

# BC Housing 2011 Carbon Neutral Action Report



# Table of Contents

Executive Summary	1
2011 Greenhouse Gas Emissions	3
Offsets Applied to Become Carbon Neutral in 2011	4
Actions Taken to Reduce Greenhouse Gas Emissions in 2011	5
Plans to Continue Reducing Greenhouse Gas Emissions 2012 – 2014	14

# Executive Summary

As the provincial agency that develops, manages, and administers a wide range of subsidized housing options across the province, BC Housing is the largest social housing provider in B.C. We manage about 7,200 public housing units. Another 62,200 units are managed through partnerships with over 800 housing providers, mostly non-profit societies and housing co-operatives. BC Housing also helps bring about improvements in the quality of residential construction in B.C. and helps strengthen consumer protection for buyers of new homes through responsibilities under the *Homeowner Protection Act*.

Sustainability is a key strategic priority for BC Housing. In our Service Plan and other corporate planning documents, we set ambitious targets and track our progress to ensure the long-term sustainability of the province's social housing stock to meet the future housing needs of British Columbians. We also set targets for reductions in greenhouse gas (GHG) emissions.

In 2011 we achieved significant milestones in our work on sustainability including obtaining carbon neutral status. More importantly, we reduced GHG emissions from buildings directly managed by BC Housing by 25 per cent in 2010, and maintained the same level of reductions of 25 per cent in 2011 (against a 2005 baseline). Last year we also reduced GHG emissions across the whole BC Housing building portfolio, which includes directly managed public housing, group homes, single room occupancy hotels, and other types of non-profit operated housing by 16 per cent (against the 2005 baseline). This corresponded to a significant reduction of related utility costs. The cost savings are being used toward other BC Housing programs that address the demand for housing and support services for those in the greatest need across the province.

These reductions were achieved through our investment and focus on building upgrades and energy retrofits in the last few years. Our retrofit program included building repairs and energy retrofits at 103 social housing sites.

New initiatives were launched in 2011 with our sustainability partners: Fortis BC; BC Hydro; BC Non-Profit Housing Association; and BC Healthy Communities. These initiatives included a pilot on tenant engagement, an energy efficiency program for group homes, and a small-scale energy retrofit program at 79 buildings operated by non-profit housing societies.

Our GHG reduction efforts include focusing on the development of highly energy-efficient new buildings. BC Housing in partnership with non-profit housing providers has over 40 buildings under construction in all regions of the province registered with the Canadian Green Building Council (CaGBC), including some of the first LEED Gold buildings in northern B.C. In 2011 we expanded the number of buildings and office spaces certified by CaGBC. BC Housing sites that have achieved CaGBC certification are:

- Friendship Lodge in Prince George (LEED Gold, New Construction);
- Victoria Heights in New Westminster (LEED Certified, New Construction);
- Gateway of Hope in Langley (LEED Gold, New Construction);
- Terrace Ksan in Terrace (LEED Gold, New Construction);
- Haven Gardens in Cranbrook (LEED Gold, New Construction);
- BC Housing Home Office (LEED Gold, Commercial Interiors).

## Executive Summary *(continued)*

We promote sustainability within the housing sector through different programs, most notably to province-wide Building Smart seminars on emerging green technologies, energy efficiency and durability. In 2011, 42 seminars were delivered in 22 communities to builders, designers, contractors, inspectors, planners, trades, suppliers, and other industry stakeholders.

Last year also marked the release of our *Building Enclosure Design Guide* for multi-unit, wood-frame buildings. The guide includes information on durability, maintenance and energy efficiency. This guide is widely used by industry professionals. It is also required or recommended reading in a number of university courses at the British Columbia Institute of Technology, Ryerson University and the University of Waterloo. Other initiatives in 2011 included a technical bulletin on the energy efficiency requirements for windows, and a multi-year study on energy consumption and conservation in multi-unit residential buildings.

While energy efficient and durable buildings are important to us, they are only two aspects of our sustainability initiatives. Integrating sustainability principles into our daily operations and business processes is vital to achieving our specific targets and our goal of being a change agent for the housing sector in British Columbia. BC Housing's comprehensive sustainability strategy is captured in our livegreen Sustainability Plan. This plan demonstrates the uniquely significant influence that BC Housing has in promoting sustainability through our work and throughout the housing sector. Our actions focus on three strategy clusters:

- Buildings – innovation in design, construction and management of housing;
- Change Agent – guiding and supporting our employees and partners to take action on sustainability; and
- Integration – integrating financial, social and environmental considerations in our decision making.

We are proud of our significant achievements to date, particularly in reducing the carbon footprint of operations in our social housing portfolio and our offices, creating new social housing that meets high environmental standards while creating better homes for tenants, promoting sustainable design and construction in the residential construction sector, and successfully engaging our employees about sustainability behaviours and practices. We recognize that while we have made significant strides in the last few years, our sustainability journey has just begun. Our future plans include further advancements in the green building sector and closer collaboration with our partners who share our vision to create healthy and sustainable communities.

Sincerely,



**Dan Maxwell**

*VP Corporate Services & Chief Financial Officer*

*For more information, please visit:*

[www.bchousing.org/Initiatives/Sustainability](http://www.bchousing.org/Initiatives/Sustainability)

[www.hpo.bc.ca](http://www.hpo.bc.ca)

April 30, 2012

# 2011 Greenhouse Gas Emissions

## BC HOUSING'S 2011 GHG EMISSIONS BY SOURCE

EMISSION SOURCE	GHG EMISSIONS (TONNES OF CO <sub>2</sub> E)	2011 RESULTS COMPARED TO THE BASELINE	2011 RESULTS COMPARED TO 2010
<b>Buildings</b> (Stationary Combustion)	<b>27,028</b>	<b>16% Decrease</b> (2005 Baseline)	<b>2% Increase</b>
Fleet (Mobile Combustion)	190	4% Increase (2010 Baseline)	4% Increase
Paper (Supplies)	26	51% Decrease (2005 Baseline)	12% Decrease
Total	27,244		2% Increase

In 2011 our total GHG emissions were 27,244 tonnes of CO<sub>2</sub> equivalent. Energy used in our public housing buildings is the single most significant emissions source for BC Housing.

