



BC HOUSING'S

2018

Carbon Neutral Action Report



BC Housing staff take part in a Shoreline Cleanup event.

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On the cover: Nuutsumuut Lelum in Nanaimo



Declaration Statement

This Carbon Neutral Action Report for the period January 1 to December 31, 2018 summarizes BC Housing's emissions profile, the amount of offsets purchased to reach net zero emissions, the actions we have taken in 2018 to reduce our greenhouse gas emissions, and our plans to continue reducing emissions in 2019 and beyond.

By June 30, 2019, 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 and non-profit sectors, Indigenous communities, provincial health authorities and ministries, other levels of government and community groups to develop, manage and administer a wide range of subsidized housing options across the province. We also license residential builders, administer owner builder authorizations and carry out research and education that benefits the residential construction industry and consumers. We work with about 800 housing providers and help more than 104,000 households in 200 communities across British Columbia.

In 2018, the provincial government launched CleanBC, a new provincial roadmap to reduce climate pollution while building a low-carbon economy. “Better Buildings” is one of the key focus areas of this plan. As one of the largest landlords and developers in the province, BC Housing has already played an important role in creating more energy efficient homes.



The energy use per square foot of public housing has decreased by 29% over the last 13 years and in 2018 we have reduced our greenhouse gas emissions by 34% (against 2005 baseline). Last year we added three new passive house buildings to our portfolio that also includes 30 buildings built to Leadership in Energy Efficiency and Design (LEED) standards. Features of LEED buildings include increased energy efficiency, water conservation, reduced waste during construction, and healthier indoor space.

In collaboration with the residential construction industry, housing and other partners, BC Housing worked towards enabling housing excellence, through the following initiatives:

- › Energy conservation initiatives for existing buildings
- › Green building technologies and energy conservation training and education
- › Building innovation and energy efficiency in new construction
- › Building resiliency

We will continue to work towards increasing the efficiency of social housing buildings while also improving the conditions of those buildings using the provincial Capital Renewal fund, administering the new EfficiencyBC: Social Housing Incentive Program (SHIP) in partnership with the BC Non-Profit Housing Association (BCNPHA), building new housing to high levels of BC Energy Step Code, our research on building adaptation measures, and many other initiatives.

I encourage you to read more about BC Housing actions to mitigate and adapt to climate change in this report.

Shayne Ramsay

CEO

BC Housing

2018 Greenhouse Gas Emissions and Offsets Overview

BC Housing's GHG Emissions and Offsets for 2018 (tCO₂e)

GHG EMISSIONS CREATED IN CALENDAR YEAR 2018	
Total emissions (tCO ₂ e)	22,488
Total offsets (tCO ₂ e),	22,475
ADJUSTMENTS TO GHG EMISSIONS REPORTED IN PRIOR YEARS	
Total emissions (tCO ₂ e)	-422
Total offsets (tCO ₂ e)	-422
TOTAL EMISSIONS FOR OFFSET FOR THE 2018 REPORTING YEAR	
Total offsets (tCO ₂ e)	22,053

Adjustments to Total Emissions Reported in Prior Years

In 2017, we reported 24,065 tonnes of CO₂e emissions. Following the release of BC Housing's 2017 Carbon Neutral Action Report, we discovered that the total emissions and required offsets for the previous year had been overreported by 422 tonnes. That difference in required offsets has been deducted from our 2018 emissions.

Total Emissions for Offsets for the 2018 Reporting Year

BC Housing purchased carbon offsets from the Government of B.C. for the equivalent of 22,053 tonnes of CO₂e to obtain carbon neutral status for 2018.

Thirteen tonnes of CO₂e emissions from the combustion of biomass and biomass-based fuels were reported as part of our greenhouse gas emissions profile in 2018. 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 2018 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 8, 2019



Juniper House in Merritt, built to Passive House standard in 2018.

Actions Taken to Reduce Greenhouse Gas Emissions in 2018

Buildings

BC Housing reports on energy use and related greenhouse gas 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.

In 2018, this portfolio included 638 social housing sites, totaling over a million square meters of floor area. During the year, we added 42 sites and divested two from the greenhouse gas reporting inventory.

Greenhouse Gas Results for Buildings

In 2018, our greenhouse gas emissions related to energy used to provide heat, water and electricity for our buildings totaled 22,110 tonnes of CO₂ equivalent¹. Since 2005, we have seen a 34 percent decrease in emissions from our buildings and a 5 percent decrease from 2017.²

2018 Buildings GHG Emissions *compared with 2005 baseline and 2017 results*

EMISSION SOURCE	2018 GHG EMISSIONS (Tonnes of CO ₂ e)	2018 RESULTS COMPARED WITH THE 2005 BASELINE	2018 RESULTS COMPARED WITH 2017
Buildings (Stationary combustion)	22,110	34% decrease	5% decrease

Greenhouse gas 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.

The year-to-year decrease in emissions between 2018 and 2017 can be attributed to a couple of factors:

The boilers that feed the district energy system at the large Riverview site in Coquitlam were turned off for the summer, resulting in energy savings.

The winter of 2018 was warmer compared to 2017 in many areas of the province, resulting in less energy used for heating.

For the 2018 reporting year, FortisBC natural gas consumption data (accounting for approximately 23% of our total emissions) was estimated for private accounts for all or varying portions of individual buildings. For the 2018 reporting year, we are estimating consumption of these accounts based on similar building types to ensure consistency year-to-year. 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.



