



BC HOUSING'S 2019 Carbon Neutral Action Report



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A BC Housing staff member attends a demonstration on alternative fuel vehicles.

Declaration Statement

This Carbon Neutral Action Report for the period January 1 to December 31, 2019 summarizes BC Housing’s emissions profile, the amount of offsets purchased to reach net zero emissions, the actions we have taken in 2019 to reduce our greenhouse gas emissions, and our plans to continue reducing emissions in 2020 and beyond.

By June 30, 2020, 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 aims to make a positive difference in people’s lives and communities through safe, affordable, and quality housing. To accomplish this mission, BC Housing works in partnership with the private and non-profit sectors, 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 over 820 housing providers and help more than 112,900 households in 309 communities across British Columbia.

BC Housing aims to incorporate sustainability into all aspects of our work. In 2019, we continued our actions and programs to reduce greenhouse gas emissions from existing buildings, new construction, as well as office paper, fleet vehicles and employee commuting.

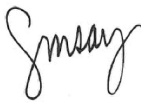
BC Housing’s work supports many initiatives under the provincial CleanBC climate action plan. We administer the new Social Housing Incentive Program (SHIP) in partnership with the BC Non-Profit Housing Association (BCNPHA) to increase the efficiency of social housing buildings across the province. In 2019, the B.C. government announced building code changes to support the safe construction of taller wood buildings. BC Housing provided support for these changes through technical research and education.

BC Housing was instrumental in the roll-out of the BC Energy Step Code and continues to provide education to residential builders and other industry professionals to help them achieve the levels of energy performance expected under this voluntary code. In 2019, eleven BC Housing projects achieved high levels of the BC Energy Step Code, including four projects certified Passive House, built in various regions across the province.

Our work also continued in the field of adaptation and resiliency. The Mobilizing Building Adaptation and Resilience (MBAR) project is a multi-year initiative to help ensure buildings are better adapted to climate change stresses and shocks. Through MBAR, BC Housing is working with over 30 partner organizations to facilitate and pilot sustainable and resilient design and renovation.

2020 will bring new challenges and new opportunities. We will continue to work with our partners to carry out our mandate in the context of the COVID-19 situation, while helping to build the resiliency that B.C. needs to deal with the climate and environmental challenges to come.

Shayne Ramsay
CEO
BC Housing



2019 Greenhouse Gas Emissions and Offsets Overview

BC Housing’s GHG Emissions and Offsets for 2019 (tCO₂e)

As per the [Directive](#) issued March 31, 2020, each Public Sector Organization will use their 2018 GHG Emissions as a placeholder for the purposes of their 2019 CNAR.

GHG EMISSIONS AND OFFSETS FOR 2019	
Total Emissions (tCO ₂ e)	22,508.5
Total BioCO ₂	12.5
Total Offsets (tCO ₂ e)	22,496
Offset Investment (\$25 per tCO ₂ e)	\$562,400

Total Emissions for Offsets for the 2019 Reporting Year

BC Housing purchased carbon offsets from the Government of B.C. for the equivalent of 22,496 tonnes of CO₂e to obtain carbon neutral status for 2019.

Twelve and a half tonnes of CO₂e emissions from the combustion of biomass and biomass-based fuels were reported as part of our greenhouse gas emissions profile in 2019. 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 Climate Change Accountability Act and Carbon Neutral Government Regulation, BC Housing (the Organization) is responsible for arranging for the retirement of the offsets obligation reported above for the 2019 calendar year, together with any adjustments reported for past calendar years (if applicable). The Organization hereby agrees that, in exchange for the Ministry of Environment and Climate Change Strategy (the Ministry) ensuring that these offsets are retired on the Organization’s behalf, the Organization will pay within 30 days, 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.

Abbas Barodawalla
Chief Financial Officer
BC Housing
May 15, 2020



Juniper House in Merritt, certified to the International Passive House standard.

Actions Taken to Reduce Greenhouse Gas Emissions in 2019

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 mid-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 2019, this portfolio included 694 social housing sites (with one or more building per site), totaling over a million square metres of floor area. During the year, we added 57 sites to our greenhouse gas reporting inventory. The majority of these new buildings are modular construction, built under BC Housing’s Rapid Response to Homelessness program, to rapidly house individuals experiencing homelessness across the province.