The total GHG emissions in 2011 increased by two per cent compared to the previous year. However, emissions related to buildings decreased by 16 per cent, and emissions related to office paper decreased by 51 per cent compared to our 2005 baseline. The reductions were achieved despite an increase in the number of social housing units, and the impacts of colder weather last year. They are attributed to the extensive building upgrade and energy retrofit program conducted at 103 social housing sites in the last few years.

It was estimated that stationary fugitive emissions from air conditioning and refrigeration at BC Housing's buildings do not comprise more than 0.01 per cent of total emissions and that an ongoing effort to collect or estimate emissions from this source would be significantly onerous and as a result emissions from this source have been deemed out-of-scope and have not been included in BC Housing's total greenhouse gas emissions profile or offset purchase.

# Offsets Applied to Become Carbon Neutral in 2011

BC Housing purchased carbon offsets from the Pacific Carbon Trust to the equivalent of 27,159 tonnes of CO<sub>2</sub>e in April 2011, thus becoming carbon neutral for 2011.

Eighty-six tonnes CO<sub>2</sub>e of carbon dioxide emissions from the combustion of biomass and biomass-based fuels were reported as part of our greenhouse gas emissions profile in 2011. However, as stated in Methodology for Reporting B.C. Public Sector Greenhouse Gas Emissions Version 2.0, the carbon dioxide emissions resulting from the combustion of biogenic fuel sources must be reported but do not require offsets.

## **CHANGES TO GREENHOUSE GAS EMISSIONS AND OFFSETS REPORTING FROM PREVIOUS YEARS**

Last year we reported 26,627.93 tonnes of CO<sub>2</sub>e emissions for 2010. Following the public release of BC Housing's 2010 Carbon Neutral Action Report, it was determined that the total emissions for the 2010 calendar year were under-reported by 15 tonnes CO<sub>2</sub>e and offsets required to become carbon neutral in 2010 were under-reported by 12 tonnes CO<sub>2</sub>e. The difference in offsets purchased in 2010 has been applied against our 2011 emissions.



# Actions Taken to Reduce Greenhouse Gas Emissions in 2011

## BUILDINGS

Buildings are the primary source of BC Housing's GHG emissions. There are over 1,000 social housing buildings including approximately 7,000 housing units that fall within the scope of our carbon neutral reporting. Our building portfolio is diverse: from single homes to high-rise towers located throughout 200 communities across the province. Some of the buildings that we own or lease are managed directly by BC Housing, while others are managed by non-profit housing partners.



First Place and the Judge's Choice Award for Best Modular Building in North America awarded by the Modular Building Institute. The Village, an Olympic Legacy Affordable Housing project in Chilliwack is a four-story permanent supportive housing development for adults with mental health issues and youth at risk of homelessness. The building includes 18 modules that were used in the Whistler Athletes' Village during the 2010 Winter Games. The first floor incorporates office and meeting space with other amenities including a games room and lounge, commercial kitchen and dining room as well as ancillary space for youth services.

## Actions Taken to Reduce Greenhouse Gas Emissions in 2011 *(continued)*

### 2011 GHG EMISSIONS RELATED TO BUILDINGS

BUILDINGS	CHANGE IN ABSOLUTE GHG EMISSIONS IN 2011 (AGAINST 2005 BASELINE)	POSITIVE OR NEGATIVE TREND	CHANGE IN GHG EMISSIONS IN 2011 PER FLOOR AREA (AGAINST 2005 BASELINE)	POSITIVE OR NEGATIVE TREND
Directly Managed	- 25 %	+	-24%	+
Non-directly Managed	4 %	-	-16%	+
Offices	23 %	-	-10%	+
<b>All Buildings</b>	<b>-16%</b>	<b>+</b>	<b>-21%</b>	<b>+</b>

As presented in the table above in 2011 we have reduced our GHG emissions in the directly managed portfolio by 25 per cent and have increased our energy efficiency (measured by GHG emissions per floor area) in this portfolio by 24 per cent. Directly managed buildings generated over 60% of total emissions related to buildings.

For the total building portfolio (directly managed buildings, buildings managed by non-profit housing providers, group homes, single room occupancy hotels, and others) – our GHG emissions decreased by 16 per cent, while emissions per floor area decreased by 21 per cent.

These reductions were achieved despite the growth of our housing portfolio. This is due to the significant increase in energy efficiency of the new buildings and the retrofit program conducted over the past few years. This program included such measures as: building envelope repairs, windows replacement, switching from gas heating to air source heat pumps or geothermal heating, and lighting retrofits. Specific measures were selected for each of the 103 sites participating in the program.

In addition to the retrofit program we have also launched a few new initiatives.

We partnered with BC Non-Profit Housing Association (BCNPHA) and BC Hydro to promote lighting retrofits in buildings operated by non-profit housing societies. This innovative program resulted in 79 buildings receiving lighting and lighting control upgrades and will result in an estimated annual energy savings of over 1.7 GWh (Gigawatt hour).

We conducted a pilot project to identify best strategies for engaging social housing tenants in energy conservation within a broader context of community development to specific sites. The project had a wide range of partners including FortisBC (sponsor), Ameresco (sponsor), BC Healthy Communities, and BCNPHA. The initiative focused on both youth and adults. The results demonstrated that significant energy savings can be obtained through behavioral changes. The toolkit developed as a result of this pilot will be shared with non-profit partners and the engagement strategies will be applied to other social housing sites.



