



2022 PSO Climate Change Accountability Report



BRITISH
COLUMBIA



BC HOUSING



Raft Cove Provincial Park, Northern Vancouver Island, BC.

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Cover photo: Heart on the Hill building, built to step 4 of the BC Energy Step Code in 2022. Credit: Ladysmith Resources Center Association.



Declaration Statement

This PSO Climate Change Accountability Report for the period January 1, 2022 to December 31, 2022 summarizes our greenhouse gas (GHG) emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2022 to minimize our GHG emissions, and our plans to continue reducing emissions in 2023 and beyond.

By June 30, 2023 BC Housing's final 2022 Climate Change Accountability Report will be posted to our website at www.bchousing.org



Executive Summary



Vincent Tong, Chief Executive Officer, BC Housing

BC Housing operates in a world increasingly shaped by unfolding ecological and climate crises. The UN Secretary-General has described the climate emergency as “a code red for humanity”. Extreme weather events, such as harmful air quality from wildfire smoke, unprecedented heatwaves, and flooding are becoming more frequent. BC Housing’s work and mission is to: “Make a positive difference in people’s lives and communities through safe, affordable and quality housing”. As societal challenges continue to mount, there is a growing need to develop and manage social housing. Alongside this, it is crucial to be mindful of a range of intersecting issues such as climate change, rising homelessness, systemic inequities, discrimination, and health crises.

Housing is at the heart of communities and access to adequate, safe, and suitable housing can help address homelessness and inequities. If constructed correctly, housing can reduce greenhouse gas emissions and be resilient to the affects of climate change. Housing can also shelter individuals from global pandemics.



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.

BC Housing acknowledges that we conduct our activities on the homelands of thousands of Indigenous peoples and many Nations across British Columbia, each with their own unique traditions, culture, world views, languages and history. BC Housing will emphasize Indigenous Peoples' rights to live in dignity, to maintain and strengthen Indigenous institutions, cultures and traditions and to pursue self-determined housing. Our Reconciliation Strategy under will provide a framework for how the organization operates in a way that demonstrates our commitment to and implementation of

Declaration on the Rights of Indigenous Peoples Act and the Truth and Reconciliation Calls to Action.

Our new Sustainability and Resilience Strategy, finalized in May 2023, will guide our sustainability work moving forward. This Strategy expands on the Sustainability and Resilience Framework, released in 2021. The Strategy includes performance measures, targets, and an Implementation Plan detailing actions that will help us move towards our sustainability and resilience goals over the next three years.

Vincent Tong

CEO
BC Housing

2022 Greenhouse Gas Emissions and Offsets Overview

Emissions and Offset Summary Table:

BC HOUSING 2022 GHG EMISSIONS AND OFFSETS	
GHG Emissions created in Calendar Year 2022	
Total Emissions (tCO ₂ e)	30,953
Total BioCO ₂	0
Total Offsets (tCO ₂ e)	30,953
Adjustments to Offset Required GHG Emissions Reported in Prior Years	
Total Offsets Adjustment (tCO ₂ e)	-891
Grand Total Offsets for the 2022 Reporting Year	
Grand Total Offsets (tCO ₂ e) to be Retired for 2022 Reporting Year	30,062
Offset Investment (\$25 per tCO ₂ e)	\$751,550

Total Emissions for Offsets for the 2022 Reporting Year

BC Housing purchased carbon offsets from the Government of B.C. for the equivalent of 30,062 tonnes of CO₂e to obtain carbon neutral status for 2022.

Zero tonnes of CO₂e emissions from the combustion of biomass and biomass-based fuels were reported as part of our greenhouse gas emissions profile in 2022. 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 2022 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.



Kate Begent-Connors

VP, Strategic Business Operations and Performance
BC Housing
May 30, 2023



Hunter Jack Crescent, N'Quatqua, built to Step 4 of the BC Energy Step Code in 2022.

Emission Reductions: Actions & Plans

Stationary Sources

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. With the exception of our offices, our building inventory is made up of various types of affordable housing and includes the following building types:

- ▶ Residential towers (high-rise buildings)
- ▶ Low- and mid-rise buildings
- ▶ Single-room-occupancy hotels (SROs)
- ▶ Townhouses
- ▶ Group homes

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

In 2022, this portfolio included 794 social housing sites, totaling over 16 million square feet of floor area. During the year, we added 32 new sites to our greenhouse gas reporting inventory through new construction or purchase of existing buildings.

Greenhouse Gas Results for Buildings

In 2022, our greenhouse gas emissions related to energy used to provide heat, water and electricity for our buildings totaled 30,646 tonnes of CO₂ equivalent¹. Since 2010, we have seen an 18 percent decrease in emissions from our buildings, and a six percent increase in emissions from 2021.²

2022 Buildings GHG Emissions *Compared with 2010 baseline and 2021 results*

EMISSION SOURCE	2022 GHG EMISSIONS (Tonnes of CO ₂ e)	2022 RESULTS COMPARED WITH THE 2010 BASELINE	2022 RESULTS COMPARED WITH 2021
Buildings (Stationary combustion)	30,646	18% decrease	6% increase

Our greenhouse gas emissions in 2022 were 18 percent lower compared to our 2010 baseline. Greenhouse gas emissions have reduced when compared with our baseline due to energy conservation efforts since 2010. These efforts include multi-year building upgrades, fuel switching, and energy programs. Further efforts have been made to increase energy efficiency standards for new construction and improve energy management in our portfolio. These initiatives are further described in the following section of this report.

There has been a six percent increase in emissions compared to 2021, resulting from a combination of factors, including cooler weather in 2022. Numerous buildings have aged considerably, and their equipment has reached the end of its service life, necessitating replacement and

renovation. A portion of the emission increase was the result of new sites added to the portfolio in 2022.

For the 2022 reporting year, FortisBC natural gas consumption data (accounting for approximately 19 percent of our total emissions) was estimated for private accounts for all or varying portion of individual buildings. 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. For the 2022 reporting year, the data estimation rate has dropped three percent compared to 2021, indicating an improvement of data accuracy.

