

Providence Health Care's 2017 Carbon Neutral Action Report



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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 2017 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, 2018 Providence Health Care’s final Carbon Neutral Action Report will be posted to our website at bcgreencare.ca

The cover photo is the exterior of the existing Youville Residence in Vancouver.

Executive Summary



Executive Summary: Providence Health Care, CNAR 2017

Fiona Dalton, President & Chief Executive Officer

It gives me great pleasure to present Providence Health Care's (PHC) eighth annual Carbon Neutral Action Report (CNAR) for 2017.

For eight consecutive years, PHC has been proud to be carbon neutral. 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.

With over one hundred years of service to the local community, we consider our role as stewards to be one of our most deeply held responsibilities. For us, that includes taking personal responsibility for the carbon footprint produced by our operations and facilities.

In 2017, PHC had a carbon footprint of 11,069 tonnes of carbon dioxide equivalent (tCO₂e), which was offset at a total cost of \$290,561. This represents a 4.0 per cent decrease relative to the 2007 baseline year. Compared to the first year we paid offsets (2010), PHC's carbon offset cost has decreased by \$37,683.

In 2017, 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 31 2018

Fiona Dalton
President & Chief Executive Officer
Providence Health Care

Our CO₂ Footprint

2017 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 (tCO₂e). In scope carbon emissions are categorized in three main categories:

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

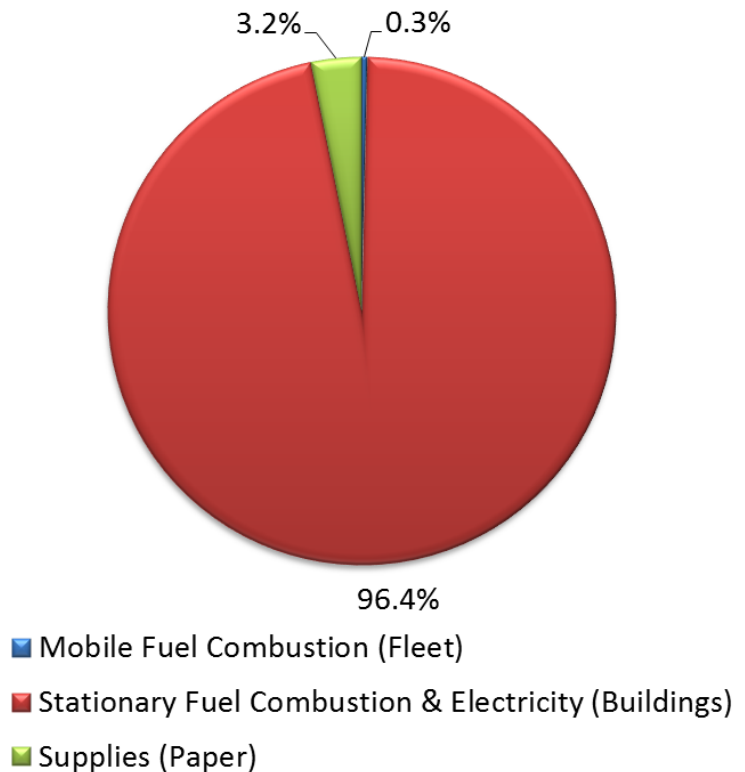
PHC's 2017 Carbon footprint offset was 11,069 tonnes of carbon dioxide equivalent (tCO₂e). That represents a 4.0% decrease in PHC's carbon footprint since 2007.

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

To become carbon neutral in 2017, Providence Health Care purchased carbon offsets at a total cost of \$290,561.25.

“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

2017 Providence Health Care's Greenhouse Gas (In-Scope) Emissions by Source



CHANGES TO PROVIDENCE HEALTH CARE'S PORTFOLIO

PHC's facility space (measured in usable square meters) has increased by almost 3% since 2007. During the same time, the number of staff (measured in full time equivalents) has increased by 19%.