Greenhouse Gas Results for Buildings

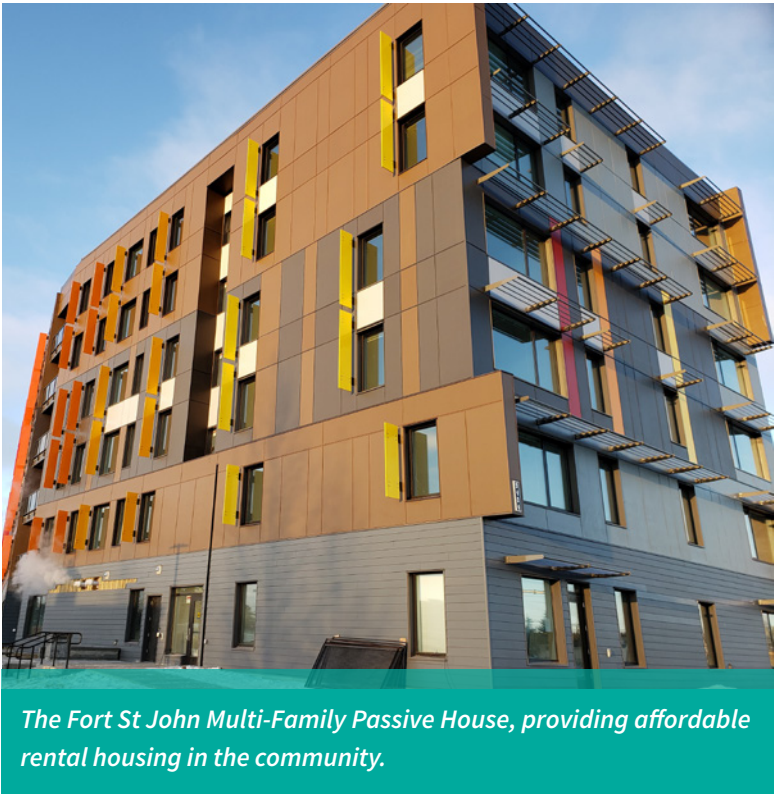
In 2019, our greenhouse gas emissions related to energy used to provide heat, water and electricity for our buildings totaled 22,110 tonnes of CO₂ equivalent¹. We have seen a significant percent decrease in emissions from our buildings compared to baseline. For the 2019 reporting year, BC Housing changed from a 2005 baseline to a 2010 baseline to align with CleanBC’s emission reduction targets.

2019 Buildings GHG Emissions²

EMISSION SOURCE	2019 GHG EMISSIONS (Tonnes of CO ₂ e)
Buildings (Stationary combustion)	22,110

Greenhouse gas emission reductions compared with our baseline are mainly a result of our energy conservation efforts since 2010, 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.

For the 2019 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 2019 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.

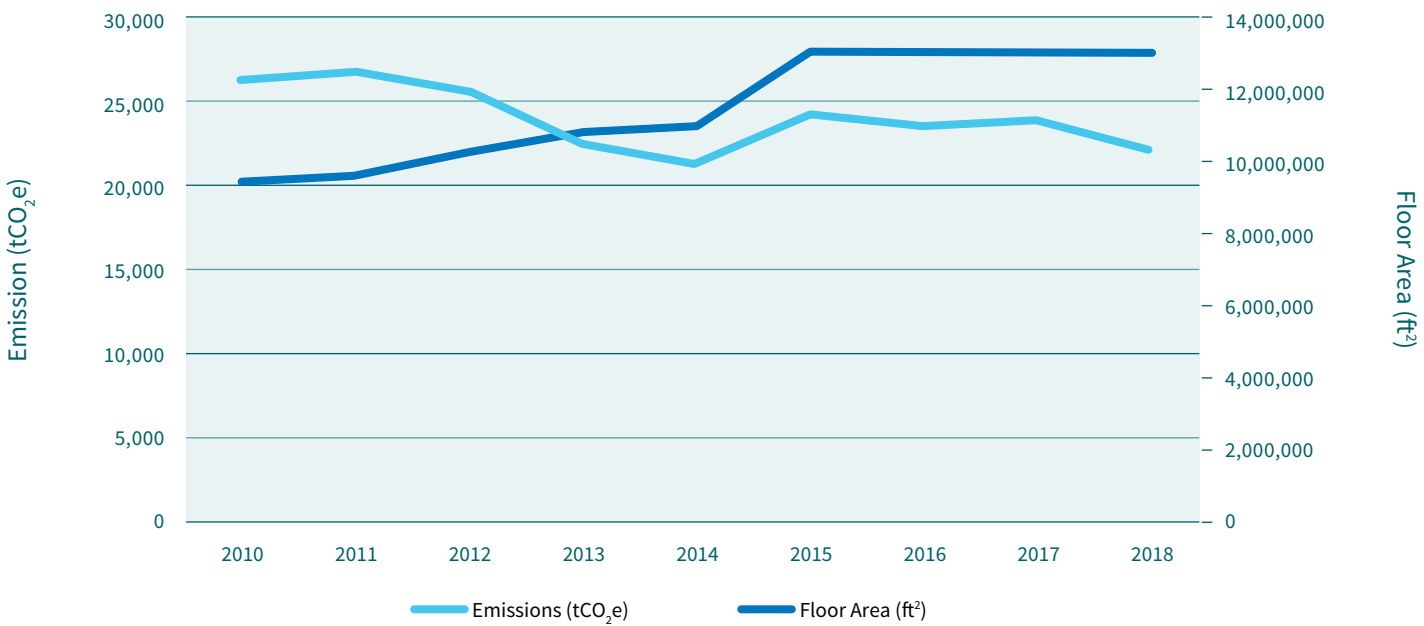


¹ Stationary fugitive emissions from air conditioning at BC Housing offices do not comprise more than 0.01 percent of total emissions and have been deemed out of scope and are not included in the total greenhouse gas profile.
² As per the Directive issued March 31, 2020, this number is BC Housing’s 2018 GHG Emissions which are acting as a placeholder for the purposes of the 2019 Carbon Neutral Action Report.

Floor Area Comparison

We have maintained significant energy and greenhouse gas reductions despite our overall floor area increasing since 2010 (although remaining mostly static since 2015). Our energy retrofit and conservation programs in our existing buildings as well as higher efficiency standards in our new buildings brought about this reduction. The following graph represents this trend from 2010 to 2018.

