2015 Carbon Neutral Action Report
Provincial Health Services Authority

Executive Summary: Provincial Health Services Authority

Carl Roy, President & Chief Executive Officer

Over the years, Provincial Health Services Authority (PHSA) has dedicated more time and resources to raising environmental awareness amongst our staff, our patients and the communities we serve.

I am pleased to present the sixth annual Carbon Neutral Action Report (CNAR), which highlights PHSA's leadership in reducing our carbon footprint and linking health and wellness to environmental sustainability and accountability. At a time when many of us feel a growing concern for our planet's health, the changes we continue to make in our workplace have earned PHSA the designation of one of Canada's Greenest Employers, for the sixth year in a row!

In 2015, PHSA had a carbon footprint of 17,468 tonnes of carbon dioxide equivalent (tCO2e), which was offset at a total cost of $ 458,535.00. This represents a 27 percent decrease from the 2007 PHSA carbon footprint. Compared to 2010, PHSA's carbon offset cost has reduced by $244,825. As well, PHSA completed several projects in 2015, with a total estimated savings of 166,206 kWh of electricity and 4 tCO_2e. PHSA partially completed five other energy savings projects in 2015, with estimated savings once complete of 1.3 GWh of electricity, 17,796 GJ of gas, and 922 tCO_2e.

Many of the energy projects that we list in this report would not have been possible without the coordinated efforts of PHSA staff working together, and in collaboration with external stakeholders. PHSA's Energy Management team worked closely with Facilities Maintenance and Operations (FMO) teams on projects that reduce emissions in PHSA buildings. These projects have positive impacts; saving energy, decreasing air pollution, and ultimately adding to the health and wellness of facilities, workplaces and the communities we serve.

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Our CO_2 Footprint

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

Provincial Health Services Authority (PHSA) reports its organizational carbon footprint based on guidelines provided by the Carbon Neutral Government Regulation (CNGR) and the Climate Action Secretariat (CAS).

The 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 Provincial Health Services Authority's carbon footprint to comprise of six different greenhouse gases, which are converted to tonnes of carbon dioxide equivalent (tCO_2e). These gases are categorized in three main categories:

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

Provincial Health Services Authority

PHSA's 2015 Carbon footprint offset was 17,468 tonnes of carbon dioxide equivalent (tCO_2e). That represents a 27% decrease in PHSA's carbon footprint since 2007.

Over 98% of Provincial Health Services Authorities in-scope emissions are attributed to the building portfolio.

To become carbon neutral in 2015, Provincial Health Services Authority purchased carbon offsets at a total cost of $ 458,535.

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CHANGES TO PHSA PORTFOLIO AND WEATHER INFLUENCE

PHSA's useable facility space has decreased 9.5% since 2007, which is largely due to the decommissioning of the Riverview property. During the same time, the number of staff (measured in full time equivalents) has increased by 45.3%. During this time, PHSA has controlled increases in facility space by seeking opportunities to optimize existing space use while maintaining safety and efficiency.

In 2015, emissions per full-time employee at PHSA (1.61 tCO_2e/FTE) have decreased by 49.9% since 2007. And emissions per unit of floor area (0.05 tCO_2e/m^2) have decreased 19.7% since 2007.

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.

PHSA

	Our Carbon Footprint (in tCO2e)	2007	2010	2011	2012	2013 [2]	2014	2015
CO_2	Mobile Fuel Combustion (Fleet & other mobile equipment	189	195	180	203	153	159	159
	Stationary Fuel Combustion & Electricity (Buildings)	22,930	20,413	22,497	24,950	19,890	17,923	16,426
	Supplies (Paper)	891	891	912	839	771	828	882
	Total Carbon Footprint (tCO2e)	**24,010**	**21,499**	**23,590**	**25,992**	**20,815**	**18,911**	**17,467**
	Emissions Which Do Not Require Offsets [1]	-9	-9	-9	-10	-10	-9	-10
	Total Carbon Footprint (tCO2e)	24,002	21,490	23,581	25,981	20,805	18,902	17,458
	Adjustments / Corrections	0	0	0	0	0	0	10
	Total Carbon Footprint - for offsetting (tCO2e)	**24,002**	**21,490**	**23,581**	**25,981**	**20,805**	**18,902**	**17,468**
$	Purchased Carbon Offsets	$ -	$ 628,000	$ 485,700	$ 644,750	$ 538,025	$ 472,625	$ 436,700
	Purchased Carbon Offsets +HST / GST	**$ -**	**$ 703,360**	**$ 543,984**	**$ 676,988**	**$ 564,926**	**$ 496,256**	**$ 458,535**
KPI	Emissions per Full-Time Employee	3.21	2.26	2.61	2.44	2.05	1.86	1.61
	Emissions per Meter Square Facility Space	0.062	0.055	0.060	0.065	0.061	0.055	0.050

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

[2] Carbon Footprint adjusted for 2013 due to building data corrections from the Climate Action Secretariat.