### ACTIONS LEADING TO GHG REDUCTIONS WITHIN BC HOUSING'S BUILDING PORTFOLIO UNDERTAKEN IN 2011 INCLUDED:

- Energy retrofits and building envelope repairs conducted at 52 housing sites (or 80 per cent of the total number of units managed by BC Housing), 32 non-profit sites, and 19 single room occupancy hotels – totaling 103 renovations under the Housing Renovation Partnership;
- Adoption of building standards with high environmental and minimum energy performance requirements, such as minimum Optimized Energy Performance points for the LEED rating systems for large buildings, EnerGuide 80 for small buildings, and caps on maximum energy use from fossil fuels;
- Development of LEED tools to support the decision making process related to GHG reduction targets, LEED requirements and building life cycle;
- Two renewable energy rooftop solar installations located at Greenbrook in Surrey and Stamps Place in Vancouver;
- Installation of solar domestic water pre-heating systems at 11 sites;
- All new buildings designed and constructed to achieve LEED Gold certification;
- Two new projects achieved LEED certification in 2011. Currently, BC Housing has four social housing buildings with LEED Gold Certification that are now occupied by tenants, one building that is LEED Certified, and one LEED Gold Certification for Commercial Interiors for our office;
- Forty buildings are currently registered with the Canadian Green Building Council and awaiting completion and/or certification;
- Adoption of innovative, modular housing construction processes for more than half of the 1,300 new housing units for seniors and people with disabilities built under the Seniors' Rental Housing initiative, which also provides employment for local contractors, and utilizes local and recycled materials, such as pine beetle wood in communities across the province;
- Commissioning of a research project to identify further GHG emission reductions for multi-unit residential buildings, and to create guidelines for technical teams involved in asset management;
- Publication of the *Building Enclosure Design Guide – Wood-Frame Multi-Unit Residential Buildings*. The guide has already been widely accepted by the industry and academia. It explores the latest research, design and construction best practices;
- Twenty-two Building Smart seminars entitled *Home – Homes for Life: Building for Now and the Future* were delivered in 20 communities across B.C. The seminar discussed universal and adaptable homes and resilient cities concepts;
- Twenty Building Smart seminars entitled *Making It Work: Design and Details for New Seismic and Envelope Requirements* were delivered in 22 communities across the province and at other industry events. The seminars included information on proposed changes to the BC Building Code and emerging green technologies to improve building efficiency in small buildings and houses.

# Examples of Results of Renovations and Energy Retrofits

**GREENBROOK** (Surrey) – a major renovation and installation of alternative energy sources such as air source heat pumps and solar panels for the 127-unit site (502 tenants). In 2011, Greenbrook achieved a 90 per cent reduction in GHG emissions (compared to 2005 baseline). This translates into 395 tonnes of GHG emissions saved in 2011, an equivalent of annual GHG emissions from 70 passenger vehicles.



**HALL TOWER** (Burnaby) – achieved 23 per cent GHG reductions in 2011 (against 2005 baseline). There were 114 tonnes of CO<sub>2</sub>e less in 2011 than in 2005, an equivalent of annual GHG emissions from 29 passenger vehicles.



**STAMPS PLACE** (Vancouver) – 30 per cent GHG reductions in 2011 (against 2005 baseline). There were 646 tonnes of GHG emissions less in 2011 than in 2005, an equivalent of annual emissions from 115 passenger vehicles.



# Examples of Projects Recognized for Sustainability

## EXCELLENCE IN CREATING A LOW-RISE MULTI-FAMILY DEVELOPMENT: TUTT STREET PLACE

Tutt Street Place, a supportive housing development in Kelowna with 39 apartments with integrated support services to help women with children who are homeless or at risk of homelessness, won the Canadian Home Builders' Association Central Okanagan TOMMIE Award for Excellence in Creating a Low-Rise Multi-Family Development. Tutt Street was built to LEED Gold standards in partnership with NOW Canada Society.



The building's sustainability features include a geothermal heating and cooling system and water energy-efficient systems. Three-quarters of its construction waste was diverted from landfill, and materials used in the building had a minimum 15 per cent recycled content with 10 per cent of these extracted or manufactured locally.

## SPECIAL AWARD OF EXCELLENCE GREEN AWARD: OLYMPIC VISTA APARTMENTS

Olympic Vista Apartments in Saanich won the Green Award at the Greater Victoria Commercial Building Awards. The three-storey development operated by Victoria Cool Aid Society provides 36 bachelor apartments with 24/7 support services for people who are homeless or at risk of homelessness. The apartments are reconfigured modular homes from the Olympic and Paralympic Village at Whistler.



## Examples of Projects Recognized for Sustainability *(continued)*

### **COMMUNITY AWARD OF EXCELLENCE: CAMAS GARDENS**

Camas Gardens in Victoria won the Community Award of Excellence at the Greater Victoria Commercial Buildings Awards. The three-storey building operated by the Pacifica Housing Advisory Association includes 44 self-contained bachelor and one-bedroom supportive housing apartments for individuals who are homeless or at risk of homelessness. The development has parking for 24 bicycles, common amenity space, a communal kitchen, program and office space as well as a courtyard where residents may socialize. Camas Gardens has been designed to achieve LEED Gold certification.





# Fleet

BC Housing has 48 fleet vehicles. In 2011 five new trucks were added. Most vehicles in the fleet are trucks and vans used by our grounds and building maintenance staff. Our office pool vehicles include only Smart Cars and hybrid vehicles.

FLEET	CHANGE IN ABSOLUTE GHG EMISSIONS IN 2011 (AGAINST 2010 BASELINE)	POSITIVE OR NEGATIVE TREND	CHANGE IN GHG EMISSIONS IN 2011 PER KM TRAVELED (AGAINST 2010 BASELINE)	POSITIVE OR NEGATIVE TREND
	4%	–	6%	–

In 2011 we introduced a Green Fleet Management policy and program that included driver education and the installation of web-based tracking systems for optimal route planning. While the program contributed to emission reductions for individual vehicles, due to the addition of five new trucks, overall fleet emissions increased by four per cent in 2011 compared to the previous year.

Employees attending off-site meetings are encouraged to:

- Take public transit by using available transit passes;
- Use the Smart car or the hybrid vehicles; or
- Share a ride with colleagues.

In addition to our program aiming at reducing GHG emissions from business travel we also have a comprehensive program to encourage alternative commuting. This program includes:

- Transit passes offered at a reduced rate;
- Carpooling information;
- Teleworking option for many positions;
- Discounts for bikes and bike accessories;
- Secure bike parking;
- Shower facilities;
- Ride-home vouchers for taxi service in case of emergency;
- Discount for a car-sharing company; and
- Green rewards program for employees who take alternative transportation.

