From: "Mochrie, Paul" <Paul.Mochrie@vancouver.ca>
To: "Direct to Mayor and Council - DL"
Date: 11/5/2021 12:33:27 PM
Subject: CEAP Annual Report : Follow Up on Council Questions
Attachments: Vancouver GPC BASIC 2020 Inventory Summary.pdf
2021-ceap-annual-report.pdf
Status of Climate Related Upgrades to City Owned Buildings.pdf
Vancouver CDP Disclosure.pdf
Vancouver Fleet Summary.pdf
CEWG - Member Biographies.pdf

Dear Mayor and Council,

This note is a follow up to the November 3rd first annual update on the Climate Emergency Action Plan and provides additional details requested by Council. If you feel anything is missing please let me know.

Q1: Why is there a discrepancy between what CEAP and REFM reports for CoV owned building energy use?
A1: REFM reports on city owned buildings and CEAP reports on city owned stationary GHG sources, which includes city owned buildings, the NEU and the asphalt plant. Please find attached **2021- CEAP annual report.pdf** dashboard which includes a new footnote clarifying this difference.

Q2: What is the status of the funds council made available for city owned facility energy upgrades?
A2: The Energy Optimisation budget for civic facilities has been fully allocated and projects are at various stages of construction with approximately 75% of the budget spent to date. Please see attached **Status of Climate Related Upgrades to City Owned Buildings.pdf** for details.

Q3: Please provide a summary of City fleet electrification numbers.
A3: Please find attached **Vancouver Fleet Summary.pdf**

Q4: Please provide Vancouver's public carbon disclosure information.
A4: Attached is the **2021-ceap-annual-report.pdf** that contains Vancouver's carbon data. As well, in Vancouver's Statement of Financial Information found here: **Council - Report - 2020 Statement of Financial Information - March 30, 2021 (vancouver.ca)** please see on pages 29-39 Vancouver's report in response to the Task Force for Climate-Related Financial Disclosures. Also, please find attached the **Vancouver CDP Disclosure.pdf** which is Vancouver's annual report for the Carbon Disclosure Project, which is the international climate reporting standard for all levels of government and businesses. Lastly, please find attached a Global Protocol for Community Scale GHG Inventory summary page for scopes 1, 2 and 3 – **Vancouver GPC BASIC 2020 Inventory Summary.pdf**.

Q5: Please provide a list of members for the Climate Equity Working Group.
A5: Please find attached the **CEWG – Member Biographies.pdf**

Point of Clarification #1:
Staff were asked the status of work that was previously coordinated under Greenest City that is not included under Climate Emergency. Staff's response was that the work was 'on pause' awaiting the outcome of Vancouver Plan. This answer is unclear and incomplete. Staff should have said that the centralized coordination of this work under a unified environmental plan is 'on pause' awaiting Vancouver Plan outcomes. However many standalone projects related to this work continue to progress successfully. This includes work on local food, circular economy, zero waste, biodiversity, water conservation, air quality and green jobs.

Point of Clarification #2:
In response to a question about the learnings from the public reaction to the Climate Emergency Parking Program, the answer from staff may have given the impression that we will be moving slowly on all future transportation projects. The answer was intended to be specific to our work on transport pricing, where our timeline is intentionally spread over a longer timeline to give more time for engagement and analysis on a complex and challenging topic. For other projects, we will move at an appropriate pace for the project, noting we need to find ways of moving relatively quickly to make changes

at a pace aligned with our Climate Emergency targets.

Best,
Paul

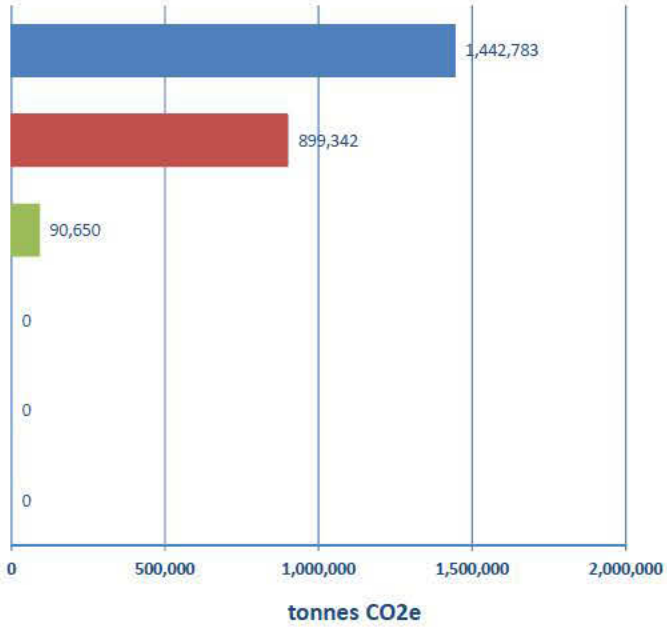
Paul Mochrie (he/him)
City Manager
City of Vancouver
paul.mochrie@vancouver.ca

The City of Vancouver acknowledges that it is situated on the unceded traditional territories of the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh (Squamish), and səlilwətaɬ (Tsleil-Waututh) Nations.

SUMMARY

NAME OF CITY:	Vancouver, Canada	**POPULATION:**	653,886
BOUNDARY:	BASIC	**LAND AREA (km2):**	115
INVENTORY YEAR:	2020	**GDP (US$ million):**	42,791

tCO2e	BASIC	Scope 1	Scope 2	Scope 3
	Stationary	1,382,281	60,502	
	Transportation	899,342		
	Waste			90,650
	IPPU			
	AFOLU			
	Other Scope 3			
	TOTAL	2,432,775		



Intensity indicators	Per capita	Per unit land area (km2)	Per unit GDP (US$m)
Emissions	3.7	21,160	57

CLIMATE EMERGENCY ANNUAL REPORT

2021 INDICATOR AND FINANCIAL DASHBOARD

CITY OF VANCOUVER | Vancouver Plan | CLIMATE EMERGENCY

Unsplash | Ben Kuo

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Abbreviations

BM	Big Move
CEAP	Climate Emergency Act on Plan
ENG	Engineering Serv ces
FRS	Finance, Risk and Supply Chain Management
HR	Human Resources
PDS	Planning, Urban Design and Sustainabil ty
REFM	Real Estate and Facilities Management

CURRENT LIKELIHOOD OF MEETING TARGETS

City staff have assessed the current likelihood of meeting each of the Big Move targets and assigned a rating of high, medium, and low. The ratings are based on pressures such as policy decisions that have been made by the City of Vancouver and other levels of government; the degree of controversy anticipated for future policy decisions; funding availability; and staff resources. Council decisions related to Climate Emergency actions in 2021/2022 will influence these ratings (see below).

More information can be found under each Big Move section.

1	2	3	4	5	6
COMPLETE WALKABLE NEIGHBOUR-HOODS	ACTIVE TRANSPORTATION & TRANSIT	ZERO EMISSIONS VEHICLES	ZERO EMISSIONS SPACE & WATER HEATING	LOW CARBON MATERIALS & CONSTRUCTION PRACTICES	RESTORED COASTS & FORESTS
MEDIUM	LOW	LOW	MEDIUM	HIGH	LOW

UPCOMING COUNCIL DECISIONS 2021-2022

Nov 2021

Streamlining Rentals **BM1**

Heritage Energy Retrofit Grant **BM4**

TBD Nature-Based Climate Solutions **BM6**

Q1 2022

Parking Standards for New Development including Open Option Parking **BM2**

EV Charging Gas Stations + Parking Lots **BM3**

EV Charging Under-Sidewalk **BM3**

GB Policy For Rezonings **BM4/5**

Q2 2022

Transport Pricing Progress Update* **BM2**

Carbon Pollution Limits Detached Homes **BM4**

Carbon Pollution Limits Large Buildings **BM4**

Mass Timber Barrier Removal **BM5**

Vancouver Plan **BM1**

Broadway Plan **BM1**

ʔəy̓almɔxw/Iy̓álmexw/ Jericho Lands Policy Statement **BM1**

Q3 2022

Climate Justice Charter **BM1-6**

* *For information only; no Council decision needed*

HEADLINE INDICATORS

Headline indicators summarize the high-level impacts of the outcomes and actions within each Big Move on overall community-level carbon pollution and green jobs growth.

