

Greater Victoria Housing Society

Greenhouse Gas Emissions Report for the 2014 Calendar Year

January 1st 2013 to December 31st 2014

Date May 22, 2015

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Introduction

Greater Victoria Housing Society (GVHS) provides affordable rental housing for 739 households of low-income seniors, adults with disabilities, families, and working individuals. This non-profit society and registered charity operates 14 buildings located in Victoria, Saanich, Esquimalt and Colwood. GVHS measured their third annual greenhouse gas (GHG) inventory for the 2014 calendar year and recorded 777.62 tonnes of carbon dioxide equivalent (tCO₂e). GVHS is Climate Smart certified for 2015.

Greenhouse Gas Protocol

- Developed by the World Resources Institute
- Most widely recognized standard for emissions reporting internationally
- <http://www.ghgprotocol.org/>.

As a Climate Smart certified business, GVHS conducted its GHG emissions inventory according to the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard, Revised Edition (“the GHG Protocol”). The GHG Protocol is an internationally recognized standard published by the World Resources Institute and the World Business Council on Sustainable Development. The GHG Protocol and related documents can be accessed at <http://www.ghgprotocol.org/>.

A letter from Climate Smart attesting to GVHS’s completion of its GHG inventory and Climate Smart certification may be available upon request.

Organizational Boundaries

Greater Victoria Housing Society (GVHS) used the operational control approach to determine its organization boundary and included in its inventory all operations over which it has operational control.

Inventory Boundaries

The Control approach was used to determine the organizational boundary for the inventory. In this approach, all of the business entities that the company had direct control over are to be included in the greenhouse gas inventory.

In the Greenhouse Gas Protocol, organizations have to select the operational boundaries around the activities they will include in their inventory. The Protocol requires the inclusion of Scope 1 and 2 emissions, and suggests including Scope 3 emissions from activities relevant to an organization’s business and goals, and for which reliable data can be obtained. Emissions scopes are defined as follows:

Scope 1: includes direct GHG emissions from sources that are owned or controlled by the reporting company or organization

For scope 1, natural gas used for heating was included.

Scope 2: includes indirect GHG emissions from purchased electricity and purchased heat

For scope 2, purchased electricity was included.

Scope 3: includes indirect GHG emissions that are consequences of the reporting company’s operations but occur at sources owned by another company

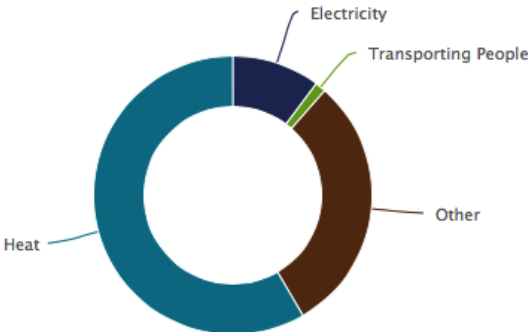
For scope 3, business travel, garbage, and paper consumption were included.

Greenhouse Gas Emissions Summary

Figure 1: Total Emissions for the 2014 Calendar Year, by Type (tCO₂e)

Breakdown by type (metric tonnes CO₂ equivalent)

Gross GHG Emissions by Activity Type (metric tonnes)
(Greater Victoria Hou..., year ending Dec 31, 2014)

