

2014 Carbon Neutral Action Report

Fraser Health Authority



Executive Summary
Michael Marchbank
President and Chief Executive Officer

I am pleased to introduce our 2014 Carbon Neutral Action Report.

Fraser Health has achieved carbon neutrality for five straight years.

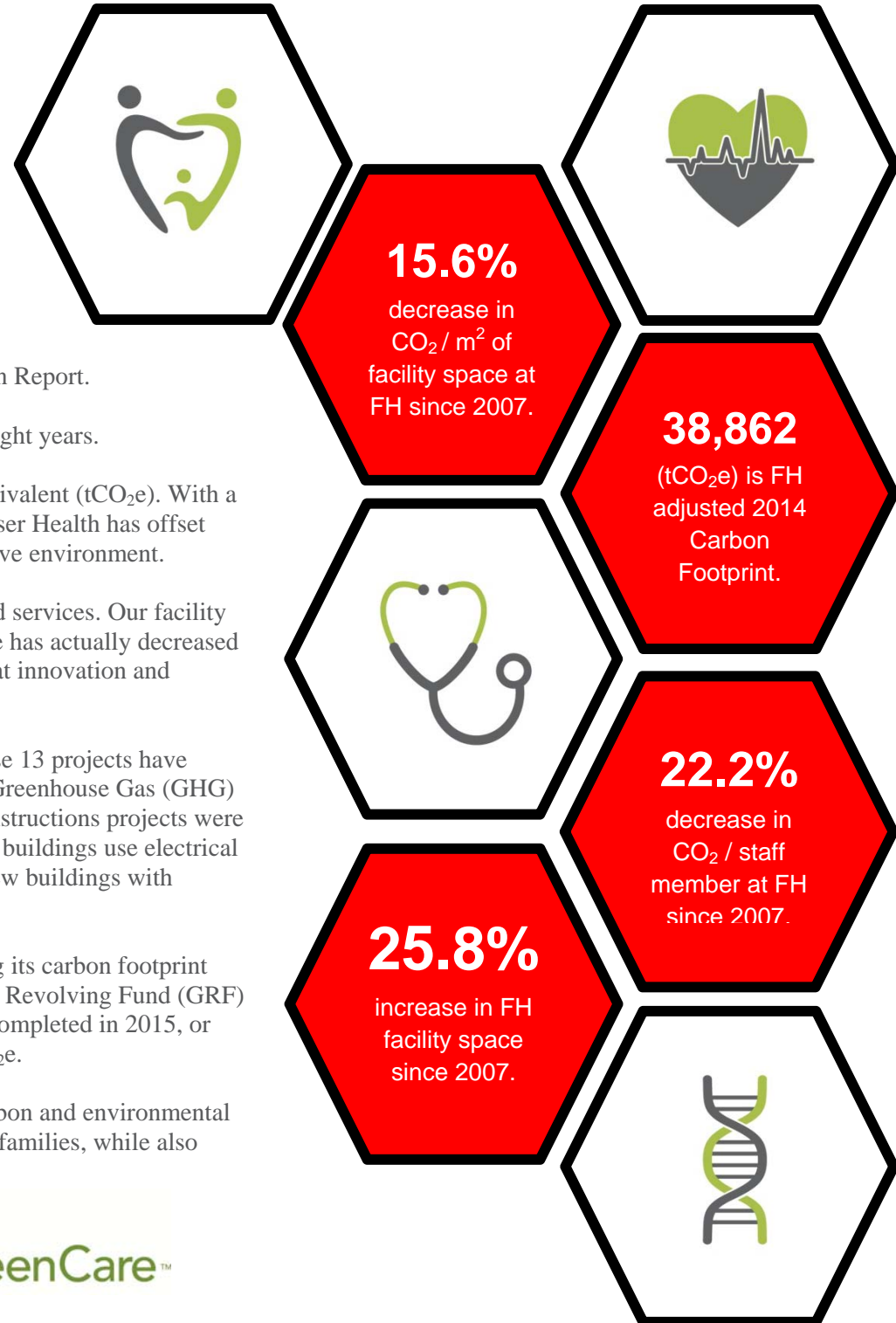
In 2014 Fraser Health's carbon footprint was 38,862 tonnes of carbon dioxide equivalent (tCO₂e). With a strong commitment towards reducing our environmental footprint since 2010, Fraser Health has offset 199,000 tonnes of carbon dioxide equivalent (tCO₂e) to the benefit of our collective environment.

