

BC Housing's
2017 Carbon Neutral
Action Report



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Declaration Statement

This Carbon Neutral Action Report for the period January 1 to December 31, 2017 summarizes BC Housing's emissions profile, the amount of offsets purchased to reach net zero emissions, the actions we have taken in 2017 to reduce our greenhouse gas emissions, and our plans to continue reducing emissions in 2018 and beyond.

By June 30, 2018, BC Housing's final Carbon Neutral Action Report will be posted to our website at www.bchousing.org



Executive Summary



Shayne Ramsay, CEO of BC Housing

BC Housing works in partnership with the private, non-profit and co-operative sectors, Indigenous groups, provincial health authorities and ministries, other levels of government and community groups to develop a range of affordable housing options. BC Housing also has responsibilities related to licensing of residential builders, home warranty insurance, and consumer protection. We carry out research and education that benefits the residential construction industry, consumers and the affordable housing sector.

In 2017/18, over 107,200 households in British Columbia benefited from provincial housing programs for affordable and supportive housing. In partnership with the housing sector, BC Housing created new supportive and affordable housing units and increased the number of households receiving rental assistance in the private market.

Safe, affordable and functional housing is the foundation of healthy people, families and communities. Our commitment to sustainability is an extension of these priorities. We recognize that our actions have an impact on local communities and ecosystems across the province. Our [livegreen Sustainability Plan](#) provides a roadmap to help fight climate change by reducing greenhouse gas (GHG) emissions and our environmental footprint.

One of the goals in BC Housing's 2018/19 – 2020/21 Service Plan is to “provide leadership in sustainability and residential construction”, bringing together two areas where we have significant leadership responsibilities. We partner with industry and government partners to initiate technical research and education projects that promote the durability and energy efficiency of new residential construction. In 2017, much of our work in this area was directed at facilitating the adoption of the BC Energy Step Code through publications, training sessions, and other educational events.



We also updated our BC Housing Design and Construction Guidelines to align with the BC Energy Step Code, a performance-based approach. Moving forward, our projects are targeting high levels of this code which will result in energy savings over the base building code in new buildings constructed through our programs.

In 2017, we published a [Climate Adaptation Framework](#), recognizing that annual average temperatures are expected to increase in B.C. in the decades to come. A climate adaptation framework allows us to take a proactive approach to identifying, prioritizing and addressing climate risks. We believe more can be achieved by working with our employees, tenants and partners to enhance the resilience of communities across British Columbia.

Also, the total GHG emissions related to energy use for heating and electricity in all buildings owned or leased by BC Housing were reduced by 28 percent compared with the 2005 baseline level, exceeding our annual reduction target. There are many factors behind these results, including:

- › Successful implementation of higher efficiency heating and lighting technologies in new and older buildings;
- › Renovation of 13 single-room-occupancy hotels in the Downtown Eastside through the Single Room Occupancy Renewal Initiative;
- › Multi-year building upgrades and energy programs;
- › Installation of heating systems low in carbon emissions; and
- › On-going improvements in energy management practices across our portfolio.

In addition, Canada's Top 100 Employers project has recognized BC Housing as one of Canada's Greenest Employers. Last year 83 percent of our employees declared that they felt supported by BC Housing to make good sustainability choices at work and at home. BC Housing's Employee *livegreen* Council played a key role in achieving such results through a variety of employee engagement initiatives. Last year, staff participated in a 30x30 Nature Challenge, the Commuter Challenge, the [Great Canadian Shoreline Cleanup](#), learning opportunities related to plastics awareness, reducing meat consumption, and eco-friendly transportation.

Read our complete Carbon Neutral Action Report to learn how our commitment to sustainability is reflected in our significant GHG reduction achievements.

Shayne Ramsay

CEO

BC Housing

2017 Greenhouse Gas Emissions and Offsets Overview

BC Housing's GHG Emissions and Offsets for 2017 (tCO₂e)

GHG EMISSIONS CREATED IN CALENDAR YEAR 2017	
Total emissions (tCO ₂ e)	24,065
Total offsets (tCO ₂ e)	24,053
ADJUSTMENTS TO GHG EMISSIONS REPORTED IN PRIOR YEARS	
Total emissions (tCO ₂ e)	-852
Total offsets (tCO ₂ e)	-840
TOTAL EMISSIONS FOR OFFSET FOR THE 2017 REPORTING YEAR	
Total offsets (tCO ₂ e)	23,213

Adjustments To Total Emissions Reported In Prior Years

In 2016, we reported 24,904 tonnes of CO₂e emissions. Following the release of BC Housing's 2016 Carbon Neutral Action Report, we discovered that total emissions for the previous year had been overreported by 852 tonnes and required offsets had been overreported by 840 tonnes. That difference in required offsets has been deducted from our 2017 emissions.

2017 Total Emission Offset

BC Housing purchased carbon offsets from the Government of B.C. for the equivalent of 23,213 tonnes of CO₂e to obtain carbon neutral status for 2017.

Twelve tonnes of CO₂e emissions from the combustion of biomass and biomass-based fuels were reported as part of our greenhouse gas emissions profile in 2017. However, while CO₂e emissions from these sources must be reported, they do not require offsets.

Retirement of Offsets:

In accordance with the requirements of the Greenhouse Gas Reduction Targets Act and Carbon Neutral Government Regulation, BC Housing is responsible for arranging for the retirement of the offsets obligation reported above for the 2017 calendar year, together with any adjustments reported for past calendar years. The organization hereby agrees that, in exchange for the Ministry of Environment ensuring that these offsets are retired on the organization's behalf, the organization will pay the associated invoice to be issued by the Ministry in an amount equal to \$25 per tonne of offsets retired on its behalf, plus GST.