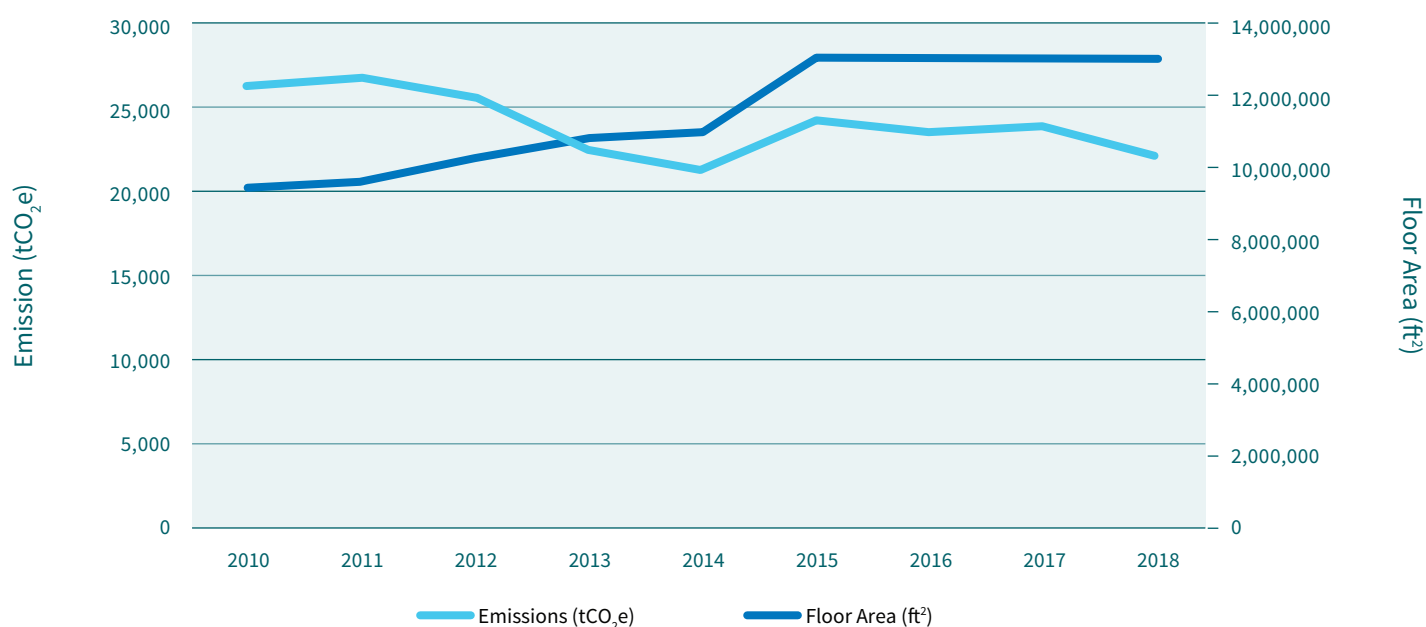
te cecew (The Beach) modular supportive housing development in Vancouver was built to BC Energy Step Code level 3 in 2018.

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 greenhouse gas profile.
2 All comparisons are based on absolute emissions. For the comparison of last year results and 2005 – the baseline was recalculated as per the greenhouse gas protocols.

Floor Area Comparison

We have maintained significant energy and greenhouse gas reductions despite our overall floor area increasing since 2010 (although remaining fairly static since 2015). This has been due to the energy retrofit and conservation programs in our existing buildings and higher energy efficiency standards in the new buildings. The following graph represents this trend:

Floor Area and GHG Emissions Change (2010 - 2018)



Actions Taken in 2018

In 2018, BC Housing worked with our partners, staff, and tenants to ensure lasting energy performance in our existing building stock, as well as in our new housing developments. As a licensing body for the residential building sector, we helped guide this industry towards higher energy efficiency. Through the year, we worked towards and enabling innovation and housing excellence.

We undertook initiatives related to buildings in the following areas:

- › Energy conservation initiatives for existing social housing buildings
- › Energy conservation training and education in the social housing sector
- › Energy efficiency in new social housing construction
- › Technical research and education in the residential construction sector
- › Climate change adaptation

Specific actions taken last year within each of these areas are described below.

ENERGY CONSERVATION INITIATIVES FOR EXISTING SOCIAL HOUSING BUILDINGS

- › BC Housing administers or supports a range of energy efficiency programs for social housing providers, in collaboration with our partners. In 2018, these programs included:
 - The new **EfficiencyBC: Social Housing Incentive Program** (SHIP) in partnership with the BC Non-Profit Housing Association (BCNPHA). This provincial program launched in 2018 and is intended to help affordable housing owners and operators reduce greenhouse gas emissions in their existing building portfolio. It supports natural gas and fuel switching measures (and other electrification opportunities) that result in significant reduction in current fossil fuel use.
 - The **Energy Conservation Assistance Program (ECAP)** in collaboration with BC Hydro and FortisBC. Through this program, older furnaces were replaced with energy efficient models at several BC Housing funded group homes and non-profit housing developments. These furnace replacements are expected to result in an annual reduction of 1,600 GJ.
 - The **Energy Efficiency Retrofit Program (EERP)**, along with our partners the BC Non-Profit Housing Association (BCNPHA), BC Hydro, and FortisBC, which enabled approximately 20 electric and 12 gas-focused energy retrofit projects, for a total estimated savings of 600,000 kWh and 4,000 GJ respectively. The program offers non-profit housing providers additional funding to complete small-scale, energy saving retrofits of items such as light fixtures and boilers.
 - In partnership with the Columbia Basin Trust (CBT) and BCNPHA, we assisted non-profit housing providers with the costs of increasing energy efficiency. Through an agreement with the CBT, we funded non-profit housing providers for energy retrofits during 2018 and will finalize approved projects during 2019. A total of 31 non-profit housing providers and 48 building will benefit from this program.
- › In 2018, our energy management team worked with consultants to conduct 21 energy audits on high-, mid- and low-rise housing buildings to determine details of current energy consumption patterns and opportunities for savings. This will allow for energy conservation measures in future fiscal years. Funding for audits and repairs will come from the Capital Renewal Fund.