Headline		Baseline		Current			Target		Notes
Carbon pollution* (community, total)	tCO_2e	2,859,119	2007	**2,432,775**	**-15%**	2020	-50%	2030	Overall carbon pollution dropped significantly in 2020. A sudden dip in transportation-related emissions occurred due to decreased resident activity during the COVID-19 pandemic.
Carbon pollution* (community, transportation)	tCO_2e	1,032,809	2007	**899,783**	**-13%**	2020	-50%	2030	
Carbon pollution* (community, buildings)	tCO_2e	1,609,874	2007	**1,442,783**	**-10%**	2020	-50%	2030	
Embodied carbon in new construction (community)	embodied tCO_2e	TBD	2017	**TBD**			-40%	2030	Staff are exploring data collection methods to enable measurement.
Growth rate of green jobs (vs. growth rate of all jobs)	jobs	TBD		**TBD**			TBD increase	TBD	Staff are working on determining appropriate survey instrument and frequency to collect this data.

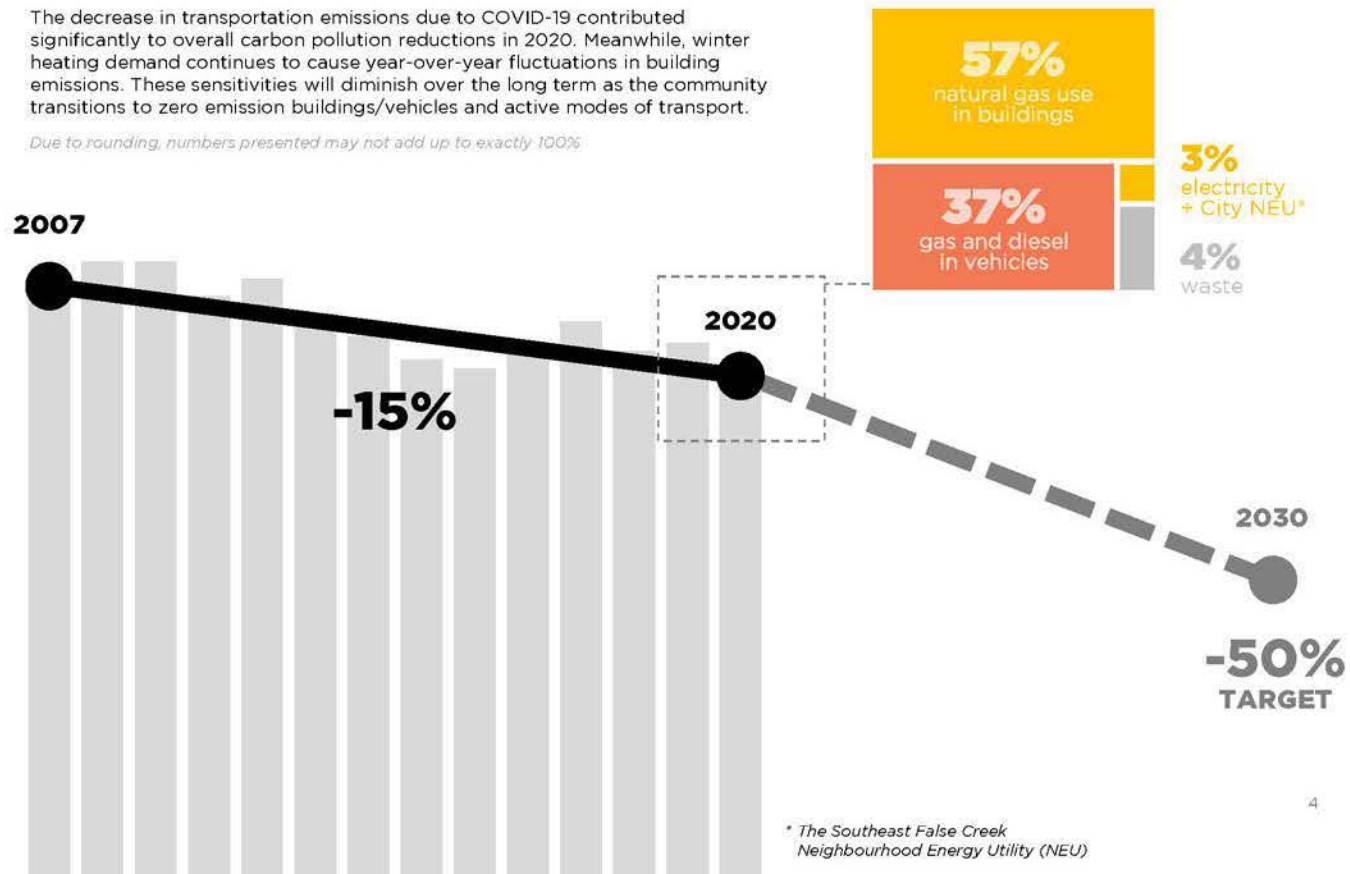
* *Carbon pollution figures reported under the Greenest City Action Plan were compiled to an older, then-relevant standard (the ICLEI Emissions Analysis Protocol). Going forward, CEAP reporting will use the Global Protocol for Cities (GPC) Basic protocol, comprising Scope 1 and 2 "Stationary", Scope 1 "Transportation", and Scope 3 "Waste" greenhouse gas emissions. This new protocol does not omit any data from the previous standard. All annual totals going back to our 2007 baseline year have been revised.*

Community-wide carbon pollution decrease (15%) is more than the declines achieved in transportation (13%) and buildings (10%) because the community-wide number also includes the carbon pollution from waste disposal and treatment, which dropped by 58% between 2007 and 2020. .

Vancouver's Carbon Pollution in 2020

The decrease in transportation emissions due to COVID-19 contributed significantly to overall carbon pollution reductions in 2020. Meanwhile, winter heating demand continues to cause year-over-year fluctuations in building emissions. These sensitivities will diminish over the long term as the community transitions to zero emission buildings/vehicles and active modes of transport.

Due to rounding, numbers presented may not add up to exactly 100%



* *The Southeast False Creek Neighbourhood Energy Utility (NEU)*

EXPENDITURES, SAVINGS, AND REVENUE

Climate Emergency Action Plan-related capital projects, 2021

Year-to-date (YTD) spend/committed, $M, current as at October 14, 2021

Expenditures, $M	Projected, 2021	Actual, YTD 2021	% Actual YTD vs Projected, 2021	Projected, 5yr cumulative	Actual, 5yr cumulative	% Actual YTD vs Projected, 5yr cumulative
BM1 Complete Walkable Communities	-	-	-	70.0	-	0%
BM2 Active Transportation + Transit	38.25	18.04	47%	288.40	18.04	6%
BM3 Zero Emission Vehicles	1.30	0.89	69%	77.90	0.89	1%
BM4 Zero Emission Space + Water Heating	18.50	14.83	80%	56.60	14.83	26%
BM5 Low Carbon Construction Materials	-	-	-	3.20	-	0%
BM6 Carbon Sequestration	-	-	-	0.35	-	0%
Finance, Equity, Indicators	-	-	-	70.0	-	0%
TOTAL	**$58.05**	**$33.77**	**58%**	**$496.45**	**$33.77**	**7%**

Savings and Revenue, $M*	Actual**, YTD 2021	Projected, 5yr cumulative	Actual**, 5yr cumulative	% Actual YTD** vs Projected, 5yr cumulative
Cost Savings	*10.00*	25.00 – 50.00	*10.00*	*20-40%*
Grants	4.33	25.00	4.33	17%
New Revenue	-	45.00 – 50.00	-	0%
TOTAL	***$14.33***	**$95.00 – 125.00**	***$14.33***	***11-15%***

* *Not shown is a $95–125M gap that will need to be addressed through the 2023-2026 City capital planning process. Staff also continue to explore ways to close the gap in Climate Emergency funding, through cost savings"; senior government and external-partner funding opportunities; and potential new City revenue sources. Depending on the outcomes of this work, this financial framework may be revised in 2022-2023.*

** *Figures in italics are estimated rather than actual, e.g., cost-savings figures are based on conservative estimates of business-as-usual service-delivery levels.*

For the full Climate Emergency financial framework, see Appendix L of the Climate Emergency Action Plan report to City Council, available at ***vancouver.ca/climateemergency***

BIG MOVE 1 Complete, Walkable Communities

90% of people live within an easy walk/roll of their daily needs.