Providence Health Care								
BUILDINGS, FTE AND WEATHER		2007	2012	2013	2014	2015	2016	2017
Distinct PHC Buildings		n/a	37	40	37	36	36	41
	% Owned	n/a	93%	91%	92%	92%	92%	91%
	% Leased	n/a	7%	9%	8%	8%	8%	9%
Usable Square Meters¹		174,002	176,186	179,222	178,157	177,216	177,159	178,602
Full-Time Employee Equivalents²		4,038	4,977	4,748	4,580	4,686	4,760	4,816
Weather (summarized in Heating Degree Days)³		2,870	2,859	2,820	2,627	2,489	2,537	2,922

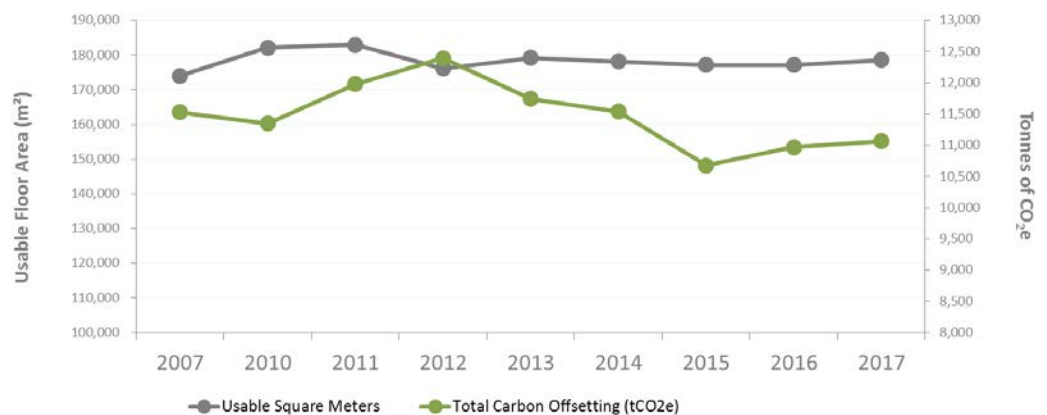
¹ Usable area excludes roof tops, interstitial spaces, and parking areas.

² Full-Time Employee data was provided by the Ministry of Health.

³ Heating Degree Days (HDD's) are based on YVR Airport data from Environment Canada and is intended to reflect the demand for heating.

Overall since 2007, PHC's carbon footprint has decreased, while usable floor area and staff have increased. PHC's 2017 emissions per full-time employee (2.30 tCO₂e/FTE) have decreased by 19% since 2007. PHC's 2017 emissions per unit of floor area (0.06 tCO₂e/m²) have decreased 6% since 2007.

PHC Useable Floor Area and Emissions (2007-2017)



The carbon emissions reported are not adjusted for changes in weather. Heating Degree Days (HDD's) is a metric designed to reflect the demand for energy required to heat a building. The HDD's for 2017 were 2% higher than those recorded in 2007, while emissions have decreased. This is reflected by the lower emissions per HDD, suggesting increased efficiency of the heating systems overall.

Providence Health Care								
Our Carbon Footprint (in tCO ₂ e)		2007	2012	2013	2014	2015	2016	2017
CO ₂	Mobile Fuel Combustion (Fleet)	15	47	47	43	45	48	38
	Stationary Fuel Combustion & Electricity (Buildings)	11,448	12,083	11,442	11,145	10,267	10,569	10,679
	Supplies (Paper)	70	271	260	358	371	359	356
	Total Carbon Footprint (tCO ₂ e)	11,533	12,402	11,749	11,546	10,682	10,975	11,074
	Emissions Which Do Not Require Offsets ^{1, 2}	-1	-7	-5	-5	-5	-4	-5
Total Carbon Footprint (tCO ₂ e)	11,532	12,395	11,744	11,542	10,677	10,972	11,069	
Total Carbon Offsetting (tCO₂e)		11,532	12,395	11,744	11,542	10,677	10,972	11,069
\$	Purchased Carbon Offsets	\$ -	\$ 309,575	\$ 294,525	\$ 288,550	\$ 266,925	\$ 274,300	\$ 276,725
	Purchased Carbon Offsets +HST / GST	\$ 328,244	\$ 325,054	\$ 309,251	\$ 302,978	\$ 280,271	\$ 288,015	\$ 290,561
KPI	Emissions per Full-Time Employee (tCO ₂ e/FTE)	2.86	2.49	2.47	2.52	2.28	2.31	2.30
	Emissions per Facility Space (tCO ₂ e/m ²)	0.07	0.07	0.07	0.06	0.06	0.06	0.06
	Emissions per Heating Degree Day (tCO ₂ e/HDD)	4.0	4.3	4.2	4.4	4.3	4.3	3.8

Total emissions from previous years are subject to minor adjustments / corrections following annual reviews.