Renovations were completed at Grandview Terrace in Vancouver, resulting in energy savings.

- › We also completed a significant energy retrofit on a BC Housing directly managed site located in Vancouver. Grandview Terrace is a 154 unit complex with concrete towers and townhomes. In 2018, additional insulation and upgraded windows were added to this development and are expected to result in significant energy savings.

ENERGY CONSERVATION TRAINING AND EDUCATION IN THE SOCIAL HOUSING SECTOR

- › In 2018, BC Housing's energy management team continued to work with BC Housing staff across all departments to raise the level of energy literacy within the organization and to enhance a culture of energy conservation at BC Housing. Their expertise was essential in guiding the development of new housing to highly energy efficient standards such as Passive House and high levels of the BC Energy Step Code.
- › BC Housing Community Developers, partners, and other staff continued to engage BC Housing 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.
 - On Vancouver Island, 95% of tenants surveyed during the 2018 energy campaign responded that energy efficiency is important or very important for themselves and/or their neighbours.
 - Our website has further resources on how to engage social housing tenants on sustainability focusing on energy conservation and waste diversion.

In 2018, BC Housing continued to support the BCNPHA in the delivery of their Operations and Maintenance program which aims build energy management capacity in the housing sector, enhance energy and greenhouse gas savings, and get tenant buy-in and engagement.

- Courses offered through the Operations and Maintenance program include:
 - Asset Management Foundations
 - Building Systems
 - New Construction and Redevelopment
 - Green Asset Management
 - And others



Vancouver Island staff engaged tenants on energy efficiency with a fun pumpkin carving contest.

ENERGY EFFICIENCY IN NEW SOCIAL HOUSING CONSTRUCTION

- › BC Housing encourages our project partners to achieve energy efficient standards in the development of new social housing:
 - In 2018, we completed 29 projects that have achieved Step Code levels 3 or higher. The BC Housing Design and Construction Guidelines have been written to align with the BC Energy Step Code. Beginning in 2018, our projects are targeting high levels of this code, a performance-based approach that will result in energy savings over base building code in new buildings constructed through our programs.
 - To date, BC Housing and our non-profit housing partners have 60 buildings registered with the Canadian Green Building Council and 41 have received Leadership in Energy and Environmental Design (LEED) certification.
 - We have also been working with our partners to construct buildings that achieve the Passive House standard. In 2018, three developments were built to Passive House standard:
 - Harding Heights, Smithers
 - Nuutsumuut Lelum, Nanaimo
 - Juniper House, Merritt

TECHNICAL RESEARCH AND EDUCATION IN THE RESIDENTIAL CONSTRUCTION SECTOR

BC Housing has obligations related to strengthening consumer protection for new homebuyers and improving the quality of residential construction. In 2018, we undertook the following initiatives which contributed to improved quality of residential construction and better building energy efficiency:

- › BC Housing was a partner in organizing workshops through the Local Energy Efficiency Partnerships (LEEP) program. This program enables builders to reduce their time and risk by using innovations that can help them build higher performance homes better, faster and more affordably.
 - Building on the success of a series of LEEP videos produced in 2017, we partnered with Natural Resources Canada, BC Hydro, FortisBC, Canadian Home Builders' Association, and the City of Vancouver, to produce series of videos featuring homes built under LEEP program in the Interior and Northern regions of the province. These videos are available for viewing on the [BC Housing website](#).



Nuutsumuut Lelum in Nanaimo built to the International Passive House standard in 2018.

- › BC Housing conducts technical research and provides education to help improve the quality of residential construction and increase building energy efficiency. In 2018, we published several reports, including:

- BC Energy Step Code Builder Guide
- BC Energy Step Code Design Guide
- Best Practice Guide on Air Sealing and Insulation Retrofits for Single Family Homes (2nd Edition)

These reports are available online from [BC Housing's Research Centre](https://www.bchousing.org/research-centre/).