Outcomes

Indicator	Baseline	Current	Target	Notes

Indicator(s) to be determined as part of Vancouver Plan

Actions

Action	
1.01	Reduce Reliance On Motor Vehicles in the Broadway Plan and Other Planning Areas
1.02	Consider New Actions Through Vancouver Plan To Support Walkable, Complete Communities

Milestones

Current likelihood of meeting targets MEDIUM

As part of Vancouver Plan, the City is exploring updated policies and land use options that consider how we can provide more opportunities for more people to live within walking distance of their daily needs. Decisions to add new housing can be challenging, so it is uncertain if Vancouver Plan will deliver on the scale of change needed to get on track for our Big Move 1 target.

Action	Milestone		Due Date		Responsible	Progress
1.01	Action	We will bring forward recommendations to advance walkable, complete communities with the Vancouver Plan.	2022	-	PDS	Underway
1.02	Action	We will identify near-term actions to support existing neighbourhood retail/commercial amenities (including corner stores) in response to recent Council direction and as part of the Employment Lands and Economy Review.	2020	Q4	PDS	Complete
	Action	We will incorporate a target in plans for areas close to rapid transit stations for at least 80% of trips to be made on foot, bike or transit by 2030.	2021	-	PDS	Underway
	Action	We will implement the new Secured Rental Policy to provide opportunities for secured rental housing in proximity to school, parks and shops.	2021	Q4	PDS	Underway
	Action	We will update Home-Based Business regulations to provide additional flexibility for residents to work from home and for new services/amenities to be provided in residential areas.	2022	Q3	PDS	Underway
all	Equity	We will prioritize equity concerns within Vancouver Plan working groups, and via a dedicated working group focussed on Vancouver Plan policies. More details will be shared with Council as part of the Vancouver Plan.	-	-	PDS	Complete

BIG MOVE 2 Active Transportation and Transit

By 2030, two thirds of trips in Vancouver will be by active transportation and transit.

Outcomes

Indicator		Baseline		Current		Target		Notes
Sustainable mode share*	trips	48%	2017	**44%**	2020	67%	2030	2020 resu ts were abnormally impacted by the sudden decline of res dent trips across all modes due to the COVID-19 pandemic.
AAA bikeways**	km	82	2017	**97**	2020	TBD increase	TBD	
Bus-lane network	bus-lane kilometre-hours***	394	2019	**503**	2020	TBD increase	TBD	
Resident registered vehicles	veh cles	311,739	2016	**330,497**	2020	TBD decrease	TBD	
Vehicle kilometres travelled (VKT)	km/resident	5,950	2007	**3,600**	2020	TBD decrease	TBD	

Additional indicator(s) to be determined on approval of policies and programs.

* *Vancouver-resident trips made by walking, cycling, or transit*
** *Total includes some greenway segments with cycling infrastructure that substantially meets the city's All Ages and Abilities (AAA) guidelines*
*** *A kilometre-hour measures the spatial length of the bus-lane network, as well as overall hours of operation.*

Actions

Action	
2.01	Implement Transport Pricing in the Metro Core
2.02	Expand And Improve Our Walking/Rolling, Biking Network
2.03	Improve Bus Speed And Reliabil ty
2.04	Encourage More Walking, Biking And Trans t Use
2.05	Promote Remote and Flexible Work Options
2.06	Eliminate Minimums and Introduce Maximums for Parking in New Developments
~~2.07~~	~~Implement Res dential Parking Permits C ty-Wide~~ Not Approved

For the full list of Climate Emergency actions and draft indicators, see Appendix M of the Climate Emergency Action Plan report to City Council, available at ***vancouver.ca/climateemergency***

BIG MOVE 2 Active Transportation and Transit

By 2030, two thirds of trips in Vancouver will be by active transportation and transit.

Milestones

Current likelihood of meeting targets LOW

Our work to support active transportation and transit needs to scale up considerably to meet our 2030 target. That scaling-up will require an increase in investment. The decision to not implement the Climate Emergency Parking Program means we have a significant gap in the overall CEAP financial framework. That gap is particularly important for Big Move 2 because the actions are largely reliant on City investment.

Action	Milestone		Due Date	Responsible	Progress
2.01	Action	We will launch the "explore" phase of a feasibility study for Transport Pricing to determine the interests and concerns of stakeholders, analyze baseline conditions, develop an evaluation framework and scenario building blocks (technologies, pricing structures, regulatory review).	2022 Q2	ENG	Underway
	Equity	We will complete analysis to identify existing inequities in Vancouver's transportation system; this will inform future phases of the Transport Pricing strategy.	2022 Q2	ENG	Underway
	Action	We will identify the required technology and system architecture, and will have developed a financial plan that identifies upfront investment needs, operating and maintenance, and revenue flows.	2024 Q2	ENG	Not Started
	Equity	We will include in the preferred pricing strategy potential affordability and fairness mitigation options embedded into the pricing structure to ensure a more equitable transportation system for all.	2024 Q2	ENG	Not Started
	Action	Council to decide on an approved preferred pricing strategy, to move forward into implementation.	2024 Q4	ENG	Not Started
	Action	Subject to Council approval, we will implement a transport pricing system in the city centre.	2026 Q1	ENG	Not Started
2.02	Action Equity	We will work with Vancouver Bike Share to add e-bikes to Vancouver's public bike share system to reduce cycling barriers to people of different ages, genders, and physical abilities.	2021 -	ENG	Underway
	Equity	We will further expand Mobi's successful equity program, offering $20 (or free) annual memberships, in-person sign ups and training and cash payment options through a network of community partners.	2022 -	ENG	Underway
	Equity	We will further develop equity analysis (e.g., mapping) to inform the 5-year Cycling Network Plan, to ensure underserved areas are considered.	2022 -	ENG	Underway
	Equity	We will further develop equity analysis (e.g., mapping) to inform the Walking Plan, to ensure underserved areas are considered.	2022 -	ENG	Underway
	Action	We will update the 5-year Cycling Network Plan.	2022 -	ENG	Underway
	Action	We will develop a 5-year Walking Priority Map.	2022 -	ENG	Underway
2.03	Action	We will develop the Transit Priority Implementation Plan to guide bus speed and reliability improvements.	2021 -	ENG	Underway
	Action	We will have implemented transit priority measures on five key corridors across the city, materially improving the bus speed and reliability for those routes.	2025 -	ENG	Underway
	Equity	We will further develop equity analysis (e.g., mapping) to inform bus transit route prioritization, selection and improvements, underserved areas are considered.	2025 -	ENG	Underway
2.04	Equity	The TDM Action Plan will embed a commitment and strategy to advancing equity by ensuring that the needs of disproportionately impacted communities are actively planned for. Regular data collection and engagement with disproportionately impacted communities will help to ensure that programs and initiatives are designed to best meet their needs.	2021 -	ENG	Complete
	Action	We will develop campaigns, resources, and guidance that promote active and sustainable transportation options, services, and programs for the public and for employers.	2021 -	ENG	Underway
	Action	We will work with the Vancouver School Board and independent/private schools to improve active travel infrastructure around schools. This includes consultation with 4-6 schools per year to understand the school's active travel challenges and develop customized action plans. Typical upgrades include marked crosswalks, flashing beacons, sidewalk, bulges, speed humps and parking/traffic signage changes.	2022 -	ENG	Underway

BIG MOVE 2 Active Transportation and Transit

By 2030, two thirds of trips in Vancouver will be by active transportation and transit.