As the Fraser Valley's population grows, so has Fraser Health and its facilities and services. Our facility space has grown by 25.8% since 2007, but the CO₂ / square meter of facility space has actually decreased by 15.6% and the CO₂ / full time staff member has decreased by 22.2%. Proof that innovation and conservation can go hand-in-hand.

In 2014, Fraser Health implemented 13 energy conservation retrofit projects. These 13 projects have potential energy savings of 1.6 equivalent gigawatt hours (eGWh), resulting in a Greenhouse Gas (GHG) reduction of 209 tCO₂e and a cost avoidance of \$71,000. In addition, two new constructions projects were completed at Surrey and Mission Memorial Hospitals. These two new low carbon buildings use electrical energy for space heating, resulting in a substantial GHG reduction compared to new buildings with conventional natural gas heating systems.

Looking towards 2015 and beyond, Fraser Health is committed to further reducing its carbon footprint with the introduction of the Carbon Neutral Capital Program (CNCP) and a Green Revolving Fund (GRF) initiative. Over 30 energy conservation retrofit projects have either already been completed in 2015, or are in a state of completion.. These will result in a further reduction of 1,730 tCO₂e.

I would like to thank everyone that has worked hard to reduce Fraser Health's carbon and environmental footprint. By working together, we are providing quality care for our patients and families, while also caring for our environment.

Our CO₂ Footprint

2014 GREENHOUSE GAS EMISSIONS 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 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 Fraser 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 Fuel Combustion
2. Mobile Fleet Combustion
3. Supplies (Paper)

Fraser Health

Fraser Health's 2014 Carbon Emissions Footprint was 38,862 tonnes of carbon dioxide equivalent (tCO₂e). Although this represents a 6.2% increase in the Carbon Footprint offset since 2007, the FH facility and staffing portfolio have also grown significantly during the same time period. Taking this into consideration the CO₂ / square meter of facility space has actually **decreased by 15.6%**.

Over 97% of Fraser Health's in-scope emissions are attributed to our building portfolio (Stationary Fuel Combustion).

To become carbon neutral in 2014, Fraser Health purchased carbon offsets from the Ministry of Environment at a total cost of \$1,020,128.

The Climate Action Secretariat of British Columbia had determined which GHGs are in scope and which ones are out of scope.

In Scope	Out of Scope
<ul style="list-style-type: none">• Six Green House Gases (GHG) are in scope for measuring and reporting:<ul style="list-style-type: none">• Carbon Dioxide - CO₂,• Methane - CH₄,• Nitrous Oxide - N₂O,• Sulphur Hexafluoride - SF₆,• Per fluorocarbons - PFCs,• Hydro fluorocarbons - HFCs	<ul style="list-style-type: none">• All other GHG gases are considered out of scope.

CHANGES TO FH PORTFOLIO AND WEATHER INFLUENCE

Fraser Health continues to grow and offer more services to a growing lower mainland population. Fraser Health's "useable" facility space and FTEs have grown by 25.8% and 36.6% respectively since 2007.

The vast majority 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. The carbon emissions associated with our Natural Gas use is approximately 93% of the total building emissions.

The carbon emissions reported are not adjusted for changes in climate temperatures. Vancouver 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 2014 were 9% 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.