Actions Taken to Reduce Our CO₂ Footprint

2017 LIST OF ACTIONS TAKEN TO REDUCE CO2 FOOTPRINT

Stationary Emissions (Buildings)

- **Continuous Optimization:** PHC has substantially completed the implementation phase of BC Hydro's Continuous Optimization Program at two sites in 2017; at St. Vincent's Langara and Holy Family Hospital as well as the investigation phase at St. Paul's Hospital campus, specifically focused on the Providence Phase I and Phase II buildings.
- **Asset Management:** PHC had initiated a study to review replacement options for a failed chiller at St. Paul's Hospital. In cooperation with the energy management team, this study was expanded to explore a low exergy Thermenex design approach to improve heat recovery and further reduce carbon emissions.
- **FMO Staff Engagement:** The PHC 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 Residence. 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.
- **Boiler Replacement:** PHC completed a boiler replacement project at St. Vincent's Youville residential care facility in 2017 using Carbon Neutral Capital Program (CNCP) funding
- **Design Guidelines:** PHC's energy management team were 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.
- **Behaviour Change:** PHC's energy team continue to promote energy conservation and GHG emissions reduction through awareness and behaviour change programs, such as Green+Leaders, GreenCare Community website, the BC Hydro Energy Wise Network program, and FortisBC's Communication Education and Outreach program.

Mobile Fleet Combustion (Fleet and other vehicles)

- PHC has **one 120v electric vehicle charging station** at St. Paul's Hospital, which is located downtown Vancouver in the West End (51 regular plug-ins are also available throughout the parkade).
- PHC partners with Provincial Health Services Authority and Vancouver Coastal Health to provide a **shuttle service** between sites. In 2017, **23,499 PHC staff** used the shuttle from various Vancouver sites.
- **388 PHC staff** collectively participated in the 2017 **Clean Commuter & Wellness Challenge**; a campaign to motivate PHC staff to leave their car at home and commute in an active and clean way.
- PHC added **13 new bike parking stalls**, for a total of **248**.

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.
- PHC **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:

