

2015 Carbon Neutral Action Report

Fraser Health Authority



Executive Summary: Fraser Health, CNAR 2015

Michael Marchbank, President and Chief Executive Officer

It is my pleasure to present Fraser Health's 2015 Carbon Neutral Action Report. This marks the sixth consecutive year we have achieved carbon neutrality, as part of the provincial public sector commitment to achieve net-zero emissions.

Fraser Health's 2015 carbon footprint represented 36,384 tonnes of carbon dioxide equivalent (tCO₂e) – a 6.4 per cent decrease from 2014 and a 0.6 per cent decrease since 2007. Health care is an energy-intensive industry and one that continues to grow, with populations expanding and aging. In addition, our facilities and staffing portfolios have expanded significantly since 2007 – by 26 per cent and 23 per cent – respectively. Despite these pressures, Fraser Health's tCO₂e per square meter of facility space has decreased by 21 per cent, a notable achievement.

In 2015, retrofits to 19 of our facilities were completed, which will result in significant energy savings of 4.4 eGWh (15,663 GJ) and GHG savings of 645 tCO₂e. Several energy and greenhouse gas emission reduction projects were funded by the Carbon Neutral Capital Program (CNCP) including those at Chilliwack General, Delta, Eagle Ridge and Peace Arch Hospitals. Over \$1 million was used from this fund to enable the majority of the emission savings stated above.

A \$250,000 Green Revolving Fund was established this year, using internal and seed funding from BC Hydro to enable a revolving funding mechanism for future electricity reduction projects; and we continued to expand our engagement strategy with the Green+Leader Program, encouraging everyone to realize their role in supporting environmental stewardship.

To counteract emissions we were unable to reduce, we purchased carbon offsets from the Ministry of Environment at a total cost of \$955,001.

In the year ahead, innovation and commitment will help us move our refreshed GreenCare environmental sustainability strategic framework forward, allowing us to better align energy management with population health and wellness. As well, we will continue implementing greenhouse gas emission and energy reduction projects and ensuring new buildings adopt energy efficient design principles.

Thank you to everyone who worked hard to reduce Fraser Health's carbon and environmental footprint. We know every individual can make a difference and by working together we are able to provide both quality care and a better health care environment for our patients and our communities.



Our CO₂ Footprint

2015 GREENHOUSE GASEMISSIONS BREAKDOWN AND OFFSETS APPLIED TO BECOME CARBON NEUTRAL

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

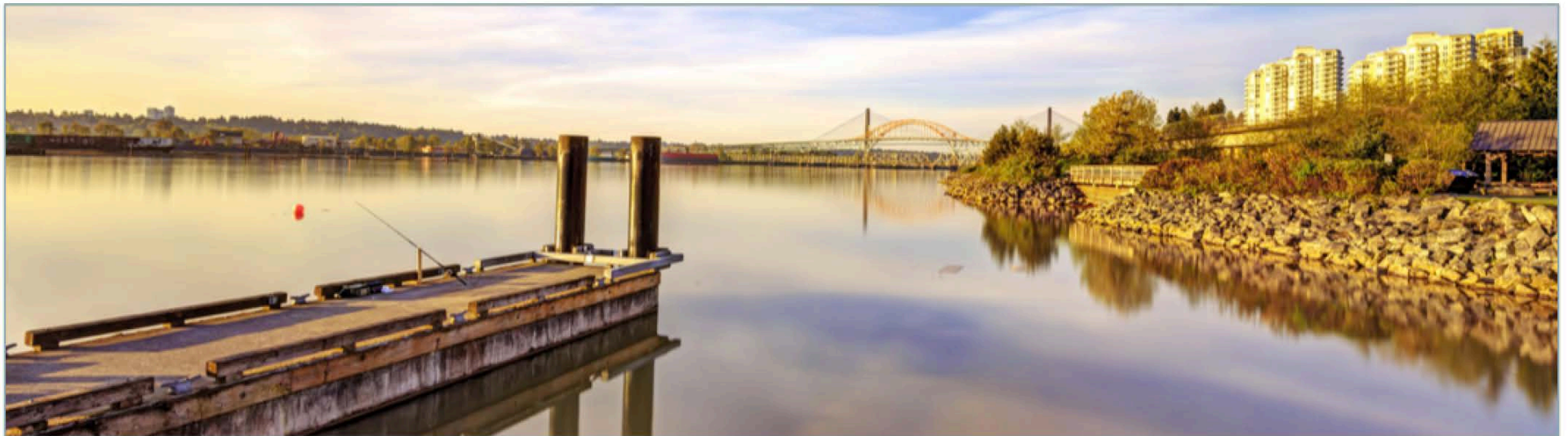
CAS uses various elements of reporting, based on the GHG Protocol Corporate Standard, which has classified carbon reporting into three areas. Of these areas, CAS has determined that the scope of Fraser Health's assessed carbon footprint will comprise six different greenhouse gases, which are measured as tonnes of carbon dioxide equivalent (tCO₂e). These are organized in three main categories:

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

FRASER HEALTH

Fraser Health's 2015 carbon emissions footprint was 36,381 tonnes of carbon dioxide equivalent (tCO₂e). This represents a 6.4 per cent decrease from 2014 and a decrease of 0.6 per cent in the carbon footprint since 2007. This is a great achievement since the Fraser Health facility and staffing portfolios have grown significantly during the same time period. Taking this into consideration the tCO₂e / square meter of facility space has actually decreased by 21 per cent.

To become carbon neutral in 2015, Fraser Health purchased carbon offsets from the Ministry of Environment at a total cost of \$955,001.



CHANGES TO FRASER HEALTH'S PORTFOLIO AND WEATHER INFLUENCE

Fraser Health continues to grow and expand services to an increasing regional population. Since 2007, Fraser Health's useable facility space has increased by 26 per cent and full time equivalent (FTE) positions have increased by 23 per cent.

Over 95 per cent of Fraser Health's carbon footprint is related to the energy consumption of its owned and leased buildings. Natural gas is the predominant fossil fuel used for space heating, hot water, and process loads in our stationary combustion plants. Carbon emissions associated with our use of natural gas make up 96 per cent of building emissions.

The carbon emissions reported are not adjusted for changes in weather and temperature. Vancouver and the Fraser Valley has a climate which predominately requires heating to satisfy internal building 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 3.6 per cent below 2007 levels, which is reflected in a decreased demand for space heating, and natural gas use in 2015.

FRASER HEALTH

BUILDINGS, FTE AND WEATHER	2007	2010	2011	2012	2013	2014	2015
Distinct FHA Buildings	n/a	132	143	149	150	153	151
% Owned	n/a	82%	82%	82%	82%	84%	84%
% Leased	n/a	18%	18%	18%	18%	16%	16%
Usable Square Meters	611,075	667,654	677,965	686,512	711,701	768,716	767,060
Full-Time Employee Equivalents	12,260	13,682	14,788	14,158	14,359	14,772	15,044
Weather (summarized in Heating Degree Days)¹	2,870	2,603	2,952	2,874	2,831	2,600	2,519

¹ Building energy consumption is influenced by climate conditions. Vancouver has a climate which predominately requires heating to satisfy internal building temperatures. Heating Degree Days (HDD's) is a metric designed to reflect the demand for energy needed to heat a building. Measurement designed. The HDDs are taken from Abbotsford Airport.