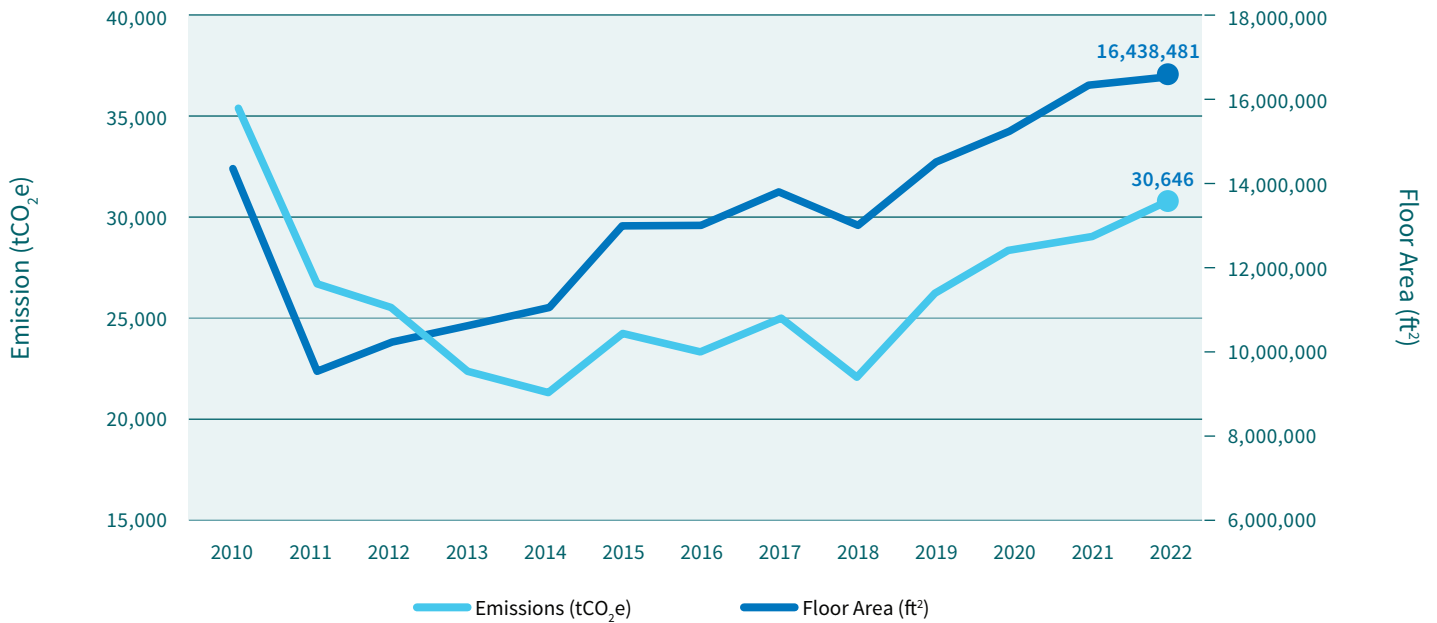


1 Stationary fugitive emissions from air conditioning at BC Housing offices do not comprise more than 0.01 percent of total emissions and have been deemed out of scope and are not included in the total greenhouse gas profile.
 2 As of the 2019 reporting year, BC Housing has changed from a 2005 baseline to a 2010 baseline to align with CleanBC's emission reduction targets. For the comparison of last year results and 2010, the baseline was recalculated as per the greenhouse gas protocols.

Floor Area Comparison

Our emissions have decreased relative to our floor area since 2010. However, our portfolio has increased by over 163 buildings since 2018. This has resulted in increasing greenhouse gas emissions over the past three years.

FLOOR AREA AND GHG EMISSIONS CHANGE (2010 - 2022)



Actions Taken in 2022

In 2022, 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. Our Licensing and Consumer Services department added a condition to all general contractor licenses in October 2022 requiring competency in building to Step 3 of the BC Energy Step Code. Through the year, despite the ongoing challenges of the COVID-19 pandemic, we worked towards enabling innovation and housing excellence.

We undertook initiatives related to buildings in the following areas:

- ▶ Energy conservation initiatives for existing affordable housing buildings
- ▶ Energy conservation training and education in the social housing sector
- ▶ Energy efficiency in new affordable housing construction
- ▶ Technical research and education in the residential construction sector
- ▶ Mobilizing Building Adaptation and Resilience (MBAR)
- ▶ Asset management capacity building for Indigenous communities

ENERGY CONSERVATION INITIATIVES FOR EXISTING AFFORDABLE HOUSING BUILDINGS

- ▶ BC Housing administers or supports a range of energy efficiency programs for social housing providers, in collaboration with our partners. In 2022, these programs included:
 - The **CleanBC: Social Housing Incentive Program (SHIP)** is a provincial program launched in 2018 intended to help affordable housing owners and operators reduce greenhouse gas emissions. It supports fuel switching measures that result in a significant reduction in current fossil fuel use. In 2022, eight projects were completed with an estimated annual GHG reduction of 225 tCO₂e.
 - The **Energy Efficiency Retrofit Program (EERP)**, along with our partners the BC Non-Profit Housing Association (BCNHPA), BC Hydro, and FortisBC. This program enabled approximately six electric energy retrofit projects, for a total estimated savings of 261,770 kWh in 2022. 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 2022, BC Housing completed energy audits and electrical load assessments on all major retrofit projects to determine details of current energy consumption patterns and opportunities for energy and GHG emission savings. Funding for audits and repairs come from the Capital Renewal Fund.
- ▶ Several significant energy retrofits were completed at BC Housing and non-profit partner sites in 2022. These retrofits are expected to result in considerable energy and GHG savings. This includes sites like Kinsmen Ravine, Creekside Village, and Orwell Hotel with more than 100 tCO₂e reduction per year.

