



2015 Carbon Neutral Action Report Vancouver Coastal Health Authority



Executive Summary: Vancouver Coastal Health

Mary Ackenhusen, President and Chief Executive Officer

I am pleased to present Vancouver Coastal Health's 2015 Carbon Neutral Action Report. For the sixth consecutive year, Vancouver Coastal Health has achieved carbon neutrality, as part of the provincial public sector commitment to achieve net-zero emissions.

In 2015, Vancouver Coastal Health's carbon emissions footprint was 39,484 tonnes of carbon dioxide equivalent (tCO₂e) – a 7.7% decrease from 2014 and a 21% decrease in the carbon footprint since 2007. To counteract emissions we were unable to reduce otherwise, we purchased carbon offsets from the Ministry of Environment at a total cost of \$986,239.

In 2015, Vancouver Coastal Health continued its effort to further reduce our environmental impact by completing 18 energy savings projects for a total estimated savings of 2.63 GWh of electricity and 19,096 GJ of natural gas a reduction of 992 tCO₂e of GHG. As well, VCH fully utilized the Carbon Neutral Capital Program (CNCP), to fund several energy / GHG emission reduction projects at Powell River Hospital. CNCP funds, combined with incentive funding were invested into an energy efficiency upgrade project, which resulted in 79 tCO₂e emission savings.

High levels of staff engagement and coordinated efforts make Vancouver Coastal Health's energy reduction projects possible. The success story in this report highlights the value of a team orientated approach, celebrating the collaboration between VCH's Energy Management team, Powell River's Facilities Maintenance and Operations team, and external stakeholders. This resulted in a successful project with estimated annual savings of 16,106 kWh's of electricity; 1,518 GJ's of natural gas; \$20,202 in avoided energy and maintenance costs; and 79 tCO₂e of greenhouse gas emissions. These reduced emissions and financial savings, ultimately add to the health of our buildings, benefit the wellbeing of the communities we serve, and would not have been possible without collaboration and engaged staff.

As 2015 progresses, I will continue to support the innovative and collaborative approach, which drives VCH's commitment to create sustainable health care.



Our CO₂ Footprint

2015 GREENHOUSE GAS EMISSIONS BREAKDOWN AND OFFSETS APPLIED TO BECOME CARBON NEUTRAL

Vancouver Coastal Health (VCH) reports its organizational carbon footprint based on guidelines provided by the Carbon Neutral Government Regulation (CNGR) and B.C. 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 (tCO₂e). These gases are categorized in three main categories:

1. Stationary Combustion and Purchased Energy
2. Mobile Fleet Combustion
3. Supplies (Paper)

Vancouver Coastal Health

VCH's 2015 Carbon footprint required an offset of 39,484 tonnes of carbon dioxide equivalent (tCO₂e). That represents a 21% decrease in VCH's carbon footprint since 2007.

Over 98% of Vancouver Coastal Health's in-scope emissions are attributed to the owned and leased buildings stationary combustion and purchased energy.

To become carbon neutral in 2015, Vancouver Coastal Health purchased carbon offsets at a total cost of \$986,239.



CHANGES TO VANCOUVER COASTAL HEALTH'S PORTFOLIO AND WEATHER INFLUENCE

VCH has increased its useable facility area growth since 2007 by 12%. VCH has a staff population of 13,179 full-time equivalent staff.

The vast majority of Vancouver Coastal Health's carbon footprint is related to the energy consumption from its owned and leased buildings. 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 93.5% of the total building emissions.

The carbon emissions reported are not adjusted for changes in climate temperatures. The use of Heating Degree Days (HDD's) is a metric designed to reflect the demand for energy required to heat a building. The HDD's for 2015 were 13% below those recorded in 2007, thus the demand for space heating, and hence natural gas use would have been lower compared to the demand in 2007.

VCH (includes Bella Coola and RW Large)

Our Carbon Footprint (in tCO ₂ e)		2007	2010 ³	2011 ³	2012	2013 ³	2014	2015
CO ₂	Mobile Fuel Combustion (Fleet & other mobile equipment)	104	107	49	89	59	57	61
	Stationary Fuel Combustion & Electricity (Buildings)	48,536	45,357	46,420	45,447	43,873	42,768	38,618
	Supplies (Paper)	1,402	1,402	1,435	636	871	797	824
	Total Carbon Footprint (tCO ₂ e)	50,042	46,866	47,904	46,172	44,804	43,623	39,503
	Emissions Which Do Not Require Offsets ^{1,2}	-19	-20	-22	-25	-25	-23	-19
	Total Carbon Footprint (tCO ₂ e)	50,023	46,846	47,882	46,147	44,779	43,600	39,484
	Adjustments / Corrections	0	-203	-241	-256	-399	-815	0
Total Carbon Footprint - for offsetting (tCO₂e)		50,023	46,643	47,641	45,891	44,380	42,785	39,484