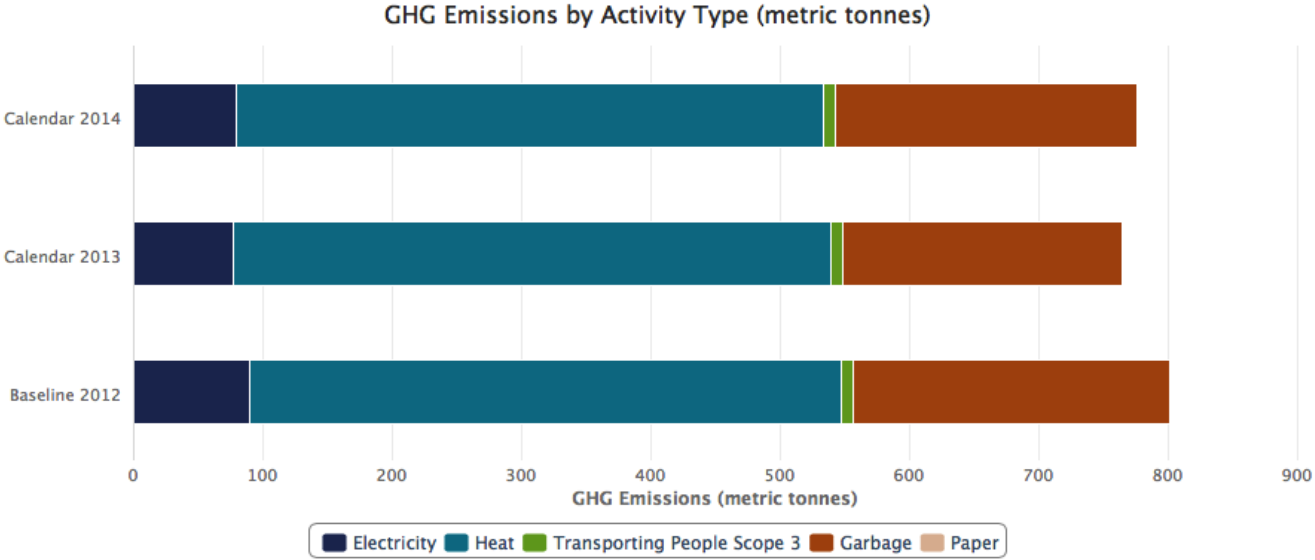


Gross Emissions	777.62	<div style="width: 100%;"></div>
Electricity	79.57	<div style="width: 10%;"></div>
Purchased	79.57	<div style="width: 10%;"></div>
Heat	454.18	<div style="width: 58%;"></div>
Generated	454.18	<div style="width: 58%;"></div>
Transporting People	9.76	<div style="width: 1%;"></div>
Road	9.76	<div style="width: 1%;"></div>
Other	234.11	<div style="width: 30%;"></div>
Garbage	233.02	<div style="width: 30%;"></div>
Paper Consumption	1.09	<div style="width: 0.1%;"></div>

Purchased Reductions	0	<div style="width: 0%;"></div>
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Net Emissions	777.62	<div style="width: 100%;"></div>
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Figure 2: Total Emissions from the 2012 Baseline Year to the 2014 Calendar Year, by Type (tCO₂e)
Breakdown by type (metric tonnes CO₂ equivalent)



Emissions by Type (metric tonnes CO ₂)	Baseline 2012	Calendar 2013	Calendar 2014
Electricity	89.71	77.5	79.57
Heat	458.35	461.86	454.18
Transporting People Scope 3	9.25	9.27	9.76
Garbage	244.05	216.52	233.02
Paper	0.75	0.89	1.09
Total	802.11	766.04	777.62

Figure 3: Emissions per FTE from the 2012 Baseline Year to the 2014 Calendar Year (tCO₂e/FTE)

Emissions per full-time employee (metric tonnes CO₂ equivalent)