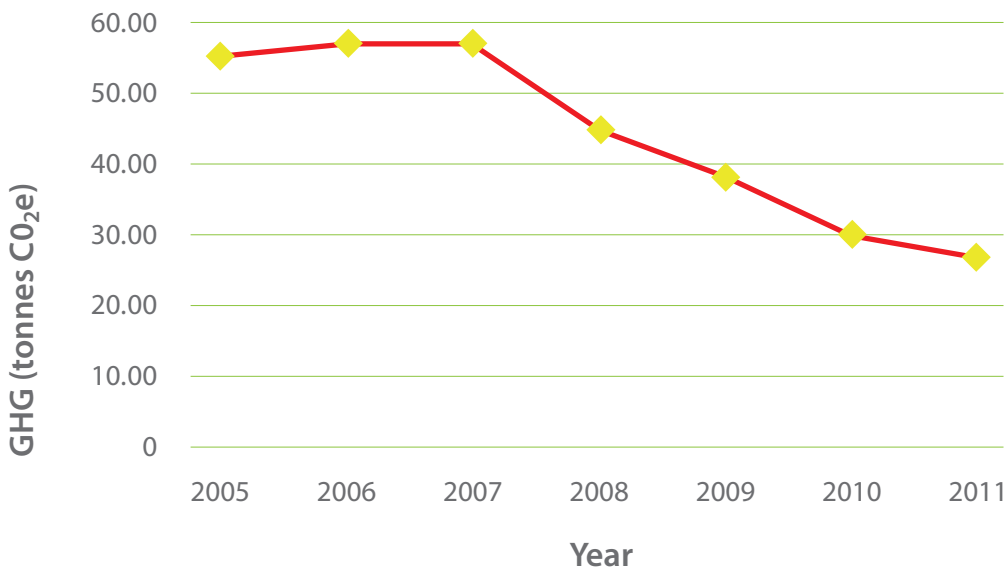


Maintenance worker Keith Lophien refers to the GARMIN GPS unit in a BC Housing vehicle. One of the ways BC Housing is working to reduce GHG emissions is through the implementation of a Green Fleet Management Program to optimize efficiency through fuel usage, route planning, fleet operation, and vehicle size, and to increase the use of alternative fuels and sustainable technologies.

# Paper

In 2011 our GHG emissions related to office paper use was 27 tonnes of CO<sub>2</sub>e. Compared to our 2005 baseline this represents a 51 per cent reduction in paper use despite a significant increase in the number of employees over the last six years. The reduction is the equivalent of preserving 501 trees, in just one year.

## TOTAL GHG EMISSIONS RELATED TO PAPER USE



These significant reductions are due to changes in our office paper procurement practices as well as to reductions of the total amount of paper used. BC Housing is creating a paperless culture through common practices of double-sided printing, wider use of computers rather than paper, switching to online services for residential builders licensing applications and renewals at our Homeowner Protection Office. In 2011 BC Housing achieved 100 per cent compliance with a non virgin-paper policy. This means 100 per cent of the paper purchased has recycled content.

PAPER	CHANGE IN ABSOLUTE GHG EMISSIONS IN 2011 (AGAINST 2005 BASELINE)	POSITIVE OR NEGATIVE TREND	CHANGE IN GHG EMISSIONS IN 2011 PER EMPLOYEE (AGAINST 2005 BASELINE)	POSITIVE OR NEGATIVE TREND
	- 51%	+	- 71%	+



# Other Actions

While BC Housing's most significant impact in terms of transitioning to sustainability is in our core business, we also believe our employees play a key role in changing our organizational culture so that sustainability is considered in all of our decisions. A few years ago we established the livegreen Employee Council – our "green team" – to help change behaviors to support environmental sustainability at work, home, and in the broader community. The council played key role in raising employee awareness and helping them make better choices related to transportation, food, and purchasing.

The council is made up of staff members who are elected by their peers to represent their region and/or work area, as well as ex-officio members who provide strategic support to the Council.



Each year the council establishes an action plan that identifies activities to create sustainability awareness among staff, influence attitudes and stimulate engagement. The impact on individual behavioural change is measured, evaluated and monitored through the council's annual livegreen employee sustainability survey. Notably, the council's 2011 survey suggests we have made significant progress over the past three years in influencing behaviour in many areas including sustainable modes of commuting, composting, gardening, reusing and recycling, sustainable food choices, purchasing green cleaning products, consuming less meat, and reducing paper and energy use.

The Take the Next Step campaign encouraged employees to go a notch further with alternative commuting choices.

# Plans to Continue Reducing Greenhouse Gas Emissions 2012 – 2014

BC Housing's Sustainability Plan includes short- and long-term goals for reducing our greenhouse gas emissions and other negative environmental impacts, as well as providing leadership in developing and managing sustainable housing.

BC Housing utilizes a well established formal process to identify and assess social housing sites most in need of repair. The majority of these sites are directly managed by BC Housing and include many recently acquired single room occupancy hotels (SROs) operated by non-profit housing societies. The directly-managed sites and SROs are the oldest social housing stock in the province and have the greatest capital renewal needs for both life safety and quality of life for tenants. One of the most significant areas for the future is the renovation and upgrade of the SROs.

Some of the key initiatives planned for the next couple of years include:

- Renovate and restore 13 single room occupancy hotels in Vancouver's Downtown Eastside through a public-private partnership;
- Implement energy-efficiency programs for buildings managed by non-profit housing providers, including group homes and multi-unit residential buildings;
- Achieve a Facility Condition Index annual reduction of one per cent from the 2011 baseline for the social housing stock;
- Research and evaluate potential key sustainability performance measures that can be implemented for major renovations;
- Further develop BC Housing's building construction and maintenance standards;
- Employee engagement campaigns related to GHG reductions from operational activities, such as energy and paper use in offices;
- Publication of a guide and resources for tenant engagement on energy conservation and development of training for building staff and on-the-ground facilitators for both BC Housing and non-profit partners;



Maria Keary Cottage in New Westminster was recognized for its restoration linking the past to the present with a sustainable solution. These endangered 1887 houses were rehabilitated into a 35-bed supportive housing facility. The restoration blended with the identity and character of the neighbourhood enhancing its historic aspects.