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Actions Taken To Reduce Our CO_2 Footprint

2015 LIST OF ACTIONS TAKEN TO REDUCE CO_2 FOOTPRINT

Stationary Fuel Combustion, Electricity (Buildings)

PHSA completed several projects in 2015, with a total estimated savings of 166,206 kWh of electricity and 4 Tonnes CO_2e.

- **BCCN Parkade Lighting Upgrade**: A lighting upgrade project was completed at the BC Cancer Agency's Centre for the North (BCCN), which involved converting parkade lighting to LED technology, adding scheduling and occupancy controls to the indoor parkade lighting, and daylight controls to the outdoor parkade lighting. Estimated annual savings are approximately 111,000 KWh of electricity.

- **Coil Cleaning:** Coil cleaning was completed at two sites (Sunny Hill Health Centre and BC Cancer Agency's Vancouver Centre) to reduce fan energy by removing dirt from heating and cooling coils. This initiative has the added benefit of improving indoor air quality. Estimated annual savings are approximately 55,000 kWh of electricity.

PHSA partially completed five other energy savings projects in 2015, with estimated savings once complete of 1.3 GWh of electricity, 17,796 GJ of gas, and 922 Tonnes CO_2e.

- **TRB Optimization:** An optimization project at the Translational Research Building (TRB) on the BC Children's and Women's campus (commonly referred to as C&W campus).

- **MHB Optimization**: An optimization project at the Mental Health Building (MHB) on the C&W campus consisting mainly of hydronic adjustments.

- **CFRI N&S Cooling Towers**: Two cooling towers were replaced that serve the Child and Family Research Institute (CFRI) North and South wings on the C&W campus. The new cooling towers are "induced draft" towers that consume one eighth as much energy, while delivering the same capacity.

- **CFRI N&S Retro-Commissioning**: Phase 2 of a retro-commissioning project at CFRI N&S was largely completed, consisting primarily of ventilation adjustments.

- **BCCRC Heat Recovery Chiller**: A major heat recovery chiller project spanning two fiscal years was partially completed in 2015 at the BC Cancer Research Centre (BCCRC) with significant projected energy savings through an innovative mechanical design. This project is funded through the Carbon Neutral Capital Program (CNCP).

Stationary Fuel Combustion, Electricity (Buildings) Continued.

PHSA's Energy Management team were involved in updating 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 human / environmental health, performing efficiency, and financial investment.

PHSA'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 and the BC Hydro Workplace Conservation Agreement program.

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Mobile Fleet Combustion (Fleet and other vehicles)

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

- PHSA installed six (5-120v; 1-240v) electric vehicle-charging stations across two core sites.
- PHSA partnered with Vancouver Coastal Health and Providence Health Care to provide a shuttle service between sites. In 2015, the shuttle provided transportation for 89,149 staff to and from PHSA facilities, and possibly removed the same number of single occupancy vehicle trips from the road.
- PHSA introduced a staff shuttle between C&W campus, staff off-site parking lot and King Edward Station that transported 102,818 passengers in 2015.
- PHSA has 739 bike parking stalls.

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.
- PHSA encouraged teleconferencing for meetings by installing web-conferencing hardware and software at various sites.

PHSA

BUILDINGS, FTE AND WEATHER	2007	2010	2011	2012	2013	2014	2015
Distinct PHSA Buildings	n/a	78	80	84	83	84	73
% Owned	n/a	57%	57%	57%	68%	67%	68%
% Leased	n/a	43%	43%	43%	32%	33%	32%
Usable Square Meters	388,990	389,883	392,728	400,444	342,311	344,956	352,229
Full-Time Employee Equivalents	7,471	9,492	9,022	10,646	10,158	10,535	10,854
Weather (summarized in Heating Degree Days) [1]	2,870	2,621	2,963	2,859	2,820	2,627	2,489

[1] Building energy consumption is influenced by climate conditions. Vancouver has a climate which predomintaly 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.