ENERGY CONSERVATION TRAINING AND EDUCATION IN THE SOCIAL HOUSING SECTOR

In 2022, BC Housing's Energy and Sustainability 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](#).



- ▶ In 2022, BC Housing continued to support the BC Non-profit Housing Association (BCNHPA) in the delivery of their Operations and Maintenance program. This aims to 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 etc.



ENERGY EFFICIENCY IN NEW AFFORDABLE HOUSING CONSTRUCTION

- ▶ BC Housing encourages our project partners to achieve energy efficient standards in the development of new social housing:
 - In 2022, we completed 35 projects that have achieved Step 3 or higher of the BC Energy Step Code. 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 steps of this code, a performance-based approach that will result in energy savings over base building code in new buildings constructed through our programs.
 - We have also been working with our partners to construct buildings that achieve the Passive House standard. In 2022, two Passive House projects were in the Design Development Stage.

In 2022, we revised our [BC Housing Design Guidelines and Construction Standards](#)³ to enhance the efficiency and livability of our housing units. We updated the following sections:

- Section 1: General Design Guidelines
- Section 4: Construction Standards
- Section 5: Drawing and Document Requirements

In early 2023, BC Housing released Technical Bulletin number three which further emphasizes passive design, filtration, and GHG intensity. The bulletin adds energy modeling and overheating analysis requirements for major renovation projects.

- ▶ In 2019, BC Housing hired a new Commissioning Manager. The Commissioning Manager assists BC Housing staff and societies to incorporate commissioning and recommissioning into their projects. In 2022, the Commissioning Manager continued developing new policies and incorporating commissioning as a requirement in our Design Guidelines and Construction Standards. It is estimated that proper commissioning can save 13 percent for new construction buildings, and 16 percent for existing buildings.



On-reserve affordable housing project for Heiltsuk Nation members, funded through the Indigenous Housing Fund on Campbell Island, BC. Art piece by Ian Reid, a Heiltsuk artist from the community.

ASSET MANAGEMENT CAPACITY BUILDING FOR INDIGENOUS COMMUNITIES

- ▶ In 2022, BC Housing's Indigenous Asset Management team worked with Indigenous communities across the province, including:
 - Implementing five Asset Management Memorandum of Understandings (MOUs) with 22 First Nations across BC
 - Holding monthly Lunch and Learns with Indigenous partners. Topics included Financial Management, Communication, Hoarding and Clean BC Income Qualified Program
 - Assisting in Building Condition Assessments of homes with First Nations
 - Bringing volunteer Project Techs and Construction Project Managers to each MOU. These staff members completed Building Condition Assessment in community and provided one-on-one time between community and BC Housing staff.

³ The [BC Housing Design Guidelines & Construction Standards](#) provide guidelines and standards for affordable housing projects whose capital and/or operating budgets are funded or financed by BC Housing regardless of project type.

TECHNICAL RESEARCH AND EDUCATION IN THE RESIDENTIAL CONSTRUCTION SECTOR

Under the Homeowner Protection Act, BC Housing is mandated to improve the quality of residential construction in B.C. through industry research and education. In 2022, we undertook the following initiatives which contributed to improved quality of residential construction and better building energy efficiency:

- ▶ BC Housing is educating the residential construction sector on a new approach to early design planning: the Integrated Design Process (IDP). IDP engages builders, project owners, and their teams of designers, mechanical contractors, and energy advisors at the conceptual design stage. By bringing everyone in early to collaborate, the team can identify key goals and ensure all expectations are met easily and efficiently, including higher energy performance targets.

BC Housing and our partners are promoting IDP across the industry by developing educational videos as part of the “Building High Performance Homes Through Local Energy Efficiency Partnerships (LEEP)” series. These videos demonstrate how IDP can be used to meet multiple goals in high performance housing projects⁴. BC Housing and our partners also supported the development of IDP facilitator training pilot for Energy Advisors through the Canadian Association of Consulting Energy Advisors (CACEA).

- ▶ BC Housing is a partner in the LEEP for Renovations program, a new phase of LEEP focusing on home renovations rather than new construction. In fall 2022, BC Housing and Canadian Home Builders’ Association held planning workshops for LEEP for Renovations in Kamloops, Victoria and Vancouver.
- ▶ BC Housing conducts technical research and provides education to help improve the quality of residential construction and increase building energy efficiency. In 2022, we published several reports and videos, including:
 - [Climate-ready Housing Design Guide](#) – This Climate-ready Housing Design Guide is intended to serve as a reference tool for housing providers, developers, and other building industry professionals across B.C. The guide includes emergent best practices and recommended technical standards for more climate-ready housing design.
 - [Technical Guide for the Design and Construction of Tall Wood Buildings in Canada \(Second Edition\)](#) – This guide shares research findings on mass timber design and construction of tall buildings.

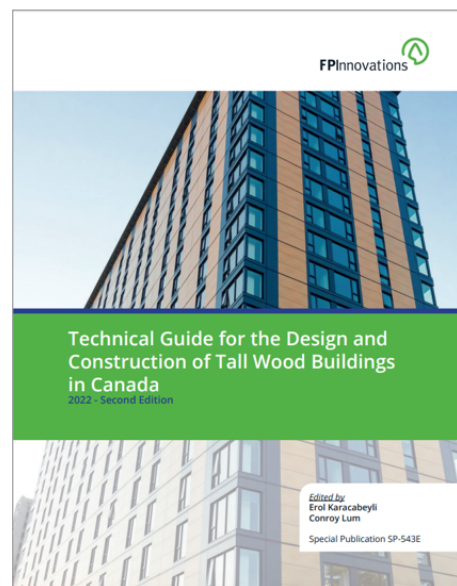
Recently updated to better align with changes to national codes and standards, the guide also shares experiences from recent tall wood projects. Readers will learn how to achieve the best environmental, structural, fire, and durability performance of mass timber products and systems as well as their health benefits.