Milestones

Action	Milestone		Due Date		Responsible	Progress
2.05	Action	We will create a Remote and Flexible Work Toolkit and promote t to employers.	2020	Q4	ENG	Complete
	Action	We will prov de additional resources, guidance and incentives to help employers sh ft and sustain employees to more frequent remote or flexible working, where possible.	2021	-	ENG	Underway
	Action	We will work w th VFRS and Local 18 to design a sustainable commuting trial based on the Fire Fighter 24 Hour Shift Schedule (COVID-19 response) and bring forward recommendations to Council.	2022	Q1	PDS	Underway
2.06	Action	We will seek Council approval to change the Parking By-Law to eliminate parking minimums in new developments (except where there are accessibility needs), and expand TDM requirements.	2022	Q2	ENG	Underway
	Equity	We will do analysis to help us understand equity concerns related to parking maximums, in order to ensure they do not inequ tably burden residents. Changes to the Parking By-Law will take accessibility into account for those living with disabil t es or mobil ty issues.	2022	-	ENG	Underway
	Action	We will seek Council approval to change the Parking By-Law to include parking maximums in new developments.	2022	Q2	ENG	Underway
~~2.07~~	~~Action~~	~~We will bring forward the first stage of establ shing residential permit parking in all Vancouver ne ghbourhoods across Vancouver and all relevant by-law changes to Council. This system will be integrated with a carbon pollut on surcharge~~	~~2021~~	~~Q4~~	~~ENG~~	Not Approved
	~~Equity~~	~~The in tial implementat on of city-w de parking permits in 2021 will focus on low-cost parking permits. f future iterat ons of the program (mid-2020s) incorporate more market-based systems, we will cons der potential discounts for d sproportionately impacted communities~~	~~TBD~~		~~ENG~~	Not Approved

BIG MOVE 3 Zero Emission Vehicles

By 2030, 50% of the kilometres driven on Vancouver's roads will be by zero emission vehicles.

Outcomes

Indicator		Baseline		Current		Target		Notes
Vehicle-kilometres travelled (VKT) by ZEVs (vs. total VKT)	km	TBD		**TBD**		50%	2030	Dependent on data sources becoming available in future (e.g., vehicle odometer readings, improved survey instruments, etc.)
Registered ZEVs (vs. all resident registered vehicles)	vehicles	0.3%	2016	**2.0%**	**2020**	TBD increase	2030	

Additional indicator(s) to be determined on approval of policies and programs.

Actions

Action	
~~3.01~~	~~Implement a Carbon Pollution Surcharge on Residential Parking Permits City-wide~~ — Not Approved
3.02	Expand The Public Charging Network
3.03	Increase EV Charging Infrastructure on Private Property
3.04	Support Charging Infrastructure For Passenger Fleets

Milestones

Current likelihood of meeting targets LOW

While the early uptake of electric vehicles in Vancouver is encouraging, that transition needs to accelerate significantly to meet our 2030 target. The carbon pollution surcharge in the Climate Emergency Parking Program was designed to accelerate the uptake of EVs, and the decision to not implement the Parking Program means that we won't have access to that tool. We also have a gap in the CEAP financial framework, which will make it difficult to provide the range of public charging options needed to support residents and businesses that don't have reliable access to home or workplace charging.

Action	Milestone		Due Date		Responsible	Progress
~~3.01~~	~~Action~~	~~We will bring forward the first stage of establishing carbon pollution surcharges in conjunction with the city-wide residential parking permit system. All relevant by-law changes will be made at this time.~~	~~2021~~	~~Q4~~	~~ENG~~	Not Approved
3.02	Equity	We will identify key disproportionately impacted communities and begin engagement on an equity strategy for EV charging infrastructure.	2021	Q1	PDS	Not Started
	Action	We will complete Phase 1 of the City's DC fast-charging network for EVs.	2021	Q1	PDS	Underway
	Action	We will provide a mechanism for the public to safely use Level 1 extension cords crossing sidewalks for EV charging.	2021	Q2	PDS	Underway
	Equity	We will develop site design guidance to ensure that new EV charging stations will better accommodate persons living with disabilities or mobility issues.	2021	Q3	PDS	Not Started
	Action	We will design and initiate light-pole charging and near-home off-street charging pilot projects, including a data collection plan.	2021	Q3	PDS	Underway
	Equity	We will determine and assess the intersecting priorities of retrofits on private property, public charging, and/or other charging locations (as suggested by disproportionately impacted communities). This will inform our equity strategy and guide implementation.	2021	Q4	PDS	Not Started
	Action	We will install 35 additional public Level 2 charging stations at public-facing, City-owned amenities, as set out in the 2016 EV Ecosystem Strategy.	2021	Q4	PDS	Underway

BIG MOVE 3 Zero Emission Vehicles

By 2030, 50% of the kilometres driven on Vancouver's roads will be by zero emission vehicles.

Milestones

Action	Milestone		Due Date		Responsible	Progress
3.02	Act on	We will complete film industry power k osk Phase 1 and Phase 2 pilot projects.	2021	-	PDS	Underway
	Act on	We will develop a Neighbourhood Charging Strategy that prov des charging in areas where residents do not have access to off-street home charging and create a more equ table distribution of charging opportunities.	2022	-	PDS	Not Started
	Act on	We will install 10 add t onal stations in Phase 2 of the City's DC Fast Charging network.	2023	-	PDS	Not Started
	Act on	We will develop a power supply and implementat on plan for film, food trucks, and special events.	TBD	-	PDS	Underway
3.03	Act on	We will develop new construction standards and a compliance mechanism for new non-residential buildings.	2021	Q2	PDS	Complete
	Equity	The new construct on standards and compliance mechanism for non-res dential buildings will ensure EV charging is accessible to those who currently have no access to EV charging.	2021	Q3	PDS	Underway
	Act on	We will bring new construction standards for all forms of non-residential buildings to Council for approval.	2021	Q3	PDS	Complete
	Act on	We will do analysis and consu t w th interested stakeholders about business l cense fees that encourage the installation of EV charging.	2021	Q4	PDS	Underway
	Act on	We will update our Transportat on Demand Management Pol cy with respect to car-sharing in new buildings to require that all such vehicles be zero emiss ons, and that requirements include electr c vehicle charging infrastructure as appl cable.	2022	-	PDS	Complete
	Equity	We will identify key barr ers to retrof tting lower- and m ddle-income res dent homes to support EV charging, with a focus on reducing barr ers in rental buildings and older buildings.	2022	-	PDS	Not Started
	Act on	We will develop a long-term EV charging retrof t strategy for res dential buildings.	2022	-	PDS	Not Started
	Act on	We will implement a program to drive retrof ts for EV charging in multi-unit rental buildings.	Ongoing		PDS	Underway
	Equity	Adjustments that encourage EV charging at gas stat ons and parking lots will not create an unreasonable financial burden. We will assess how addit onal charging at those locat ons can fill gaps in the existing public charging network.	2022	Q4	PDS	Underway
	Act on	We will bring recommendations to Council on how to adjust our business l cense fees to encourage EV charging at parking lots and gas stat ons.	2022	Q2	PDS	Not Started
	Act on	We will update the definitions for gas stations in the Zoning and Development By-Law and the Licensing By-Law to ensure that EV charging infrastructure is allowed.	TBD	-	PDS	Not Started
3.04	Act on	We will complete an action plan, in consultat on with the industry, that will deliver better publ c charging infrastructure access for passenger fleet drivers.	2021	Q1	PDS	Underway
	Equity	We will engage with drivers in ride-hailing and taxi fleets to identify barr ers to home charging, as well as EV uptake more generally.	2021	Q2	PDS	Underway
	Equity	We will have prov ded home charging retrofits for up to 50 r de-hailing or taxi drivers, depending on demand.	2021	Q4	PDS	Not Started
	Act on	We will complete the Charging Ahead w th Modo pilot project.	2021	Q4	PDS	Underway
	Equity	We will develop a rate structure and access plan for r de-hailing drivers using C ty-owned publ c charging.	2021	-	PDS	Not Started
	Act on	We will develop a detailed action plan [that includes engagement and design of home retrof t programs, rates and access opt ons at C ty-operated publ c charging stations, and pilots for DCFC and Level 2 charging opt ons for one-way car-sharing.	2021	-	PDS	Not Started
	Act on	We will prov de funding for 375 r de-hailing or taxi drivers to add a Level 2 charging stat on to their home parking stall using revenue from Low-Carbon Fuel Standard cred t sales.	2025	-	PDS	Not Started

BIG MOVE 4 Zero Emission Space and Hot Water Heating

By 2030, the carbon pollution from buildings will be cut in half from 2007 levels.