Dan Maxwell
Chief Financial Officer
BC Housing

May 9, 2018



Co:Here Foundation in Vancouver, built to LEED Gold in 2017

Actions Taken to Reduce Greenhouse Gas Emissions in 2017

Buildings

BC Housing reports on energy use and related GHG emissions from all the buildings that we own or lease as required by the Carbon Neutral Government Regulation. Our building inventory includes the following building types:

- › Residential towers (High-rise buildings)
- › Low- and medium-rise buildings
- › Single-room-occupancy hotels (SROs)
- › Townhouses
- › Group homes
- › Offices

Some of these buildings are managed directly by BC Housing, while others are operated by non-profit societies.

Our portfolio includes 599 social housing sites, totaling over a million square meters of floor area. We added 24 sites and divested 9 from the GHG reporting inventory.

GHG Results For Buildings

In 2017, our GHG emissions related to energy used to provide heat, water and electricity for our buildings totaled 23,722 tonnes of CO₂ equivalent¹. Since 2005, we have seen a 28 percent decrease in emissions from our buildings and less than one percent increase from 2016.²

2017 Buildings GHG Emissions (Compared with 2005 baseline and 2016 results)

EMISSION SOURCE	2017 GHG EMISSIONS (Tonnes of CO ₂ e)	2017 RESULTS COMPARED WITH THE 2005 BASELINE	2017 RESULTS COMPARED WITH 2016
Buildings (Stationary Combustion)	23,722	28% Decrease	<1% Increase

GHG emission reductions compared with our baseline are mainly a result of our energy conservation efforts since 2005, such as multi-year building upgrades and energy programs, increasing energy efficiency standards for new construction, and ongoing improvements in energy management in our portfolio. These initiatives are further described in the following section of this report.

Between 2016 and 2017, we did not see a significant increase or decrease in emissions.

For the 2017 reporting year, as in previous years, FortisBC natural gas consumption data was only provided in an aggregated format for private accounts for all or varying portions of individual buildings. In 2016, we

began following up with non-profit private account holders and collecting data directly from them, however, we were only able to collect data for a portion of the accounts. This is a significant issue which has limited our ability to conduct accurate data analysis and checks that would result in a high level of confidence in this data.

We are estimating consumption of those accounts for which we did not receive data based on similar building types to ensure consistency year-to-year. We are estimating consumption for 17% of our portfolio in this way, and for that portion of our emissions, we have a very low level of confidence in the data.

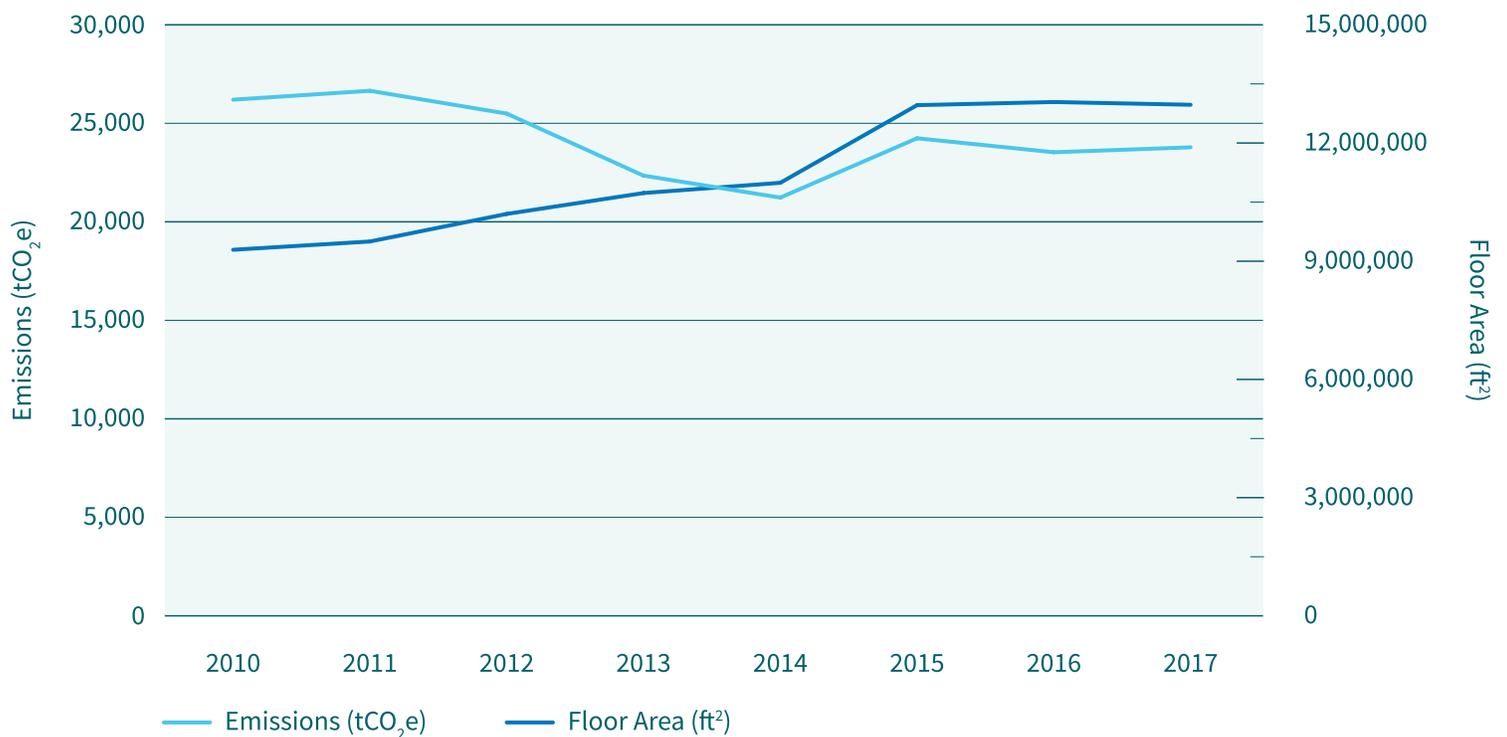
¹ Stationary fugitive emissions from air conditioning at BC Housing offices do not comprise more than 0.01 percent of total emissions and have been deemed out of scope and are not included in the total GHG profile.