- [Best Practices Guide to Window and Door Replacement in Wood-Frame Buildings](#) – This video explains the purpose of the Best Practices Guide to Window and Door Replacement in Wood-Frame Buildings. It offers a breakdown of the sections of the guide and is endorsed by industry leaders.

These reports are available online from [BC Housing’s 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 2022, the Building Smart series focused on skills and knowledge necessary for the BC building industry to reach the lower steps of the BC Energy Step Code. This includes air tightness testing, mitigating thermal bridging, evaluating thermal comfort, and key considerations for high performance walls and roofs. In addition, eight new training modules were developed to satisfy the condition for licensed general contractors which ensures builders are prepared to build to Step 3 of the BC Energy Step Code

The Building Smart seminars are available on demand as e-learning modules on the BC Housing website: [BC Housing - Learning On Demand](#)



⁴ Further information can be found at: <https://viennahouse.ca/>



Yalestone: awarded Best Multi-family Low Rise Development at the CHBA Fraser Valley Awards of Excellence for Housing Excellence.

- ▶ Now in its ninth year, BC Housing’s Building Excellence Research & Education Grants program encourages research and education to improve the quality of residential construction. It also focuses on strengthening consumer protection for buyers of new homes in B.C. Projects funded in 2022 included:
 - Developing a dedicated course specific to the EnerGuide Rating System for existing homes to address the unique climate challenges.
 - Producing a decision support tool and provide recommendations for designing BC Energy Step Code compliant buildings to consider future uncertainties, including climate change.
 - Conducting research to understand and identify barriers and challenges to adopt EV charging infrastructure in social housing and Indigenous communities.

For a complete list of projects funded in 2022 or for more information about the grant, please visit our [Building Excellence Research and Education Grant page](#).

- ▶ BC Housing and our project partners won several industry awards in 2022.
 - BC Housing was the recipient of two Construction Achievements and Renovations of Excellence (CARE) Awards: Award for Environmental Achievement, and the Excellence in Creating Housing Affordability award.
 - The Yalestone housing project received the award for Best Multi-family Low Rise Development at Fraser Valley Awards for Housing Excellence.
 - The 330 Goldstream housing project received the award for Best Multi-family Low Rise Development at the Vancouver Island Building Excellence Awards.

MOBILIZING BUILDING ADAPTATION AND RESILIENCE (MBAR)

Mobilizing Building Adaptation and Resilience (MBAR) is a multi-year, multi-stakeholder knowledge and capacity building project led by BC Housing. Over 30 organizations participate and contribute, including national, provincial, and local agencies, and industry partners. In 2022, among other activities, BC Housing worked with MBAR staff on several BC Housing MBAR Roundtable events, including:

- ▶ Financial Solutions
- ▶ Barriers and Enablers
- ▶ Equitable Resilience



**MOBILIZING
BUILDING ADAPTATION
AND RESILIENCE**



330 Goldstream: awarded Best Multi-family Low Rise Development at the Vancouver Island Building Excellence Awards.

INTEGRATED BUILDING ADAPTATION AND MITIGATION ASSESSMENT (IBAMA)

The IBAMA framework incorporates both climate adaptation and mitigation. BC Housing has broadened our definition of climate adaptation and mitigation to consider overall resilience and sustainability, into the design of new buildings at the pre-concept stage.

In 2022 and 2023, BC Housing piloted the IBAMA Framework on three projects with an integrated approach to sustainability and resilience. This process yielded significant successes, some challenges as well as critical learnings.

The 2022-2023 IBAMA pilots are:

- ▶ Vienna House Project in East Vancouver⁵
- ▶ səlilwətał (Tsleil-Waututh) Nation Housing Project in North Vancouver
- ▶ Rosewood Redevelopment in Richmond

The goals of these pilots include:

- ▶ Raising awareness of resilience, incorporating factors when developing the project's design
- ▶ Piloting the IBAMA framework and adjusting based on feedback

These learnings have included a greater need for a financial tool to justify increased investment. In 2023, BC Housing is working with partners to develop a Total Cost of Ownership (TCO) Tool. This new methodology that

uses long-term forecasting to assess the costs and benefits of sustainable and resilient housing could serve as a decision-making tool for capital planning.

Initial pilots suggest that the IBAMA process has various benefits, including:

- ▶ The ability to use future climate weather data
- ▶ Combining resiliency to future climate and seismic hazards with existing building systems
- ▶ A holistic approach to systems with multiple sustainability and resilience benefits, like green storm water infrastructure (e.g. rain garden)
- ▶ Paying more attention to social resiliency and designing buildings that can provide support to tenants during potential future emergencies.

The development of IBAMA was supported by a partnership between BC Housing, the Pacific Institute for Climate Solutions (PICS), the University of Victoria, the University of British Columbia and Simon Fraser University. Each of the three pilots go through three or, in one case, four IBAMA workshops. Attendees include the project consultant team, key BC Housing staff, and others, including municipal experts, etc.



Vienna House Demonstration Image (Credit: PUBLIC: Architecture + Communication).

⁵ Further information can be found at: <https://viennahouse.ca/>



These workshops support the design and ownership teams in navigating the below process:

For more information, this page has links to all information on IBAMA: [Adaptive Mitigation: A Framework for Assessing Climate Change Solutions in Urban Multifamily Buildings | PICS \(uvic.ca\)](#)

To support teams using IBAMA, BC Housing has developed a series of [IBAMA videos](#). These build on the following core resources:

- [IBAMA Primer](#)
- [Excel Sheet](#)
- [Reference Guide](#)

BC Housing has shared the goals and preliminary learnings with industry, government, academic and other audiences through the following avenues or events in 2022-2023:

- Buildex
- Pacific Climate Impacts Consortium
- Regular updates with Climate Action Secretariat, Building and Safety Standards Branch
- BC Housing MBAR network
- BC Non-Profit Housing Association



Creekside Village in Vernon, BC.

SUCCESS STORIES

CREEKSIDE VILLAGE is a two-storey wood-framed senior apartment building built in 1975. Located in Vernon BC, this U-shaped 43,200 square foot building contains 75 suites.