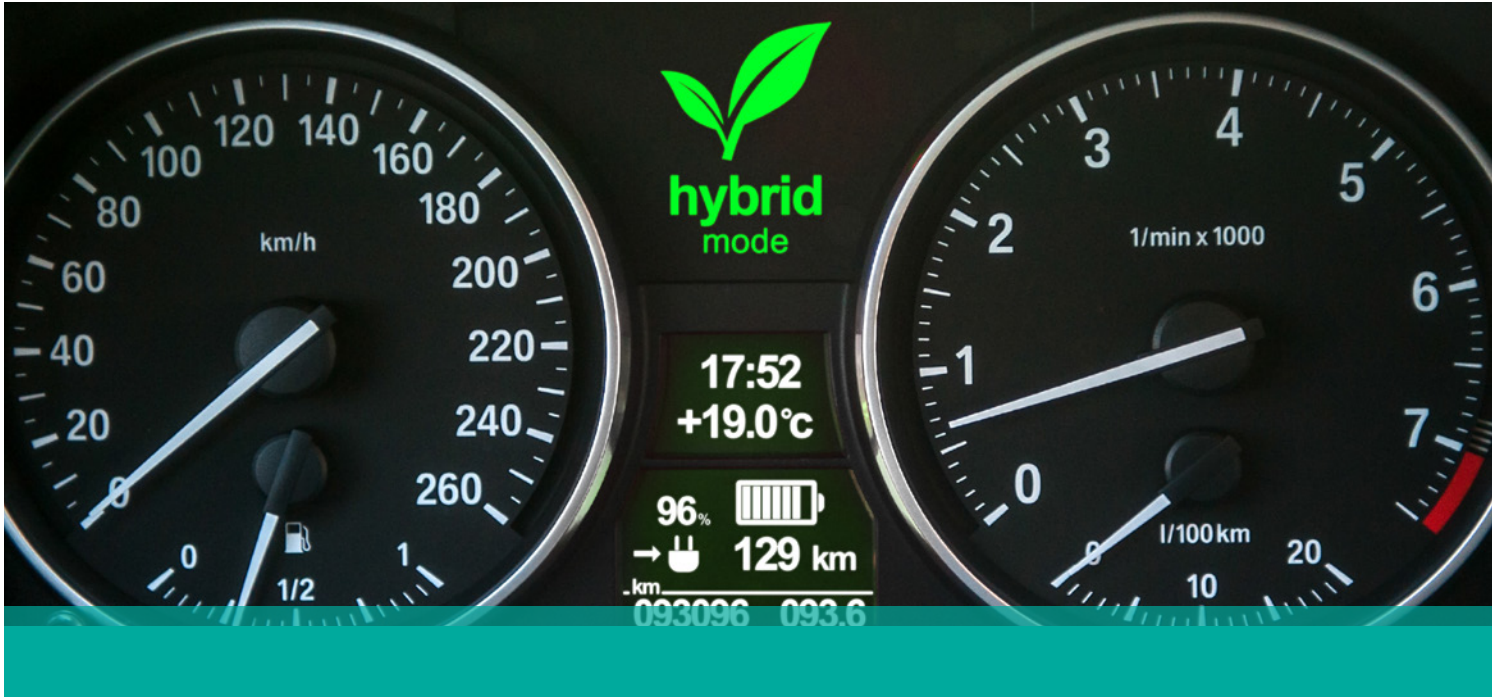
- › In collaboration with industry partners, BC Housing's Building Smart seminar series provides up-to-date building code information and best practices for the construction and design of homes in B.C. These practical and informative sessions give licensed residential builders, contractors, building officials, architects, engineers, trades, and others involved in the home building industry access to the latest research and technology. In 2018, the Building Smart series focused on helping the BC building industry to increase their familiarity with the lower steps of the BC Energy Step Code, including air tightness testing, the requirements of energy modeling, and optimizing building envelopes, windows and mechanical systems.
- › 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. These sessions ensure that trainers are available across the province to deliver training materials related to the BC Energy Step Code.
- › Now in its fifth 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 2018 included:
 - Developing a method to determine the total thermal resistance of a house on-site.
 - Enhancing a Green Professional Building Skills Training program for those who build, renovate, and maintain high performance buildings.
 - Expanding the energy literacy program in the East Kootenay region to address roof and below grade building science.

For a complete list of projects funded in 2018 or for more information about the grant, please visit: <https://www.bchousing.org/research-centre/research-education-grants>



CLIMATE CHANGE ADAPTATION

- › In 2018, BC Housing worked towards implementing our Climate Adaptation Framework, with a focus on education related to reducing the impact of extreme heat and poor air quality events on social housing residents.
- › Mobilizing Building Adaptation and Resilience (MBAR) is a multi-year, multi-stakeholder knowledge and capacity building project led by BC Housing, with participation and contribution from over 30 organizations, including from industry and national/provincial/local agencies. Through facilitating and piloting sustainable and resilient design and renovation of buildings, MBAR aims at stabilizing communities in a natural disaster (e.g. earthquake) and helping building owners and occupants better protect their investments and adapt to anticipated climate change stresses (e.g. higher precipitation, warmer summers, fire-related air pollution) and climate change shocks (e.g. severe flooding/fire/windstorms) such that no one is stressed beyond his/her ability to cope.



Fleet

In 2018, our vehicle fleet consisted of 59 fleet vehicles, primarily trucks and vans used by grounds and building maintenance staff. Office pool vehicles included Smart Cars and hybrid vehicles. Ten percent of our fleet vehicles in 2018 were fuel-efficient. During the year, we retired two vehicles from our office 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 70% of Modo trips in 2018 were taken in hybrid vehicles, resulting in greenhouse gas savings. This is an increase in hybrid trips compared to 2017, when 50% of Modo trips were taken in hybrid vehicles.

Greenhouse Gas Results for Fleet

In 2018, our greenhouse gas emissions from mobile sources (fleet vehicles, Modo vehicles, and grounds equipment) totaled 353 tonnes. Greenhouse gas emissions increased by 13% compared to 2017.

2018 Fleet and Equipment GHG Emissions

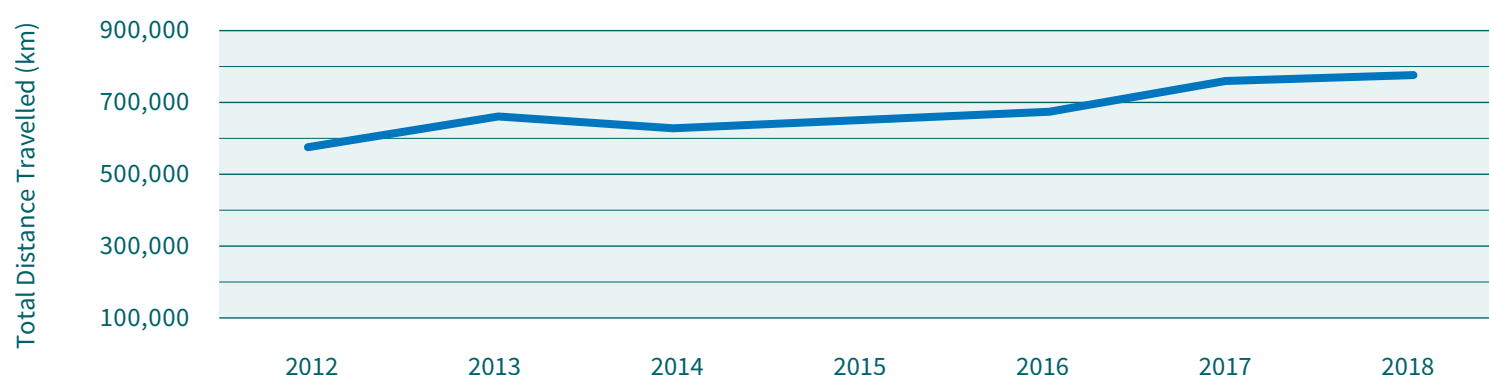
compared with 2005 baseline and 2017 results