## Plans to Continue Reducing Greenhouse Gas Emissions 2012 – 2014 *(continued)*

- Join a recognized green fleet program and provide further driver education;
- Continue to present Building Smart seminars about innovation in construction and design for licensed residential builders, contractors, trades, architects, engineers, building officials/inspectors, suppliers, and others involved in the home-building industry to provide practical information on the latest in building science and good building practices on various topics, including energy efficiency and green buildings; and,
- Continue to initiate research and education initiatives that address energy efficiency in new residential construction.

*For more information, please visit:*

[www.bchousing.org/Initiatives/Sustainability](http://www.bchousing.org/Initiatives/Sustainability)

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# BC Housing Management Commission - 2011 Carbon Neutral Action Report

## Actions Towards Carbon Neutrality

The actions listed below contribute to a reduction in greenhouse gas emissions from sources for which public sector organizations are responsible under the carbon neutral government regulation of the *Greenhouse Gas Reduction Targets Act*.

Action	Status (as of 12/31/11)	Performance to Date (as of 12/31/11)		Steps Taken in 2011	Steps Planned for 2012 -2014	Start Year	End Year
<b>Mobile Fuel Combustion (Fleet and other mobile equipment)</b>							
<b>Vehicle fuel efficiency</b>							
Replace vehicles with more fuel-efficient models	Ongoing/In Progress	17	% of vehicles are fuel- efficient models	Five new vehicles were added to the fleet in 2011. New tracking devices were installed leading to improvements in driving practices New tracking devices were installed leading to improvements in driving practices (lower speed) and better route planning.	BC Housing will join a recognized 'green fleet' program and provide further drivers' education	2011	2013
Perform regular fleet maintenance specifically to improve fuel-efficiency	Ongoing/In Progress	100	% of vehicles are subject to regular maintenance for fuel efficiency	Regular maintenance program is in place	On-going regular maintenance. New routines might be adopted as a result of the additional drivers' education	2011	No End Date (Continuous)
<b>Behaviour change program</b>							
Provide fleet driver training to reduce fuel use	Ongoing/In Progress	100	% of current drivers are trained	Initial training for the Green Fleet Management program was conducted	More in-depth drivers' training will be conducted in 2012/13	2005	2013
Introduce anti-idling policy and/or raise anti-idling awareness for fleet drivers (e.g., signs, stickers, messages)	Ongoing/In Progress			Anti-idling was introduced	More in-depth drivers' training will be conducted in 2012/13	2011	2013
Encourage carpooling in fleet vehicles	Ongoing/In Progress			On-going encouragement to carpool. In 2011 'Take the Next Step' communicated carpooling options to the employees	On-going encouragement	2005	No End Date (Continuous)
Promote alternatives to fleet vehicle travel where possible (e.g., bicycles, public transit, walking)	Ongoing/In Progress			Transit tickets, hybrid and Smart cars are available for staff as an alternative to fleet vehicle travel. Alternative transportation was encouraged through the 'Take the Next Step' campaign	Maintenance of on-going alternative transportation programs. A new guide presenting all available options for employees will be created	2005	No End Date (Continuous)
<b>Other Mobile Fuel Combustion Actions</b>							
Encourage use of energy efficient fleet vehicles for business meetings	Ongoing/In Progress			On-going encouragement to use fuel efficient vehicles for business meeting	On-going encouragement to use fuel efficient vehicles for business meeting	2005	No End Date (Continuous)
<b>Stationary Fuel Combustion, Electricity and Fugitive Emissions (Buildings)</b>							
<b>Planning/management</b>							
Enrol in a building energy benchmarking program (e.g., GREEN UP)	In Development			BC Housing set-up an internal benchmarking program, and we're also supporting the efforts of Canada Green Building Council (CaGBC) to create benchmark program for buildings in Canada	BC Housing will provide ongoing data to CaGBC and will continue to support their benchmarking program	2010	No End Date (Continuous)
Reduce office space (square meters) per employee	Ongoing/In Progress			Strategy was implement with consideration of carbon footprint, minimizing additional operating costs and ensuring that we manage the re-design of existing space, teleworking and any other innovative ideas to ensure business areas can continue to deliver their services	Assessment of long term office space needs	2010	No End Date (Continuous)
<b>Owned buildings</b>							