The building completed a full electrification of their space heating system, with new mini split heat pumps providing heating and cooling. The project was completed in January 2022 and achieved around 60 percent GHG emissions reduction.

KINSMEN RAVINE is a 30-unit low-income family townhouse complex located in Surrey, B.C. The site went through a full-electrification upgrade in 2022, with an estimated 90-95 percent GHG emission reduction.

The complex was constructed in 1991 and feature eight two-storey wood-framed buildings. The \$6 million renovation project included complete building envelope and exterior and attic insulation. Renovations also included domestic water re-pipe, kitchen cabinet and flooring replacements, bathroom upgrade, new painting, exterior and interior LED lighting upgrade and transformer upgrades. We installed heat pumps to provide heating and cooling as well as heat pump hot water tanks. We replaced the underground pipes and improved the site. The project started in September 2020 and was completed in May 2022.

In addition, two units were fully transformed into accessible units which are compliant with Canadian Standard Association (CSA) and American with Disability Act (ADA). Automatic doors with push buttons were installed in the accessible units for individuals using wheelchairs.

The GHG emission reduction from this project is estimated to be 40 tonnes a year. This is equivalent to taking nine vehicles off the road.



Mobile Sources

In 2022, our vehicle fleet consisted of 69 fleet vehicles, primarily trucks and vans used by grounds and building maintenance staff. The electric or hybrid equivalent of our ground maintenance vehicles with load requirements are not on the market yet. Office pool vehicles included Smart Cars and hybrid vehicles. Nine percent of our fleet vehicles in 2022 were fuel-efficient.

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. Thirty-nine percent of kilometres driven in Modo cars in 2022 were taken in hybrid and electric vehicles, resulting in greenhouse gas savings.

Our grounds equipment includes, but is not limited to, lawn mowers, leaf blowers, and mobile generators.

In 2022, our greenhouse gas emissions from mobile sources (BC Housing owned fleet vehicles, Modo vehicles, and grounds equipment) totaled 297 tonnes. Greenhouse gas emissions increased by 54 percent compared to our 2010 baseline and increased by 20 percent compared to 2021.

Our grounds equipment fuel consumption has been relatively consistent in the past five years. The mobile emission increase mainly originates from BC Housing Fleet and Modo vehicle emissions.

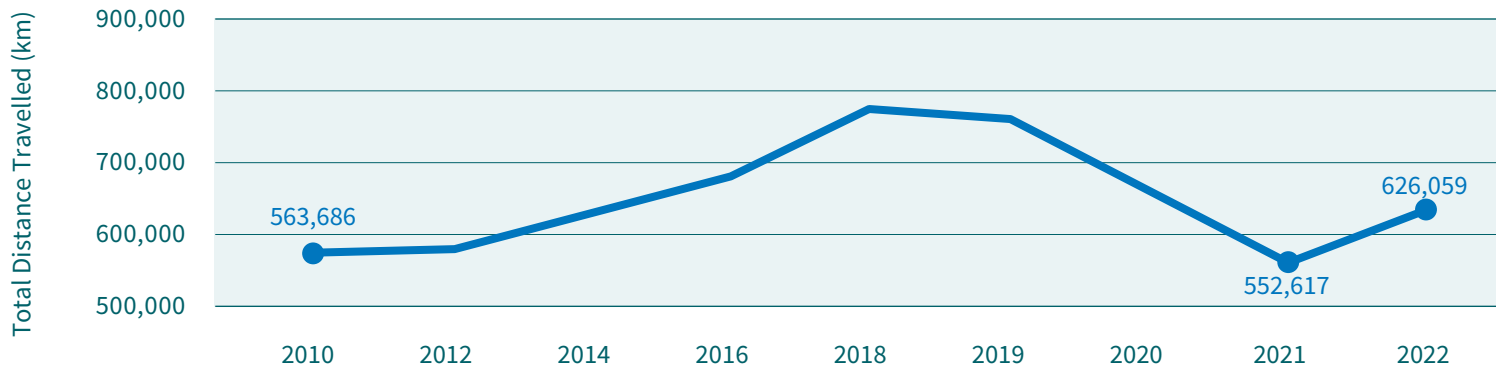
EMISSION SOURCE	2022 GHG EMISSIONS (Tonnes of CO ₂ e)	2022 RESULTS COMPARED WITH THE 2010 BASELINE ⁶	2022 RESULTS COMPARED WITH 2021
Mobile combustion	297	54% increase	20% increase

⁶ Note that the 2010 baseline mobile emissions do not include emissions from Modo vehicles, since BC Housing did not have a Modo account back then.

2022 Fleet and Modo GHG Emissions

The kilometres travelled by BC Housing owned fleet increased by 13 percent in 2022 compared to 2021. The data on kilometres traveled shows that trips and maintenance services are returning to normal levels after the pandemic.

KILOMETRES DRIVEN BY BC HOUSING FLEET, 2010-2022



Our fleet greenhouse gas intensity (GHG emissions per kilometre travelled) increased 11 percent in 2022 compared to 2021. With our services expanding, we added four new vans to our existing stock this year. The electric options of these maintenance vehicles are not yet available on the market.

Employee business travel by Modo vehicles has grown by 40 percent of distance (kilometre travelled) in 2022 compared to 2021, with in-person work-related activities slowly coming back.

When compared to our 2010 baseline, emissions from our fleet have

increased as our organization has grown. Our fleet itself has grown, from 43 vehicles in 2010, to 69 vehicles in 2022 (a 60 percent increase). Note that the emissions from Modo vehicles were not included in the 2010 mobile emissions, since BC Housing did not have a Modo account at that time.

We calculated greenhouse gas emissions for the 2022 reporting year using reported fuel consumption data (and estimation when data was unavailable). Our accounting system recorded 85 percent of fleet fuel consumption. We recognize the significance of including proper fuel data recording on our internal system platform as part of the new staff training.