EMISSION SOURCE	2018 GHG EMISSIONS (TONNES OF CO ₂ e)	2018 RESULTS COMPARED WITH THE 2005 BASELINE ³	2018 RESULTS COMPARED WITH 2017
Fleet (Mobile combustion)	353	N/A	13% increase

Due to increases in our business activities, our fleet covered more kilometers and consumed more liters of gasoline and diesel in 2018 compared to 2017. We travelled almost 768,000 km in 2018, a 2% increase over 2017 and used 6% more fuel. Our greenhouse gas intensity (greenhouse gas emissions per kilometer travelled) also increased in 2018. This may be due to a decrease in the percent of fuel-efficient vehicles in our fleet in 2018 compared to 2017.

Greenhouse gas emissions for the 2018 reporting year were calculated using reported fuel consumption data, as well as 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, 2012-2018



Actions Taken in 2018

We performed regular maintenance on all of our fleet vehicles to ensure that they are operating as efficiently as possible. When required, we replace older vehicles with newer, more efficient models.

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.

Although a large percentage of our fleet is trucks and vans that do not yet have electric equivalents available in the North American market, we have begun research on electric vehicles to ensure we are ready to act when the appropriate technology is available.

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 BC Housing *livegreen* Council.

³ Not comparable due to a change in methodology.



Paper

In 2018, our greenhouse gas emissions for office paper totaled 25 tonnes of CO₂e.

Since 2005, we have seen a 55 percent decrease in our annual greenhouse gas emissions resulting from paper consumption. This is mainly due to efforts to promote a paperless organizational culture, an increase in paper with 100% recycled content, and changes to our procurement practices. Our greenhouse gas emissions per employee due to paper use was also notable, a 77% decrease compared to 2005.

Our total paper weight purchased increased in 2018, up 11% compared to 2017. Our greenhouse gas emissions from paper also increased by nine percent between 2017 and 2018. This may be due in part to a significant increase in our business activities and a six percent increase in BC Housing staff during this time period.