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

- The **Green+Leaders** behaviour change program recruited 10 new volunteers from PHSA in 2015, making a total of 76 active staff volunteers across PHSA.
- PHSA continues to support the **GreenCare Community** website, which provides tips and toolkits on using less paper, as well as other environmental sustainability initiatives linked to health and wellness. In 2015, PHSA had 970 staff registered on the site.
- Education and awareness communication via the **GreenCare Community**, as well as stories published in PHSA news and other communication channels various internal communication channels, continue to champion behaviour change and celebrate environmental sustainability success.
- Provided training, resources, toolkits and recognition to support the **Green+Leader program** and various green teams in PHSA.
- Support professional development through workshops and educational sessions sponsored by **BC Hydro** and **Fortis BC**.

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2016 WORK TO REDUCE THE ORGANIZATION'S CO_2 FOOTPRINT

Provincial Health Services Authority plans to continue reducing GHG emissions and energy use by:

- **Optimizing our Existing Buildings:** Planning and implementing GHG / energy reduction projects in our existing building portfolio by utilizing the Carbon Neutral Capital Program (CNCP) as our primary funding source.

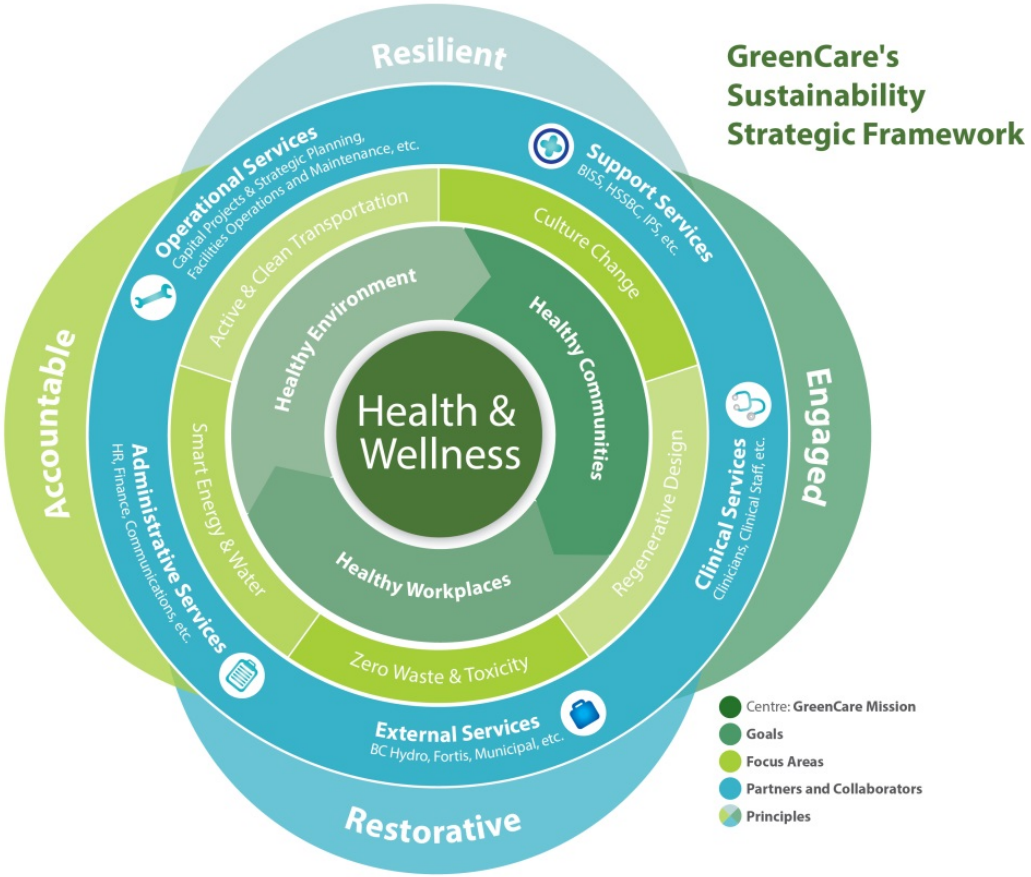
- **Influence New Construction:** Implement aggressive project-specific energy performance targets to ensure that our new buildings are as energy efficient as possible.