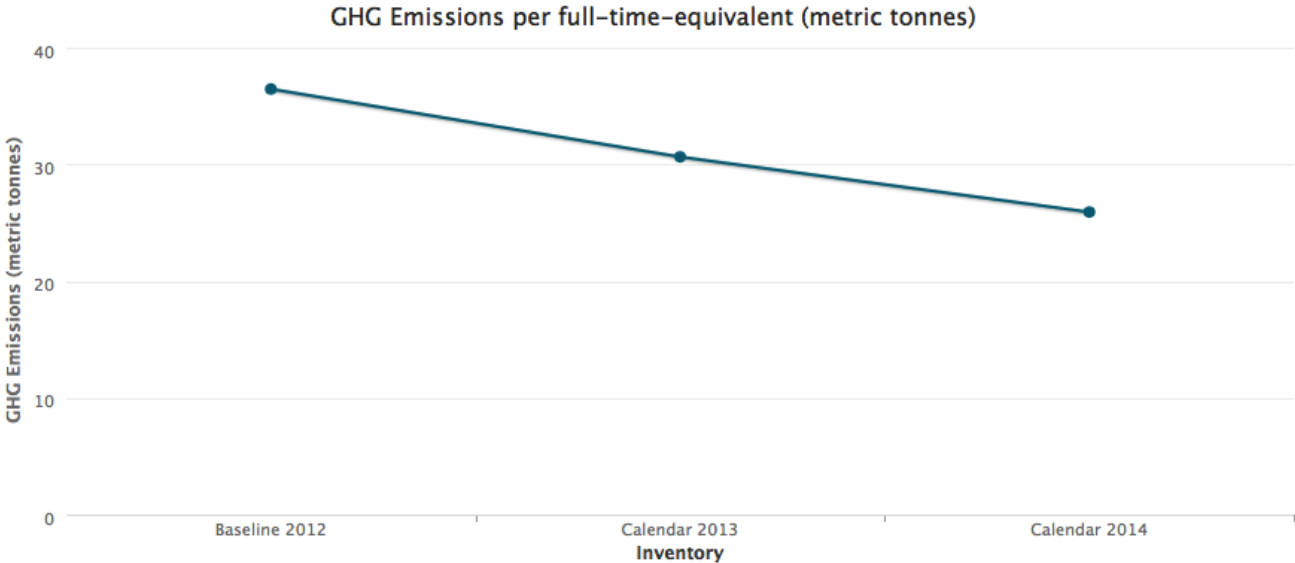
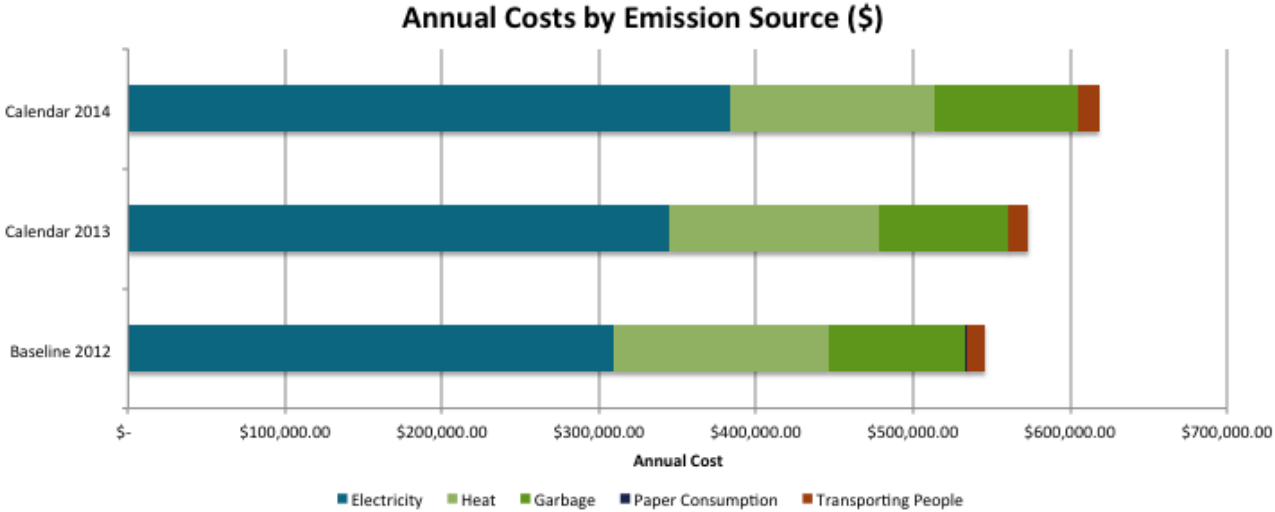


Figure 4: Annual Costs by Emission Source from the 2012 Baseline Year to the 2014 Calendar Year (\$)



Methodology

This inventory was conducted using the emissions factors from the Climate Smart web-based greenhouse gas management tool. The Climate Smart GHG management tool was designed for adherence to the GHG Protocol.

Climate Smart's emission factors come from a variety of sources, such as the Natural Resources Institute, the US Environmental Protection Agency, the US Department of Energy, the Intergovernmental Panel on Climate Change and Natural Resources Canada. Climate Smart reviews its emission factors annually to update them based on refined industry methodology and changing electricity grids. Further details on Climate Smart's emission factors, their sources, and methodology for updating them are available upon request to info@climatesmartbusiness.com.

Electricity Use > Purchased

The total kilowatt-hours consumed were entered.

Heat Use > Generated

The total giga-joules of natural gas consumed were entered.

Transporting people > Vehicles owned by others > Road

The total kilometers reimbursed were entered. For simplicity all employees were assumed to be using gas light trucks.

Other > Garbage

The total weight of landfilled waste was calculated based on the weight of garbage bins minus the weight of composting bins. The weight of waste was calculated based on bin volume and the number of pickups.

Other > Paper Consumption

The paper type, paper bond weight, number of reams used, and post-consumer recycled content were entered.

