices
- iv. Due to a variety of influences including historical data corrections and conversion factors, there may be minor discrepancies between data existing in Clean Government Reporting Tool (CGRT) vs SMARTTool

# Actions Taken to Reduce Our CO<sub>2</sub> Footprint

## 2019 LIST OF ACTIONS TAKEN TO REDUCE CO<sub>2</sub> FOOTPRINT

### Stationary Emissions (Buildings)

- **Continuous Optimization:** Providence completed the post-project or coaching phase of BC Hydro's Continuous Optimization Program at two sites in 2019; at St. Vincent's: Langara and Holy Family Hospital.
- **Waste Heat Recovery:** Providence completed two studies (at St. Vincent's: Brock Fahrni and St. Vincent's: Langara) in 2019 to explore options to address a clinical need to add cooling in response to changing climate. In cooperation with the energy management team, these studies were expanded to explore synergistically recovering waste heat and reduce carbon emissions. In both cases a low exergy Thermal Gradient Header (TGH) design approach (similar to that employed at St. Paul's Hospital) was recommended. The Brock Fahrni project is now underway.
- **FMO Staff Engagement:** The Providence energy management team has continued to build an engagement strategy with Facilities Maintenance and Operations (FMO) departments. This was focused initially at St. Paul's Hospital, and is now being extended to Holy Family Hospital and Langara Long Term Care. There are plans to expand to all major owned sites over time. The outreach focuses on reviewing energy use in buildings, identification of reduction opportunities, and optimization of existing equipment/plants.
- **Design Guidelines:** PHC's energy management team was involved in further refinements to GreenCare's Energy and Environmental Sustainability Design Guidelines for New Construction and Major Renovation projects with the intent of ensuring health care related new construction and major renovation projects are built to the highest standard of energy efficiency and conservation, within financial constraints. These guidelines informed the approach to environmental sustainability for the new St. Paul's Hospital and health campus.
- **Behaviour Change:** PHC's energy team continues to promote energy conservation and GHG emissions reduction through awareness and behaviour change programs, such as Green+Leaders and the GreenCare Community website. In 2019, Brian Simmers, Chief Financial Officer (CFO) and Vice President, Corporate Development for Providence, became a trained and active Green+Leader. In addition, The CFO provided financial support for pilot sustainability projects across the PHC community. As the Executive Champion for PHC's Mission Forward Strategic Plan's Sustainability Foundation Principle, we'd like to acknowledge the CFO's commitment and support for sustainability across the organization, and look forward to future collaborations.

## Mobile Fleet Combustion (Fleet and other vehicles)

Providence continues to provide **electric vehicle charging stations** at various sites including regular plug-ins.

Providence continues to partner with Provincial Health Services Authority and Vancouver Coastal Health to provide a **shuttle service** between sites.

Providence sites offer **bike parking stalls** to encourage and enable active transportation by bike.



## Supplies (Paper)

As part of the Green+Leader program, a **paper/waste reduction campaign** supports volunteers with **Paperless Meeting Toolkits** to encourage their colleagues to reduce paper use.

Providence **encourages teleconferencing** for meetings by installing web- conferencing hardware / software at various sites.

## Actions That Fall Outside the Scope of the Carbon Neutral Government Regulations:

The Green+Leaders behaviour change program at Providence recruit staff volunteers who help improve the environmental sustainability of PHC operations.

Providence continues to support the GreenCare Community site, which provides tips and toolkits on using less paper, as well as other environmental sustainability initiatives linked to health and wellness.

Providence offers in-person staff education on **waste management processes** in collaboration with Business Initiatives and Support Services (BISS)<sup>1</sup>.

Providence also offers a **Waste Management Basics Learning Module** online.