Actions Taken To Reduce Our CO₂ Footprint

2014 LIST OF ACTIONS TAKEN TO REDUCE CO₂ FOOTPRINT

Stationary Fuel Combustion, Electricity (Buildings)

- Various energy retrofits have been carried out in 2014. Resulting in energy savings of 1.6 eGWh (5,620 GJ) and GHG savings of 209 tCO₂e.
- Two new energy efficient low carbon buildings were completed and occupied in 2014. One at Surrey Memorial Hospital and the other at Mission Memorial Hospital. The predicted savings are 5.1 eGWh (18,874 GJ) compared to a standard baseline building. This will result in a GHG avoidance of 323 tCO₂e. More significantly, the space heating is achieved by heat recovery and air-to-water heat pumps with steam being used only for peak conditions. Thus, the high percentage use of electrical energy makes these low carbon energy buildings.
- Over 30 optimization energy conservation measures were implemented at Queens Park Care Centre, Heritage Village and

Fraser Canyon Hospital as part of the BC Hydro Continuous Optimization program.

- Rolled out an engagement strategy with Facilities Maintenance and Operations (FMO) staff at Peace Arch, Delta and Langley Memorial Hospitals; with a focus on energy building use, identifying reduction opportunities and optimization of existing equipment/plant.
- Completed and rolled out a Design Guideline for New Construction and Major Renovation projects to provide our Strategic Planning and Capital Project teams with direction for: Energy performance targets, Incentive application requirements, LEED requirements, Design Standards and Principles.
- 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.

FRASER HEALTH							
Our Carbon Footprint (in tCO ₂ e)		2007	2010	2011	2012	2013	2014
CO ₂	Mobile Fuel Combustion (Fleet & other mobile equipme	136	140	138	96	126	124
	Stationary Fuel Combustion & Electricity (Buildings)	35,404	36,270	40,036	40,306	38,622	37,739
	Supplies (Paper)	1,056	1,056	1,081	1,065	1,320	1,010
	Total Carbon Footprint (tCO ₂ e)	36,596	37,466	41,255	41,467	40,067	38,873
	Emissions Which Do Not Require Offsets ¹	-8	-8	-11	-11	-17	-12
	Total Carbon Footprint (tCO ₂ e)	36,587	37,458	41,244	41,455	40,050	38,862
Adjustments / Corrections	0	0	0	0	0	0	
Total Carbon Footprint - for offsetting (tCO₂e)		36,587	37,458	41,244	41,455	40,050	38,862
\$	Purchased Carbon Offsets	\$ -	\$ 936,459	\$ 1,031,106	\$ 1,036,384	\$ 1,001,261	\$ 971,550
	Purchased Carbon Offsets +HST / GST	\$ -	\$ 983,282	\$ 1,082,661	\$ 1,088,203	\$ 1,051,324	\$ 1,020,128
KPI	Emissions per Full-Time Employee	2.98	2.75	2.77	3.03	2.75	2.32
	Emissions per Meter Square Facility Space	0.060	0.056	0.061	0.060	0.056	0.051

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



Mobile Fleet Combustion (Fleet and other vehicles)

- Reduced the number of fleet vehicles from 49 to 45.
- 42 (36-120v; 6-240v) Electric Vehicle charging stations have been installed and are being utilized at 6 core Fraser Health sites.

Supplies (Paper)

- 47,000 less packages of paper were purchased in 2014 resulting in a reduction of 210 tCO₂e compared to 2013.
- The Green+Leaders (G+L) behaviour change program recruited 15 more volunteers in the fall of 2014 and now there are 70 volunteer Green+Leaders in total at Fraser Health. As part of the paper/waste reduction campaign these volunteers were supplied with Paperless Meeting Toolkits to encourage their colleagues to reduce paper use.
- Fraser Health and Health Shared Services BC began discussion on adopting a sustainable and lower emission wheat based paper product.
- The online GreenCare Community (GCC) site provides tips and toolkits on using less paper, such as promoting paperless meetings. Fraser Health currently has 1,200 staff registered on the GCC.