FRASER HEALTH

Our Carbon Footprint (in tCO ₂ e)		2007	2010	2011	2012	2013	2014	2015
CO ₂	Mobile Fuel Combustion (Fleet & other mobile equipment)	136	140	138	96	126	124	106
	Stationary Fuel Combustion & Electricity (Buildings)	35,404	36,270	40,036	40,306	38,622	37,739	34,863
	Supplies (Paper)	1,056	1,056	1,081	1,065	1,320	1,010	1,434
	Total Carbon Footprint (tCO₂e)	36,596	37,466	41,255	41,467	40,067	38,873	36,403
	Emissions Which Do Not Require Offsets ¹	-8	-8	-11	-11	-17	-12	-19
	Total Carbon Footprint (tCO₂e)	36,587	37,458	41,244	41,455	40,050	38,862	36,384
	Adjustments / Corrections	0	0	0	0	0	-3	0
Total Carbon Footprint - for offsetting (tCO₂e)		36,587	37,458	41,244	41,455	40,050	38,859	36,384
\$	Purchased Carbon Offsets	\$ -	\$ 936,459	\$ 1,031,106	\$ 1,036,384	\$ 1,001,261	\$ 971,550	\$ 909,525
	Purchased Carbon Offsets +HST / GST	\$ -	\$ 983,282	\$ 1,082,661	\$ 1,088,203	\$ 1,051,324	\$ 1,020,128	\$ 955,001
KPI	Emissions per Full-Time Employee	2.98	2.74	2.79	2.93	2.79	2.63	2.42
	Emissions per Meter Square Facility Space	0.060	0.056	0.061	0.060	0.056	0.051	0.047

¹ As outlined in the Carbon Neutral Government Regulation of the Greenhouse Gas Reductions Target Act, some emissions do not require offsets. calendar year noting that these amounts may include



Actions Taken To Reduce Our CO₂ Footprint

2015 LIST OF ACTIONS TAKEN TO REDUCE CO₂ FOOTPRINT

Stationary Fuel Combustion, Electricity (Buildings)

- 19 energy retrofits were carried out in 2015. These will result in energy savings of 4.4 eGWh (15,663 GJ) and GHG savings of 645 tCO₂e.
- Fraser Health fully utilized the Carbon Neutral Capital Program (CNCP) to fund several energy / GHG emission reduction projects at Chilliwack General, Delta, Eagle Ridge and Peace Arch Hospitals. Over \$1 million of CNCP funds, combined with internal capital funds and incentives, were invested and the majority of the above emissions savings are a result of this program.
- A \$250,000 Green Revolving Fund (GRF) was set up for electricity conservation projects, using a combination of internal and BC Hydro seed funds.
- Over 20 optimization energy conservation measures were implemented at Ridge Meadows Hospital and Cottage and Worthington Pavilions, as part of the BC Hydro Continuous Optimization Program.
- The Fraser Health energy management team continued to roll out an engagement strategy with Facilities Maintenance and Operations (FMO) departments, adding Queens Park Care Centre to Peace Arch, Delta and Langley Memorial Hospitals. The outreach focused on energy use in buildings, identification of reduction opportunities, and optimization of existing equipment/plants.
- GreenCare's Energy and Environmental Sustainability Design Guidelines for new construction and major renovation projects were updated, with the intent to ensure new construction and major renovation projects in health care are built to the highest standard of human / environmental health, performance efficiency, and financial investment.
- The Energy and Environmental Sustainability Team continued to promote energy conservation and GHG emissions reduction through awareness and behaviour change programs, such as the Green+Leaders program, the GreenCare Community website, and the BC Hydro Workplace Conservation Awareness program.



Mobile Fleet Combustion (fleet and other vehicles)

- Fleet vehicles have decreased from 45 to 43.
- 42 (36-120v; 6-240v) electric vehicle charging stations have been installed and activated at six core Fraser Health sites.
- A shuttle transports Fraser Health staff, ambulatory patients, family members and courier packages between three Fraser Health facilities and the SkyTrain station at Surrey City Centre. In 2015, the shuttle facilitated the transfers of 35,515 passengers and 34 packages.
- Fraser Health has 509 bike parking stalls.
- In 2015, Fraser Health launched a new carpool / ride-match program; Carpool.ca connects health care staff to carpool matches who work at the same Fraser Health site.

Supplies (paper)

- The Green+Leaders (G+L) program trains employees to help improve the environmental sustainability of health care operations across the Lower Mainland. In 2015, 13 volunteers joined the program, making a total of 76 active G+Ls in Fraser Health. As part of the waste reduction campaign, they were supplied with toolkits to reduce paper use through double-sided printing, paperless meetings and more.
- The online GreenCare Community (GCC) provides inspiration, tips and toolkits to reduce waste, including paper use. Fraser Health currently has 1,306 staff registered on the GCC.
- Fraser Health encouraged teleconferencing by installing web-conferencing hardware and software at various sites.