\$	Purchased Carbon Offsets ⁴	\$ -	\$ 1,147,124	\$ 1,188,675	\$ 1,142,350	\$ 1,128,875	\$ 1,089,325	\$ 939,275
	Purchased Carbon Offsets + HST/GST⁵	\$ -	\$ 1,284,779	\$ 1,331,316	\$ 1,199,468	\$ 1,185,319	\$ 1,143,791	\$ 986,239

KPI	Emissions per Full-Time Employee	4.26	3.43	3.68	3.45	3.26	3.15	3.00
	Emissions per Meter Square Facility Space	0.083	0.072	0.074	0.070	0.068	0.065	0.058

¹ It was estimated that Fugitive Emissions from cooling equipment do not comprise more than 0.01% of VCH's total emissions and an ongoing effort to collect or estimate emissions from this source would be disproportionately onerous. For this reason, emissions from this source have been deemed out-of-scope and have not been included in our total greenhouse gas emissions profile.

² As outlined in the Carbon Neutral Government Regulation of the Greenhouse Gas Reductions Target Act, some emissions do not require offsets.

³ Carbon Footprint adjusted for 2010, 2011 and 2013 due to building data corrections from the Climate Action Secretariat.

⁴ Purchased Carbon Offsets represent the actual invoice amount to purchase offsets in the specific calendar year.

⁵ The tax included in the Purchased Carbon Offsets in 2010-2011 included 7% HST and 5% GST, from 2012 onwards only 5% GST is included.



Actions Taken To Reduce Our CO₂ Footprint

2015 LIST OF ACTIONS TAKEN TO REDUCE CO₂ FOOTPRINT

Stationary Fuel Combustion, Electricity (Buildings)

- In 2015, Vancouver Coastal Health completed 18 energy savings projects for a total estimated saving of 2.63 GWh of electricity and 19,096 GJ of natural gas a reduction of 992 tCO₂e of GHG.
- Vancouver Coastal Health fully utilized the Carbon Neutral Capital Program (CNCPC), to fund several energy / GHG emission reduction projects. Over \$1.1m of CNCPC funds, combined with incentive funding was invested into a energy efficiency upgrade project, which resulted in 79 tCO₂e emission savings.
- VCH is in the fifth year of the Green Revolving Fund (GRF), a successful project that re-invests funds created through energy savings.
- VCH continues to embed sustainability across the organization by supporting staff engagement initiatives such as the GreenCare Community site, which has 1,635 registered VCH staff and provides tips and toolkits on energy reduction and other environmental initiatives. As well, the Green+Leader program continues to train VCH staff as sustainability champions, along with the BC Hydro Workplace Conservation Agreement program.
- VCH updated our Energy and Environmental Sustainability Design Guidelines for New Construction and Major Renovation projects with the intent to ensure health care related new construction and major renovation projects are built to the highest standard of human / environmental health, performing efficiency, and financial investment.



Mobile Fleet Combustion (Fleet and other vehicles)

In 2015, VCH's Transportation Demand Management Coordinator and Active Transportation Facilitator worked to improve, promote and establish alternative transportation opportunities for VCH staff.

- The VGH Cycling Centre provided access to a state-of-the-art end-of-trip facility, with more than 170 indoor bicycle parking spots, including 12 electric bicycle spots, lockers, showers, towel service, a lounge and a bike repair room for maintenance and tune-ups. In 2015, VGH's Cycling Centre grew its user base and expanded its services to include more workshops and events.
- An active and clean commute is supported across VCH with 1,133 bike parking stalls.
- VCH now has four electric vehicle-charging stations across three core sites.
- 196 VCH staff participated in the 2015 Clean Commuter & Wellness Challenge, a campaign to encourage staff to try an active commute.
- A new carpool / ride-match program was launched in 2015: Carpool.ca connecting VCH health care staff to carpool matches.
- In 2015, 45,100 health care staff were shuttled between VCH sites, using the internally organized Jack Bell shuttle service.