Outcomes

Indicator		Baseline		Current			Target		Notes
Carbon pollution (commun ty, buildings)*	tCO_2e	1,609,874	2007	**1,442,783**	**-10%**	2020	-50%	2030	Winter heating demand causes emiss ons to fluctuate. This sensitivity will diminish over the long term with the trans t on to zero emiss on buildings.
Carbon pollution intensity of new buildings	$kgCO_2e/m^2$	20.7	2007	**3.9**	--	2022	0	2030	Based on requirements on new building perm t appl cat ons starting January 1, 2022
Renewable energy generat on at C ty NEU*	GJ	56%	2018	--	**48%**	2020	100%**	2030	Renewable energy system (sewage heat recovery) offline with ongoing repairs until m d-2020
Renewable energy consumed in community-wide buildings	GJ	36%	2007	--	**39%*** **	2020	TBD	2030	

Additional indicator(s) to be determined on approval of policies and programs.

* *The Southeast False Creek Neighbourhood Energy Utility (NEU)*
** *To be confirmed in 2023*
*** *Does not include renewable natural gas due to lack of available data*

Actions

Action	
4.01	Set Carbon Pollution Limits and Streamlined Regulat ons
4.02	Support Early Owner Action
4.03	Build Industry Capacity
4.04	Facilitate Access to Renewable Energy

For the full list of Climate Emergency actions and draft indicators, see Appendix M of the Climate Emergency Action Plan report to City Council, available at ***vancouver.ca/climateemergency***

BIG MOVE 4 Zero Emission Space and Hot Water Heating

By 2030, the carbon pollution from buildings will be cut in half from 2007 levels.

Milestones

Current likelihood of meeting targets MEDIUM

Establishing requirements to reduce carbon pollution from existing detached homes and large commercial buildings is core to the success of Big Move 4. It will be challenging to implement these requirements in a way that is consistent with our 2030 target because the barriers to switching to zero emissions space and water heating (e.g., heat pumps) can be significant for building owners. A successful regulatory approach will need to understand and respond to these barriers.

Action	Milestone		Due Date		Responsible	Progress
4.01	Action	We will report to Council on progress made to streamline heat-pump permit requirements for existing detached homes.	2021	-	PDS	Underway
	Action	We will recommend to Council an update to the Green Building Policy for Rezonings with zero emissions requirements for heating and hot water systems for newly rezoned buildings, effective 2022.	2021	-	PDS	Underway
	Action	We will research, consult on and recommend to Council 2025 and 2030 carbon limits, emission reporting requirements, and compliance mechanisms for existing large commercial buildings and remove unrelated existing building energy upgrade requirements in the Building By-Law.	2022	-	PDS	Underway
	Action	We will report to Council on progress made to streamline heat-pump permit requirements for existing large commercial/multifamily buildings.	2022	Q1	PDS	Underway
	Equity	We will set carbon pollution limits for low-rise residential homes on an absolute basis (tonnes CO2/year), which will require more upgrades for larger homes, and will be easier to meet for smaller homes. We will explore and create a deferral option for low-income homeowners. Rental, non-market housing and small commercial will not be subject to carbon pollution limits.	2022	-	PDS	Underway
	Equity	We will translate communication materials and resources on carbon pollution limits and timelines, the permit process for heat pumps, and available programs into languages commonly spoken in Vancouver, and work with community groups, consultants and industry associations to ensure effective channels are utilized for reaching a diversity of residents and building owners.	2022	-	PDS	Underway
	Action	We will implement the Building By-Law changes approved by Council in 2020, setting zero emissions requirements for all new low-rise residential buildings, effective January 2022.	2022	-	PDS	Underway
	Action	We will research, consult, and develop recommendations for low-cost, easy-to-implement prescriptive gas conserving measures for market rental apartment buildings.	2022	-	PDS	Not Started
	Action	We will research, consult on and recommend to Council 2025 and 2030 carbon limits, emission reporting requirements, and compliance mechanisms for existing detached homes and remove unrelated existing building energy upgrade requirements in the Building By-Law.	2022	-	PDS	Underway
	Action	We will require energy benchmarking (i.e., reporting of annual energy use and carbon pollution) for large commercial and multi-family buildings.	2023	-	PDS	Underway
	Action	We will research, conduct stakeholder engagement and develop recommendations for prescriptive requirements and timing for targeted heating and amenity equipment for commercial buildings and condominiums (e.g., decorative gas fireplaces, packaged rooftop units, make-up-air units, swimming pools, etc.).	2023	-	PDS	Underway
	Action	We will develop and launch a Virtual EnerGuide Rating System, and research, consult and make recommendation to begin requiring home-rating validation for high-emitting homes, effective 2023.	2024	-	PDS	Underway
	Action	We will research, consult on and recommend to Council carbon limits or prescriptive requirements and compliance mechanisms for existing multi-unit residential building and remove unrelated existing building energy upgrade requirements in the Building By-Law.	2024	-	PDS	Underway
4.02	Action	We will begin to develop a retrofit finance collaborative and roadmap with governments, utilities, building owners, NGOs and financers, to establish a shared understanding of specific market needs and proven tools, and undertake coordinated action to develop financing tools for building retrofits.	2021	-	PDS	Underway
	Action	We will develop and launch tools to support energy retrofits of heritage buildings, in collaboration with industry, community and/or government partners.	2021	-	PDS	Underway
	Equity	We will launch the Market Rental Retrofit PLUS program, in collaboration with LandlordBC and the provincial government.	2021	-	PDS	Underway
	Equity	We will launch the Zero Emission Non-Market Retrofit Support Program, in collaboration with BC Non-Profit Housing Association, BC Housing and the provincial government.	2022	-	PDS	Underway
	Action	We will develop and launch tools to support energy retrofits of detached homes, in collaboration with industry, community and/or government partners.	2022	-	PDS	Underway
	Equity	We will continue City support for demonstration projects focused on non-market housing through the Deep Retrofit Pilot – Non-Market Housing Deep Emission Reduction pilot project (FortisBC, BC Housing, BCNPHA, Pendrellis Society).	2023	-	PDS	Underway
	Equity	We will continue City support for demonstration projects focused on non-market housing through the Reframed Initiative – Zero Carbon, Resilience Retrofits for Non-Market Housing (Pembina, BC Housing, BCNPHA, FCM, NRCan).	2024	-	PDS	Complete

BIG MOVE 4 Zero Emission Space and Hot Water Heating

By 2030, the carbon pollution from buildings will be cut in half from 2007 levels.