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.

Above and Beyond Carbon Neutral Regulations

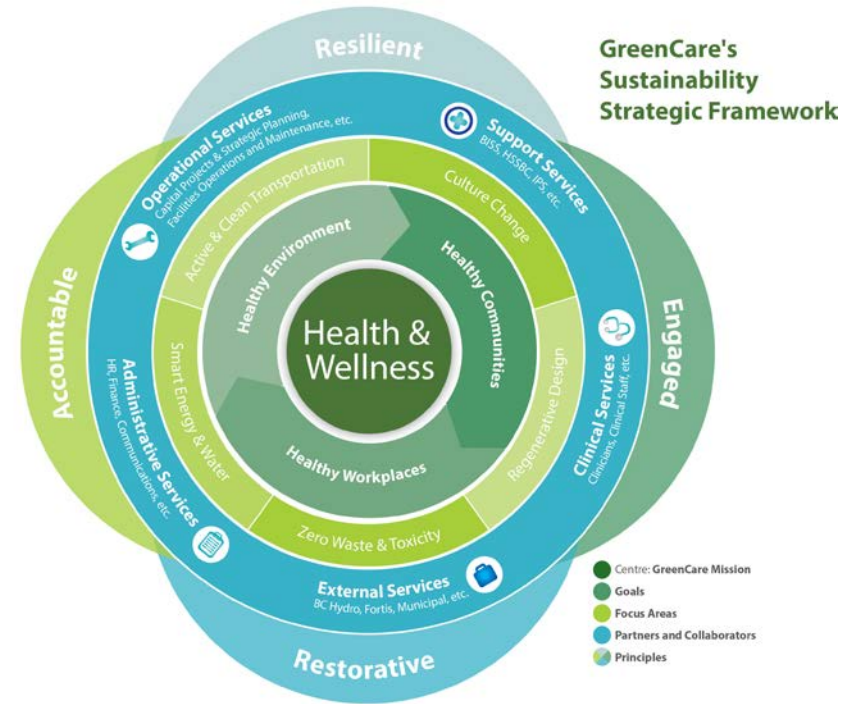
- 102 Fraser Health staff participated in the 2015 Clean Commuter & Wellness Challenge, a campaign to encourage staff to choose healthier transportation, such as walking, biking, carpooling or taking transit.
- Education and awareness communications via the GreenCare Community site, as well as stories published on Fraser Health's internal communication channels, continued to promote behaviour change and celebrate environmental sustainability success.
- Training, resources, toolkits, and recognition support staff champions through the Green+Leaders program.
- Professional development for Facilities Maintenance and Operations staff is provided through workshops and educational sessions sponsored by BC Hydro and Fortis BC.



2016 WORK TO REDUCE FRASER Health's CO₂ FOOTPRINT

Fraser Health plans to continue reducing GHG emissions and Energy use by:

- 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.
- Continuing the optimization of mechanical plants and controls in our existing building portfolio.
- Reinvesting 90 per cent of electricity savings from F16 fiscal year – as part of the Green Revolving Fund – into electricity reduction projects.
- Engaging with design engineers to ensure our new buildings adopt energy efficient design principles.
- Continuing to engage with site operations employees and external consultants to identify GHG / energy reduction opportunities.
- Engaging and educating Fraser Health employees, through the Green+Leaders program, GreenCare Community and the BC Hydro Workplace Conservation Agreement.
- Building partnerships with cities and municipalities to investigate district energy systems opportunities with alternative energy solutions.
- Working with GreenCare's refreshed strategic framework, to advance health care practices that respect environmental stewardship, in recognition that the environmental impact from healthcare facilities, operations, and services influence the health of the populations and patients we serve. Fraser 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
- Developing a roadmap for climate adaption, including resiliency assessments for two Fraser Health sites.