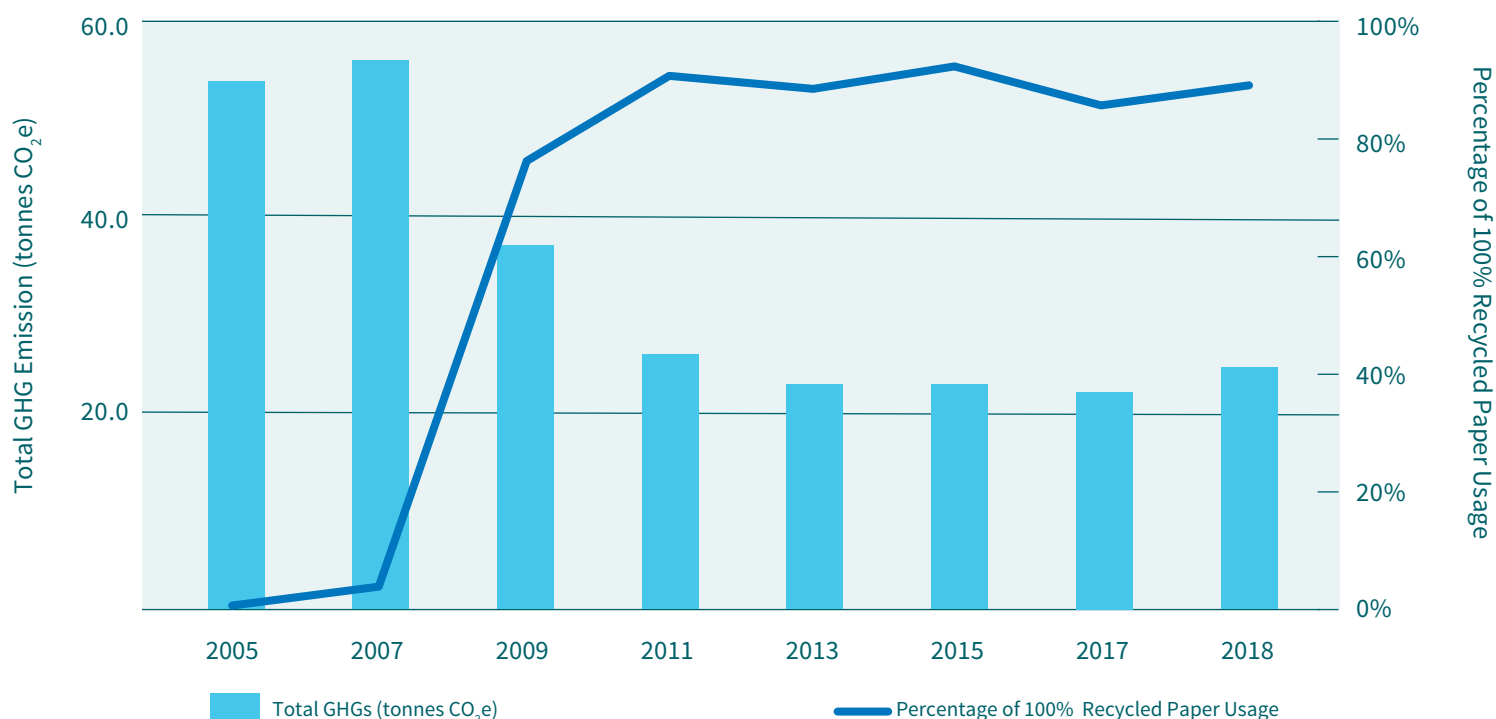
2018 Paper GHG Emissions

compared with 2005 baseline and 2017 results

PAPER	2017 GHG EMISSIONS (TONNES OF CO ₂ e)	CHANGE IN ABSOLUTE GHG EMISSIONS IN 2018 (AGAINST 2005 BASELINE)	CHANGE IN ABSOLUTE GHG EMISSIONS IN 2018 AGAINST 2017	CHANGE IN GHG EMISSIONS IN 2018 (AGAINST 2005 BASELINE) PER EMPLOYEE
	25	55% decrease	9% increase	77% decrease

In 2018, 89 percent of all the paper purchased was 100% recycled paper, a three percent increase from 2017.

Total GHG Emissions for Office Paper and Recycled Paper Usage



Actions Taken in 2018

- › 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 piloted 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 84 percent of employees tried to reduce printed materials in our offices.



BC Housing staff take part in the Shoreline Cleanup at Jericho Beach.

Other Actions

BC Housing is guided in our sustainability efforts by our *livegreen* Sustainability Plan, which is integrated with our corporate and branch plans to ensure we are considering sustainability in all of our business practices, including employee engagement, procurement, and community connections. In the context of the new provincial climate action plan: CleanBC, BC Housing is conducting a review of its existing sustainability priorities and activities. This will allow us to identify new areas of opportunities for more impactful and transformative action.



Our [livegreen Sustainability Report](#) describes in detail our actions to date, including those highlighted below.

Employee Engagement

BC Housing administers an annual sustainability survey 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 2018 survey reveals that employees are choosing to purchase more sustainable home products, are telecommuting more, are taking actions to conserve more energy (both at home and at work) and are composting more since our 2009 baseline measurements.

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.



Some of the items removed from the beach during the Shoreline Cleanup.

In 2018, the *livegreen* council organized 22 sustainability related events and published 3 informative articles in our internal newsletter. We had a total of 416 attendees across all our regional offices participating in the events.

Our *livegreen* events included:

- › A Shoreline Cleanup
- › Events related to sustainable food choices
- › Participation in the Commuter Challenge
- › A 30x30 Nature Challenge
- › Lunch and Learns on various topics

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 staff volunteer for the Quest Food Exchange

Procurement

A significant portion of our public tenders include evaluation criteria that focus on sustainable product specifications, waste reduction and diversion, efficiency, and positive contributions to local communities. Last year, 43 percent of tenders included such sustainability factors.

Community Connections

BC Housing's employee-led community investment program, Community Connections, raises more than \$150,000 for local charities annually. The program had a record-year in 2018/19, with staff raising over \$180,000 for 70 different charities. Through the program's Employer Supported Volunteerism component, volunteered over 1200 hours at local charities including food banks in several communities, the Richmond Food Sharing Farm, Shoreline Cleanup BC and our own People, Plants and Homes program. This program provides education and team-building opportunities as well as contributing to environmental, social, and economic sustainability programs in local communities in tangible ways.



Apple Valley, Kelowna

Plans to Continue Reducing Greenhouse Gas Emissions in 2019

BC Housing's Sustainability Plan

- › Conduct an assessment of sustainability activities to date against best practices and the new provincial climate action plan: CleanBC.
- › Employee and stakeholder engagement to review current activities and identify new opportunities for mitigation and adaptation on climate change and other sustainability priorities through our core businesses.
- › Launch of the new Sustainability Plan.

Energy Conservation Initiatives and New Construction in the Social Housing Sector

- › The British Columbia government will invest \$1.1 billion over the next 10 years to make B.C.'s social housing stock more energy efficient, less polluting and safer, while significantly reducing heating costs for residents. Of this Capital Renewal Fund, \$10 million annually will be dedicated to the incremental cost of energy savings measures on our own and our non-profit partner's projects. Many of these retrofit projects are underway or in the design stage including a domestic hot water heat pump project at Chimo Terrace, a BC Housing managed site. Other retrofits include fuel switching, building envelope upgrades, and other energy efficiency measures.

- › In 2019, the Energy Efficiency Retrofit Program (EERP) will include approximately 30 potential projects. Additional projects that are currently in the planning stages will likely be added to the program.
- › In 2019, BC Housing will ensure most of our renovation projects perform comprehensive energy audits and include Energy Conservation Measures (ECMs) in the design phase that lead to at least 50% greenhouse gas reductions.
- › 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. Topics will include information on intermediate steps of the BC Energy Step Code and innovative and best construction practices to comply with these requirements.
- › Sustainability and energy conservation will continue to be further integrated in our community development programs. As in 2018, we are planning a series of events around Earth Day that will involve both our staff and tenants.
- › We will also complete a review of our sustainability policy and procedures, to ensure that sustainability practices are integrated into all of our business practices.