Actions Taken in 2022

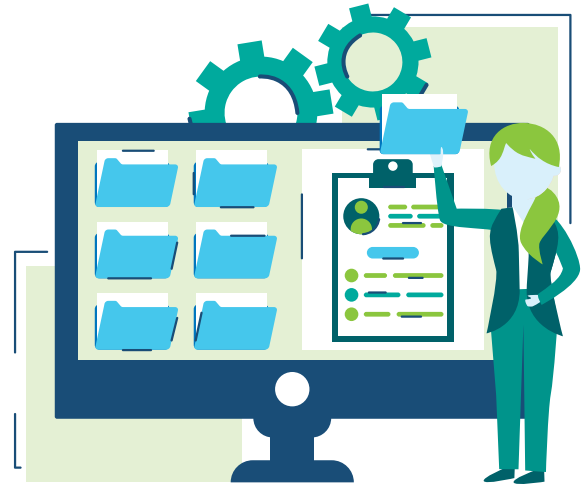
- ▶ BC Housing has embraced hybrid work post-pandemic. We ensured the procedures, policy and infrastructure were in place to facilitate remote working and hybrid teams. We renovated office spaces and designed a booking system for drop-in workspaces, meeting and training. Average carbon emissions due to commuter trips per employee dropped 59 percent in 2022 compared to our baseline year (2009). In 2022, we had the highest personal hybrid and fully electric vehicle use of 16 percent since 2009.
- ▶ We performed regular maintenance on all fleet vehicles to ensure that they are operating as efficiently as possible. When required, we replaced 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 kilometres driven by allocating resources more efficiently and monitoring idling behaviours.

Paper

In 2022, our greenhouse gas emissions for office paper totaled 10.3 tonnes of CO₂e.

Since 2010, our annual greenhouse gas emissions resulting from paper consumption decreased 66 percent. In the past, this was mainly due to efforts to promote a paperless organizational culture and changes to our procurement practices. Our purchasing of paper continued to decline in 2022 due to the shift to teleworking in 2020. In 2022, the organization purchased significantly less paper by weight (24 percent) than in 2021. We saw a corresponding decrease in greenhouse gas emissions due to paper use between 2022 and 2021 (18 percent).

Our greenhouse gas emissions per employee due to paper use decreased 78 percent compared to our baseline year.



2022 Paper GHG Emissions

PAPER	2022 GHG EMISSIONS (TONNES OF CO ₂ e)	2022 RESULTS COMPARED WITH THE 2010 BASELINE	2022 RESULTS COMPARED WITH 2021	2022 RESULTS COMPARED WITH THE 2010 BASELINE, PER EMPLOYEE
	10.3	66% decrease	18% decrease	78% decrease

In 2022, 66 percent of all the paper purchased was 100 percent recycled paper, a nine percent decrease compared to 2021. Based on this finding, BC Housing will communicate with internal stakeholders the important role recycled paper purchases play in our pursuit of sustainable business practices.

Actions Taken in 2022

- ▶ We encouraged staff to reduce printed materials by promoting paperless meetings and giving our printers a default setting of double-sided. As many of our employees continued to work remotely during 2022, they used electronic documents instead of printing as frequently.
- ▶ BC Housing’s Records and Information Centre championed paper reduction in 2022. The COVID-19 pandemic sped up some work with departments to move various file series completely electronic. This was important as large sections of staff began working at home exclusively and still required access to materials.
- ▶ The Human Resources Branch has been digitizing HR functions, moving all systems away from paper-based processes to automated, digitized, and in some cases App-based processes.

This has included scanning all employee files, as well as digitizing

the employee onboarding process including all new employee forms and policy signoffs. Other digitized forms and processes complete or underway include:

- Recruitment Requisition Form
- Employee Change Form
- Payroll Change Form
- Teleworking Agreement
- And others

- ▶ The IT Department launched an IT Modernization project. This strengthens systems and puts tools in place to support greater flexibility in remote and teleworking. Part of this project includes enabling secure digital signatures and secure data collection, as well as supporting digitized systems throughout the organization.

Plans to Continue Reducing Greenhouse Gas Emissions in 2023

Energy Conservation Initiatives and New Construction in the Social Housing Sector

- ▶ The Province of British Columbia has invested \$1.1 billion over ten years to make B.C.'s social housing stock more energy efficient, less polluting and safer. Investments also aim to significantly reduce heating and cooling costs for residents. Of this 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. Other retrofits include fuel switching, building envelope upgrades, and other energy efficiency measures.
- ▶ In 2023, the Energy Efficiency Retrofit Program (EERP) will continue to address the energy efficiency of social housing.
- ▶ In 2023, BC Housing will require whole building energy modelling for all major retrofit projects, in addition to energy audits and electrical load assessments to lead to at least 50 percent greenhouse gas reductions.

The Residential Construction Sector

- ▶ BC Housing will continue to provide education to the residential construction industry 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.
- ▶ We will continue to take action to facilitate the implementation of the BC Energy Step Code, including:
 - Performance monitoring of high-performance social housing buildings meeting high levels of the BC Energy Step Code.
 - Engaging with the design teams early on to establish sustainability target and conduct peer review process to ensure efficient building design
 - Developing other educational materials. This includes 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 B.C.
 - Administering a local government survey to gauge the barriers and successes in adoption of the BC Energy Step Code.
 - Updating our Owner Builder Authorization exam to include questions that address BC Energy Step Code requirements. In addition, our Licensing and Consumer Services department will work



with partners to update general contractor qualification course materials to address new BC Energy Step Code requirements.

- ▶ BC Housing will continue to partner on the Local Energy Efficiency Partnerships (LEEP) project, including the LEEP for Renovations program.
- ▶ In partnership with our research partners, BC Housing will publish additional reports designed to assist the residential construction sector meet market demand and transition to sustainable and resilient design.