Floor Area and GHG Emissions Change (2010 - 2018)



Actions Taken in 2019

In 2019, BC Housing continued to work 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. Throughout the year, we worked towards 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 2019, these programs included:
 - The **CleanBC: Social Housing Incentive Program (SHIP)** in partnership with the BC Non-Profit Housing Association (BCNPHA). The provincial program, launched in 2018, helps 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. In 2019, eleven projects were approved and are in-progress with an estimated annual GHG reduction of 496 tCO₂e.
 - The **Energy Conservation Assistance Program (ECAP)** in collaboration with BC Hydro and FortisBC. Through this program, tenants receive free energy evaluation and free installation of energy saving products. In some instances, they also receive free fridge or furnace replacement or additional insulation. In 2019, 517 BC Housing directly managed units received ECAP assessments.
 - The **Energy Efficiency Retrofit Program (EERP)**, along with our partners the BC Non-Profit Housing Association (BCNPHA), BC Hydro, and FortisBC, which enabled approximately 18 electric and 8 gas-focused energy retrofit projects, for a total estimated savings of 835,000 kWh and 1,707 GJ respectively in 2019. 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 2019. A total of 31 non-profit housing providers and 60 buildings were involved in the program. Overall estimated energy savings are 2,980,530 kWh per year and 245 tCO₂e.
- ▶ In 2019, BC Housing worked with consultants to conduct 23 energy audits on high-, mid- and low-rise housing 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.
- ▶ Several small energy retrofits were completed on BC Housing directly managed sites in 2019, while several larger energy retrofits are currently under construction, with completion expected in 2020. These retrofits are expected to result in significant energy savings.



ENERGY CONSERVATION TRAINING AND EDUCATION IN THE SOCIAL HOUSING SECTOR

- ▶ In 2019, BC Housing’s energy management team worked with staff across all departments to raise the level of energy literacy within the organization and to enhance a culture of energy conservation. 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 presented on the new energy and sustainability requirements that have been incorporated into our Design Guidelines and Construction Standards at the annual BC Non-Profit Housing Association conference in November, 2019.
- ▶ In 2019, BC Housing hired a new Commissioning Manager who will assist BC Housing staff and societies to incorporate commissioning and recommissioning into their projects. The Commissioning Manager will develop new policies and incorporate commissioning as a requirement in our Design Guidelines and Construction Standards. It is estimated that proper commissioning can reduce energy use by 13 percent for new construction buildings, and 16 percent for existing buildings.
- ▶ BC Housing Community Developers, partners, and other staff engaged 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 in energy savings each year.
 - [Our website](#) has resources on how to engage social housing tenants on sustainability focusing on energy conservation and waste diversion.
- ▶ In 2019, BC Housing continued to support the BCNPHA in the delivery of their Operations and Maintenance program which aims to build energy management capacity in the housing sector, enhance energy and greenhouse gas savings, and achieve 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 other topics



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 2019, we completed 11 projects that achieved Step Code levels 3 or higher. The BC Housing Design and Construction Guidelines have been revised to align with the BC Energy Step Code. Since 2018, our projects have targeted 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 more than 60 buildings registered with the Canadian Green Building Council and 49 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 2019, we completed a Passive House development in Fort St John. A portion of this development is currently serving as temporary workforce housing for BC Hydro staff, in addition to providing affordable and market rental housing to the community.



The Fort St John Multi-Family Passive House, certified to Passive House standards.

TECHNICAL RESEARCH AND EDUCATION IN THE RESIDENTIAL CONSTRUCTION SECTOR

BC Housing is mandated through the *Homeowner Protection Act* to strengthen consumer protection for new homebuyers and improve the quality of residential construction. In 2019, we undertook the following initiatives which contributed to improved quality of residential construction and better building energy efficiency:

- ▶ BC Housing and partners organized 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 a series of videos featuring homes built under the LEEP program in the Interior and Northern regions of the province. These videos were completed in May 2019 and are available for viewing on the [BC Housing website](#).
- ▶ BC Housing conducts technical research and provides education to help improve the quality of residential construction and increase building energy efficiency. In 2019, we published several reports, including:
 - Strategies for Collaborative Construction: Integrated Project Delivery Case Studies
 - MBAR Resources: Design Discussion Primers
 - BC Energy Step Code: Design Guide
 - The Design Guide Supplement on Overheating and Air Quality, BC Energy Step Code SupplementThese reports are available online from [BC Housing’s Research Centre](#) and details on these reports are available in the [Housing Research and Education Project Highlights Booklet](#).
- ▶ 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 2019, the Building Smart series helped the B.C. building industry to better understand the lower steps of the BC Energy Step Code, including air tightness testing, mitigating



thermal bridging, evaluating thermal comfort, and key considerations for high performance walls and roofs.

- ▶ BC Housing also offered Train-the-Trainer sessions, aimed at building capacity around the BC Energy Step Code for industry professionals. These sessions ensure trainers are available across the province to deliver training materials related to the BC Energy Step Code.
- ▶ Now in its sixth 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 2019 included:
 - Developing a workshop to support design and planning of high energy performance Part 3 residential buildings.
 - Developing an online training and mentorship program that trains participants to become certified Energy Advisors.
 - Creating a web-based knowledge transfer tool to increase awareness of emerging technologies and support BC Energy Step Code compliance.