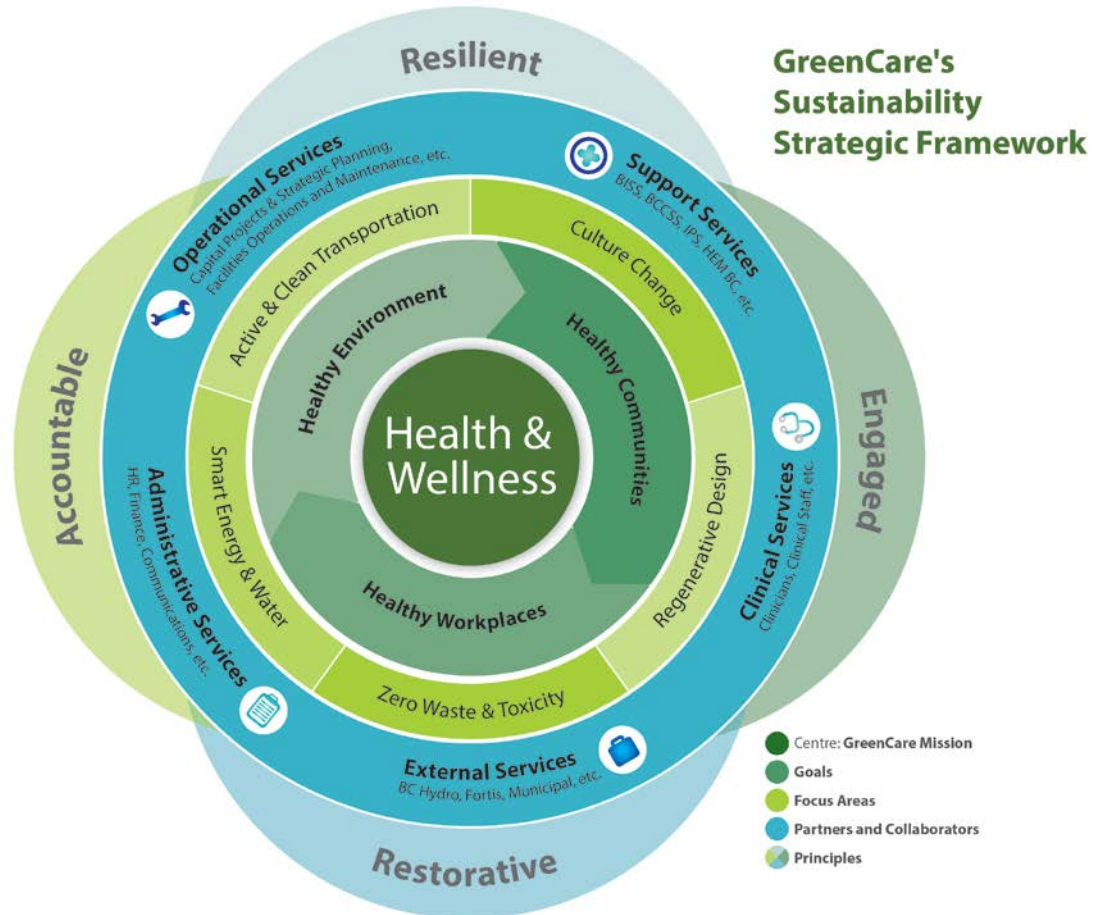
- The Green+Leaders behaviour change program at PHC now has a total of **9 active staff volunteers** who help improve the environmental sustainability of PHC operations, and a total of 19 have been trained over the years.¹
- PHC continues to support the **GreenCare Community** site, which provides tips and toolkits on using less paper, as well as other environmental sustainability initiatives linked to health and wellness. PHC had **480 staff registered** on the site as of 2017.
- Education and awareness communications via the GreenCare Community, as well as stories published in PHC news and various internal communication channels, continue to champion behaviour change and celebrate environmental sustainability success.

¹ Note these corrections to the 2016 data reported: In 2016 there were 8 total active PHC staff volunteers and 17 staff trained since the program began in 2007.

Future Actions to Reduce Our CO₂ 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 the BC Hydro Energy Wise Network 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

Boiler Plant Upgrade and Air Sealing at Youville Residence

In 2017, a multipart project spanning two fiscal years was completed at Youville Residence thanks to the availability of funding through the Carbon Neutral Capital Program (CNCP).

With these funds, the Providence Health Care Energy Management team were able to coordinate with a variety of stakeholders, consultants and contractors to upgrade of the boiler plant, improve the building system controls, and improve envelope airtightness at Youville Residence.

Two condensing boilers, the Viessman Vitocrossal 200 CM2 were installed. Viessmann is a top name in boiler reliability and efficiency. In addition to being condensing boilers which recover latent heat from the boilers' exhaust which would otherwise go to waste, these particular boilers also have a high turn down ratio (resulting in a high part-load efficiency).

By matching these top notch boilers with carefully developed controls software, the heating efficiency of the boiler plant has now been greatly improved, especially at part loads in the spring and fall. The collaboration with our various stakeholders and our available funding has enabled us to replace an essential asset at the end of its service life with a newer higher performing asset – a win-win.

In addition to replacing and upgrading the heating plant, the envelope was also sealed. To complete this project, we partnered with CANAM, a contractor that specializes in this type of work.

This work involves identifying and sealing leaky areas around windows doors, and other penetrations through the envelope which typically leak air. It may not sound like the most impressive way of saving energy at first. However, but a bit of attention to detail can go a long way in a larger residential care facility like Youville Residence.

Residents within a well-sealed building are more likely to feel comfortable as air infiltrating from the cooler outside is kept to a minimum. This has the added benefit of saving energy and costs as well.

Technology: Condensing natural gas boilers and envelope air sealing

Energy Savings: An estimated 1,370 GJ per annum of natural gas, 15,000 kWh/year of electricity.