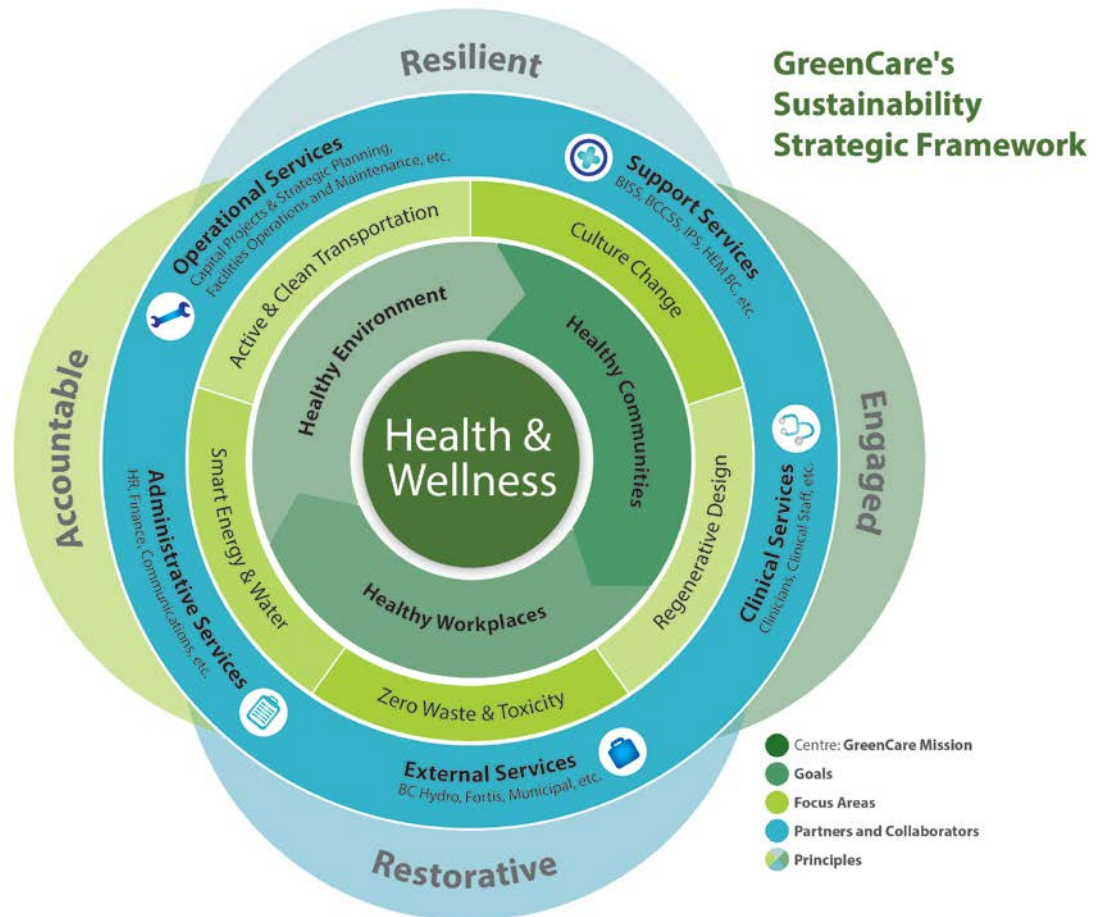
<sup>1</sup> For more information, please contact BISS Hazardous Waste Coordinator, Teri Guimond, Teri.Guimond@vch.ca



# Future Actions to Reduce Our CO<sub>2</sub> Footprint

PHC plans to continue reducing GHG emissions and Energy in the following ways:

- Optimizing our Existing Buildings:**  
 Planning and implementing GHG / Energy reduction projects in our existing building portfolio by utilizing the Carbon Neutral Capital Program as our primary funding source.
- Efficient New Construction:**  
 Implementing project-specific energy performance targets to ensure that our new buildings are as energy efficient as possible.
- Systemic Change:**  
 Leveraging and promoting our Sustainability Policy, and implementing standards, guidelines, and processes to embed energy management principles further into standard operations.
- Align with our Core Mandate:** Working with GreenCare’s refreshed Strategic Framework; PHC’s efforts to reduce carbon emissions will take a collaborative approach and seek to support a sustainable and environmentally responsible health care system, which continues to advance health and wellness in its broadest sense.



- Behaviour Change:** Engaging and educating our staff, via the Green + Leaders program, GreenCare Community and FortisBC’s Communication, Engagement and Outreach program.
- Innovation and Demonstration:** Promoting innovative approaches and taking other small “seedling actions” to prepare for larger innovation as appropriate opportunities arise.

# Feature Project

## Low Carbon and Resilient Asset Management across PHC Sites Yields Value

In 2019, Providence completed two studies (at St. Vincent's: Brock Fahrni and St. Vincent's: Langara) to explore options to address a clinical need to add cooling in response to our changing climate. Tony Munster, Executive Director Projects Planning and Facilities Management, gave approval to expand these studies to explore options to synergistically recover waste heat in order to reduce both operating costs and carbon emissions, in collaboration with the energy management team.

The expanded study scope was funded through the FortisBC Custom Energy Study program. In both cases a low exergy Thermal Gradient Header (TGH) design approach (similar to that employed at St. Paul's Hospital) was recommended as a means to increase climate resilience while also reducing carbon emissions.

The Brock Fahrni project is now underway and will utilize Carbon Neutral Capital Program (CNCP) funding and take advantage of a **\$313,000 incentive** from FortisBC. The temporary once-through cooling systems will be replaced with permanent mechanical cooling consisting of a heat recovery chiller and a TGH approach to enable waste heat to be reused within the building.

These projects build upon the success of the St. Paul's Hospital Chiller 2 & Heat Recovery project, which was featured in the 2018 issue of this report. That was a major capital project that is now substantially complete with only final commissioning and measurement and verification (M&V) tasks still underway. Early M&V results are in line with the anticipated utility savings. The eighty per cent **pre-M&V incentive (\$428,546)** from FortisBC was delivered in 2019, and the **remaining incentive (\$137,425)**, the final twenty per cent post-M&V plus implementation bonus, is anticipated within the next 10 months.