# BC Housing Management Commission - 2011 Carbon Neutral Action Report

Action	Status (as of 12/31/11)	Performance to Date (as of 12/31/11)		Steps Taken in 2011	Steps Planned for 2012 -2014	Start Year	End Year
Establish energy performance baseline for owned buildings	Ongoing/In Progress	100	% of owned buildings have an established energy performance baseline	Energy performance and GHG emissions baseline was established for 2005 calendar year. GHG reduction opportunities were identified for Group Homes	Continuation of energy performance monitoring	2008	No End Date (Continuous)
Register for performance labelling/certification for commercial interiors of owned buildings (e.g., LEED CI)	Completed in 2011	47	% of commercial interiors in owned buildings have labelling	New office space registered for LEED certification (HPO office)		2008	2011
Achieve LEED NC Gold certification at a minimum for new construction or major renovations	Ongoing/In Progress	69	% of owned buildings are certified LEED NC Gold or LEED NC Platinum	New construction projects are being designed to achieve LEED Gold certification. 40 projects (PRHC owned and owned by a non-profit housing provider but develop with PRHC involvement) are currently registered with the Canadian Green Building Council, and are being built to high energy efficiency and design standards. Sustainable design model was created to address decision-making needs, LEED requirements, GHG reduction targets and life cycle of buildings. First LEED buildings (owned by non-profit housing providers) received certification and are now occupied: Friendship Lodge in Prince George (LEED Gold);Victoria Heights in New Westminster (Certified), Gateway of Hope in Langley (LEED Gold), Terrace Ksan in Terrace (LEED Gold), Haven Gardens in Cranbrook (LEED Gold)	Build all new projects (600 sq meters or larger) that are owned by BC Housing to LEED Gold	2008	No End Date (Continuous)
Incorporate integrated design process into new construction or during renovations of owned buildings	Ongoing/In Progress			Integrated design process is adopted for both new construction and the energy retrofit program	Integrated design process will be continued	2008	No End Date (Continuous)
Perform energy retrofits on existing, owned buildings	Ongoing/In Progress			Building upgrade and energy retrofit have been completed at 71 housing sites owned by BC Housing, representing X % of the total floor area owned	Completion of the retrofit program under Housing Renovation Partnership at 71 sites. Upgrade and retrofit of 13 Single Resident Occupancy hotels in Downtown Eastside	2008	2014
<b>Retrofitting owned buildings</b>							
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	Ongoing/In Progress			Mechanical systems upgrades were part of the retrofit program. BC Housing's Capital Planning process incorporates energy use reduction measures with capital renewal measures. They are selected on project by project basis	Completion of the retrofit program under Housing Renovation Partnership at 71 sites	2005	2012
Upgrade lighting systems during retrofits	Ongoing/In Progress			Lighting systems upgrades were part of the retrofit program. They are selected on project by project basis	Completion of the retrofit program under Housing Renovation Partnership at 71 sites	2005	2012
Upgrade/adjust control systems during retrofits	Ongoing/In Progress			Upgrade or adjustment of control systems were part of the retrofit program. They are selected on project by project basis	Completion of the retrofit program under Housing Renovation Partnership at 71 sites	2005	2012
Improve building insulation (including windows) during retrofits	Ongoing/In Progress			Building insulation (including windows) upgrades were part of the retrofit program. They are selected on project by project basis	Completion of the retrofit program under Housing Renovation Partnership at 71 sites	2005	2012
Install an on-site renewable energy demonstration project	Ongoing/In Progress			502 public housing units across two sites: Greenbrook (Surrey) and Stamps Place (Vancouver) are part of the on-site renewable energy demonstration project. Greenbrook features solar panels and air-source heat pumps, Stamps Place features solar panels. Greenbrook received a recognition of Excellence in Energy Efficiency from the City of Surrey in 2011	Completion of the retrofit program under Housing Renovation Partnership at 71 sites	2005	2012
<b>Leased buildings</b>							
Establish energy performance baseline for leased buildings	Ongoing/In Progress			Energy performance and GHG emissions baseline was established for 2005 calendar year	Continuation of energy performance monitoring	2008	No End Date (Continuous)

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Lease space with commercial interiors performance labelling/certification (e.g., LEED CI)	Completed in 2011			Awaiting LEED Gold certification for the new office space for the Homeowner Protection Office branch		2008	2012
<b>Appliances and electronic devices</b>							
Replace refrigerators with ENERGY STAR models or source ENERGY STAR models for future purchases	Ongoing/In Progress			All new refrigerators were replaced with Energy Star models	Purchases of new appliances are of Energy Star models	2007	2012
Replace other appliances or electronic devices with ENERGY STAR models or source ENERGY STAR models for future purchases	Ongoing/In Progress			All new appliances and electronic devices were replaced with Energy Star models	Purchases of new appliances are of Energy Star models	2007	2012
Replace desk lamp incandescent bulbs with compact fluorescent (CFL) bulbs or source more efficient desk lamps for future purchases	Ongoing/In Progress			All light bulbs in housing units undergoing energy retrofit were replaced to CFL bulbs	All new lighting will be energy efficient	2007	2012
<b>Behaviour change program</b>							
Ask staff to unplug electrical equipment or switch off power bars when not in use	Completed in 2011			Energy Challenge conducted for employees		2011	2011
Encourage use of stairs instead of elevators	Ongoing/In Progress			On-going encouragement through the Green Points reward program	On-going encouragement through the Green Points reward program	2007	No End Date (Continuous)
Provide reminders for turning off lights (e.g., signs, stickers, messages)	Completed in 2011			Energy Challenge conducted for employees		2010	2011
<b>Supplies (Paper)</b>							
<b>Paper Type</b>							
Purchase 30% post-consumer recycled paper	Ongoing/In Progress	8	% of total paper purchased contains 30% recycled content	More thorough implementation of the Sustainability Policy to procurement practices	On-going implementation	2010	No End Date (Continuous)
Purchase 100% post-consumer recycled paper	Ongoing/In Progress	91	% of total paper purchased contains 100% recycled content	More thorough implementation of the Sustainability Policy to procurement practices	On-going implementation	2010	No End Date (Continuous)
<b>Printer/document settings</b>							
Switch networked printers and photocopiers to automatic double-sided	Ongoing/In Progress	100	% of network printers or photocopiers are set to automatic double-sided	All black & white Home Office printers are set to automatic double sided printing	Continuation of this practice with any additions of new printers	2009	No End Date (Continuous)
Apply "print and hold" settings to networked printers to eliminate unclaimed print jobs	Ongoing/In Progress			This setting has been applied to the new printers	Continuation of this practice with any additions of new printers	2010	No End Date (Continuous)
<b>Electronic media in place of paper</b>							
Install collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	In Development	75	% of staff workstations with software installed	SLICE software was rolled out to the next group of employees to enhance paperless documentation and collaboration within each branch	Finalize SLICE roll-out to all employees	2009	2013
Use electronic document library for filing common documents	Ongoing/In Progress			The implementation of the New Content Management System has been initiated to enhance electronic document library for filing documents	Full implementation of the New Content Management System	2010	2012



## BC Housing Management Commission - 2011 Carbon Neutral Action Report

Action	Status (as of 12/31/11)	Performance to Date (as of 12/31/11)		Steps Taken in 2011	Steps Planned for 2012 -2014	Start Year	End Year
<b>Behaviour change program</b>							
Train staff to use collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	In Development	75	% of staff currently have received collaborative software training	SLICE software was rolled out to the next group of employees to enhance paperless documentation and collaboration within each branch	The rest of organization will be trained and using the software	2010	2012
Encourage staff to hold paperless meetings or presentations (i.e., no handouts)	Ongoing/In Progress			New equipment has been installed in additional meeting rooms to facilitate paperless meetings	Continuation of existing initiatives	2007	No End Date (Continuous)
Encourage re-use of scrap paper	Ongoing/In Progress			Note pads available in Home Office are produced from scrap paper	Continuation of existing initiatives	2007	No End Date (Continuous)

## BC Housing Management Commission - 2011 Carbon Neutral Action Report

### Actions to Reduce Provincial Emissions and Improve Sustainability

The actions listed below contribute to a reduction in greenhouse gas emissions from sources that fall outside of the reporting requirements defined in the carbon neutral government regulation of the *Greenhouse Gas Reduction Targets Act*. Public sector organizations can optionally use this section to report on actions that will help British Columbia meet its provincial greenhouse gas reduction targets, engage the public, and improve environmental sustainability across all aspects of their organization.