² The comparison between 2017 and 2016 is based on absolute emissions, while our 2005 baseline is recalculated to reflect buildings in our portfolio during the reporting year. Baseline recalculation is conducted as per the GHG reporting protocols.

Floor Area Comparison

We have maintained significant energy and GHG reductions despite our overall floor area growing for the past few years (although remaining fairly static between 2015 and 2017). This has been due to the energy retrofit and conservation programs in our existing buildings and higher energy efficiency standards in the new buildings.

Floor Area and GHG Emissions Change (2010-2017)



Actions Taken In 2017

BC Housing has taken significant action to increase the energy efficiency of our building portfolio, both new construction and our existing building stock.

In collaboration with our tenants and non-profit housing partners, we worked together to reduce GHG emissions in 2017.

Highlights of initiatives undertaken this year include:

- › Modifications to renovation project tendering documents to include energy efficiency considerations
- › Energy conservation and retrofit programs

- › Tenant engagement on energy conservation
- › Ensuring the energy efficiency and sustainability of new construction through the revision of the BC Housing Design and Standards Guidelines; and
- › A new focus on climate change adaptation

Specific actions taken last year within each of these areas are described on the following pages.

ENERGY CONSERVATION INITIATIVES FOR BUILDINGS IN 2017

- › We have developed a large-scale energy efficiency program to assist non-profit societies interested in making energy-efficient design choices on their buildings. It is tentatively named the Energy Efficiency Incentive Program (EEIP). We have collaborated with the BC Non Profit Housing Association and MEM/FortisBC to set up a fund to benefit non-profit societies wishing to undertake energy efficiency projects. We have commissioned an energy audit on a pilot project to determine eligibility and fine-tune the program.
- › We added a requirement within tendering documents for renovation projects to include comprehensive energy assessment and Energy Conservation Measure (ECM) development in the design portion of a project. A budget has been set aside for energy audits and energy conservation measures (e.g. energy efficient windows, building envelope, lighting, boilers, etc.) to ensure projects incorporate ECMs as a part of the scope.
- › Furnaces were replaced at several BC Housing funded group homes and non-profit housing developments through the Energy Conservation Assistance Program (ECAP) in collaboration with BC Hydro and FortisBC. These furnace replacements will result in an estimated annual reduction of 1,727 GJ.
- › An energy and sustainability component of a program involving BC Housing and the Musqueam Indian Band in Vancouver resulted in upgrading more than 13 on-reserve home furnaces due for replacement. This initiative delivered an estimated annual savings of 201 GJ.
- › BC Housing continued supporting energy savings at social housing developments through the [Energy Efficiency Retrofit Program](#) (EERP) with the BCNHPA, BC Hydro, and FortisBC. The program offers non-profit housing providers additional funding to complete small-scale, energy saving retrofits of items such as light fixtures and boilers. Last year, this enabled approximately 23 electric and 17 gas-focused energy retrofit projects, for a total estimated savings of 409,000 kWh and 6,200 GJ respectively.
- › BC Housing has signed an agreement with the Columbia Basin Trust (CBT) to assist non-profit housing providers with the costs of increasing energy efficiency. In partnership with BCNHPA, we have funded non-profit housing providers for energy retrofits during 2017 and will continue to do so in 2018.
- › Our energy management team worked with consultants to conduct eight energy audits on high-, mid- and low-rise buildings to determine details of current energy consumption patterns and opportunities for savings. This will allow for energy conservation measures in future fiscal years.



A new high efficiency boiler system was installed at Dunwood Place as part of a partnership between BCNHPA, FortisBC, and BC Housing.



*“Cause We Care House” in Vancouver, built to LEED Gold in 2017
(photo credit: YWCA of Vancouver)*

ENERGY CONSERVATION TRAINING AND EDUCATION

- › BC Housing continued to support the BCNPHA with their Operations and Maintenance (O&M) training program for the public, non-profit, and private housing sectors. This program aims to foster a culture of energy management within building operations staff, build capacity in the housing sector, enhance energy and GHG savings, and get tenant buy-in and engagement. Courses include:
 - › Asset Management Foundations
 - › Building Systems
 - › New Construction and Redevelopment
 - › Green Asset Management
- › Our energy management staff continue to play a leadership role in creating and enhancing a culture of energy conservation among BC Housing staff across all departments.
- › Community developers, partners, and other staff continue to engage tenants on energy efficiency, showing how real energy savings can be realized through behaviour-based energy efficiency programs. Tenant engagement can lead to an estimated two to five percent rise in energy savings each year. Our tenant engagement outreach in Victoria reached 20 percent of households in the past heating season, 5 percent more than in 2016. [Our website](#) has further resources on how to engage social housing tenants on sustainability focusing on energy conservation and waste diversion.