For a complete list of projects funded in 2019 or for more information about the grant program, please visit: <https://www.bchousing.org/research-centre/grants-funding-opportunities>

CLIMATE CHANGE ADAPTATION

- ▶ In 2019, BC Housing continued implementation of our Climate Adaptation Framework, educating individuals on reducing the impact of extreme heat and poor air quality events on social housing residents. We are actively engaged in sharing our experience and learning from others. We delivered presentations and workshops at the Adaptation 2020 conference in Vancouver, Livable Cities Forum in Victoria and other events.
- ▶ In 2019, BC Housing partnered with the BC Non-profit Housing Association (BCNPHA) to offer presentations on managing extreme heat in social housing to the non-profit housing sector across the province. The sessions included in-person and online webinars on asset management, leadership, and operational aspects of this climate change challenge.
- ▶ The Mobilizing Building Adaptation and Resilience (MBAR) project is a multi-year initiative ensuring buildings are better adapted to climate change stresses (higher precipitation, warmer summers, fire-related air pollution) and climate change shocks (severe flooding, fire, windstorms). Through MBAR, BC Housing is working with over 30 partner organizations to facilitate and pilot sustainable and resilient design and renovation. The first phase of pilot projects included public and private residential buildings. A second phase of pilots will start accepting expressions of interest (EOIs) in 2020. Resources to guide discussion and planning for resilience (Design Discussion Primers) are available for download on the BC Housing website, with more resources coming soon.
<https://www.bchousing.org/research-centre/library/residential-design-construction/MBAR>



BC Housing staff learn about hydrogen fuel cell and electric vehicles at a livegreen event.

Fleet

In 2019, our vehicle fleet consisted of 61 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 2019 were fuel-efficient. During the year, we retired three vehicles and added five new vehicles to the fleet.

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. Fifty percent of Modo trips in 2019 were taken in hybrid vehicles, resulting in greenhouse gas savings.

Greenhouse Gas Results for Fleet

In 2019, our greenhouse gas emissions from mobile sources (fleet vehicles, Modo vehicles, and grounds equipment) totaled 353 tonnes.

2019 Fleet and Equipment GHG Emissions³

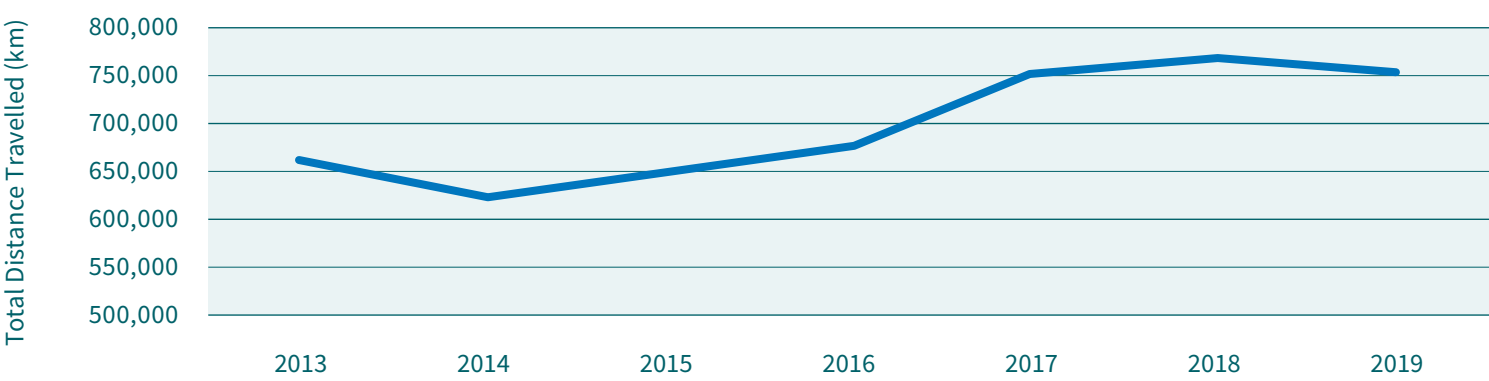
EMISSION SOURCE	2019 GHG EMISSIONS (TONNES OF CO ₂ e)
Fleet (Mobile combustion)	353

Our fleet covered slightly fewer kilometers and consumed fewer liters of gasoline and diesel in 2019 compared to 2018. Our greenhouse gas intensity (greenhouse gas emissions per kilometer travelled) also decreased slightly in 2019.

Greenhouse gas emissions for the 2019 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.

³ As per the Directive issued March 31, 2020, this number is BC Housing’s 2018 GHG Emissions which are acting as a placeholder for the purposes of the 2019 CNAR.

Kilometres Driven by BC Housing Fleet, 2013-2019



Actions Taken in 2019

- ▶ 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.
- ▶ In 2019, the Fraser Basin Council provided information to staff on electric vehicles in a B.C. context through a lunch and learn and outdoor event where staff could try out electric and alternate fuel vehicles.
- ▶ The annual employee sustainability survey uncovered that BC Housing employees are increasingly choosing hybrid and fully electric vehicles. While the automobiles used by employees to commute to and from work in 2019 still run primarily on gasoline, 2019 saw the highest ever share of hybrid and fully electric vehicles at almost 8%.
- ▶ 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.



BC Housing staff examine a hydrogen fuel cell vehicle.



Paper

In 2019, we changed our baseline from 2005 to 2010 to align with the provincial CleanBC plan. Since 2010, we have seen a 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 percent recycled content, and changes to our procurement practices. Our organization has added a significant number of employees since 2010, and our greenhouse gas emission reduction per employee for paper use was also notable.