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.
 - 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 tool kits for hands-on training that are useful and accessible to builders and designers in both urban and remote regions of BC.
 - Administering a local government survey to gauge the barriers and successes in adoption of the BC Energy Step Code.
- › BC Housing will continue to partner on the Local Energy Efficiency Partnerships (LEEP) project.
- › In partnership with our research partners, BC Housing will publish the following reports in 2019:
 - Building Envelope Retrofit for Improved Durability and Energy Performance
 - Design Versus Actual Energy Performance in Green Buildings
 - Energy Efficiency Related to Hydronic Heating Systems in MURBs
 - Tiny Houses – An Alternative to Conventional Housing
 - Wood-Frame Building Envelope Systems for Net-Zero Energy-Ready Buildings

Climate Change Adaptation

- › In 2019, BC Housing is partnering with the BC Non-profit Housing Association (BCNPHA) to bring training on managing extreme heat in social housing to the non-profit housing sector across the province. This training will be in-person and through webinars and will touch on asset management, leadership, and operational aspects of this climate change challenge.
- › Mobilizing Building Adaptation and Resiliency project will continue growing the new body of knowledge related to barriers and benefits of implementing specific resiliency measures based on the implementation of these measures in MBAR pilot projects.

Fleet

- › In 2019, all new hires will have a chance to access online training on eco-driving techniques, which can help reduce greenhouse gas emissions from vehicle trips by up to 25 percent.
- › We 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 (SOV) driving.



Participants at a Mobilizing Building Adaptation and Resilience workshop.

Paper

- › In 2019, 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.

Other Actions

- › The Employee *livegreen* Council will continue its focus on encouraging BC Housing employees to make more sustainable decisions at work, home and in their communities. Activities are planned in four focus areas:
 - **Food:** Of all the possible actions that an individual can take to reduce their greenhouse gas emissions, one of the highest leverage actions is a switch to a diet that local, seasonal, and plant-based. Activities planned in this area include: Meatless Monday Challenge, Vegan Potluck, Veggie Chilli Cook-off and others.
 - **Transportation:** According to our annual *livegreen* survey, one of the largest leverage points for reducing greenhouse gas emissions by BC Housing employees is to switch single occupancy vehicle (SOV) trips into other, more sustainable modes. Additionally, CleanBC has committed to significant positive impact regarding cleaner transportation. The Council will support these goals through new Carpool Challenge, Commuter Challenge, promotion of BC Housing's Transit incentive programs and other initiatives.
 - **Home:** CleanBC's new programs and incentives related to efficiencies within buildings offer home owners the opportunities to reduce their reliance on fossil fuels with subsidies up to \$2000. They also aim to help BC communities reach a 95% organic waste diversion target. Combined, these two goals set forth by the Province dovetail nicely into the goals of the *livegreen* council. As such, the focus areas for the 12 months covered under this plan under the category 'Home' include reducing waste, repurposing/re-homing unneeded goods, and reducing energy consumption.

- **Work:** In 2018, the Canadian Council for Ministers of the Environment (CCME) approved in principle a Canada-wide strategy on zero plastic waste, with an action plan to be proposed in 2019. This year's emphasis under the category of 'Work' will rest primarily on plastic waste, both reducing it and sorting it properly), and will also focus on building some foundational engagement opportunities for the many new employees at BC Housing.

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>



BCHOUSING.ORG

Part 1: CNAR Survey

1. General Information

Name: Magdalena Szpala

Contact Email: mszpala@bchousing.org

Organization Name: BC Housing

Sector: Crown

Role - Please select your role(s) below.

If more than one individual completed the survey, multiple categories may be selected:

Energy Manager: No

Sustainability Coordinator: Yes

Administrative Assistant: No

Facilities/Operations Manager/Coordinator: No

CEO/President/Exec Director: No

Treasurer/Accounting: No

Superintendent: No

A. Stationary Sources (e.g. Buildings, Power Generators): Fuel Combustion, Electricity use, Fugitive Emissions.

1. Actions taken by your organization in 2018 to support emissions reductions from buildings.

a) Do you have a strategy to reduce emissions from stationary sources?

Yes

If yes above, what are the main goals?: *40% reduction in GHG emissions from all buildings owned or leased by BC Housing, including directly managed public housing by 2030/31 (from 2005 baseline)

*100% of provincially sponsored affordable housing units designed to meet the energy and sustainability targets defined in the BC Housing Design Guidelines and Construction Standards in 2030/31

* Review of existing BCHousing GHG reduction goals in the context of the new goals set by the province in CleanBC

b) Whether you have a strategy or not (1.a), briefly describe your organization's plans to continue reducing emissions from stationary sources:

I. Over the medium-term term (1-5 years)

*Capital Renewal Fund: \$10 Million annually will be dedicated to the incremental cost of energy savings measures on our own and our non-profit partner's projects.

*The Energy Efficiency Retrofit Program (EERP) to include approx. 30 projects in 2019

*Renovation projects to include energy audits and Energy Conservation Measures.

*Construction of Passive House pilot projects and projects built to high levels of the BC Energy Step Code

*We will also complete a review of our sustainability policy and procedures, to ensure that sustainability practices are integrated into all of our business practices

*Build new buildings targeting high levels of the BC Energy Step Code

II. Over the long term (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.

c) Please describe your strategy's goals (if any) related to [energy audits](#).

*Renovation projects to include energy audits and Energy Conservation Measures.

The energy team has created an RFP for energy modelling which requires identification of measures that target 50% GHG reduction from current usage. Every project receiving capital renewal funding is expected to complete an audit prior to design.

I. What % on average of your building portfolio has an energy audit completed each year (if any)? : 3

d) Please describe your strategy's goals (if any) related to building retrofits.

*Capital Renewal Fund: \$10 Million annually will be dedicated to the incremental cost of energy savings measures on our own and our non-profit partner's projects.