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

- The Green+Leaders (G+L) behaviour change program recruited 19 new volunteers from VCH in 2015, making a total of 69 active staff volunteers from across VCH.
- VCH continues to support the GreenCare Community (GCC) site, which now has 1,635 VCH staff registered and provides inspiring articles, toolkits and resources.
- Education and awareness communication via the GreenCare Community, as well as stories published on VCH News and other communication channels, continues to champion behaviour change and celebrate environmental sustainability success.
- Supported professional development for Facilities Management and Operations staff through workshops professional development through workshops and educational sessions sponsored by BC Hydro and Fortis BC.

VCH (includes Bella Coola and RW Large)

BUILDINGS, FTE AND WEATHER	2007	2010	2011	2012	2013	2014	2015
Distinct VCH Health Buildings	n/a	270	255	230	231	230	232
	% Owned	84%	85%	85%	85%	85%	86%
	% Leased	16%	15%	15%	15%	15%	14%
Usable Square Meters¹	602,766	645,957	645,957	652,661	657,356	657,905	675,746
Full-Time Employee Equivalents	11,738	13,600	12,936	13,293	13,596	13,293	13,179
Weather (summarized in Heating Degree Days)²	2,870	2,621	2,963	2,859	2,820	2,627	2,490

¹ Usable area excludes roof tops, mechanical rooms, parkades, and parking lots.

² Building energy consumption is influenced by climate conditions. Vancouver has a climate which predominantly requires heating to satisfy internal building temperatures. Heating Degree Days (HDD's) is a measurement designed to reflect the demand for energy needed to heat a building.

Supplies (Paper)

- As part of the Green+Leader program, a paper/waste reduction campaign supported volunteers with Paperless Meeting Toolkits to encourage their colleagues to reduce paper use.
- In 2015, VCH encouraged teleconferencing for meetings by installing web-conferencing hardware and software at various sites.
- In collaboration with BCSS (HSSBC), VCH has started to discuss the procurement of wheat based paper supplies.



Paperless Meetings Toolkit

Objective

A paperless meeting is characterized by the absence of paper copies of the agenda, minutes, presentations or other documents. The goal is to decrease paper use by eliminating the practice of printing documents to hand out at meetings.

Why paperless meetings

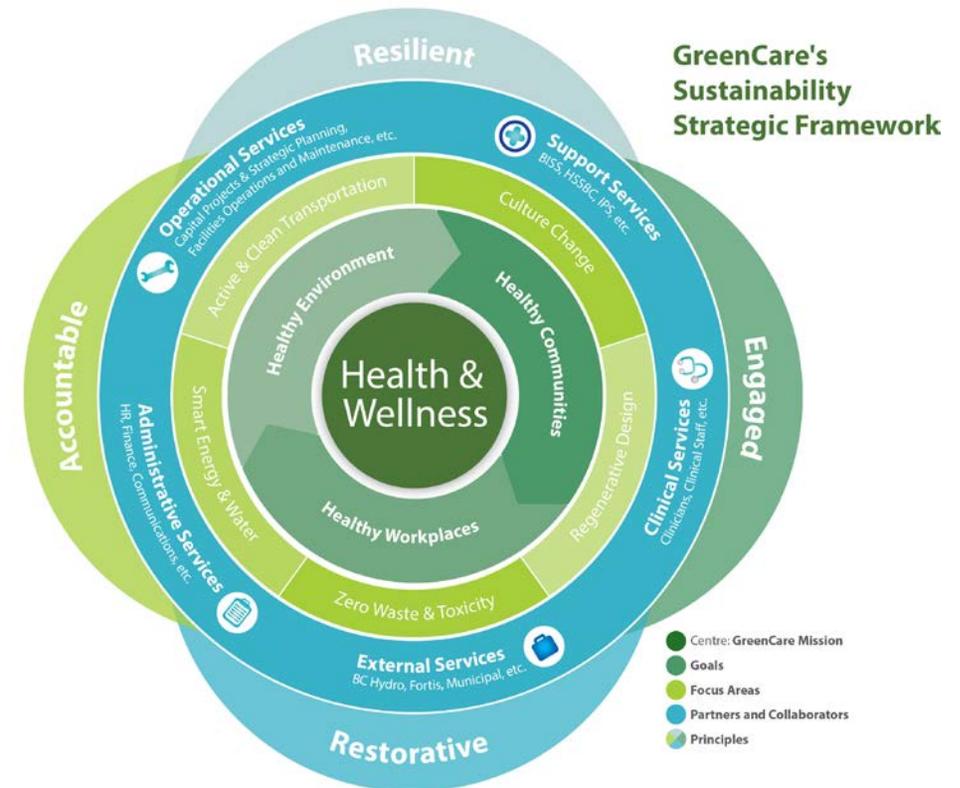
A paperless meeting eliminates paper and its related expenses. Required documents are distributed digitally ahead of time so people can review them or project them onto a screen. When a paper version is required, stop and think about how many copies you actually need: can people share or can they read on a laptop or from a projector? Paperless meetings can also assist your department in eliminating the risk associated with printing confidential information. If you can use virtual meetings, this further reduces expenses related to travel and employee impacts.