Emissions Reduction Strategies Under Consideration for the 2015 Calendar Year

Phase	ID	Deliverables	Description	Status	Timeline
Phase 1: Initiating					
	1.1	GHG Inventory	Data Collection and Analysis to Monitor Emissions	Done	2012 Baseline - 2015
	1.2	Climate Smart Certification	Third party verification.	Done	2012 Baseline - 2015
Phase 2: Planning					
	2.1	Strategy for Reductions	This document	Done	2012 Baseline - 2015
	2.2	Continuation Plan	Educate and involve additional staff in audit	Ongoing	2015
Phase 3: Capital Projects By Emissions Area					
Natural Gas					
	NG.1	Balmoral Boiler Upgrade	Replace boilers with new, right sized equipment.	Ongoing	Approved Funding. Procurement Started. Scheduled Summer 2015.
	NG.2	Forest Heights Windows	Replace with Double Paned.	Ongoing	Budgetary Quote Received. On Hold until Funded.
	NA.3	Tillicum Windows	Upgrade to better Double Paned.	Ongoing	Budgetary Quote Received. On Hold Until Funded.
	NA.4	Tillicum Attic Insulation	Top up/improve insulation already there.	Outstanding	
Garbage					
	G.1	Improved Compost Signage	Signage on Bins is unclear or non-existent.	Outstanding	2015
	G.2	Monitor/Reporting Process	System to monitor for over-servicing	Outstanding	2015
	G.3	Decrease Service	Over Servicing Suspected at Several Buildings	Outstanding	2015
	G.4	Change Provider?	Interview/Get Proposals From Other Companies	Outstanding	2015

Phase	ID	Deliverables	Description	Status	Timeline
Electricity					
	E.1	Power Smart Upgrades	PSPX/EERP Rebate Programs used at several buildings	Ongoing	2014-Ongoing. Sitkum, Balmoral, Tillicum, Campbell and others.
	E.2	ECAP Program	Tenant Education/Energy Savings Products for Units	Ongoing	2015 - Tillicum, Dowler, Balmoral, Grafton, Constance
	E.3	High Efficiency Laundry	35 Washers/35 Dryers Installed at 10 buildings	Done	2015
	E.5	Solar Proposal Campbell	Re-Engineer Dormant Solar Equipment.	Ongoing	2015. Awaiting Proposal.
	E.4	Campbell Windows	Replace with Double Paned.	Ongoing	Budgetary Quote Received. Pursuing Funding.
Portfolio Assessment					
	PA.1	Asset Planner Software	Gain access and monitor building needs/condition	Ongoing	2014 - Ongoing.
	PA.2	Procure BCA's	Building Condition Assessments for each building	Done	2015
	PA.3	Asset Inventory	Inventory of building components and information	Done	2015
	PA.4	Capital Planning	Ameresco/BCNPHA Template to Create Capital Plans	Ongoing	2015 - 2016

Phase	ID	Deliverables	Description	Status	Timeline
Phase 4: Communications/Stakeholder Management					
Tenant Engagement	TE.1	Energy Education	ECAP	Outstanding	2015
Staff					
	SC.1	Reporting/Communication	Reporting regularly on initiatives and progress	Ongoing	As requested.
			Encourage saving paper/energy.	Ongoing	2015
Board					
	BC.1	Board Reports	As requested provide Kaye with info for board	Ongoing	As requested.
External					
	EC.1	Website - Climate Smart	Update Page	Outstanding	2015
	EC.2	Website - Current Projects	Summary Description of projects on website or blog.	Outstanding	2015
	EC.3	Social Media - Twitter Posts	Updates and strategic communication with partners/vendors/supporters.	Outstanding	2015

Analysis

GVHS measured their baseline inventory for the 2012 Calendar year. Since then, they have measured two additional inventories with Climate Smart (2013 and 2014 Calendar years).

Emissions in the 2014 Calendar year were reduced by 24.49 tCO₂e (a 3% decrease) compared with their 2012 baseline year and increased by 11.58 tCO₂e (a 2% increase) compared with their 2013 calendar year (see figure 2).

However, GVHS's operations have expanded since the 2012 baseline year reflected by the increase in number of full-time equivalent employees and acquiring a new location. Despite operations expansion GVHS experienced a continued downward trend in their emission intensity (emissions per full time employee, see figure 3). GVHS experienced reductions in emissions from garbage, electricity, and heat compared with their 2012 baseline year. They also experienced increases in emissions from transporting people in vehicles owned by others and in paper consumption. More specifically, the following changes were observed (from greatest to least absolute change):