We also saw a slight annual decrease in greenhouse gas emissions due to paper use between 2019 and 2018.

2019 Paper GHG Emissions⁴

PAPER	2019 GHG EMISSIONS (TONNES OF CO ₂ e)
	25

In 2019, 90 percent of all the paper purchased was 100% recycled paper, a one percent increase compared to 2018.

⁴ As per the Directive issued March 31, 2020, this number is BC Housing's 2018 GHG Emissions which are acting as a placeholder for the purposes of the 2019 CNAR.

Actions Taken in 2019

- ▶ 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.
- ▶ BC Housing's Records and Information Centre championed paper reduction in 2019. During the past year, we implemented the scanning of paper applications for certain programs, reducing the need to create paper files, and reducing the amount of storage necessary for paper files. The Records and Information Centre also began developing a business case for electronic signatures and explored software options.
- ▶ The annual employee survey revealed that 84 percent of employees tried to reduce printed materials in our offices.

Other Actions

Our BC Housing sustainability efforts are guided by our livegreen Sustainability Plan, which is integrated with our corporate and branch plans. By integrating our sustainability plan, we ensure we are considering sustainability in all of our business practices, including employee engagement, procurement, and community connections. In the context of the provincial climate action plan, CleanBC, BC Housing conducted a review of our sustainability priorities and activities in 2019. This included an in-depth review of BC Housing's current approach to sustainability policy, governance, and decision-making, followed by engagement with nearly 25 percent of staff, including an advisory group and the executive committee. The assessment and engagement culminated in recommendations to inform future sustainability work, to be implemented in 2020.

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



BC Housing staff volunteer with the People, Plants and Homes program.



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 2019 survey reveals that employees are choosing to purchase more sustainable home products, telecommuting more, taking actions to conserve more energy (both at home and at work) and composting more since our 2009 baseline measurements.

Our employee green team, the *livegreen* Council, plays a key role in encouraging sustainable employee behaviour both in the workplace and at home, helping to establish sustainable lifestyles for employees, families and communities. This committed and corporate-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.

In 2019, the *livegreen* council organized 19 sustainability related events and published three informative articles in our internal newsletter. We had over 530 event attendees⁵ across all our regional offices.

Our *livegreen* events included:

- ▶ 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 five consecutive years and we have been recognized as a Transformational Company by Canadian Business for Social Responsibility.

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



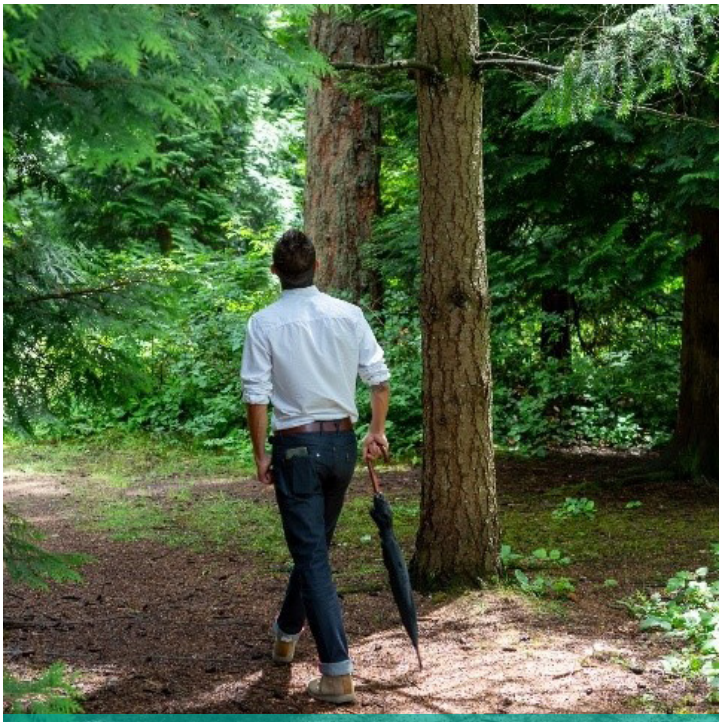
BC Housing staff donate blood for Canadian Blood Services.