Success Story: A Coordinated Approach

In 2015, success for Fraser Health's Energy Management (EM) team was linked to increased collaboration and a coordinated approach.

"Over the years, we have made an effort to build relationships with Facilities Maintenance & Operations (FMO) teams across Fraser Health. Where we have established strong relationships and good communication, we have been rewarded with a better understanding of facility needs, and greater opportunity to identify and implement projects that enhance operations and improve health care facilities," says Robert Bradley, Energy Manager for Fraser Health.

Most recently, Fraser Health celebrated the success of these coordinated efforts at Delta Hospital (DEH) and Mission Memorial Hospital (MMH). In both cases, FMO teams worked closely with the Energy Management (EM) team, as well as external partners, to replace obsolete heating and domestic hot water systems with a new and more energy efficient boiler plant, as well as plumbing infrastructure. These projects have improved occupant comfort and supported patient care, while reducing energy and emissions.

The FMO and EM teams, with guidance from an engineering consultant, worked closely to determine viable and reliable energy saving solutions. Funding from the Carbon Neutral Capital Program (CNCPP), internal capital, as well as financial incentives from both Fortis BC and BC Hydro were instrumental in completing these projects on budget and on time.

The project at DEH was completed in March 2015 and collaboration between EM and FMO continued throughout the year. Monitoring and continuous commissioning has resulted in increased savings beyond the original estimates. The overall natural gas and electricity savings are approximately 1,900 GJ, resulting in emission savings of over 80 tCO₂e. The MMH project was completed in March 2016 and the EM team will be applying the successful approach from DEH to maximize energy and emissions savings.

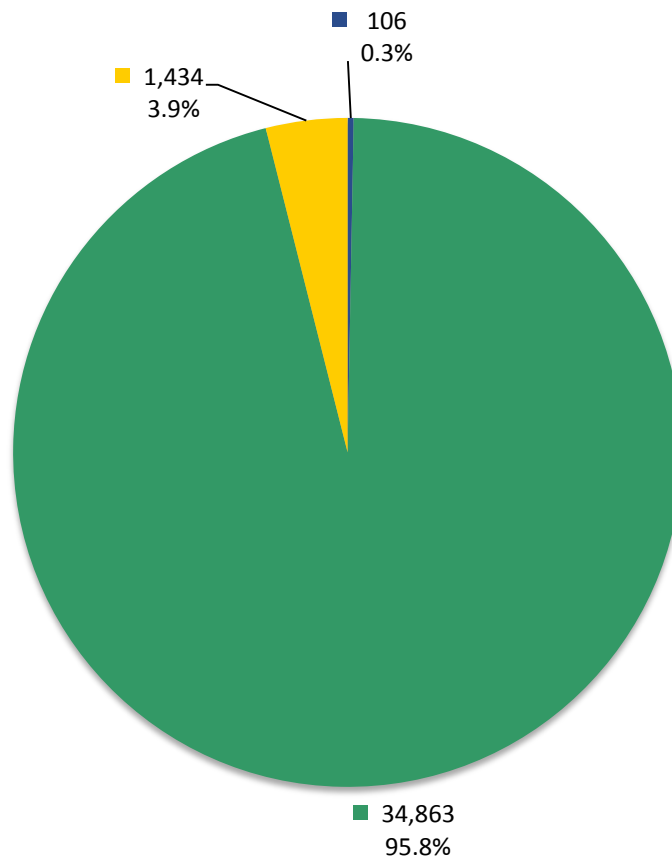


Energy Management and Facilities Management and Operations teams at Mission Memorial Hospital.

In BC, health authorities and affiliates are the province's second largest consumers of energy. This is due to the 24-hour operations of health care facilities, the use of specialized equipment, and the nature of services that health care provides.

By replacing, upgrading, and continuously commissioning equipment, we are reducing our annual energy costs and our carbon dioxide emissions. These savings have a positive impact, decreasing carbon pollution, improving air quality, increasing efficiencies, and ultimately ensuring that hospital infrastructure has a longer life with reduced cost in the long-term. All of this is made possible by the coordinated efforts of the FMO and EM team.