Changes in Emissions Compared with the 2012 Baseline Year

<i>Emissions Source</i>	<i>Absolute Change (tCO₂e)</i>	<i>% Change</i>
Garbage	11.03 ↓	5% ↓
Electricity	10.14 ↓	11% ↓
Heat	4.17 ↓	1% ↓
Transporting People Scope 3	0.51 ↑	6% ↑
Paper	0.34 ↑	45% ↑
Overall Emissions	24.49 ↓	3% ↓

Compared with their 2013 calendar year, GVHS experienced reductions in emissions from heat and increases in emissions from garbage, electricity, transporting people in vehicles owned by others, and paper consumption. More specifically, the following changes were observed (from greatest to least absolute change):

Changes in Emissions Compared with the 2013 Calendar Year

<i>Emissions Source</i>	<i>Absolute Change (tCO₂e)</i>	<i>% Change</i>
Garbage	16.50 ↑	8% ↑
Heat	7.68 ↓	2% ↓
Electricity	2.07 ↑	3% ↑
Transporting people Scope 3	0.49 ↑	5% ↑
Paper	0.20 ↑	22% ↑
Overall Emissions	11.58 ↑	2% ↑

Moving forward, GVHS will work to minimize their emissions by implementing strategies aimed at waste, electricity and heat.

Conclusion

The emissions inventory for GVHS is consistent with the internationally recognized “GHG protocol” followed by Climate Smart. GVHS measured their emissions for the 2014 calendar year and recorded a finalized inventory of 777.62 tCO₂e. Their reduction strategies address a wide range of activities. This greenhouse gas inventory and accompanying reduction plan were compiled using best practices in carbon accounting, and demonstrate the continued commitment that GVHS has towards environmental stewardship and corporate social responsibility.

Appendix

Greater Victoria Housing Society Electricity and Natural Gas 2012-2014 Comparison

Electricity Usage

Location	2012 kWh	2013 kWh	2014 kWh	% Change from baseline	% Change from 2013
772 Bay Street (Office)	26483			-	-
Balmoral Gardens	180305	182128	186313	3%	2%
Campbell Lodge	805200	872415	868697	8%	0%
Colwood Lodge	430920	416882	427620	-1%	3%
Constance Court	150020	172963	187774	25%	9%
Dahli Place			73680	-	-
Dowler Lodge	323400	350887	332880	3%	-5%
Esquimalt Lions Lodge	343080	389028	405541	18%	4%
Forest Heights	17661	15678	13031	-26%	-17%
Grafton Lodge	144080	152080	142560	-1%	-6%
Head Office		28001		-	-
Loreen Place	121834	147146	147230	21%	0%
Nigel Square	6039	8887	7608	26%	-14%
Pembroke Mews	70040	69400	65120	-7%	-6%
Sitkum Lodge	750300	859500	872250	16%	1%
Tillicum Terrace	117792	111962	112071	-5%	0%
Townley Lodge	101250	91566	84139	-17%	-8%

Electricity Costs

Location	Baseline 2012	Calendar 2013	Calendar 2014	% Change from baseline	% Change from 2013
772 Bay Street (Office)	\$2,566			-	-
Balmoral Gardens	\$17,918	\$18,610	\$20,243	13%	9%
Campbell Lodge	\$66,133	\$83,062	\$81,162	23%	-2%
Colwood Lodge	\$35,203	\$36,782	\$39,642	13%	8%
Constance Court	\$13,271	\$15,346	\$17,992	36%	17%
Dahli Place			\$7,678	-	-
Dowler Lodge	\$25,802	\$27,036	\$30,766	19%	14%
Esquimalt Lions Lodge	\$27,840	\$30,475	\$34,733	25%	14%
Forest Heights	\$1,793	\$1,503	\$1,323	-26%	-12%
Grafton Lodge	\$14,893	\$16,981	\$16,803	13%	-1%
Head Office		\$3,061	\$3,366	-	10%
Loreen Place	\$10,799	\$13,348	\$14,461	34%	8%
Nigel Square	\$569	\$855	\$802	41%	-6%
Pembroke Mews	\$6,916	\$7,856	\$7,003	1%	-11%
Sitkum Lodge	\$63,926	\$67,659	\$84,978	33%	26%
Tillicum Terrace	\$10,902	\$12,194	\$12,916	18%	6%
Townley Lodge	\$10,346	\$10,316	\$9,852	-5%	-4%

Natural Gas Usage

Location	2012 GJ	2013 GJ	2014 GJ	% Change from baseline	% Change from 2013
Balmoral Gardens	4452	4218	4037	-9%	-4%
Constance Court	524	497	453	-14%	-9%
Dahli Place			240	-	-
Forest Heights	780	817	845	8%	3%
Grafton Lodge	942	913	1009	7%	11%
Loreen Place	732	1094	915	25%	-16%
Pembroke Mews	122	166	147	21%	-11%
Tillicum Terrace	1054	1061	973	-8%	-8%