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

- A record 141 Fraser Health staff participated in the 2014 Clean Commuter Challenge, which is a campaign to encourage staff to choose alternative healthier modes of commuting. Examples of this include walking, biking, or taking transit.
- Virtual Meeting Technology has been implemented at various sites
- Installed web-conferencing software

FRASER HEALTH						
BUILDINGS, FTE AND WEATHER	2007	2010	2011	2012	2013	2014
Distinct FHA Buildings	n/a	132	143	149	150	157
	% Owned	n/a	82%	82%	82%	84%
	% Leased	n/a	18%	18%	18%	16%
Usable Square Meters	611,075	667,654	677,965	686,512	711,701	768,716
Full-Time Employee Equivalents	12,260	13,626	14,900	13,660	14,539	16,747
Weather (summarized in Heating Degree Days)¹	2,870	2,603	2,952	2,874	2,831	2,614

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 measurement designed to reflect the demand for energy needed to heat a building.

- Encouraged alternative travel to meetings
- Education and Awareness Communication / stories published in various internal communication channels / newsletters
- Supported green teams by implementing a Green+Leaders program to support individual staff members, who join the program, with resources and training.
- Provided resources and a dedicated staff to support the Green+Leaders program and various green teams
- Maintained a sustainability / green recognition program for the Green+Leaders
- Support green professional development through workshops and educational sessions sponsored by BC Hydro

2015 WORK TO REDUCE THE ORGANIZATION'S CO₂ FOOTPRINT

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

- Implementing GHG/Energy reduction retrofit projects in our existing building portfolio by utilizing the Carbon Neutral Program Funding (CNCP) and BC Hydro sponsored Green Revolving Funds (GRF)
- Continuing the optimization of mechanical plant and controls in our existing building portfolio.



- Continue engaging with site Operations staff and external Consultants to identify GHG/Energy opportunities.
- Engaging with Strategic Planners and Capital Project Managers to ensure that our Design Guideline for New Construction and Major Renovation projects is embedded in their process and projects scopes.
- Engaging and educating our staff via the existing Green + Leaders program, GreenCare Community and the BC Hydro Workplace Conservation Agreement.
- Building partnerships with our P3 partners to help them identify energy conservation opportunities.
- Building partnerships with Cities and Municipalities to investigate District Energy Systems opportunities with alternative energy solutions.
- Investigating renewable/clean cost effective energy solutions.

SUCCESS STORY

In 2014 the new Surrey Memorial Hospital Critical Care Tower (SMH-CCT) opened. To date it is the largest health care project in British Columbia to achieve LEED Gold.

The expansion was driven by the increased Fraser Valley population. SMH-CCT added 151 acute care beds and a new emergency department with specialized mental health and pediatric areas. The design emphasized evidence-based and lean design principles to ensure the facility will support the highest levels of care.

The new eight storey Tower incorporated sustainable design features while establishing a healthy and comfortable space for patients, staff, and visitors. A commitment to maximizing energy efficiencies, SMH-CCT established a priority on indoor air quality and natural lighting, with state of the art mechanical and electrical plant and control systems.

According to the energy modelling carried out as part of a BC Hydro New Construction program, the Tower is predicted to save nearly 4 eGWh of energy and compared to a standard baseline building. The total consumption is estimated at 20 eGWh, and space heating is achieved by heat recovery and



Figure 1: Surrey Memorial Hospital Critical Care Tower

air-to-water heat pumps with steam being used only for peak conditions. This results in a 73:23 ratio of electrical to natural gas energy being used and makes this new Tower a low carbon energy building with estimated annual emission of less than 1,100 tCO₂e.

In addition other sustainability features include the use of wood and natural materials, water-efficient landscaping, storm water reuse, provisions for alternative transportation, including electric vehicle charging stations, bicycle storage and change rooms. ■



2014 Carbon Neutral Action Report (CNAR) - Part 2 ACTIONS

Organization Name

Fraser Health Authority

Actions Taken to Reduce Emissions

1) Stationary Fuel Combustion, Electricity (Buildings): Indicate which actions were taken in 2014:

Performed energy retrofits on existing buildings

Yes

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

Yes

Undertook an evaluation of overall building energy use.