Procurement

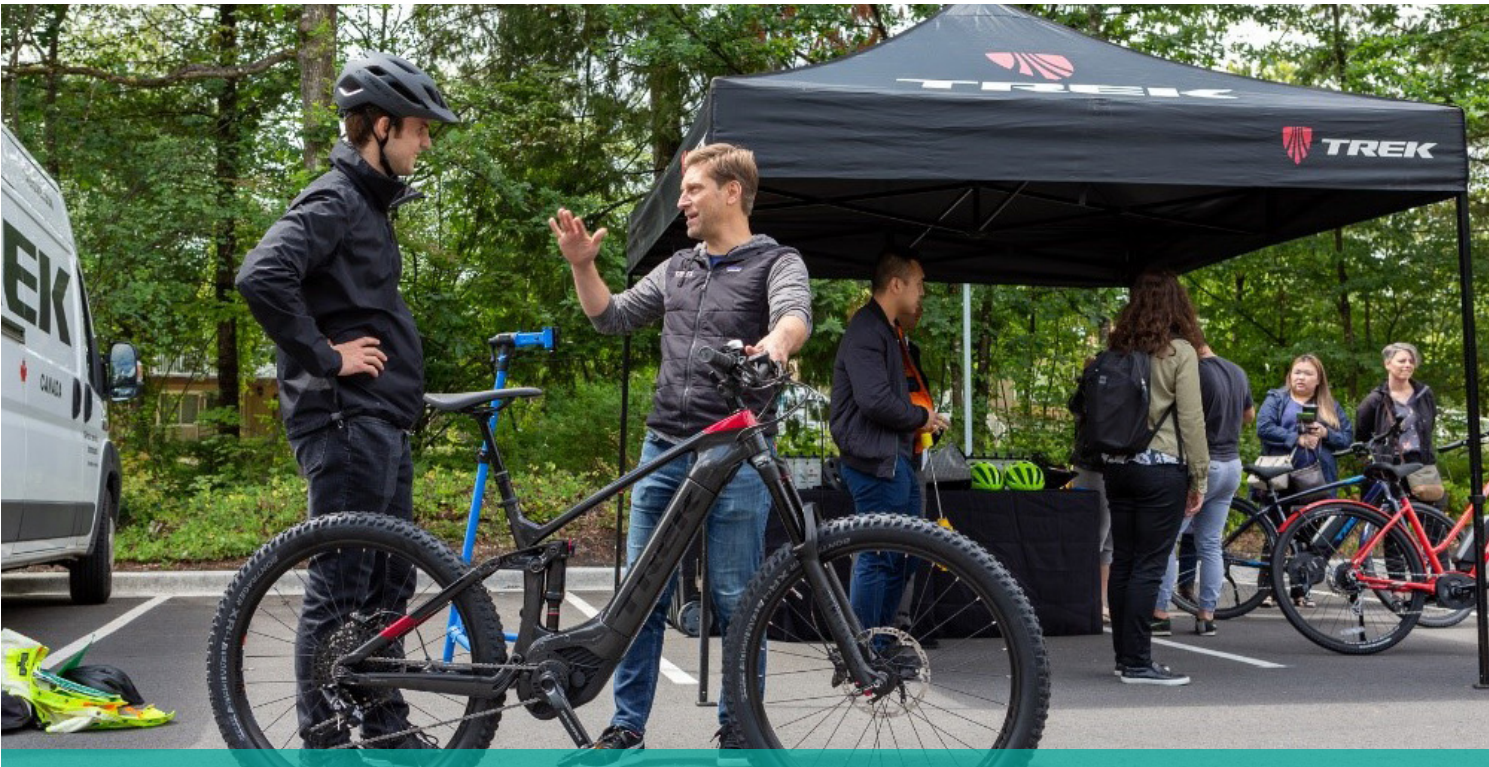
A significant portion of our public tenders include evaluation criteria that focus on sustainable product specifications, waste reduction and diversion, efficiency, and positive contributions to local communities. Last year, 40 percent of tenders included such sustainability factors.

Community Connections

BC Housing’s employee-led community investment program, Community Connections had a record-year in 2019/20, with staff raising over \$207,000 for 75 different charities. The program has raised over \$1.6 million dollars for local charities since being introduced in 2008. Through the Community Connection’s Employer Supported Volunteerism component, staff volunteered over 950 hours at local charities including food banks in several communities, the Burnaby Christmas Bureau, Habitat for Humanity and BC Housing’s 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.



A BC Housing staff member observes nature at a livegreen council event.



BC Housing staff learn about e-bikes at a livegreen council event.



Plans to Continue Reducing Greenhouse Gas Emissions in 2020

BC Housing’s Sustainability Plan

- ▶ BC Housing will build on the work undertaken in 2019 to review our sustainability practices and will launch the new Sustainability Plan in 2020/2021.

Energy Conservation Initiatives and New Construction in the Social Housing Sector

- ▶ The Government of British Columbia 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 BC Housing and our non-profit partner’s projects. Many of these retrofit projects are underway or in the design stage including a DHW 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 2020, the Energy Efficiency Retrofit Program (EERP) will continue to address the energy efficiency of social housing.
- ▶ In 2020, 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 percent 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 integrated in our community development programs. Due to physical distancing measures required during the COVID-19 pandemic, we will find innovative ways to continue these programs.

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 that meet high levels of the BC Energy Step Code.
 - Continuing to deliver a Train-the-Trainer program.
 - Developing other educational materials such as a series of customized seminars and webinars, videos, animation, online interactive guidance tools, and tool kits. These accessible resources will be used in hands-on training for builders and designers in both urban and remote regions of B.C.
 - Administering a local government survey to gauge the barriers and successes in adopting 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 technical research reports in 2020, including:
 - Design Versus Actual Energy Performance in Social Housing Buildings
 - MBAR: Mechanical Design Cost Benefit Analysis
 - Technical Guide for the Design and Construction of Tall Wood Buildings in Canada

Climate Change Adaptation

- ▶ In 2020, BC Housing will continue our partnership with the BC Non-profit Housing Association (BCNPHA) and the City of Vancouver to provide training on managing extreme heat and poor air quality due to wildfire smoke to the non-profit housing sector in B.C. A series of three on-line webinars are planned, focusing on the following topics: key strategies for addressing overheating and air quality in new construction, major upgrades and retrofits, and no-cost, low-cost approaches for existing buildings.
- ▶ The Mobilizing Building Adaptation and Resiliency (MBAR) project will grow the body of knowledge related to barriers and benefits of implementing specific resiliency measures, based on the implementation of these measures in MBAR pilot projects.
- ▶ We will continue incorporating climate change risks into BC Housing's Enterprise Risk Management framework.