GHG Reductions: An estimated 69 tCO₂e/year

Total Incremental Project Cost*: \$200,000

Operational Cost Savings: \$10,700 (estimated energy cost savings)

Business Case: Simple payback of less than 8 years.

Benefits/Co-Benefits: More comfortable building interior with lowered energy costs due to the improved heating plant efficiency. Cost effective carbon reduction: \$2,900 per tonne GHG reduction (good use of CNCP funding with comparable projects up to \$5,000/tCO₂e).

*Incremental Project Cost refers to the additional cost required to install energy efficient equipment above the cost for the building code minimum standard (in this case, above the cost of a standard efficiency boiler).

Part 1: CNAR Survey

1. General Information

Name: Alex Hutton

Contact Email: Alex.Hutton@fraserhealth.ca

Organization Name: Providence Health Care

Sector: Health

2. Stationary Sources (eg. Buildings, Power Generators): Fuel Combustion, Electricity use, Fugitive Emissions.

During 2017, did your organization take any of the following actions to support emissions reductions from buildings? (please select all that apply)

Conducted an energy audit/study of building(s) in the organization's portfolio.; Performed energy retrofits of the organization's building(s)

2. Stationary Sources - Other? Please specify: (1) Continued with Implementation phase of the BC Hydro Continuous Optimization (C.Op.) program at 2 sites and started the Investigation phase at 1 new site. (2) Continued to roll out Energy Engagement Strategy with FMO staff. (3) Promoted the use of our Energy and Environmental Sustainability (EES) Design Guidelines for New Construction and Major Renovation projects. (4) Continued to promote energy conservation and GHG emissions reduction through awareness and behaviour change programs.

Regarding new buildings, the new Saint Paul's hospital and integrated health campus, to be located on Station Street, is currently in the indicative design planning stage and will be designed to meet LEED Gold per Government mandate. PHC has begun comprehensive redevelopment planning of our residential care homes. The project's scope includes planning for new buildings on Providence's St. Vincent's: Heather site in Vancouver and looking at renewal of some of our current residential care homes. These facilities will be designed to achieved LEED Gold or equivalent per Government mandate.

If you selected "*Performed energy retrofits of the organization's building(s)*":

How many buildings were retrofitted?: 2

If you selected "*Built, or are building new LEED Gold or other "Green" buildings*":

How many new "Green" buildings?:

Did your Organization perform any retrofits during 2017? Please describe briefly:

Saint Paul's Hospital: The cooling towers were upgraded and replaced with induced draft units achieving savings in fan energy.

Youville Residence: The boiler was replaced with two condensing boilers conserving natural gas for heating. A project to seal places allowing air-infiltration into the envelope was also implemented.

2a. Stationary Sources (eg. Buildings, Power Generators): Fuel Combustion, Electricity use, Fugitive Emissions.

Please briefly describe your organization's plans to continue reducing emissions from its stationary sources:

a) Over the next 1-5 years

Providence Health Care has a Strategic Energy Management Plan (SEMP), last published in 2015, with details of our energy consumption and greenhouse gas emissions, reduction targets and planned actions to achieve these targets. Our work can be summarized within five main areas: optimizing our existing buildings; influencing new construction and major renovations; behaviour change and education campaigns; systemic change by embedding EM into standard business practices; and innovation.

b) Over the following 6-10 years

Our longer term strategy is currently to continue with the types of efforts described in the short term; however, we can anticipate that there may be changes in the priorities (such as increased focus on electrification) as well as the specific projects that result. We can also anticipate the specific projects may involve new and innovative technologies and strategies not currently available or ready for implementation.

3. Mobile Sources (Vehicles, Off-road/portable Equipment): Fuel Combustion:

During 2017, did your organization take any of the following actions to support emission reductions from its mobile sources? (please select all that apply)

None of the above

3) Mobile Sources - Other? Please specify:: PHC continues to partner with Provincial Health Services Authority and Vancouver Coastal Health to provide a shuttle service between sites. In 2017, tens of thousands of PHC staff used the shuttle from various Vancouver sites.