*The Energy Efficiency Retrofit Program (EERP) to include approx. 30 projects in 2019

I. What % on average of your building portfolio is retrofitted each year in the following categories (if any) - click [here](#) for further information:

Minor retrofits (e.g., low cost, easy to implement measures including caulking, lighting, adding roof insulation, etc.) (%): 20

Major retrofits (e.g., replacing windows and doors, equipment replacement such as boilers, etc.) (%): 10

Deep retrofits (e.g., replacing roof, replacing the heating, ventilation and air-conditioning system with a renewable technology like a ground-source heat pump, etc.) (%): 5

e) Please describe your strategy's [re/retro-commissioning](#) goals (if any)?

We have hired a commissioning manager and have started a priority list of projects for re-commissioning.

I. What % on average of your building portfolio do you recommission each year? : 2

f) Do you keep records of Refrigerant gases category and refilling volumes?

No

I. If yes, have you included the associated emissions in your reporting?

No

g) How many newly constructed buildings received at least LEED Gold certification in 2018 : 0

II. Please explain why LEED Gold certification was not obtained.

Many of these building were targeting high levels of the BC Energy Step Code instead of LEED.

h) Other actions? Please describe briefly.

Our community development programs include tenant engagement on energy conservation at selected sites, at various times during the year.

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

3. Actions taken by your organization in 2018 to support emissions reductions from mobile sources.

a) Do you have a strategy to reduce emissions from mobile sources?

No

I. If yes, what are its goals?

We don't have a strategy but we do have a goal of 20% reduction in GHGs per km traveled from all fleet vehicles used by BC Housing by 2030/31 (from 2016 baseline)

b) Whether you have a strategy or not (3.a), briefly describe your organization's plans to continue reducing emissions from mobile sources:

I. Over the medium-term term (1-5 years)

- *increase driver education on efficient driving
- *Continue using a GPS fleet tracking system to reduce fleet mileage
- *explore the potential for replacing vehicles with hybrid, electric or higher efficiency options

c) How many fleet vehicles did you purchase from the following categories:

Electric Vehicle – EV - (e.g., Nissan Leaf, Chevy Bolt): 0

"Plug In" Electric Vehicle – PHEV (e.g., plug-in Prius, Chevy Volt): 0

Hybrid vehicle – HEV – non "Plug In"- (e.g., Toyota Highlander Hybrid): 0

Hydrogen fuel cell vehicle : 0

Natural gas/propane: 0

Gas/diesel vehicle: 1

I. If you purchased new gas/diesel vehicles, can you briefly explain why vehicles from the other categories were not chosen?

Our fleet consists primarily of trucks and vans used by grounds and building maintenance staff. Currently there are not any hybrid or electric options that meet our requirements. Fleet car purchasing is done regionally. We do not have a policy requiring regional staff to purchase electric or hybrid vehicles.

d) How many existing EV charging stations does your organization have in each category:

level 2: 0

level 3: 0

How many level 2 stations (if any) are specifically for your fleet vehicles: 0

How many level 3 stations (if any) are specifically for your fleet vehicles: 0

e) How many EV charging station(s) did you install in 2018 in each category:

level 2: 0

level 3: 0

How many level 2 stations (if any) were installed specifically for your fleet vehicles: 0

How many level 3 stations (if any) were installed specifically for your fleet vehicles: 0

4. Please indicate the number of the vehicles in the following vehicle classes that are in your current fleet (including any purchased in 2018):

Definitions:

- Light duty vehicles (LDVs) are designated primarily for transport of passengers <13 and GVWR<3900kg
- Light duty trucks (LDTs) are designated primarily for transport of light-weight cargo or that are equipped with special features such as four-wheel drive for off-road operation (include SUVs, vans, trucks with a GVWR<3,900kg)
- Heavy duty vehicles (HDV) includes vehicles with a GVWR>3,900 kg (e.g. ¾ tonne pick-up truck, transport trucks)

a) Light duty vehicles (LDVs)

Electric Vehicles – EV - (e.g., Nissan Leaf, Chevy Bolt): 0

"Plug In" Electric Vehicle – PHEV -- (e.g., plug-in Prius, Chevy Volt) : 0

Hybrid vehicles – HEV – (e.g., non "Plug In"- older Toyota Prius, Toyota Camry hybrid): 3

Hydrogen fuel cell vehicles: 0

Natural gas/propane: 0

Gas/diesel: 3

b) Light duty trucks (LDTs)

Electric Vehicles – EV : 0

"Plug In" Electric Vehicle – PHEV: 0

Hybrid vehicles – HEV – (e.g., non "Plug In"- older Ford Escape Hybrid, older Chevrolet Silverado pickup hybrid etc): 1

Hydrogen fuel cell vehicles: 0

Natural Gas/propane: 0

Gas/diesel: 36

c) Heavy duty vehicles (HDV)

Electric Vehicles – EV : 0

"Plug In" Electric Vehicle – PHEV : 0

Hybrid vehicles – HEV – (e.g., non "Plug In"): 0

Hydrogen fuel cell vehicles: 0

Natural Gas/propane: 0

Gas/diesel: 16

C. Office Paper: Indicate which actions your PSO took in 2018:

6. Actions taken by your organization in 2018 to support emissions reductions from paper supplies.

a) Do you have an Office Paper strategy?

No

I. If yes, what are its goals?

We don't have a strategy but we do have a goal of 80% reduction in GHGs from all office paper used by BC Housing by 2030/31 (from 2005 baseline). We also have existing policies and procedures aiming to reduce overall paper use and related GHG emissions.

b) Whether you have a strategy or not (6.a), briefly describe your organization's plans to continue reducing emissions from paper use:

I. Over the medium-term (1-5 years)

*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.

*We 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.

*In 2019/20 we will be conducting a review of our sustainability plan including goals and actions related to office paper

II. Over the long term (6-10 years)

We do not have a long term plan for paper

c) Have an awareness campaign focused on reducing office paper use

No

d) Purchased alternate source paper (bamboo, hemp, wheat, etc.)

Yes