Milestones

Action	Milestone		Due Date	Responsible	Progress
4.03	Act on	We will develop a Building Electr f cat on Road Map and launch a Building Electrif cat on Coalition to mon tor and coordinate collaborative act on, in collaboration with government, util ty, NGO and industry partners.	2021 -	PDS	Complete
	Act on	We will establish the LC3 Low Carbon Innovat on Centre (core function), in collaborat on w th Metro Vancouver and the Federat on of Canadian Municipal t es, to facil tate industry best-pract ce sharing, case study compilat on, fostering a commun ty of practice, and project/product tours.	2021 -	PDS	Underway
	Equity	We will identify effective channels and methods for engaging smaller, minority-owned renovators and skilled trades involved in home and building retrofits, in collaborat on w th industry associat ons.	2021 -	PDS	Not Started
	Equity	We will identify appropriate commun cation channels and disseminate information in mu tiple languages on C ty requirements, industry training opportunities and resources to a diversity of tradespeople and general labourers that do existing building contract work in Vancouver.	2022 -	PDS	Not Started
	Equity	We will subs dize the training of trades accreditation for small contractors and offer incentives for qualif ed trades for heat pump retrof ts. This will include exploring ways to target training support for groups who are currently underrepresented in the trades (e.g., women and people living w th disabilities or mobility issues).	2023 -	PDS	Not Started
	Act on	We will develop targeted messaging for the HVAC industry to provide lead time for techn cal training and build a commun ty of advocates, in collaborat on with local trades associations and inst tut ons.	2023 -	PDS	Underway
	Act on	We will co-develop w th industry the training requirements for City heat pump permits for detached homes and ground-oriented residential dwellings, subs dize the training of trades accred tation and offer incentives for qualif ed trades for heat pump retrof ts.	2023 -	PDS	Not Started
4.04	Equity	We will collect data to understand our current and projected future customer demograph c in order to ident fy marginalized or low-income customer groups.	2021 -	ENG	Underway
	Act on	We will complete a market sounding for renewable energy supply.	2021 -	ENG	Complete
	Act on	We will complete a feasibil ty study, and engage with relevant stakeholder groups.	2022 -	ENG	Not Started
	Equity	We will apply an equ ty lens to the strategy for trans tioning the NEU to 100% renewable energy.	2023 -	ENG	Not Started
	Act on	We will recommend to Council a roadmap for transitioning the NEU to 100% low carbon, subject to evaluation and competitiveness w th other low-carbon energy options for buildings.	2023 -	ENG	Underway
	Act on	We will complete the gr d infrastructure study to ident fy barriers and bottlenecks to electr fication, in partnership w th BC Hydro.	2021 -	PDS	Underway
	Equity	We will work w th the provincial government and BC Hydro to ensure that low-income households receive enhanced incentives for electric space heating and hot water equipment and explore rate subsid es.	2023 -	PDS	Not Started
	Act on	We will reduce barriers to electr c serv ce upgrades, establish rates structures, and develop equipment incentives that encourage the adoption of electric heat pumps and other building electrif cat on measures, in collaborat on with BC Hydro and the provincial government.	2023 -	PDS	Underway
	Act on	We will work w th FortisBC to facilitate the use of renewable natural gas as a compliance opt on the meet the City's carbon pollution limits, and to dentify other actions to help FortisBC exceed their 15% renewable gas target for 2030.	2023 -	PDS	Underway
	Act on	We will support large-scale renewable energy in existing private distr ct energy systems through var ous means, including policy and tax measures, BCUC interventions, carbon trading, and advocacy.	TBD -	PDS	Underway

For the full list of Climate Emergency actions and draft indicators, see Appendix M of the Climate Emergency Action Plan report to City Council, available at ***vancouver.ca/climateemergency***

BIG MOVE 5 Low-Carbon Construction Materials

By 2030, the embodied emissions from new buildings and construction projects will be reduced by 40% compared to a 2018 baseline.

Outcomes

Indicator		Baseline		Current	Target		Notes
Embodied carbon in new construction (community)	embodied tCO_2e	TBD	2017	**TBD**	-40%	2030	Staff are exploring data collection methods to enable measurement.

Additional indicator(s) to be determined on approval of policies and programs.

Actions

Action	
5.01	Set Embodied Carbon Pollution Limits for New Buildings
5.02	Make It Easier And Less Expensive To Use Lower Carbon Materials In New Buildings
5.03	Support The People Using Low Carbon Materials In New Buildings
5.04	Low Carbon Planning and Strategies

Milestones

Current likelihood of meeting targets HIGH

Establishing embodied carbon reduction requirements for new buildings is core to the success of Big Move 5. While there are some technical challenges to creating fair and consistent requirements in this new field, there are many low- or no-cost options available today to reduce embodied carbon, and industry is quickly gaining familiarity with those options. Some actions scheduled for 2021 have slipped to early 2022, but we are on track to achieve our 2030 target.

Action	Milestone		Due Date	Responsible	Progress
5.01	Action	We will establish standardized 2018 baselines to measure reductions for developments in the city.	2021	PDS	Underway
	Action	We will make recommendations to Council to update the Green Building Policy for Rezonings to establish one of the first limits on embodied carbon globally.	2021	PDS	Underway
	Equity	The plan will include sustainable, equitable, and healthy sourcing: policy updates will explore inclusion of options that encourage best practices in sourcing building materials and products.	2021	PDS	Underway
	Action	We will explore quick wins and first steps in code (in the VBBL), such as low-carbon material requirements for concrete and insulation, and targets for certain building types (e.g., large detached homes).	2023	PDS	Not Started
	Action	We will make recommendations to update the embodied carbon requirements in the rezoning policy to increase in stringency (and again in 2030).	2025	PDS	Not Started
	Action	We will adopt the targets and other requirements from the 2021 rezoning policy, and possibly those from incentive programs for small residential buildings ("Part 9"), into the code.	2025/26	PDS	Not Started
5.02	Action	We will develop incentives for 1-3 story residential that achieve deep embodied carbon reductions.	2021	PDS	Underway
	Action	We will develop ways to allow more uses for mass timber within the Building By-Law.	2022	PDS	Underway
	Equity	We will have consulted on and identified ways to meaningfully direct benefits from the incentive-based actions toward disproportionately impacted communities and ways to tailor the actions to support rental or non-profit housing projects.	2022	PDS	Underway

BIG MOVE 5 Low-Carbon Construction Materials

By 2030, the embodied emissions from new buildings and construction projects will be reduced by 40% compared to a 2018 baseline.

Milestones

Action	Milestone		Due Date	Responsible	Progress
5.03	Act on	We will facilitate the creation of an online tool that qu ckly shows the relative impacts of big design decis ons on embodied carbon, to greatly advance understanding of what factors matter most, similar to the Pathfinder tool the City and BC Housing supported to help users understand the BC Energy Step Code.	2021	PDS	Complete
	Act on	We will coordinate, support, and share knowledge w th external organizations/other governments.	2022	PDS	Underway
	Act on	We will advocate for regional and provincial embod ed carbon frameworks that other local governments in B.C. could adopt, such as an embodied emissions step code, low-carbon material requirements, or regional embodied carbon policy.	2022	PDS	Underway
	Act on	We will support the creat on of databases, tools, pract ce gu des, training, and knowledge-sharing networks.	2022	PDS	Not Started
	Equity	We will work w th local capac ty-building organizat ons that deliver education and raise awareness on embodied carbon to study the divers ty and inclusion in the embod ed carbon commun ty, and take act ons and provide funding that reflect the lessons learned from this study.	2022	PDS	Not Started
5.04	Act on	We will coordinate our actions on embodied carbon with other key strateg es, policies, and plans at the City, such as the Vancouver Plan, Zero Waste, Green Economy, and others.	2023	PDS	Underway

For the full list of Climate Emergency actions and draft indicators, see Appendix M of the Climate Emergency Action Plan report to City Council, available at ***vancouver.ca/climateemergency***

BIG MOVE 6 Carbon Sequestration

By 2021, develop "negative emission" targets that can be achieved by restoring forest and coastal ecosystems.

Outcomes

Indicator		Baseline		Current		Target		Notes
Tree canopy cover* (vs. total Vancouver land area)	ha	23%	2018	**23%**	**2018**	30%	2030	2,645ha of tree cover across the city's total area of 11,500ha

Additional indicator(s) to be determined on approval of policies and programs.

* *Measurement every 5 years using LiDAR and i-Tree methods, per Urban Forest Strategy*

Actions

Action	
6.01	Develop a Natural Carbon Sequestration Program

Milestones

Current likelihood of meeting targets LOW

Formalizing a target for Big Move 6 has been more challenging than anticipated, for two primary reasons. First, there is not a clearly established role for local governments in advancing nature-based climate solutions and negative emissions, and part of our work is helping to define that role. Second, the objective of preserving trees can conflict with the objective of adding more housing, which is central to our Big Move 1 work. We are trying to resolve that conflict before bringing a target and action plan to Council.