Action	Status (as of 12/31/11)	Performance to Date (as of 12/31/11)	Steps Taken in 2011	Steps Planned for 2012 -2014	Start Year	End Year
<b>Business Travel</b>						
<b>Virtual meeting technology</b>						
Install web-conferencing software (e.g., Live Meeting, Elluminate, etc.)	Ongoing/In Progress	100 % of computers have web-conferencing software installed	Continued implementation and use of the video conferencing technologies	Continued implementation and use of the video conferencing technologies	2007	No End Date (Continuous)
<b>Behaviour change program</b>						
Encourage carpooling to meetings	Ongoing/In Progress		Smart Cars and a Hybrid Car are available at the Home Office for business travel	Continued availability and promotion of car pooling	2007	No End Date (Continuous)
Encourage alternative travel to meetings (e.g., bicycles, public transit, walking)	Ongoing/In Progress		Transit tickets are available for staff to use for travel to meetings.	Continued availability and promotion of use of the public transit	2007	No End Date (Continuous)
<b>Education, Awareness, and Engagement</b>						
<b>Team-building</b>						
Create Green, Sustainability, Energy Conservation, or Climate Action Teams with executive endorsement	Ongoing/In Progress	72 % of employees who indicate they feel supported by BC Housing to make good sustainability choices in the workplace and at home	livegreen Employee Council strategic plan was implemented. Activities included: Recycling campaigns, National Sweater Day, Energy Challenge, Promotion and Sales of Green Cleaning Products, Promotion of Bike to Work Week, livegreen Employee Survey, Educational Articles on the website	Activities planned include: Employee Carbon and Paper Challenge, Green Product Testing, Promotion of Bike to Work and Commuter Challenges, and others	2008	No End Date (Continuous)
Provide resources and/or dedicated staff to support teams	Ongoing/In Progress	72 % of employees who indicate they feel supported by BC Housing to make good sustainability choices in the workplace and at home	livegreen Council is allocated 12 paid hours per month per each member. Resources were made available to build a website and create a baseline survey and facilitated strategic planning process. livegreen Forum has been supported to allocate their time on sustainability related tasks	livegreen Council will continue to receive the necessary support	2008	No End Date (Continuous)
Providing behaviour change education/training to teams (e.g., community-based social marketing)	Ongoing/In Progress		Sustainability library was expanded by a number of new items. livegreen Council members participated in Strategic planning sessions and a number of lunch and learns	Participation in on-line sustainability training programs	2008	No End Date (Continuous)
<b>Awards/Recognition</b>						
Establish a sustainability/green awards or recognition program	Ongoing/In Progress		Green points program is available to all employees	Continuation of the program	2010	No End Date (Continuous)
<b>Staff Professional Development</b>						
Support green professional development (e.g., workshops, conferences, training)	Ongoing/In Progress		Educational sessions were provided to staff from the Development Services branch on: HVAC equipment, BC Hydro programs. Educational session for Asset Strategies staff on Waste tracking framework	Planned sessions include: Efficient Lighting Systems, GHG Reduction Guidelines, Green Cleaning Products	2008	No End Date (Continuous)
Include green options in employee performance measurement system	Ongoing/In Progress		Corporate Plan, Branch plans and a number of individual performance plans include sustainability related goals	Integration of sustainability into corporate performance plans will continue	2008	No End Date (Continuous)
<b>Staff awareness/education</b>						

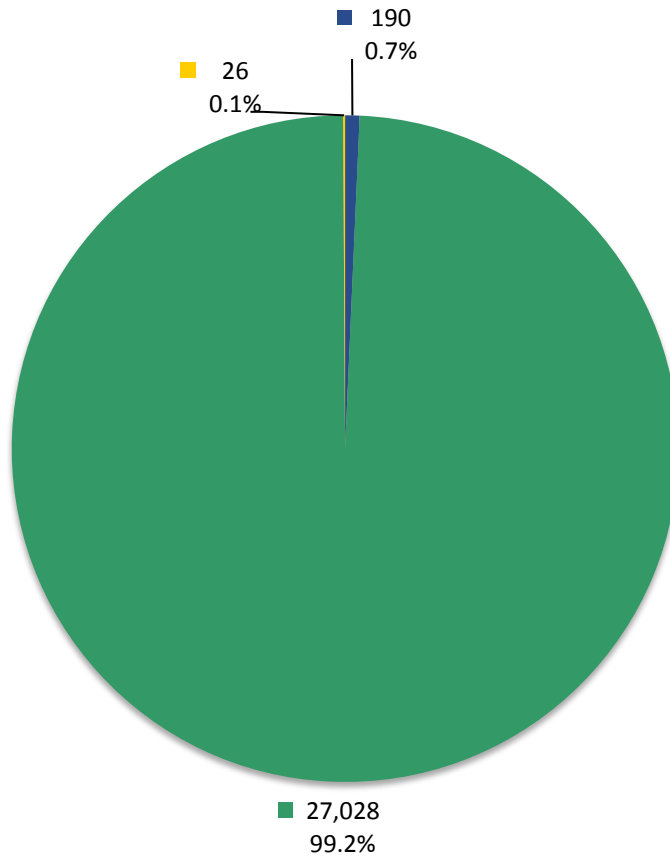
## BC Housing Management Commission - 2011 Carbon Neutral Action Report