Fraser Health Authority Greenhouse Gas Emissions by Source for the 2015 Calendar Year (tCO₂e*)



Total Emissions: 36,403

- Mobile Fuel Combustion (Fleet and other mobile equipment)
- Stationary Fuel Combustion (Building Heating and Generators) and Electricity
- Supplies (Paper)

Offsets Applied to Become Carbon Neutral in 2015 (Generated May 26, 2016 8:57 AM)

Total offsets required: **36,384**. Total offset investment: **\$909,600**. Emissions which do not require offsets: **19** **

*Tonnes of carbon dioxide equivalent (tCO₂e) is a standard unit of measure in which all types of greenhouse gases are expressed based on their global warming potential relative to carbon dioxide.

** Under the *Carbon Neutral Government Regulation of the Greenhouse Gas Reduction Targets Act*, all emissions from the sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.

2015 Carbon Neutral Action Report Survey

Organization Name:

Fraser Health Authority

Please select your sector:

- Health Authority or Affiliate

1) Stationary Sources (Buildings, Power Generators, Ext. Lighting) Fuel Combustion, Electricity use, Fugitive Emissions:

Please indicate which actions your PSO took in 2015:

Have developed an overall strategy/plan to reduce energy use in your organization's buildings inventory:

Yes

If Yes, please describe:

Fraser Health has a 3 year Strategic Energy Management Plan (SEMP), complete details of our energy use, reduction targets and planned actions to achieve these targets. Although this is a 3 year rolling plan, the SEMP is reviewed and updated annually. This allows us to compare our energy use performance across the building portfolio and adjust the planned actions accordingly.

Undertook evaluations of building energy use:

Yes

Performed energy retrofits on existing buildings:

Yes

Built or are building new LEED Gold or other "Green" buildings:

Yes

Please list any other actions, programs or initiatives that your organization has introduced that support emissions reductions from buildings:

1. Implemented over 20 optimization energy conservation measures at Ridge Meadows Hospital and Cottage and Worthington Pavilions as part of the BC Hydro Continuous Optimization program. In addition, as part of the C.Op. program we started the process to implement over 30 ECM's at Surrey Memorial Hospital and Mission Memorial Hospitals. These ECM's will be fully implemented in

2016.

2. Continued to roll out the engagement strategy with the Facilities Maintenance and Operations (FMO) departments, adding Queens Park Care Centre to Peace Arch, Delta and Langley Memorial Hospitals; with a focus on energy building use, identifying reduction opportunities and optimization of existing equipment/plant.
3. As part of the Lower Mainland Facilities Management, we updated our the Energy and Environmental Sustainability (EES) 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.
4. Continued 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.

2) Mobile Sources (Fleet, Off-road/Portable Equipment) Fuel Combustion:

Indicate which actions your PSO took in 2015:

Have put in place an operations policy/program to support systematic reductions in fleet related emissions:

(e.g., program to convert fleet to renewable fuels)

No

If Yes, please describe:

(No response)

Replaced existing vehicles with more fuel efficient vehicles (gas/diesel):

Yes

Replaced existing vehicles with hybrid or electric vehicles:

No

Took steps to drive less than previous years:

No

Please list any other actions, programs or initiatives that your organization has introduced that support emissions reductions from fleet combustion:

1. Reduced the number of fleet vehicles from 45 to 43.

2. Continued with the staff / patient shuttle services between the three FH facilities and SkyTrain station in Surrey City Centre., including the transfers of 35,515 passengers and 34 packages.

3) Supplies (Paper):

Indicate which actions your PSO took in 2015:

Have put in place an operations policy/program to facilitate a systematic reduction in paper-related emissions:

(e.g., policy to purchase 100% Recycled Content; default to double-sided printing)

No

If yes, please describe:

(No response)

Have put in place an operations policy/program to facilitate behavioural changes from paper use:

(e.g. awareness campaign to reduce paper use):

Yes

If yes, please describe:

1. 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 76 active Green+Leaders in Fraser Health.