NEW CONSTRUCTION

- › BC Housing published revised BC Housing Design and Construction Guidelines aligned with the BC Energy Step Code. Moving forward, our projects are targeting high levels of this code, a performance-based approach that will result in energy savings over and above base building code in new buildings constructed through our programs.
- › To date, BC Housing and our non-profit housing partners have almost 60 buildings registered with the Canadian Green Building Council and 36 have received Leadership in Energy and Environmental Design (LEED) certification.
- › The following buildings were constructed to the LEED Gold standard in 2017:
 - › Cause we Care House, Vancouver
 - › Co:Here Foundation, Vancouver
 - › 33 to 41 Hastings, Vancouver

ACTIVITIES IN THE RESIDENTIAL CONSTRUCTION SECTOR

- › In 2017, BC Housing, in partnership with Natural Resources Canada, BC Hydro, FortisBC, Canadian Home Builders' Association, and the City of Vancouver, produced a series of videos featuring homes built under the Local Energy Efficiency Partnerships (LEEP) program. The program aims to significantly improve energy efficiency of new residential construction beyond code requirements. These eye-catching videos showcase how the LEEP initiative is helping to drive innovation in the industry and increase the number of builders who can deliver high performance homes affordably and confidently. We look forward to sharing this new video series with industry professionals, stakeholders and the builder community.

These videos are available online from [BC Housing's Research Centre](#)



- › BC Housing conducts technical research and provides education to help improve the quality of residential construction and increase building energy efficiency. In 2017, we published several reports, including:
 - › Energy Consumption in Low-Rise Multi-Family Residential Buildings in British Columbia
 - › Illustrated Guide to R22+ Effective Walls in Residential Construction in British Columbia
 - › Illustrated Guide for Building Safe and Durable Wood Decks and Balconies
- › These reports are available online from [BC Housing's Research Centre](#)

- › The Energy Step Code Metrics Study was completed in late September 2017. This research has anticipated the implementation impact of the metrics used in the Energy Step Code, including benefits and unintended outcomes, of the proposed metrics and targets relative to building size, climate zone, GHG emissions, peak electrical demand, first and operating costs, and life-cycle cost per abated tonne of carbon.
- › In collaboration with industry partners, BC Housing's Building Smart seminar series provides up-to-date building code information and best practices for the construction and design of homes in B.C. These practical and informative sessions give licensed residential builders, contractors, building officials, architects, engineers, trades, and others involved in the home building industry access to the latest research and technology. In 2017, the Building Smart series focused on introducing the BC building industry to the BC Energy Step Code, including working with an energy advisor, the requirements of energy modeling, and optimizing building envelopes, windows and mechanical systems.

Building Smart Seminars

Exploring building science, new technologies and good building practices:

- › Building code requirements
- › High performance housing
- › Building enclosure design & construction
- › Energy efficiency & sustainability
- › Seismic safety requirements

400+
Customized education seminars

30,000+
In-person attendees

4,000+
Webinar attendees

1,200
Hours of education



A cooling fan from Stratford Gardens / Photo by: Curtis Trent

- › BC Housing also coordinated and led a series of Train-the-Trainer sessions, aimed at building capacity around the BC Energy Step Code for industry professionals.
- › Now in its fourth year, BC Housing's [Building Excellence Research & Education Grants program](#) encourages research and education to improve the quality of residential construction, as well as strengthening consumer protection for buyers of new homes in B.C. Projects funded in 2017 included:
 - › Performing durability and energy modelling analysis to anticipate the performance of buildings in future climates
 - › Producing a video series offering introductory training on basic energy efficiency retrofits and building envelope maintenance
 - › Developing a curriculum for a certificate program on the energy assessment of building systems and equipment

For a complete list of projects funded in 2017 or for more information about the grant, please visit:

www.bchousing.org/research-centre/grants-funding-opportunities

CLIMATE CHANGE ADAPTATION

- › This year BC Housing published a [Climate Adaptation Framework](#). Our goal is to address the impacts of climate change on our buildings, which include the likely increase in costs related to building repairs and emergencies, new demands on our employees and resources, and the possible affect climate change will have on the health and safety of tenants.
- › BC Housing is also conducting a project to identify the top climatic hazards (such as changing temperatures and heat extremes, forest fires, sea level rise, flooding and changes to precipitation) and their impacts and risk levels to social housing across the province. The initial impact assessment was conducted using Geographic Information Systems through the overlay of social housing site locations with climatic hazard data. The top hazards identified were extreme heat events and flooding.



BC Housing staff choose Modo cars for some work-related trips.

Fleet

BC Housing has 61 fleet vehicles, primarily trucks and vans used by grounds and building maintenance staff. Office pool vehicles included Smart Cars and hybrid vehicles. Fifteen percent of our fleet vehicles in 2017 were fuel-efficient. During the year, we retired two vehicles from our maintenance fleet and replaced them with two new vehicles.

We also have a corporate account with Modo, a car-sharing cooperative, for staff use in the Vancouver Coastal and Fraser regions. Our Modo account gives our staff access to a wider range of vehicles and provides flexibility on where to get them. Starting in 2016, emissions from staff trips in Modo vehicles were calculated and reported alongside BC Housing's own fleet. Over 50 percent of Modo trips in 2017 were taken in hybrid vehicles, resulting in GHG savings.

GHG Results For Fleet In 2017

GHG emissions from mobile sources (fleet vehicles, Modo vehicles, and grounds equipment) totaled 321 tonnes. GHG emissions increased by 7 percent compared to 2016.