Yes

Please list any other actions taken to reduce emissions from Buildings:

1. Rolled out a strategy to improve engagement with Facilities Maintenance and Operations (FMO) staff with a focus on understanding the energy building use, identifying reduction opportunities and optimization of existing equipment/plant.
2. Completed and rolled out a Design Guideline for New Construction & Major Renovation projects to provide our Strategic Planning and Capital Project teams with direction for: Energy performance targets, Incentive application requirements, LEED requirements, Design Standards and Principles.
3. 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 Fleet Combustion (Fleet and other vehicles):Indicate which actions were taken in 2014:

Do you have a fleet?

Yes

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

Yes

Replaced existing vehicles with hybrid or electric vehicles

No

Reduced the overall number of fleet vehicles

Yes

Took steps to drive less than last year

Yes

Please list any other actions taken to reduce emission from fleet:

N/A

3) Supplies (Paper):Indicate which actions were taken in 2014:

Used less paper than previous year

Yes

Used only 100% recycled paper

No

Used some recycled paper

Yes

Used alternate source paper (Bamboo, hemp, etc.)

No

Please list any other actions taken to reduce emissions from paper use:

The Green + Leaders (G+L) behaviour change program recruited 15 more volunteers in the fall of 2014 and now there are 70 volunteers in FHA. As part of the paper/waste reduction campaign, the volunteers were supplied with Paperless Meeting Toolkits to encourage their colleagues to reduce paper use.

Our online GreenCare Community (GCC) site includes content and provides tips on using less paper, such as promoting paperless meetings.

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Actions Taken to Reduce Emissions - continued

Explain how you plan to continue minimizing emissions in 2015 and future years:

FHA plans to continue reducing GHG emissions and Energy use by:

1. Implementing GHG/Energy reduction retrofit projects in our existing building portfolio by utilizing the Carbon Neutral Program Funding (CNCP) and BC Hydro sponsored Green Revolving Funds (GRF).
2. Continuing the optimization of mechanical plant and controls in our existing building portfolio.
3. Continue engaging with site Operations staff and external Consultants to identify GHG/Energy opportunities.

4. Engaging with Strategic Planners and Capital Project Managers to ensure that our Design Guideline for New Construction & Major Renovation projects is embedded in their process and projects scopes.
5. Engaging and educating our staff via the existing Green + Leaders program, GreenCare Community and the BC Hydro Workplace Conservation Agreement.
6. Building partnerships with our P3 partners to help them identify energy conservation opportunities.
7. Building partnerships with Cities and Municipalities to investigate District Energy Systems opportunities with alternative energy solutions.
8. Investigating renewable/clean cost effective energy solutions.

If you wish to list any other "sustainability actions" outside of buildings, fleet, paper and travel check "yes". This reporting is optional.

Yes

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Actions to Promote Sustainability and Conservation - OptionalThe following are actions that fall outside the scope of the Carbon Neutral Government Regulation, but which many organizations still undertake and may wish to report on. This section is optional for reporting.

Business TravelCreated a low-carbon travel policy or travel reduction goal (Low-carbon: Lowest emission of greenhouse gases per kilometre per passenger)

Yes

Virtual Meeting TechnologyInstalled web-conferencing software (e.g., Live Meeting, Elluminate, etc.)

Yes

Made desktop web-cameras available to staff

Yes

Encourage alternative travel to meetings (e.g., bicycles, public transit, walking)

Yes

Encourage carpooling to meetings

Yes

Education and AwarenessHave created Green, Sustainability, Energy Conservation, or Climate Action Teams.

Yes

Provided resources and/or dedicated staff to support these teams

Yes

Provided behaviour change education/training for these teams (e.g., community-based social marketing)

Yes

Established a sustainability/green awards or recognition program

Yes

Support green professional development (e.g., workshops, conferences, training)

Yes

Planning for Cimate ChangeHave assessed whether extreme weather events and/or long term changes in climate will affect our organization's business areas

No

Long term changes in climate have been incorporated into our organization's decision making.