If you selected "*Replaced existing vehicles with more fuel efficient vehicles (gas/diesel)*":

How many vehicles?:

If you selected "*Replaced existing vehicles with hybrid or electric vehicles*":

How many vehicles?:

3a. Mobile Sources (Vehicles, Off-road/portable Equipment): Fuel Combustion:

Please briefly describe your organization's plans to continue reducing emissions from its mobile sources:

a) Over the next 1-5 years

1. Fleet vehicles to be replaced by more fuel efficient model or disposed of, as and when required.
2. Established and successful staff / patient shuttle routes will be continued for the foreseeable future.

b) Over the following 6-10 years

Continuing to work with Fleet Procurement and Transportation Demand Management Coordinator to improve, promote, and establish low carbon transportation opportunities. A funding application has been submitted that may result in additional EV charging stations being installed, which could potentially trigger a move towards EV fleet vehicles.

4. Supplies (Paper): Indicate which actions your PSO took in 2017:

During 2017, did your organization take any of the following actions to support emissions reductions from paper supplies? (please select all the apply)

Had an awareness campaign focused on reducing office paper use

4) Supplies (Paper): Indicate which actions your PSO took in 2017: - Other? Please describe briefly:: As part of the paper/waste reduction campaign within the Green+Leaders (G+L) behaviour change program, volunteers were supplied with Paperless Meeting Toolkits to encourage their colleagues to reduce paper use. There are now 19 trained G+Ls within Providence Healthcare.

In collaboration with BC Clinical and Support Services (BCCSS), Providence Health Care has continued to discuss the procurement changes to improve recycled content.

If you selected "*Had a policy requiring the purchase of recycled content paper*":

State the required recycled content here (30%, 50%, 100%):

If you selected "*Had a policy requiring the purchase of alternate source paper (bamboo, hemp, wheat, etc)*", which type of alternate source paper did you use?

Please briefly describe your organization's plans to continue reducing emissions associated with its office paper use in future years.

We plan to continue with the paper/waste reduction campaign within the Green+Leaders (G+L) behaviour change program and discussions regarding procurement changes to improve recycled content.

5. Other Sustainability Actions

a) Business Travel

During 2017, did your organization take any of the following actions to support emissions reductions from business travel? (please select all that apply)

Encouraged alternative travel for business (e.g. bicycles, public transit, walking)

5) Other Sustainability Actions - Other? Please specify:: Staff participated in the 2017 Commuter Challenge. Staff at PHC have continued to utilize the carpool / ride match program.

b) Education/Awareness

During 2017, did your organization have any of the following programs or initiatives to support sustainability education and awareness? (please select all that apply)

A Green, Sustainability or Climate Action Team; Support for professional development on sustainability (e.g. workshops, conferences, training); Supported or provided education to staff about the science of climate change, conservation of water, energy and/or raw materials

5a) Other Sustainability Actions - Other? Please specify:: 1) Continued with the successful Green+Leaders (G+L) behaviour change program, with a focus on fostering sustainable behaviours in four key areas: Zero Waste, Energy Conservation and Climate Neutral, Active & Clean Transportation and Social Sustainability. In 2017, two new PHC G+L's joined and there were nine active PHC G+L's in total. 2) At the end of 2017, 480 PHC employees were registered on the Lower Mainland Facilities Management GreenCare Community (GCC) site. This website is used to communicate all EES projects and initiatives, as well as engage health care staff with the EES themes and offer a place for staff to collaborate. (3) Continued with the sponsored BC Hydro Energy Wise Network (EWN) program. This program supports the G+L program and also provides tools and resources for other awareness initiatives, such as our Facilities Maintenance and Operations (FMO) engagement strategy. (4) Educated 64 PHC employees on Waste Management processes

c) Other Sustainability Actions

During 2017, did your organization have any of the following programs or initiatives to support sustainability? (please select all that apply)

An operations policy or program to facilitate the reduction and diversion of building occupant waste (e.g., composting, collection of plastics, batteries) from landfills or incineration facilities; Lifecycle costing of new construction or renovations

5b) Other Sustainability Actions - Other? Please specify:: Some efforts are made to identify water conservation opportunities; however, securing funding to implement water conservation projects has been challenging.

Some preliminary steps have been taken regarding exploring more sustainable procurement practices.