Action	Milestone		Due Date		Responsible	Progress
6.01	Action	We will report to Council with a carbon capture target and an update on the research into existing sequestration projects, financial and regulatory options, potential sequestration project partners, and potential pilot projects.	2021	Q4	PDS	Delayed
	Action	Funding for pilot projects will be included in the capital plan.	2022	-	PDS	Underway
	Equity	The roadmap for Big Move 6 will focus on equitable outcomes. For example, we can explore opportunities where tree planting or forest and coastal restoration could have the greatest benefit for communities most impacted by urban heat islands and/or environmental degradation. This roadmap will be informed by data collection and analysis, and engagement with the Climate and Equity Working Group.	2022	-	PDS	Underway

FINANCIAL FRAMEWORK, EQUITY AND INDICATORS

Actions

Action	
F.01	Investigate Eco-Charges
G.01	Work with Local First Nations
G.02	Develop a Climate Justice Charter
G.03	Engage Impacted People
G.04	Include Greater Focus on Equity in Current Sustainability Programs
G.05	Report on CEAP Indicators Framework and Improve Data

Milestones

Current likelihood of meeting targets LOW

There is a significant gap in the CEAP financial framework, due in part to the decision to not implement the Climate Emergency Parking Program. There is currently no replacement revenue source identified. Staff continue to explore ways to close that gap. Work is progressing well with the Climate and Equity Working Group to carefully scope the Climate Justice Charter. We are on track to bring that to Council in Q3 2022.

Action	Milestone		Due Date		Responsible	Progress
F.01	Action	We will report back to Council with potential new or additional fees/charges to encourage low-carbon investments and behaviours, after undertaking public and stakeholder engagement in early 2021 on select fees. This will be done as part of the annual report on fees.	2021	-	PDS	Underway
	Equity	We will perform financial analysis and engage with disproportionately impacted communities to understand how proposed fees/charges would impact different communities.	2021	Q3	PDS	Underway
	Equity	We will include potential affordability and fairness impact mitigation options in fees/charge proposals, based on analysis and engagement, to ensure a more equitable structure for all.	2021	-	PDS	Underway
G.01	Action	We will have engaged with each of the local Nations to determine their areas of interest for collaboration and to discuss funding support from the City for their climate work.	2021	Q4	PDS	Underway
G.02	Action	We will develop a Climate Justice Charter and proposed equity indicators for Council approval. This charter will be a living document that will be revised based on feedback and learning as work proceeds.	2022	Q1	PDS	Underway
G.03	Action	We will restart the Climate and Equity Working Group to provide input on engagement plans. Additionally, the commitment to identify and conduct engagement with those who will potentially be impacted is integrated into the work for all actions in the CEAP.	2021	Q1	PDS	Underway
G.04	Action	We will host an internal (Sustainability Support Services) workshop focused on integrating equity into our existing programs.	2021	-	PDS	Underway
G.05	Action	We will provide Council with CEAP Annual Reports, which will include targets and indicators for actions/outcomes, and improved underlying data/analysis to support reporting.	Ongoing		PDS	Underway

For the full list of Climate Emergency actions and draft indicators, see Appendix M of the Climate Emergency Action Plan report to City Council, available at ***vancouver.ca/climateemergency***

GREEN OPERATIONS PLAN Zero Carbon

Green Operations indicators for Zero Waste, Healthy Ecosystems, and Staff Leadership reported bi-annually.

Outcomes

Indicator		Baseline		Current			Target		Notes
Carbon pollution* (corporate, total)	tCO_2e	495,000	2008	**225,000**	**-55%**	2020	-60%	2030	
Sustainable mode share (C ty staff commute)**	trips	TBD		no data available			67%	2030	Tracking will resume following the pandem c, as commuting hab ts and expectations were sign f cantly disrupted in 2020/2021.
Vehicle kilometres travelled (VKT) by zero emiss on City fleet veh cles	km	--		--	3%***	2020	50%	2030	We expect this number to change as we return to normal operations following the COVID-19 pandemic.
Carbon pollution* (corporate, buildings)	tCO_2e	27,000	2008	**20,500**	**-24%**	2020	-50%	2030	
Embodied carbon in new construction (City buildings)	embodied tCO_2e	TBD		TBD			-50%	2030	5 projects underway, targeting 40% reduct on. We plan to increase target to 50% by 2030.

* *Emissions from stationary energy use (City buildings, the Southeast False Creek Neighbourhood Energy Utility, the City's asphalt plant at Kent Yard), fleet activity, and Vancouver Landfill operations, per Vancouver's corporate inventory compiled annually using the Global Protocol for Cities.*

** *City staff commuting trips by walking, cycling, transit, or telecommuting*

*** *Estimate only; may change as we continue to refine mileage-tracking methods*

Actions/Milestones

Action/Milestone			Due Date	Responsible	Progress
1-1	Pr or ty	Establish a carbon-reduct on accounting and reporting framework (at the program/project level where possible) that gives transparency to cost, contributions to carbon goals, responsibilities, etc.	2021	PDS	Underway
1-2	Pr or ty	Update the Sustainable Commuting Program to accelerate long-term shifts towards staff commuting by walking, cycling, or transit. Establish and implement a best practice standard for end-of-trip facil t es. Target 50% by 2025	2025	HR, REFM, PDS	Underway
1-3	Pr or ty	All non-emergency light-duty passenger vehicle purchases to be electric, and electr c or low-carbon opt ons considered for all other fleet and equipment purchases. [FUNDING-DEPENDENT]	Ongoing	ENG	Underway
1-4	Pr or ty	All new heating and hot water systems in city-owned facilities to be zero emissions, and all cap tal replacement and maintenance systems to be zero emiss ons where feasible, with appropriate staff training provided	Ongoing	REFM	Underway
1-5	Pr or ty	Develop a refrigerant management plan for transitioning to low global warming potential refrigerants used in city owned buildings, and monitor and manage leakage of refrigerants.	2021	REFM	Underway
1-6	Pr or ty	Assess and minimize operational and embodied emissions for construction of all new civ c buildings and facilities, noting that new buildings are already being bui t to zero operational emiss ons. Beginning immediately at 40%; working towards 50% by 2030.	2030	REFM, PDS	Underway
1-7	Pr or ty	Revise the corporate work from home policy to support the continuation of remote work, including the tracking and communications of carbon reduct ons. Based on learnings/appet te to do so from COVID experience.	2021	HR, REFM, PDS	Underway
1-8	Pr or ty	25% of all corporate spend on products and materials to be low or no carbon.	2025	FRS	Underway
1-9	Leadership	Transition all small landscaping equipment to zero emiss on equivalents.	2023	Parks Board	Not Started
1-10	Leadership	Develop and implement low carbon catering guidelines for City-hosted meetings and events that accommodate cu turally appropriate requirements/foods.	2022	PDS	Not Started
1-11	Leadership	Include all material Scope 3 emiss on sources in corporate inventory reporting. Set targets for reductions from 2025-2030.	2023	PDS	Underway
1-12	Leadership	Replace city-wide streetlights with LEDs, as per the Outdoor Lighting Strategy.	2025	ENG	Underway
1-13	Leadership	Explore embod ed carbon emission reduct ons to infrastructure projects.	Ongoing	ENG	Underway
1-14	Leadership	Apply annual increases to the internal corporate carbon price to inform organization-w de policy, business, and operat onal decisions.	Ongoing	PDS	Underway
1-15	Leadership	Continue to invest in MFA BC fossil fuel-free screened funds and dentify further opportunities for divestment from fossil fuels, reporting regularly on progress.	Ongoing	FRS	Underway
1-16	Leadership	Integrate a climate risk assessment into Engineering's Project Management Framework.	2021	PDS, ENG	Not Started

For the full list of Green Operations Plan actions and indicators, see ***https://vancouver.ca/files/cov/12-09-2020-green-operations.pdf***

Status of Climate Related Upgrades to City Owned Buildings

The City has been demonstrating leadership in reducing GHG emissions from its City owned facilities by committing to exceed Council approved community-wide targets for existing and new building GHG reduction. We have committed to achieving a target of 100% renewable energy in City owned facilities by 2040, ten years ahead of the Council approved Climate Emergency Action Plan city wide target of 100% renewable energy by 2050, and to building all new and replacement facilities to a zero emissions standard starting in 2018, well ahead of the Zero Emissions Building Plan target of 2025 for essentially all new buildings city wide.