Fleet

- ▶ A large percentage of our fleet are trucks and vans that do not yet have electric equivalents available in North America. However, in 2023 BC Housing will research potential funding and collaboration opportunities available to advance the uptake of electric vehicles.
- ▶ In 2023, BC Housing will explore funding options for electric vehicle charging. Our staff achieved the highest personal hybrid & fully electric vehicle use of 16 percent in 2022. Charging stations would encourage sustainable commuting modes among our employees.
- ▶ We will renew staff training on 'green driving' which can result in significant GHG reductions.
- ▶ We will continue supporting the teleworking program with procedure, technical and infrastructural support. We will also explore the trends in BC Housing commuting data and will uncover possible options for reducing single-occupancy vehicle driving.

Paper

- ▶ In 2023, BC Housing will aim at sourcing 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. The livegreen Council will continue to encourage employees to make more sustainable decisions at work, home, and in our communities.
- ▶ We will continue to explore the digitization of our processes so we can transition away from printed documents and the use of paper.





Climate Risk Management

Over the span of 10 years, most of BC Housing’s sustainability work focused on climate mitigation and reducing our greenhouse gas emissions. This has changed in the last few years. Extreme weather events – very poor air quality due to wildfire smoke, extremely hot, record-breaking temperatures, and flooding events, demonstrated that climate change is a social issue. Climate change impacts are already affecting our tenants, buildings, and organization.

BC Housing is taking action to deal with climate change in the following ways:

- ▶ Integrated resiliency as well as Truth and Reconciliation and Equity objectives into our new Sustainability and Resilience Strategy Framework, and 2022/23 Implementation Plan. This has been done in a way that is more incorporated in our corporate planning process, ensuring higher level of accountability across the organization.
- ▶ Conducted a high-level climate risk assessment in 2017. This identified our top risks: hotter and drier summers, warmer and wetter winters, and increased risk of flooding. These could potentially impact the health and safety of tenants, increase operating building costs, and put new demands on our resources. This year we will create a roadmap for a more detailed, building level assessment of our portfolio.
- ▶ Updated and expanded our Extreme Heat and Wildfire Smoke Response Plan in collaboration with health, Emergency Management BC, municipalities and other partners. Key actions areas included:
 - Increasing capacity within the non-profit housing providers sector
 - Building organizational capacity within BC Housing
 - Reducing risks to residents associated with extreme heat and poor air quality due to wildfire smoke in new construction and existing buildings
 - Completing research and engagement, in collaboration with the sector, to better understand the technical and non-technical remedies to alleviate extreme heat and wildfire smoke impacts on residents who live in social housing
 - Collaborating with partners, stakeholders and people living in social housing



- ▶ Researched and published low-carbon, resilient building guides and bulletins for the residential construction industry. We will incorporate this new body of knowledge in training and education for the industry.
- ▶ In 2017, we published a Climate Adaptation Framework. The Framework was our first step in recognizing that many of the impacts of climate change are here for the foreseeable future. The Framework also highlighted that BC Housing must act on the climate change impacts already affecting our work and communities across B.C. The adaptation framework helps us prepare and respond to those changes in weather patterns and to unprecedented extreme weather events.
- ▶ Our new Sustainability and Resilience Framework released in 2021 closely aligns our work on mitigation and adaptation. This ensures our efforts go towards reducing our contribution to climate change and other sustainability and social crises, while also ensuring the resilience of our housing and communities.

PLANS TO CONTINUE THIS WORK IN 2023

- ▶ In 2023, BC Housing will continue to engage with tenants and residents affected by extreme weather and work with the non-profit housing sector on managing extreme heat and poor air quality due to wildfire smoke in affordable housing. We will do this with our partners the BC Non-profit Housing Association (BCNPHA), health authorities, Emergency Management BC, local government and communities, and others.
- ▶ In 2023, BC Housing will continue to implement the Extreme Heat and Wildfire Smoke Response Plan. This will help reduce the risk for individuals living in social housing and accessing shelters and transition homes, and those who are unsheltered. It will recommend changes for constructing renovating buildings so that they take into account the current and future climate – which is already very different than our past climate. We will continue to update our Building Standards and Construction Guidelines. We will also carry out relevant research to reflect and address the increasing risks of extreme weather driven by climate change.
- ▶ Scaling up the collaborative, multi-year knowledge and capacity building research project: Mobilizing Building Adaptation and Resilience (MBAR). This project aims to help people protect their homes and buildings from climatic changes and seismic shocks. Pilot projects access resources and renovation, design expertise to help buildings stay comfortable, safe and resilient, even with heavier rainfall, hotter summers, wildfires, flooding, and windstorms. Based on the pilot projects, a new body of knowledge has been generated and shared with the industry through publications, training and roundtables.

We will offer learning opportunities related to barriers and benefits of implementing specific resiliency measures. BC Housing will continue working with the existing and new MBAR pilot projects, academic, industry and other partners, to share the best practices.

Other Sustainability Initiatives

Strategic Planning

In 2021, BC Housing released our new Sustainability and Resilience Framework. The Framework shows how BC Housing's sustainability and resilience work supports and advances the organization's Mission, Vision and Values. It also deepens our understanding of sustainability, especially social sustainability. We started developing the Framework in 2019. At this time, BC Housing reviewed our existing livegreen Sustainability Plan and related sustainability projects across the organization. The review included an assessment of policy, governance, decision-making and reporting within the context of best practices and global trends. It involved consultation with an internal advisory group, the executive team, and engagement with 25 percent of BC Housing staff through regional workshops and interviews.

This work continued in 2022 with planning sessions for internal stakeholders. This led to the development of performance measures, targets, and an Implementation Plan. The Plan details actions needed to move BC Housing in the direction of our goals over the next three years.

Plans to Continue This Work in 2023

In 2023, BC Housing will launch our new Sustainability and Resilience Strategy, building on the Sustainability and Resilience Framework and Implementation Plan. This Strategy recognizes the system-wide impacts of decision-making and the social, environmental, and financial implications of all BC Housing decisions. If successful, the Strategy will enhance the organization's ability to address the housing crisis and the ecological crisis at the same time. It will ensure that we are aware of the links between capital funding and ongoing operating costs when making decisions related to sustainability and resilience measures.