A BC Housing staff member test drives an electric vehicle.

Fleet

- ▶ In 2020, all new hires will have access to 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.
- ▶ 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 started research on electric vehicles to ensure we are ready to act when the appropriate technology is available. We plan to engage a consultant to help us evaluate our fleet and choose fuel efficient and alternative fuel vehicles as appropriate as we replace our aging fleet.

Paper

- ▶ In 2020, BC Housing is aiming to source a higher percentage of our paper with 100 percent recycled content. We will reach out to regional staff to ensure purchases of paper with a lower recycled content do not happen 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. The council will also continue to encourage employees to make more sustainable decisions at work, home, and in our communities.
- ▶ We will keep exploring the use of digital signatures so we can transition away from printed documents for some of our processes.

Other Actions

- ▶ The Employee *livegreen* Council will focus on encouraging BC Housing employees to make more sustainable decisions at work, home and in their communities. Physical distancing may impact the council's plans in the months to come. Activities are planned in four focus areas:
 - **Food:** encouraging sustainable food choices such as: growing your own food, buying local and organic food, promoting a meatless diet, etc.
 - **Commuting:** creating awareness amongst employees and others of the opportunities to make environmentally friendly commuting and personal travel choices.
 - **Home:** inspiring employees to reduce their environmental footprint at home make informed choices and reduce existing barriers to purchasing responsible products.
 - **Work:** encouraging employees to make sustainable decisions at work that lead to cost savings, higher efficiencies, and healthier lifestyles.
- ▶ In addition to our ongoing commitment to our Community Connections program, we will also explore opportunities to partner to improve food security for vulnerable British Columbians.



Urban vegetable garden maintained as part of the BC Housing Peoples, Plants and Homes program

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

Confirmation number: 00C27565

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Carbon Neutral Action Report Survey - 2019

Public sector organizations (PSOs) are required to complete this survey, in addition to a Carbon Neutral Action Report (CNAR) as mandated by BC's [Climate Change Accountability Act](#) and the [Carbon Neutral Government Regulation](#).

Due to the COVID-19 pandemic, the following [Directive](#) was issued on March 31, 2020. Certain deadlines were also extended for the 2019 reporting year (see below).

March 31, 2020 Directive:

Under my authority as the Director for the purposes of the Act, and under the authority delegated to me in Section 6 of the Carbon Neutral Government Regulation, I hereby direct that all ministries and Public Sector Organizations covered by the Carbon Neutral Government requirement shall use their 2018 GHG emissions as a temporary estimate for their actual 2019 GHG emissions, for the purposes of the 2019 Carbon Neutral Action Reports and 2019 Carbon Neutral Government reporting required under the Climate Change Accountability Act.

Neil Dobson, Executive Director, Clean BC Implementation
Climate Action Secretariat

Although 2018 emissions data will be used as a placeholder for 2019, **all other (qualitative) components of the CNAR and CNAR Survey are to be completed with information from 2019 (e.g., actions taken or planned to reduce emissions)**. The only change to the survey is that the deadline was extended by one month to June 30, 2020.

This survey is divided into two parts:

Part 1 - Will be made public on the Climate Action Secretariat (CAS) [website](#) after June 30, 2020; however, it will not be appended directly to each individual PSO CNAR as was done in previous years. This section collects details about actions taken or planned to reduce emissions and is intended to supplement the legislative requirements in your CNAR.

Part 2 - Will NOT be made public. Information you provide in this section is important and will be used internally to help CAS staff with planning for emissions reduction and climate change adaptation initiatives. Although not required, PSOs are highly encouraged to complete Part 2.

Note: Survey progress can be saved at any time by clicking the "Save and continue later" button at the bottom of each page. A new window will open and you will be asked to provide your name and email. An email will be sent to you from Carbon.Neutral@gov.bc.ca with the subject line: "Questionnaire Link", which will include a hyperlink for the "Project: Carbon Neutral Action Report Survey – Broader Public Sector 2019". You can then continue responding at another time or email the hyperlink to a colleague to complete remaining section(s).

May 29, 2020	<ul style="list-style-type: none">The final, signed version of the CNAR (or Small Emitters Form) must be submitted by email to: Carbon.Neutral@gov.bc.ca
June 30, 2020*	<ul style="list-style-type: none">Ministry of Environment and Climate Change Strategy must post a final CNAR for each organization on the BC Government's CNG website and each PSO is encouraged to post the report on their website.The CNAR Survey (optional for Small Emitters) must be completed and submitted online. <p>*Deadline extended from May 29, 2020.</p> <ul style="list-style-type: none"><u>All offset invoice payments must be submitted to CAS.</u>
Sept 30, 2020*	<ul style="list-style-type: none">Clean Government Reporting Tool (CGRT) Data Entry must be completed for the 2019 reporting year.

	*Deadline extended from April 30, 2020.
Oct 15, 2020*	<ul style="list-style-type: none"> • Self-Certification checklist must be completed, signed and submitted by email to: Carbon.Neutral@gov.bc.ca. *Deadline extended from May 15, 2020.

*See the [Carbon Neutral Government – Program Requirements website](#) for more information on program requirements, timelines and templates.

PART 1 - Included as part of your public CNAR report.