2016 WORK TO REDUCE THE ORGANIZATION'S CO₂ FOOTPRINT

Vancouver Coastal Health plans to continue reducing GHG emissions and Energy in the following ways:

- VCH's Energy Management team is planning the implementation of 20 energy projects in 2016 at a number of VCH facilities. When completed, these projects will result in a total estimated savings of 2.0 GWh of electricity, 68,835 GJ of natural gas and a reduction of 3,292 tCO₂e of GHG. The GHG savings represent emissions reduction of 8.3% from the 2015 Carbon Offsets totals at VCH.
- Planning and implementing GHG / energy reduction projects in our existing building portfolio by utilizing the Carbon Neutral Capital Program (CNCP), and supplementing with internal capital funds and incentives from BC Hydro and Fortis BC.
- Engaging with design engineers to ensure our new builds adopt energy efficient design principles.
- Continuing to engage with site operations staff and external consultants to identify GHG / Energy opportunities.
- Engaging and educating our staff, via the existing Green+Leaders program, GreenCare Community and the BC Hydro Workplace Conservation Agreement.
- Developing a roadmap for climate adaptation, including resiliency assessment for three Vancouver Coastal Health site.
- Working with GreenCare's refreshed Strategic Framework, Vancouver Coastal Health will strive to advance health care practices that respect environmental stewardship, noting that the environmental impact from health care facilities, operations and services influence the health of the populations and patients we serve. Vancouver Coastal Health will engage in a collaborative approach to create a sustainable and environmentally responsible health care system, which continues to advance health and wellness in its broadest sense.



Project Success: A Team-Orientated Approach

In 2015, Vancouver Coastal Health celebrated the successful implementation of 18 energy saving projects that helped shrink VCH's carbon footprint and reduce operational costs. Each of these projects has to be thoroughly investigated to ensure they are viable and successful, while causing minimal disruption to our patients and front line health care staff. This is no small feat, and would not have been possible without the strong collaboration between Facility Maintenance and Operational (FMO) teams and the Vancouver Coastal Health Energy Management team.

One particularly successful energy reduction project was implemented at Powell River General Hospital, a 33-bed facility located in the northern region of the Sunshine Coast, which provides a range of acute and diagnostic services to the population of the Powell River Regional District.

After the results of a detailed site energy investigation were reviewed, it was clear there was an opportunity to optimize the sites heating system and provide an upgrade to some mechanical equipment that has been in place since the original construction. The site's energy center, which also provides heat to Willingdon Creek Village, was replaced with a modern hybrid plant in addition to two other energy saving measures.

The FMO and Energy Management teams worked together to prepare a project plan that would minimize any service disruption, while staying on schedule. This included arranging several phased shutdowns and supplying a temporary back-up boiler to ensure sufficient heating capacity was available in the event of an emergency. Input from the FMO team during the initial investigation, implementation, and project handover resulted in a final project that aligned with the site's needs, and had a positive impact on site operations, patient comfort, and VCH's environmental footprint.

"Strong support from the FMO team, along with open communication throughout the project, was required for this complex retrofit to be successful. We depended on their site knowledge, and relationships with clinical departments, to successfully coordinate this type of project. Their involvement was essential," notes Alan Lin, Energy Specialist for Vancouver Coastal Health.

Energy Saving Measures

The three key energy saving measures implemented are listed below:

- High Temperature Domestic Hot Water (DHW) Set Point Reduction: this included the installation of a DHW booster to ensure the required sanitation temperatures are supplied.
- High Efficiency Boiler Upgrade: this measure replaced the two large existing boilers and with three small high efficiency condensing units and two modern dual fuel units. This reliable system provides the control required to optimize the hot water supply in low and high demand cycles.
- Demand Control Ventilation: new variable speed drives were installed on both the supply and exhaust fans provided ventilation to the kitchen facilities to match ventilation to the demand.

The estimated annual savings from this project are 16,106 kWh's of electricity, 1,518 GJ's of natural gas, \$20,202 in avoided energy and maintenance costs, and 79 tCO_{2e} of greenhouse gas emissions.



Powell River General Hospital: High Efficiency Boiler Upgrade.