Natural Gas Costs

Location	Baseline 2012	Calendar 2013	Calendar 2014	% Change from baseline	% Change from 2013
Balmoral Gardens	\$71,639	\$61,692	\$60,022	-16%	-3%
Constance Court	\$8,052	\$7,754	\$7,122	-12%	-8%
Dahli Place			\$3,519	-	-
Forest Heights	\$11,727	\$14,322	\$12,851	10%	-10%
Grafton Lodge	\$15,269	\$15,023	\$16,608	9%	11%
Loreen Place	\$12,342	\$16,458	\$12,231	-1%	-26%
Pembroke Mews	\$3,197	\$3,375	\$2,670	-16%	-21%
Tillicum Terrace	\$15,681	\$14,575	\$14,718	-6%	1%

About Climate Smart

Climate Smart is a Vancouver-based social enterprise that offers a comprehensive, small-group-based training program, certification and tools for small/medium enterprises (SMEs) to measure and **profitably reduce their energy, transport, and waste-related costs** and greenhouse gas (GHG) emissions.

In 2010, Climate Smart launched the first municipally supported climate change program designed specifically for the local SME business community. Other key partners are **Port Metro Vancouver, Vancouver Airport Authority, Vancouver Economic Commission** and **Richmond's Economic Development Department**.

Climate Smart builds capacity within businesses by training key staff to develop strategies for ongoing reductions in emissions and associated costs from energy, fuel and waste that create economic as well as environmental benefits. Climate Smart emphasizes the business case for GHG reduction: **operational efficiencies, cost savings, and competitive advantage**.

Climate Smart's training and **innovative data services** are designed to link business-sector actions to carbon emission reduction targets, while simultaneously addressing economic development and green economy goals. Climate Smart has built out extensive datasets, **case studies** and **analysis for community-emission modeling** – utilized by both partners and businesses to benchmark their progress amongst emission and cost-saving goals.

Case studies from a sampling of 40 Climate Smart businesses show a total **annual cost savings of \$1 million**. Case studies with GHG and cost reductions: <https://climatesmartbusiness.com/case-studies/>

Key Sectors & Climate Smart Certified Businesses

Climate Smart works across a range of industry sectors, including:

- Construction & Real Estate
- Manufacturing
- Food & Beverage Processing
- IT and Tech
- Transportation related (terminals, marinas, distributors)
- Retail
- Professional Services (legal, accounting, engineering)

Example Climate Smart businesses include: **Aggressive Tube Bending, Van Houtte Coffee Services, Albion Fisheries, Frogbox, Concert Properties, Electronic Arts, Pacific Blue Cross, Purdys Chocolatier. River Market, Securiguard, Tinhorn Creek Vineyards, Continental Roofing, the PNE, 505-Junk, APEGBC, Treen Safety, Easy Park, Cypress Mountain and many more!**

Climate Smart At A Glance

Climate Smart is a Vancouver-based social enterprise, providing expertise in small- and medium-sized enterprise (SME) training, software, tools, and certification to profitably reduce GHG emissions generated by business operations. Climate Smart builds capacity within businesses by training key staff to develop strategies for ongoing reductions in emissions and associated costs from energy, fuel and waste that create economic as well as environmental benefits. Climate Smart emphasizes the business case for GHG reduction: operational efficiencies, cost savings, and competitive advantage.

Climate Smart's training and innovative data services are designed to link business-sector actions to carbon emission reduction targets, while simultaneously addressing economic development and green economy goals. Climate Smart has built out extensive datasets (gathered from client businesses since 2008), case studies and analysis for community-emission modeling – utilized by both partners and businesses to benchmark their progress against emission and cost-saving goals. For detail on methodology, see Appendix B.

In 2010, Climate Smart launched the first municipally supported climate change program designed specifically for the local SME business community. Other key partners include: Vancity, Vancouver Airport Authority, Vancouver Economic Commission, Port Metro Vancouver, and CGA-BC.

775+

Climate Smart certified businesses to date (trained or in training)

1,258,132+

total emissions measured by Climate Smart to date, in tonnes (t) CO₂e

14%

Average reduction achieved after 3 years of Climate Smart certification

\$397

Projected cost savings to a business, per tonne CO₂e reduced