Action	Status (as of 12/31/11)	Performance to Date (as of 12/31/11)		Steps Taken in 2011	Steps Planned for 2012 -2014	Start Year	End Year
Provide education to staff about the science of climate change	Ongoing/In Progress			livegreen Employee Council provides regular green tips on BC Housing intranet sites	livegreen Employee Council will continue to provide green tips via the website and through other events as set-out in their strategic plan	2008	No End Date (Continuous)
Provide education to staff about the conservation of water, energy, and raw materials	Ongoing/In Progress			livegreen Employee Council provides regular green tips on BC Housing intranet sites	livegreen Employee Council will continue to provide green tips via the website and through other events as set-out in their strategic plan	2008	No End Date (Continuous)
Provide green tips on staff website or in newsletters	Ongoing/In Progress			livegreen Employee Council provides regular green tips on BC Housing intranet sites	livegreen Employee Council will continue to provide green tips via the website and through other events as set-out in their strategic plan	2008	No End Date (Continuous)
Provide sustainability education during new staff orientation	Ongoing/In Progress			Presentation of BC Housing's commitment to sustainability is integrated in new staff orientation	Continuation of the program	2008	No End Date (Continuous)
<b>Client/public awareness/education</b>							
Provide education to clients/public about the science of climate change	In Development			Completion of the Tenant Engagement on Sustainability pilot at 5 sites	Tenant Engagement Program will be implemented at the new sites	2010	2014
Provide education to clients/public about the conservation of water, energy, and raw materials	In Development			Completion of the Tenant Engagement on Sustainability pilot at 5 sites	Tenant Engagement Program will be implemented at the new sites	2010	2014
Provide green tips on client/public website or in newsletters	In Development			Completion of the Tenant Engagement on Sustainability pilot at 5 sites	Tenant Engagement Program will be implemented at the new sites	2010	2014
<b>Other Sustainability Actions</b>							
<b>Water conservation</b>							
Establish a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models	In Development			Efficient water fixtures were installed on sites include in the retrofit program	Efficient water fixtures to be installed on sites include in the retrofit program	2007	2012
<b>Waste reduction/diversion</b>							
Put in place an operations policy to facilitate the reduction and diversion of building occupant waste from landfills or incineration facilities	Completed in 2011			Composting program implemented at Home Office. Recycling programs exist at housing sites		2009	2011
Implement a hazardous waste reduction and disposal strategy	In Development	33%	Hazardous materials inventory completed for 33% of properties owned and directly managed by BC Housing	Completed representative sampling and inventory of hazardous materials on 33% of properties owned and directly managed by BC Housing	Completed representative sampling and inventory of hazardous materials on additional 33% of properties owned and directly managed by BC Housing	2011	2014
<b>Procurement (non-paper supplies)</b>							
Incorporate minimum recycled content standards into procurement policy for consumable, non-paper supplies (e.g., writing instruments, binders, toner cartridges, etc.)	Ongoing/In Progress			Sustainable Procurement Program development plan was created	Sustainable Procurement to be implemented	2009	No End Date (Continuous)
Establish green standards for goods that are replaced infrequently and/or may require capital funds to purchase (e.g., office furniture, carpeting, etc.)	Ongoing/In Progress			Green Lens Procedure was created to focus on items with green labels	Sustainable Procurement to be implemented	2009	No End Date (Continuous)

## BC Housing Management Commission - 2011 Carbon Neutral Action Report

Action	Status (as of 12/31/11)	Performance to Date (as of 12/31/11)		Steps Taken in 2011	Steps Planned for 2012 -2014	Start Year	End Year
Implement sustainable purchasing program for cleaning products, disposable paper products and trash bags	Ongoing/In Progress			Green cleaning products have been replacing other products at all directly managed sites. They were also made available to employees for personal use at home	Continuation of the existing green cleaning program	2009	No End Date (Continuous)
Require a minimum purchase of sustainable, and organic food and beverages supplied by contracted food suppliers or caterers	Ongoing/In Progress			Sustainable, organic and local catering has been a preferred option on many occasions	Implement minimum requirements	2009	2012
<b>Building construction, renovation, and leasing</b>							
Establish a policy to reuse materials where possible and divert construction and demolition debris from landfills and incineration facilities	Ongoing/In Progress			Framework for diversion tracking was established	Implement diversion tracking framework	2010	No End Date (Continuous)
Incorporate lifecycle costing into new construction or renovations	Ongoing/In Progress			Lifecycle costing was incorporated into the retrofit program	Continue to use lifecycle costing	2008	No End Date (Continuous)
<b>Indoor air quality</b>							
Incorporate low volatile organic compounds (VOCs) standards into procurement policy for products such as paints, carpets, and furniture	In Development			Phasing out of VOC and oil based paints at all BC Housing owned sites is in progress	Complete elimination of VOC and oil based paints from use at public housing sites	2008	2012
<b>Commuting to and from home</b>							
Introduce telework/work from home policy	Ongoing/In Progress			Telework program continued in 2011	Telework program will be continued	2008	No End Date (Continuous)
Offer staff a compressed work week	Ongoing/In Progress			An option of compressed work week exist to the effect of increased work hours so that every three week an employee can take a flex-day	The program will be continued	2005	No End Date (Continuous)
Encourage commuting by foot, bicycle, carpool or public transit	Ongoing/In Progress			Participation in Bike to Work Week and The Commuter Challenge	Participation in Bike to Work Week and The Commuter Challenge	2005	No End Date (Continuous)
Provide shower or locker facilities for staff/students who commute by foot or by bicycle	Ongoing/In Progress			Ongoing	Ongoing	2005	No End Date (Continuous)
Provide secure bicycle storage	Ongoing/In Progress			Ongoing	Ongoing	2005	No End Date (Continuous)
<b>Other Sustainability Actions</b>							
Encourage employees to choose alternative commuting choices	Ongoing/In Progress			'Take the Next Step campaign encouraged employees to go a 'notch' further with the alternative commuting choices	Conduct similar campaigns to encourage employees to take alternative transportation for their commuting	2009	No End Date (Continuous)
Measure GHG emissions from commuting	Ongoing/In Progress	2.2	% reduction of GHG emissions per employee	Conducted employee commuting survey. Shared results and designed a new campaign based on survey results	Continue to monitor GHG emissions related to commuting based on the annual livegreen employee survey	2009	No End Date (Continuous)

## BC Housing Management Commission Greenhouse Gas Emissions by Source for the 2011 Calendar Year (tCO<sub>2</sub>e\*)



**Total Emissions: 27,244**

- 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 2011 (Generated May 18, 2012 10:08 AM)

Total offsets required: **27,159**. Total offset investment: **\$678,975**. Emissions which do not require offsets: **86** \*\*

\*Tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) 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.