2017 Fleet and Equipment GHG Emissions

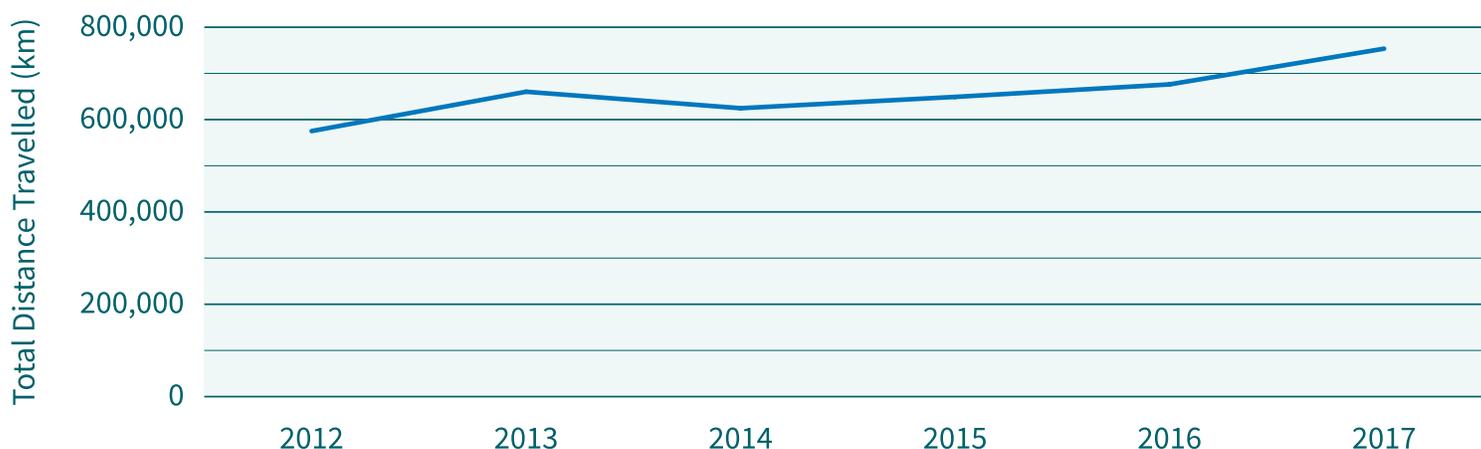
(Compared with 2005 baseline and 2016 results)

EMISSION SOURCE	2017 GHG EMISSIONS (Tonnes of CO ₂ e)	2017 RESULTS COMPARED WITH THE 2005 BASELINE ³	2017 RESULTS COMPARED WITH 2016
Fleet (Mobile Combustion)	321	N/A	7% Increase

Kilometers travelled and liters consumed increased slightly in 2017 compared to 2016. Kilometers travelled increased by ten percent, and liters consumed increased by 8 percent. Our GHG intensity (GHG emissions per kilometer travelled) decreased in 2017. This may be due to drivers using eco-driving techniques or to an increase in the percent of fuel efficient vehicles in 2017 compared to 2016.

As in 2016, GHG emissions for the 2017 reporting year were calculated using reported fuel consumption data, as well as an estimation when fuel consumption data was not available. Ninety-eight percent of fleet fuel consumption was recorded in our accounting system, resulting in a high level of confidence in this data.

Kilometres Driven By BC Housing Fleet (2012-2017)



Actions Taken In 2017

- › The Lower Mainland grounds and maintenance fleet continued to use a GPS fleet tracking system to reduce fleet mileage. This allowed fleet managers to reduce kilometers driven by allocating resources more efficiently and monitoring idling behaviours.
- › All fleet vehicle drivers, as well as other employees, have completed eco-driving training to encourage a culture of fuel efficient driving, supported by the livegreen Council.
- › Our ability to accurately report and monitor fuel usage has increased significantly over the past few years due to the efforts of our staff in recording fuel usage in our systems.

³ Not comparable due to a change in methodology.



Paper

Our GHG emissions for office paper totaled 23 tonnes of CO₂e.

We have seen a 59 percent decrease in our GHG emissions resulting from paper consumption tracked since the inception of the program in 2005. BC Housing continues to promote a paperless culture by purchasing 100 percent recycled content, as well as implementing changes to our procurement and HR practices to encourage waste reduction options across our organization.

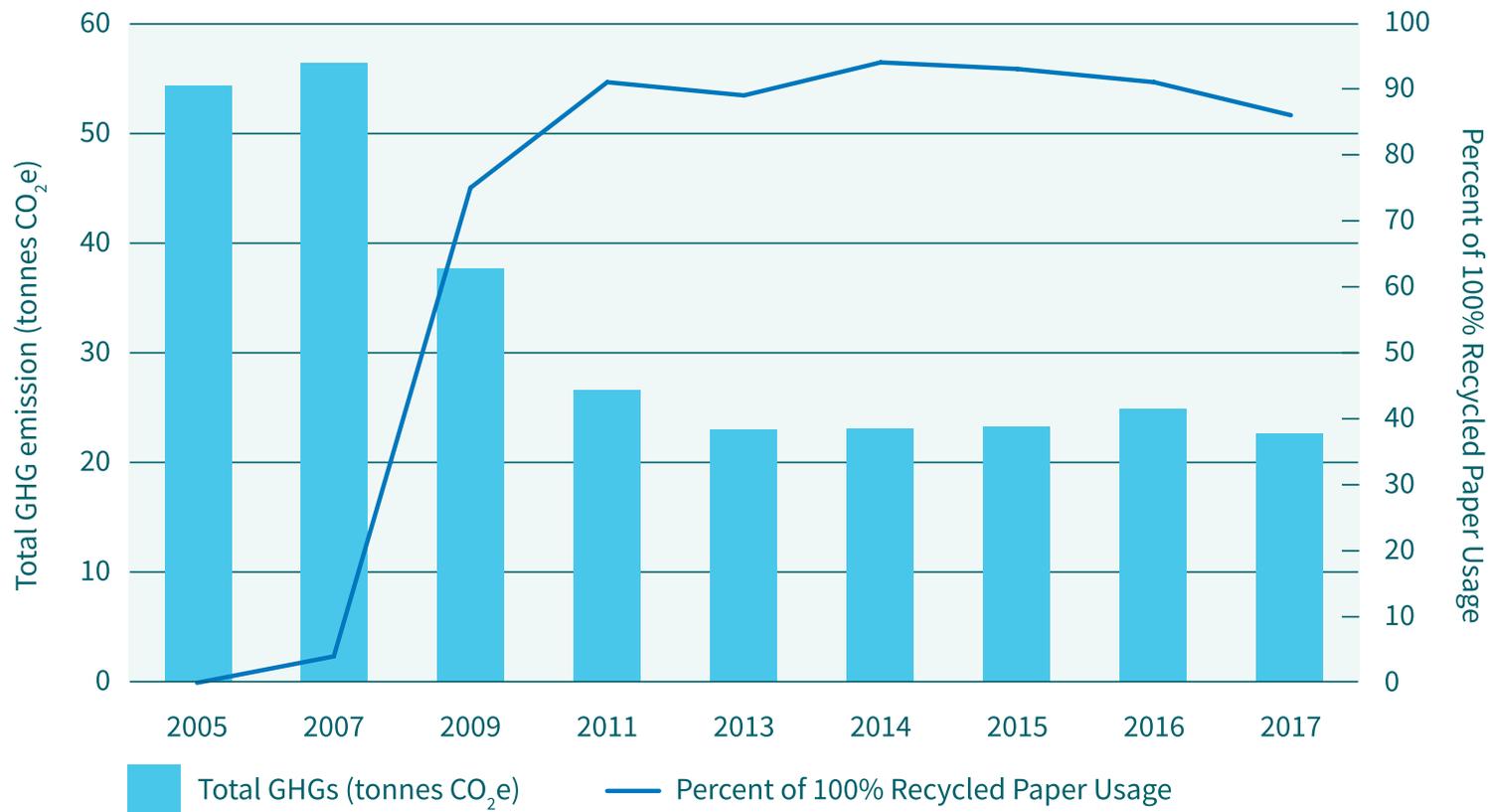
Our GHG emissions from paper declined by 9 percent between 2016 and 2017, despite a 5 percent increase in staff.⁴ Our total paper weight purchased also continued to decline, down 12 percent compared to 2016.