- **Systemic Change:** Implementing standards, guidelines, and processes to embed energy management principles further into standard operations.

- **Behaviour Change:** Engaging and educating our staff, via the existing Green+Leaders program, GreenCare Community and the BC Hydro Workplace Conservation Agreement.

- **Innovation and Demonstration**: Leverage the innovative Green Revolving Fund approach that has been initiated for PHSA to support ongoing investment in energy conservation through utility cost avoidance achieved through conservation.

- **Align with our Core Mandate:** Working with GreenCare's refreshed Strategic Framework; Provincial Health Services Authority 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 populations and patients we serve. Provincial Health Services Authority 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.



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SUCCESS STORY

Since energy used in buildings represents over 90% of PHSA's carbon footprint, it is a key focus of the organization's drive for carbon neutrality. For that reason, PHSA's Energy Management team looks to optimize existing buildings, upgrading infrastructure and equipment to advance energy efficiency and healthy workplaces.

In 2015, PHSA's Energy Management team worked in collaboration with Todd Jacques, Director of Facilities at the Child and Family Research Institute (CFRI) to implement several energy savings projects and enhance PHSA's facilities.

The CFRI is the largest research institute of its kind in Western Canada in terms of people, productivity, funding and size. It is comprised of more than 264,000 square feet spanning five buildings with various research centers, including the Centre for Molecular Medicine and Therapeutics (CMMT), as well as research groups focused on reproduction and pregnancy, nutrition, immunity, disease and genetics. The building that houses the CMMT is one of the five CFRI buildings located in the northwest corner of BC Children's and Women's (C&W) campus and home to laboratories and clinic research areas where scientists and researchers work to solve genetic questions surrounding human illness and well-being.

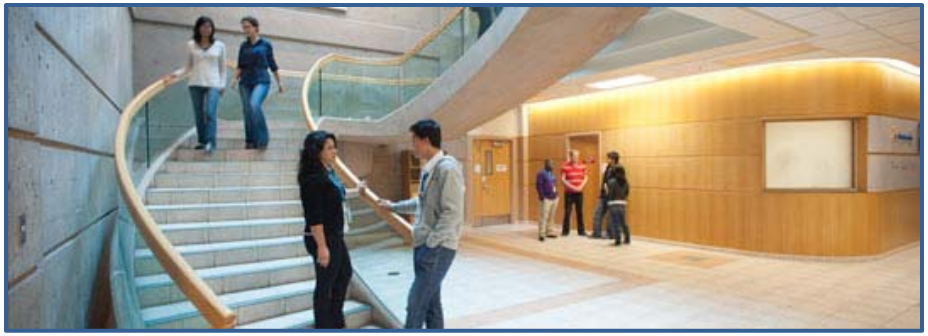
An urgent need was identified to replace the cooling towers for the building to reliably maintain appropriate thermal conditions for the building, particularly important for research laboratories and clinic research areas.

PHSA's Energy Management team saw an opportunity to support this initiative due to the significant energy savings potential. The project was implemented to replace the old cooling towers with two new towers, which are eight times more energy efficient, achieving estimated savings of 117,000 electrical kWh each year. These particular cooling towers were chosen because they are "induced draft" technology and will further improve energy efficiency, reduce energy costs, and help cut PHSA's carbon footprint.

"It was important for CFRI to reduce our energy output for a variety of reasons: environmentally, to reduce our impacts at the C&W site, and for the expected financial benefits that result from energy savings. All the [energy conservation] projects ran smoothly and I look forward to seeing the results," says Jacques.

PHSA's Energy Management team noted that the project ran smoothly, in large part, as a result of Jacques' willingness to try new energy saving technologies and the efforts that his Facilities Maintenance and Operations team to support and achieve project completion. Jacques coordinated various contractors, worked in collaboration with multiple stakeholders to ensure the project was completed on time, and provided funding for the energy controls portion.

This project is PHSA's CNAR success story, as the energy savings were made possible due to a high level of cooperation, coordination and engagement from Todd Jacques and his team. This aligns with GreenCare's vision that a collaborative approach is needed to create a sustainable and environmentally responsible health care system, which continues to advance health and wellness in its broadest sense.



Centre for Molecular Medicine & Therapeutics

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