No

Actions to Promote Sustainability and Conservation - Optional (continued)

Staff Awareness and Education Provided education to staff about the science of climate change

Yes

Provided education to staff about the conservation of water, energy, and raw materials

Yes

Provided green tips on staff website or in newsletters

Yes

Alternate Work/Commuting Options Allow for telework/working from home

Yes

Staff have the option of a compressed work week

No

Commuting by foot, bicycle, carpool or public transit is encouraged

Yes

Shower or locker facilities are provided for staff/students who commute by foot or by bicycle

Yes

Secure bicycle storage is provided

Yes

Other Sustainability Actions Establish a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models

Yes

Put in place a potable water management strategy to reduce potable water demand of building-level uses such as cooling tower equipment, toilet fixtures, etc. and landscape features

Yes

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

Yes

Have implemented a hazardous waste reduction and disposal strategy (Hazardous Waste: E.g., electronics including computer parts and monitors, batteries, paints, fluorescent bulbs)

Yes

Have incorporated minimum recycled content standards into procurement policy for consumable, non-paper supplies (e.g., writing instruments, binders, toner cartridges, etc.)

No

Established green standards for goods that are replaced infrequently and/or may require capital funds to purchase (e.g., office furniture, carpeting, etc.)

No

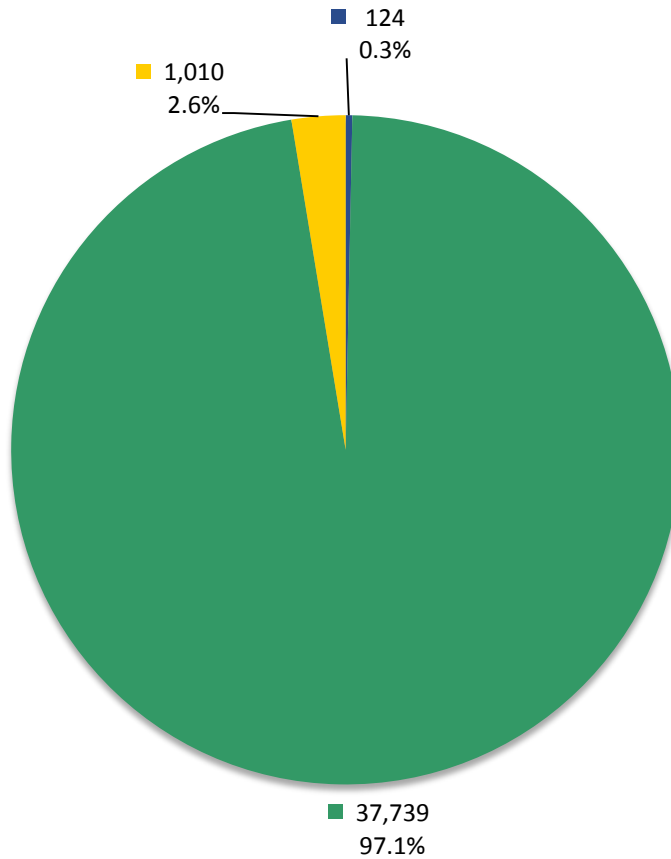
Incorporated lifecycle costing into new construction or renovations

Yes

Please list and other sustainability actions you wish to report not included in the previous list.

1. The annual update of our Environmental Accountability Report, including goals and targets for 10 strategic focus areas.
2. The continued success of the Recycling Program across the region.
3. The continued effort to reduce staff single occupancy vehicle commuting by such actions as, promoting the availability of electric car charging stations and the Clean Commuter challenge.

**Fraser Health Authority
Greenhouse Gas Emissions by Source
for the 2014 Calendar Year (tCO₂e*)**



Total Emissions: 38,873

- 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 2014 (Generated June 22, 2015 4:14 PM)

Total offsets required: **38,862**. Total offset investment: **\$971,550**. Emissions which do not require offsets: **12** **

*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.