2017 Paper GHG Emissions *(Compared with 2005 baseline and 2016 results)*

EMISSION SOURCE	2017 GHG EMISSIONS (Tonnes of CO ₂ e)	2017 RESULTS COMPARED WITH THE 2005 BASELINE	2017 RESULTS COMPARED WITH 2016	2017 GHG EMISSIONS PER EMPLOYEE COMPARED WITH THE 2005 BASELINE
Paper	23	59% decrease	9% decrease	78% decrease

⁴ The 2016 CNAR incorrectly reported change in absolute emissions against 2005 baseline as 57 percent instead of 54 percent and the decrease per employee as 75 percent instead of 74 percent.

Total GHG Emissions For Office Paper and Recycled Paper Usage



Actions Taken In 2017

- › We are increasingly using technology (such as computers, tablets, and phones) in place of printed paper for daily business. For example, our HR department has initiated a pilot to implement tablet-based interviews to dramatically reduce paper used in the recruitment process.
- › We encouraged staff to reduce printed materials by promoting paperless meetings and giving our printers a default setting of double-sided.
- › Our office services staff made every effort to buy 100 percent recycled paper and only purchased paper with a lower recycled content if there was no paper of the type required available with 100 percent recycled content.
- › The annual employee survey revealed that 86 percent of employees tried to reduce printed materials in our offices.



The 2018 livegreen council at a recent planning session

Other Actions

BC Housing has had sustainability top of mind for many years. Our *livegreen* Sustainability Plan is integrated with our corporate and branch plans to ensure every area puts a “green” lens on all its activities. Our Senior Strategic Advisor on Sustainability is part of our Executive Office team who works with employees throughout the organization to ensure sustainability is a part of their portfolios.



Our [livegreen Sustainability Report](#) describes in detail our actions in those areas, including:

Employee Engagement

Our employee green team, the *livegreen* Council, plays a key role to encourage sustainable employee behaviour both in the workplace and at home, helping to establish sustainable lifestyles for employees, families and communities. This committed and corporately-sponsored council represents every branch of BC Housing. Council members work to a strategic plan that is informed by the findings of our annual sustainability survey.

The *livegreen* council organized 28 sustainability related events and published 11 informative articles in our internal newsletter. We had a total of 635 attendees⁵ across all our regional offices participating in these events.

Our *livegreen* events included:

- › Participation in the Commuter Challenge
- › A 30x30 Nature Challenge
- › Documentary screenings
- › Lunch and Learns on various topics

⁵ Note that this number is not unique individuals as it includes individuals who attended more than one livegreen event.



BC Housing staff attend a wrap-up event for The Commuter Challenge

The purpose of the annual sustainability survey is to measure, evaluate, and monitor the sustainability practices of employees year over year. This monitoring allows the evaluation of the livegreen program's progress.

The 2017 survey reveals that employees are choosing to purchase more sustainable home products, are being more energy conscious in their home utilities usage, are considering more sustainable vacation travel, and are consuming less meat and eating more organic foods since our 2009 baseline measurements. This year the calculated GHG emissions per employee from commuting also hit an all time low.

Our annual 2017 Employee Engagement Survey also includes sustainability questions. Eighty-three percent of our employees said they felt supported by BC Housing to make sustainable choices at home and at work, while 89 percent felt that it is important for BC Housing to be serious about reducing our environmental impact

Due in part to our employee engagement practices, Canada's Top 100 Employers project has named BC Housing one of Canada's Greenest Employers for three consecutive years and we have been recognized as a Transformational Company by Canadian Business for Social Responsibility.



BC Housing accepts the 2018 Canada's Top Employers award for the third consecutive year.