All three of the projects mentioned are the result of collaboration between numerous different stakeholders and departments including PHC's Facilities Maintenance and Operations (FMO) team, PHC Finance, as well as the Energy Management and Capital Projects teams responsible for the Providence Portfolio.

### Brock Fahrni Cooling & Holistic TGH Heat Recovery Project

**Technology:** Thermal Gradient Header (TGH) holistic heat recovery strategy

**Predicted Energy Savings:** An estimated 8,200 GJ per annum of steam and an increase of 244,000 kWh/year of electricity to operate the new chiller.

**Predicted GHG Reductions:** 400 tCO<sub>2</sub>e/year anticipated GHG reduction.

**Incremental Project Cost\*:** \$380,000 (total project cost estimated at \$1.1M)

**Incentive Funding:** \$45,000 Study Incentive & \$313,000 Capital Incentive

**Operational Cost Savings:** \$67,000 (estimated utility cost savings relative to the baseline with reduced steam offsetting increased electricity)

**Business Case:** Simple payback of less than six (6) years taking incentives into account.

**Benefits/Co-Benefits:** New asset. Added cooling capacity. Improved climate resilience. Cost effective carbon reduction: <\$4,000 per tonne GHG reduction (good use of CNCP funding with comparable projects up to \$5,000/tCO<sub>2</sub>e capital cost of carbon reduction).

\*Incremental Project Cost refers to the additional cost required to implement the low carbon solution over and above the bare minimum solution required to meet the needs and building code standards (in this case, above the cost of adding cooling without heat recovery).

# Feature Initiative

## Collaborative Approach Explores the Intersection of Healing Environments and Low Carbon Resilience

A small group of attendees from a November 2019 ASHRAE event were so impressed by Distinguished ASHRAE Lecturer Dr. Stephanie Taylor and her research that they organized for her to return to Vancouver for a healthcare specific audience. Dr. Taylor's research presents compelling evidence that highlights the importance of maintaining indoor relative humidity carefully between 40% and 60% to reduce the spread of infectious agents and to create a healing indoor environment.

This small group, included Alex Hutton, Energy Manager responsible for PHC's portfolio, saw the potential to explore how these important findings might intersect with our context of a declared Climate Emergency and the associated necessity to achieve low carbon climate resilience.

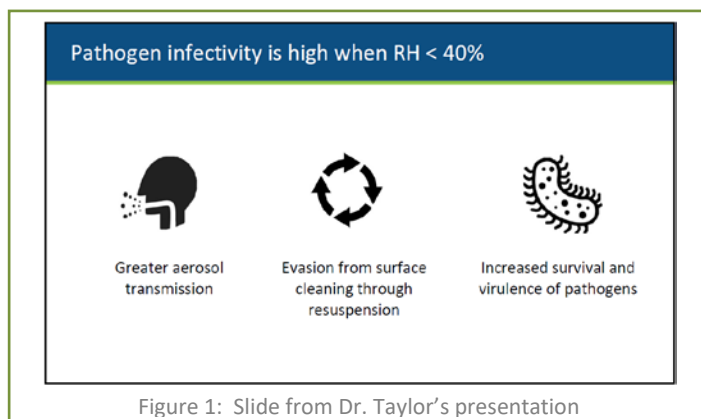
Dr. Taylor delivered a wealth of information within just 30 minutes, leaving 50 minutes for a facilitated breakout session and talk-back. The hypothesis behind the activity was that if we explore the potential at the intersection of healing environments and low carbon resilience, we will arrive at different and better solutions than exploring either in isolation, or exploring both through a purely risk management lens.

Each of the four groups was led by a facilitator through a contemplation and exploration of an optimistic future state in which we have responded appropriately as climate change has progressed. The future state imagines for example that our healthcare facilities being designed and operated to new standards defined by parameters that reflect the intersection of a healing, resilient and sustainable built environment (including carefully controlled indoor relative humidity). This would include taking a low carbon approach to humidity control.

"[The group] in Vancouver, BC organized one of the most forward thinking events I have ever experienced. They brought together health, regulatory, scientific, engineering and architecture professionals to brainstorm design approaches to integrate the goals of supporting occupant health while conserving carbon-based energy use. Bravo!" – Dr. Taylor



PHC's Energy Manager (Alex Hutton, Left) with Distinguished Lecturer Dr. Stephanie Taylor (Right)



The energy in the room was palpable and evidenced by the challenge of silencing the group discussions in order to reconvene for a brief talk-back. A wide variety of ideas, solutions, and new questions arose from the discussion.

These ideas are especially relevant as we prepare to respond appropriately to our new reality, post COVID-19. As summarized in Figure 1, low relative humidity increases pathogen infectivity via several mechanisms.