Reminder that Part 1 will be made public on the CAS [website](#).

Contact Name:
<i>Magdalena Szpala</i>
Contact Email:
<i>mszpala@bchousing.org</i>
Organization Name:
<i>BC Housing</i>
Role – Please select the best category for your current role with your organization. If more than one individual completed the survey, multiple categories may be selected:
Sustainability Coordinator
Please select your sector:
Crown (CR)

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

Actions taken by your organization in 2019 to support emissions reductions from buildings

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

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

Over the medium-term term (1-5 years)
<ul style="list-style-type: none"> - BC Housing's Design Guidelines and Construction Standards require targeting high levels (Steps 3 & 4) of the BC Energy Step Code, and include GHG Intensity targets - Capital Renewal Fund: \$10 Million annually has been dedicated to the incremental cost of energy savings measures on BC Housing's and non-profit housing providers' projects - Renovation projects to include energy audits and Energy Conservation Measures. Every renovation project is required to identify 50% GHG saving energy conservation measure bundles - The Energy Efficiency Retrofit Program (EERP) will continue to address the energy efficiency of social housing. - Construction of Passive House pilot projects - Continuation of the Energy Conservation Assistance Program in collaboration with BC Hydro and Fortis BC - Providing Energy conservation training and education in the social housing sector and for BC Housing's staff - Technical research and education focusing on low-carbon building technologies, including offering Train the Trainer programs for the BC Energy Step Code - Building Excellence Research and Education Grants program

Over the long term (6-10 years)

- Increasing requirements leading to low-carbon, resilient social housing buildings
- Continuation of the energy and retrofit programs for social housing in B.C.
- Continuation of research and education related to energy efficiency and resilient building technologies for the residential construction industry

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

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

3%

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

- Capital Renewal Fund : \$10 Million annually has been 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) will continue to address the energy efficiency of social housing

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%

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 .

What % on average of your building portfolio do you recommission each year?

2%

Do you keep records of Refrigerant gases¹ category and refilling volumes?

[1] Fugitive emissions from stationary cooling equipment are attributed to the leakage and loss of HFC and PFC based coolants from air conditioning and commercial type refrigeration systems. Coolant loss can occur during the manufacturing, operation, and disposal of such equipment. Gases that may be reported via CGRT include HFC R-134, HFC R-134a, HFC R-404a, HFC R-407c, HFC R-410a.

No

How many newly constructed buildings received at least LEED Gold certification in 2019?

1 and we had 20 projects achieve high levels of the BC Energy Step Code

How many newly constructed buildings did not receive LEED Gold certification?

41

Please explain why LEED Gold certification was not obtained for those new buildings.

Many of these building were targeting high levels of the BC Energy Step Code instead of LEED. Provincially funded new construction is required to meet the BC Housing Design Guidelines and Construction Standards.

Other actions? Please describe briefly:

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

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

Actions taken by your organization in 2019 to support emissions reductions from mobile sources?

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

No

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

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

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). 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 started research on electric vehicles to ensure we are ready to act when the appropriate technology is available. We plan to engage a consultant to help us evaluate our fleet and choose fuel efficient and alternative fuel vehicles as appropriate as we replace our aging fleet.

Over the long term (6-10 years)

Ideally, we would like to switch out appropriate vehicles with zero emission vehicles, as they become available in the North American market. Engaging a consultant to review our fleet management plan will be a first step in this direction.

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

5

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.

Actions taken by your organization in 2019 to support emissions reductions from mobile sources? (Continued)

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?

As defined as Level 2 stations only your organization's fleet vehicles may use

0

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

As defined as Level 3 stations only your organization's fleet vehicles may use

0

How many EV charging station(s) did you install in 2019 in each category:

Level 2?

0

Level 3?

0

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

As defined in the previous section

0

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

As defined in the previous section

0

Please briefly describe any other related actions, (e.g. charging station feasibility studies, electrical panel upgrades, etc.)

*We conducted a charging station feasibility study at one of our directly managed housing buildings, but found that the electrical capacity was not available and would be cost prohibitive to upgrade.
For our own fleet we have not pursued any related actions, as there are no electric vehicles that suit the Maintenance or Grounds requirements.*

Please indicate the total number of the vehicles in the following vehicle classes that are in your

current fleet

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)

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

4

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

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
17

Actions taken by your organization in 2019 to support emissions reductions from paper supplies.

Briefly describe your organization’s plans to continue reducing emissions from paper use:

Over the medium-term (1-5 years)
<i>In 2020, BC Housing is aiming to source a higher percentage of the office paper with 100 percent recycled content. We will reach out to regional staff to ensure purchases of paper with a lower recycled content do not happen 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. We are currently exploring the use of digital signatures so we can transition away from printed documents for some of our processes.</i>

Over the long term (6-10 years)
<i>All of our sustainability goals (except for GHG for buildings) are currently being reviewed and will be updated in our new Sustainability and Resiliency Strategy.</i>

Do you have an awareness campaign focused on reducing office paper use?
No

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

Other 2019 actions, please specify

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.

BC Housing's Records and Information Centre championed paper reduction in 2019. During the past year, we implemented the scanning of paper applications for certain programs, reducing the need to create paper files, and reducing the amount of storage necessary for paper files. The Records and Information Centre also began developing a business case for electronic signatures and explored software options.

The annual employee survey revealed that 84 percent of employees tried to reduce printed materials in our offices.