Staff volunteer at Surrey Food Bank as part of BC Housing's Community Connections Program

Procurement

An increasing number of our public tenders include evaluation criteria and factors that focus on sustainable product specifications, waste reduction and diversion, efficiency, and positive contributions to local communities. Last year, 58 percent of tenders included such sustainability factors, an increase from 53 percent in 2016. BC Housing is the first public organization in B.C. to win an Achievement of Excellence in Procurement from the National Procurement Institute and is only the sixth Canadian company to win this award in its 20-year history.

Community Connections

BC Housing's employee-led community investment program, Community Connections, raises more than \$150,000 for local charities annually. Through the program's Employer Supported Volunteerism component, our staff donates more than 1000 hours a year to charities such as food banks and the Food Sharing Farm in Richmond. This program provides education and team-building opportunities as well as contributing to environmental, social, and economical sustainability programs in local communities in tangible ways.



Olivia Skye in Vancouver, built to LEED Gold in 2017

Plans to Continue Reducing GHG Emissions in 2018

- › The Energy Efficiency Retrofit Program (EERP) will include approximately 50 potential projects with an estimated 2.2 GWh of energy savings. Additional projects that are currently in the planning stages will likely be added to the program.
- › BC Housing has applied for funding from the federal government to pilot EnergieSprong style deep GHG retrofits. If successful, we will undertake a pilot project.
- › We will also complete a deep GHG retrofit at one of our directly managed sites, Grandview Terrace in Vancouver. This project may result in significant GHG savings.
- › Significant funding has been earmarked by the province for additional GHG savings measures on retrofit projects. Many of these projects will get underway in 2018.
- › BC Housing will ensure most of our renovation projects perform comprehensive energy audits and include Energy Conservation Measures (ECMs) in the design phase.
- › Development and Asset Strategies (DAS) Branch plans to complete several pilot projects to explore the use of new and emerging construction technologies that are cost-effective and environmentally sustainable. Three Passive House projects are currently in construction and will be complete in 2018.
- › BC Housing has signed an agreement with FortisBC to create the Energy Efficiency Incentive Program (EEIP). This program will allow non-profit housing providers to receive financing and grants for energy efficiency retrofits and energy conservation measures on new construction projects. FortisBC has provided \$500,000, which we will match to provide grants. This program could provide more than \$10 million in financing for energy-saving projects.
- › BC Housing will continue to provide residential construction industry education by developing and delivering at least 10 Building Smart workshops, seminars, and webinars across B.C. Potential topics will include the new BC Building Code provisions, BC Energy Step Code and innovative and best construction practices to comply with these requirements.
- › Sustainability and energy conservation will continue to be integrated in our community development programs. As in 2017, we are planning a series of events around Earth Day that will involve both our staff and tenants.

The Residential Construction Sector

- › We will continue to take action to facilitate the adoption of the BC Energy Step Code, including:
 - › Performance monitoring of high performance social housing buildings meeting high levels of the BC Energy STEP code
 - › Developing a “Design Guide” targeting architects and developers, and a “Builder Guide” for builders and designers of smaller buildings, to provide comprehensive information on cost-effective energy conservation measures and design features that will often be useful to help buildings meet each Step within each climate zone of B.C. The Design Guide and the first two phases of the Builder Guide will be published in 2018.
 - › Continuing to deliver a Train-the-Trainer program.
 - › Developing other educational materials including a series of customized seminars and webinars, videos, animation, online interactive guidance tools, and toolkits for hands-on training that are useful and accessible to builders and designers in both urban and remote regions of B.C.



Non-profit housing staff attend a workshop hosted by BC Housing and BC Non Profit Housing Association on extreme heat in social housing buildings

- › Under the Sustainable Housing for First Nations in BC project, the Cleantech Community Gateway (CTCG) will work with First Nations communities and leadership to develop and implement a framework that will lead to the building of housing that is affordable, energy efficient, durable, culturally appropriate, and mold resistant.
- › The Home Energy Labelling Pilot will improve awareness among home buyers of home energy labels, their function and their role when shopping for a home. When market transformation has been reached, it is anticipated home buyers will look for the label when choosing a home and understand how a good energy efficiency rating impacts their comfort, well-being and home value.
- › BC Housing will continue to partner on the Local Energy Efficiency Partnerships (LEEP) project. A video series will be produced in 2018 for Southern Interior and Northern B.C.
- › BC Housing will publish the following reports in 2018:
 - › Guide to Low Thermal Energy Demand for Large Buildings
 - › Design vs Actual Energy Performance in Social Buildings
 - › Illustrated Guide to Achieving R-30 Wood-Frame Roofs; and
 - › Wood-Frame Building Envelope Systems for Net-Zero Energy-Ready Buildings
- › The following projects and initiatives in the residential construction sector will also commence in 2018:
 - › Performance monitoring of a retrofitted multi-unit high-rise private market building
 - › Mobilizing adaptation and resilience in building design and renovation

Climate Change Adaptation

- › As part of our project on extreme heat responses in social housing, we will engage with non-profit housing providers and produce the following deliverables:
 - › Extreme heat response guidelines for BC Housing
 - › Extreme heat response guideline template for non-profit housing providers
 - › A communications toolkit
 - › Educational materials

Fleet

- › All new hires will have a chance to access online training on eco-driving techniques, which can help reduce GHG emissions from vehicle trips by up to 25 percent.
- › We will review our fleet purchasing policy, to ensure that hybrid or electric options are chosen whenever possible.
- › We will approach MODO users throughout the organization to see if they would be willing to prioritize electric and hybrid vehicles for their work-related trips.
- › Livegreen Council members will also explore the trends in BC Housing commuting data and will look at possible incentives and other policy adjustments to allow for more telecommuting and to uncover possible options for reducing Single Occupancy Vehicle driving.