2. The online GreenCare Community (GCC) site provides tips and toolkits on using less paper, such as promoting paperless meetings. Fraser Health currently has 1,306 staff registered on the GCC.

Used only 100% recycled paper:

No

Used some recycled paper:

Yes

Used alternate source paper:

(e.g., bamboo, hemp, wheat etc.)

No

Please list any other actions, programs or initiatives that your organization has introduced that support emissions reductions from paper supplies:

1. Fraser Health and Health Shared Services BC began discussions on adopting a sustainable and lower emission wheat based paper product.

2. Fraser Health continued to encouraged teleconferencing for meetings by rolling and installing web-conference hardware and software.

Page 4

4) Other Sustainability Actions:

Please note that this section is optional

Business Travel

Created a low-carbon travel policy or travel reduction goal:

(low-carbon = lowest emission of greenhouse gas per kilometer per passenger)

Yes

Encouraged alternative travel for business:

(e.g. bicycles, public transit, walking)

Yes

Encouraged or allow telework/working from home:

Yes

Other:

1. Have a total of 42 Electric Vehicle charging stations installed at 6 core Fraser Health sites and these were utilised to a higher extent in 2015.

2. Continued with the successful Clean Commuter Challenge in 2015. Over 100 Fraser Health staff participated in the Challenge (campaign to encourage staff to choose alternative healthier modes of commuting).

3. Fraser Health launched a new carpool / ride match program to connect health care staff to carpool matches that work at the same Fraser health Site.

Education Awareness

Have a Green/Sustainability/Climate Action Team:

Yes

Supported green professional development:

(e.g. workshops, conferences, training)

Yes

Supported or provided education to staff about the science of climate change, conservation of water, energy and/or raw materials:

Yes

Other:

1. The Energy and Environmental Sustainability (EES) team from the Lower Mainland Facilities Management (LMFM) department operate a staff leadership and behaviour change program designed to foster a culture of environmental sustainability in health care facilities. The Green+Leaders (G+L) program, recruits, trains and supports staff volunteers to carry out behaviour change and education campaigns within their departments. The program focuses on fostering sustainable behaviours in four key areas: Zero Waste, Energy Conservation and Climate Neutral, Active & Clean Transportation and Social Sustainability. In 2015, Fraser Health had 76 active G+L in the program.

2. In 2015, the EES team continued to utilize the BC Hydro Workplace Conservation Awareness Program (WCA). 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.

3. At the end of 2015, Fraser Health currently has 1,306 staff registered on the GreenCare Community (GCC) Site. This EES operated 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, share resources and start discussions with each other.

Adaptation Planning for Climate Risks

Have assessed whether increased frequency of extreme weather events and/or long term changes in climate will affect your organization's infrastructure, its employees and/or its clients:

No

Have incorporated these anticipated changes in climate into your organization's planning and decision making:

No

Other:

The EES team from the LMFM department are developing a roadmap for building climate change resilience. This will include resiliency assessments of two Fraser Health Acute Care sites.

Other Sustainability Actions

Established a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models:

No

Have put in place an operations policy/program to facilitate the reduction and diversion of building occupant waste stream from landfills or incineration facilities:

(e.g., composting, collection of plastics, batteries)

Yes

Established green standards for goods that are replaced infrequently and/or may require capital funds to purchase:

(e.g., office furniture, carpeting, etc.)

No

Incorporated lifecycle costing into new construction or renovations:

Yes

Please list any other sustainability actions your organization has taken not listed above:

1. Continued to roll out the Recycling Renewal Program. There are now 19 sites in Fraser Health and average diversion rate in 2015 was 38%. In addition, there were 45 Recycling Champions recruited and trained in 2015.

2. The review and re-issue of the LMFM Environmental Accountability Report, including updated goals and targets for 10 strategic focus areas.

3. A dedicated team within the LMFM Energy and Environmental Sustainability department was formed to review and refresh our overall GreenCare Strategic Framework.