The Sustainability and Resilience Strategy is also an opportunity to protect our organization and the Community Housing sector from future shocks and stresses. It also helps to protect our investments over time. This Strategy will drive innovation and leadership in the housing and construction sectors. Finally, it will more strongly align our values and the outcomes of our work. As we move forward, we acknowledge that the Strategy will be a living document, supporting our organization and sector to learn and improve over time.



Livegreen council's Penticton shoreline clean up in 2022.



Richmond Sharing Farm 2022, BC Housing staff harvesting celery for the food bank and families in need.

Employee Engagement

Employee engagement continued to be important in 2022, as many employees were working from home. Our employee green team, the livegreen Council, plays a key role in encouraging sustainable employee behaviour both in the workplace and at home. They help 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.

In 2022, our livegreen council gave employees a chance to engage on sustainability initiatives. With so many employees working from home, the events provided employees with an opportunity to connect socially with their colleagues, improving moods and fostering connections. The importance of nature was also highlighted for many around the province, as we found ways to explore safely outdoors and connect with nature.



In 2022, our livegreen events included:

► **Farm Work Day**

Staff participated in a fall farm harvesting activity. BC Housing's Victoria team visited Newman farm, which is part of Farmlands Trust Society's food redistribution initiative, "field to plate". Their aim is to grow, harvest and donate fresh local produce to those experiencing food insecurity.

The home office team volunteered at the Richmond Sharing Farm. The non-profit organization that produces organic fruits and vegetables year-round to donate to those in need via the Richmond Food Bank and community meals programs. Staff and family members harvested nearly 950 lbs of celery.

► **Shoreline Cleanup in Vancouver, Victoria and Penticton**

BC housing organized three shoreline cleanup events in Vancouver, Victoria and Penticton in August and September 2022. The three teams collected a total of 51 pounds of garbage and recyclables, including more than 3,000 cigarette butts, and 500 plastic pieces.

By 2050, ocean plastic will outweigh the ocean's fish. The shoreline cleanup offered the opportunities for employees to put citizen science into action. Tips to help reduce plastic pollution, the impact of plastic pollution and personal plastic consumption calculator were shared among the employees.

► **Go By Bike Week**

Even though many of our staff are no longer commuting daily, they did have a chance to participate in "Go-by-Bike Week", encouraging and supporting cycling for errands and exercise in addition to commutes. 25 employees participated in the campaign in May. Information and articles were shared on the benefits of cycling for physical and mental health, and the reductions in greenhouse gas emissions from vehicle use. We also held Bike to Shop Week in July.

► **Meatless Monday Campaign**

During our "Month of Meatless Mondays" campaign, staff swapped vegetarian and vegan recipes. Colleagues had the opportunity to join online cooking classes, hosted from employee households. Nineteen participants took the pledge abstain from eating meat one day per week for four weeks and saved approximately 276kg of CO₂ and 20,216 gallons of water

► **30 x 30 Nature Challenge + Photo Contest**

Our annual 30 x 30 Nature Challenge encouraged employees to commit to spending 30 minutes a day outside, every day for 30 days. Nature-related photos, poems and drawings were shared among our staff.

► Virtual Lunch and Learns on various topics

► Other Gardening activities

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 nine consecutive years. We have been recognized as a Transformational Company by Canadian Business for Social Responsibility.



Staff participated in Meatless Mondays campaigns in 2022.

PLANS TO CONTINUE THIS WORK IN 2023

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. As a pilot for the 2022-2023 fiscal year, the livegreen council agreed to focus its activities on the following three major sustainability issue areas:

- Climate Change Mitigation and Adaptation
- Pollution Prevention (Waste, Plastics, and Chemicals)
- Protection of Biodiversity and Appreciation of Nature

Further, it was emphasized that social sustainability (Equity Diversity Inclusion and Belonging, Truth & Reconciliation, and Accessibility) be a lens applied to all activities in attempt to avoid creating any barriers to inclusion, This helps to actively work towards a more socially sustainable organization and society.

CORPORATE SUSTAINABILITY AND RESILIENCE EDUCATION

Micro-credential course offered through Royal Roads University

In 2022, BC Housing connected interested staff with the “Climate Change Adaptation Fundamentals” course offered through Royal Roads University. This course provides learners with an overview of the current state of knowledge on climate. It also offers participants a grounding in the core concepts supporting climate change adaptation. In 2022, over 20 BC Housing staff took this course, helping build climate adaptation capacity at BC Housing.

Olympic Village Tour

BC Housing’s Sustainability & Resilience team organized a tour of the Olympic Village neighbourhood in collaboration with the City of Vancouver and the Co-operative Housing Federation of BC.

The purpose was to learn from some of the major sustainability and resilience strategies and technologies used at Olympic Village, particularly passive cooling and blue & green infrastructure. The tour invited 20 professionals with a combination of BC Housing staff, BC Housing consultants and contractors. Participants from the other organizations helped to lead and develop the tour.



Chris Higgins, Senior Green Building Planner at City of Vancouver, speaking about the challenges to the City’s False Creek Neighborhood Energy Utility.

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.

We are collaborating with other partners to pilot social procurement on one of our projects.

Community Connections

BC Housing’s employee-led community investment program, Community Connections had another record-smashing year in 2022, with staff raising over \$408,000 for 108 different charities. Since the start of the program in 2008, close to \$2.8 million has been raised for local charities contributing to environmental, social, and economic sustainability programs in local communities in tangible ways. Through the program’s Employer Supported Volunteerism component, BC Housing staff volunteered for the Coldest Night of the Year, Community Cleanup, Food Banks and other volunteerism.

Further Resources

For information about BC Housing’s work on Sustainability and Resilience please visit:

[Sustainability with livegreen | BC Housing](#)

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



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