Paper

- › We will implement the use of technology to replace printed paper for our operational requirements, as appropriate. The HR department will complete their pilot on the use of tablet-based interviewing and expect to have this process fully in place in 2018.
- › In 2018, BC Housing will try to source a higher percentage of our paper with 100 percent recycled content. We will reach out to regional staff who make paper purchases to ensure that paper with lower recycled content is not purchased by mistake.
- › The Livegreen Council will promote the idea of paperless meetings through information bulletins in the BC Housing weekly e-newsletter and signage in meeting rooms and will continue to encourage employees to make more sustainable decisions at work, home, and in our communities.

Further Resources

For information about our actions and plans in other sustainability areas, please visit:

<https://www.bchousing.org/about/sustainability>

<https://www.bchousing.org/research-centre>



Part 1: CNAR Survey

1. General Information

Name: Magdalena Szpala

Contact Email: mszpala@bchousing.org

Organization Name: BC Housing

Sector: Crown

2. Stationary Sources (eg. Buildings, Power Generators): Fuel Combustion, Electricity use, Fugitive Emissions.

During 2017, did your organization take any of the following actions to support emissions reductions from buildings? (please select all that apply)

Conducted an energy audit/study of building(s) in the organization's portfolio.; Performed energy retrofits of the organization's building(s); Built, or are building new LEED Gold or other "Green" buildings

If you selected "*Performed energy retrofits of the organization's building(s)*":

How many buildings were retrofitted?: 124

If you selected "*Built, or are building new LEED Gold or other "Green" buildings*":

How many new "Green" buildings?: 60

Did your Organization perform any retrofits during 2017? Please describe briefly:

In 2017 BC Housing retrofitted a total of 124 buildings with energy saving materials/ fixtures. Interior and exterior retrofits including windows and doors accounted for 53 of the projects. In addition to the interior and exterior retrofits there were 28 building envelope restorations, 27 HVAC projects and 16 boiler/DHW retrofits.

2a. Stationary Sources (eg. Buildings, Power Generators): Fuel Combustion, Electricity use, Fugitive Emissions.

Please briefly describe your organization's plans to continue reducing emissions from its stationary sources:

a) Over the next 1-5 years

- *The Energy Efficiency Retrofit Program (EERP) to include approx. 50 projects; estimated 2.2 GWh of energy savings.
- *Completion of a deep energy retrofit at one of BC Housing site in Vancouver.
- *Renovation projects to include energy audits and Energy Conservation Measures.
- *Construction of Passive House pilot projects (3 currently in construction).
- *Launch of the new Energy Efficiency Incentive Program with FortisBC for no-profit housing providers.

b) Over the following 6-10 years

- *Continuation of the energy and retrofit programs for social housing in BC.
- *Continuation of research and education related to energy efficiency and green, resilient building technologies, for the residential construction industry.

3. Mobile Sources (Vehicles, Off-road/portable Equipment): Fuel Combustion:

During 2017, did your organization take any of the following actions to support emission reductions from its mobile sources? (please select all that apply)

Replaced existing vehicles with more fuel efficient vehicles (gas/diesel); Replaced existing vehicles with hybrid or electric vehicles

3) Mobile Sources - Other? Please specify:: Over 50 percent of Modo trips in 2017 were taken in hybrid vehicles

If you selected "*Replaced existing vehicles with more fuel efficient vehicles (gas/diesel)*":

How many vehicles?: 1

If you selected "*Replaced existing vehicles with hybrid or electric vehicles*":

How many vehicles?: 1

3a. Mobile Sources (Vehicles, Off-road/portable Equipment): Fuel Combustion:

Please briefly describe your organization's plans to continue reducing emissions from its mobile sources:

a) Over the next 1-5 years

- *Review of fleet purchasing policy
- *Promotion of MODO electric and hybrid vehicles among BCHousing employees
- *Promotion of on-line training on eco-driving techniques

b) Over the following 6-10 years

4. Supplies (Paper): Indicate which actions your PSO took in 2017:

During 2017, did your organization take any of the following actions to support emissions reductions from paper supplies? (please select all the apply)

Had an awareness campaign focused on reducing office paper use; Had a policy requiring the purchase of recycled content paper

If you selected "*Had a policy requiring the purchase of recycled content paper*":

State the required recycled content here (30%, 50%, 100%): 100

If you selected "*Had a policy requiring the purchase of alternate source paper (bamboo, hemp, wheat, etc)*", which type of alternate source paper did you use?

Please briefly describe your organization's plans to continue reducing emissions associated with its office paper use in future years.

- *We will implement the use of technology to replace printed paper for our operational requirements, as appropriate.
- *Staff education to ensure most of the office paper is with 100% recycled content.
- *Campaigns related to promotion of paperless meetings and reduction of office paper use.

5. Other Sustainability Actions

a) Business Travel

During 2017, did your organization take any of the following actions to support emissions reductions from business travel? (please select all that apply)

Encouraged alternative travel for business (e.g. bicycles, public transit, walking); Encouraged or allowed teleworking or working from home

b) Education/Awareness

During 2017, did your organization have any of the following programs or initiatives to support sustainability education and awareness? (please select all that apply)

A Green, Sustainability or Climate Action Team; Support for professional development on sustainability (e.g. workshops, conferences, training); Supported or provided education to staff about the science of climate change, conservation of water, energy and/or raw materials

c) Other Sustainability Actions

During 2017, did your organization have any of the following programs or initiatives to support sustainability? (please select all that apply)

A water conservation strategy which may include a plan or policy for replacing water fixtures with efficient models; An operations policy or program to facilitate the reduction and diversion of building occupant waste (e.g., composting, collection of plastics, batteries) from landfills or incineration facilities; Green procurement standards for goods (e.g., office furniture, etc.)