To date the City has reduced GHG emissions in City owned facilities by approximately 36% compared to 2007, despite an increase of greater than 20% in heated floor area. This significantly exceeds our commitment to reduced GHG emissions by 20% by 2020 set out in the Greenest City Action Plan and our internal Green Operations Plan 1.0. We are well on our way to meet the targets of 100% renewable energy in City owned facilities by 2040.

Below is a summary of existing building climate related upgrade projects funded from the REFM 2019 Energy Optimisation capital budget plus the allocations added in 2020. The Energy Optimisation budget has been fully allocated and projects are at various stages of construction with approximately 75% of the budget spent to date.

The second table below shows a list of zero emission renewal projects where existing City owned buildings are being replaced with new zero emissions buildings. The third table below shows a list of other new zero emissions City owned buildings. These projects are all funded separately from new construction project budgets.

COV Existing Building GHG Reduction Upgrades			
Project	**Budget**	**GHG Reduction**	**Description**
VPD Annex 236 E Cordova Heat Pump	$1,620,000	90% ghg reduction for whole building	Installation of an air source heat pump system with backup electric boiler to replace gas boiler and end of life chiller, to provide heating and cooling and DHW heating.
Bloedel Conservatory Heat Pump	$1,050,000	88% ghg reduction for whole building	Installation of an air source heat pump system to replace end of life chiller and cooling tower, to provide space heating and cooling
Kitsilano Pool DHW Heat Pump	$400,000	90% ghg reduction for DHW heating	Installation of a CO2 based air source heat pump system to replace gas fired domestic hot water (DHW) boilers
Killarney Community Center Pool Heat Pump	$1,350,000	56% ghg reduction for whole building	Installation of a pool dehumidification heat recovery heat pump system and air handling unit to replace gas boiler, for pool space heating and pool water heating
Killarney Community Center Arena Heat Recovery Modifications	$25,000	10% ghg reduction for whole building	Installation of an ammonia condensate bucket trap on icrerink heat recovery heat exchanger, to improve icrerink heat recovery and offset gas boiler use.
Hillcrest Center DHW heat pump	$800,000	90% ghg reduction for DHW heating	Installation of a pool dehumidification heat pump system to replace gas fired domestic hot water heating system.
Fire hall #4/Library Heat Pump RTU's	$250,000	20% ghg reduction for whole building	Installation of two air source heat pump rooftop units to replace gas fired rooftop units.
Library Square Heat Pumps	$650,000	65% ghg reduction for whole building	Installation of exhaust air heat recovery heat pump system to offset gas fired steam heating as an upgrade to the chiller and cooling tower replacement project.
Kaslo Hub 2780 East Broadway Heat Pumps	Included in renovation budget	90% ghg reduction for floor 2 and 3 renovation	Installation of an air source heat pump system to replace numerous gas fired rooftop units, to provide heating and cooling.

City Owned Zero Emission Full Building Replacements

Project	GHG reduction compared to replaced building	Zero Emissions Strategy
Firehall #17	99%	Passive House Certification, 100% electric, ground source heat pumps for heating and cooling, air source heat pump DHW, solar PV for net zero energy
Marpole Community Center and Outdoor Pool	95%	Passive House Certification, 100% electric, air source heat pumps for space heating and cooling and DHW and pool heating
Sunset Yards Operations Building	95%	Passive House Certification, 100% electric, air source heat pumps for space heating and cooling and DHW
Roddan Lodge and Evelyne Saller Centre	91%	Near Zero emissions - All electric except commercial kitchen, air source heat pumps for space heating and cooling and DHW

City Owned Zero Emission New Buildings

Project	GHG reduction compared to typical existing building	Zero Emissions Strategy
Gastown Parkade Childcare's	97%	Passive House Certification, 100% electric, air source heat pumps for heat and cooling and DHW, solar PV
825 Pacific Artist Hub	96%	Passive House Certification, 100% electric, air source heat pumps for space heating and cooling and DHW
Coal Harbour School/childcare/housing	96%	Passive House Certification, 100% electric, air source heat pumps for space heating and cooling and DHW
West Fraserlands Childcare	96%	Passive House Certification, 100% electric, air source heat pumps for space heating and cooling and DHW

Welcome to the CDP-ICLEI Unified Reporting System 2021

WWF OPCC Introduction

0. Introduction

(0.1) Please give a general description and introduction to your city including your city's reporting boundary in the table below.

	Administrative boundary	Description of city
Please complete	City / Municipality	Vancouver is located on the west coast of Canada. With a population of 631,486 people (2016 census), Vancouver is the eighth largest Canadian city and Metro Vancouver is the third largest region in Canada. Vancouver enjoys an international reputation as the world's most livable city, reinforced again in 2009 by The Economist. In 2010, Vancouver ranked second on the EIU Greenest City Index, thanks to bold decisions made by our predecessors, such as protecting the watersheds of the North Shore mountains, creating Stanley Park, maintaining public access to long stretches of the waterfront, and rejecting freeways through the city. Vancouver was one of the first cities in the world to recognize the threat posed by climate change, with the Clouds of Change Task Force recommending in 1990 that we begin reducing CO2 emissions. The Greenest City Action Plan (GCAP), adopted in 2011, encompassed a decade of comprehensive climate action plan to support the city's transformation to a low-carbon, thriving economy. Then in 2019, the City became one of the first in Canada to declare a climate emergency. Our Climate Emergency Action Plan (adopted in 2020) sets out six Big Moves and a suite of accelerated actions to keep Vancouver's emissions on an IPCC-compliant trajectory by rapidly decreasing our community emissions by 50% before 2030, to achieve carbon neutrality and derive 100% of our community-wide energy from renewable sources before 2050.

		Vancouver is also a leader in city-level adaptation. One of the first of its kind in Canada, the City's Climate Adaptation Strategy was adopted by Council in 2012 and updated in 2018. The Strategy is a forecast and plan for adapting to the future impacts of climate change. It contains core actions that address impacts (prioritized through vulnerability and risk assessments), and enabling actions to help integrate an adaptation lens as standard practice into all City work.

(0.2) If you have not previously submitted your Letter of Commitment to the Global Covenant of Mayors, either through the relevant regional covenant or through the Global Covenant secretariat, please attach the letter signed by an appropriately mandated official (e.g. Mayor, City Council) to this question.

Compact of Mayors SIGNED LETTER.pdf

City Details

(0.3) Please provide information about your city's Mayor or equivalent legal representative authority in the table below.

	Leader title	Leader name	Current term end year
Please complete	Mayor	Kennedy Stewart	2022

(0.4) Please select the currency used for all financial information disclosed throughout your response.

CAD Canadian Dollar

(0.5) Please provide details of your city's current population. Report the population in the year of your reported inventory, if possible.

	Current population	Current population year	Projected population	Projected population year
Please complete	654,000	2020	659,000	2021

(0.6) Please provide further details about the geography of your city.

	Land area of the city boundary as defined in question 0.1 (in square km)
Please complete	115

1. Governance and Data Management

Governance

(1.0) Please detail sustainability goals and targets (e.g. GHG reductions) that are incorporated into your city's master plan and describe how these are addressed in the table below.

Sustainability goals and targets	Description
Emissions reduction targets	Vancouver has no official community plan, but a City-wide Plan is currently in development (as of summer 2021). The Climate Emergency Action plan, our climate mitigation policy, is a foundational piece that will be integrated into this new City-wide Plan.
Adaptation targets	Vancouver has no official community plan, but a City-wide Plan is currently in development (as of summer 2021). Our existing climate adaptation policies (i.e., Climate Change Adaptation Strategy, Resilient Vancouver) are foundational pieces that will be integrated into the City-wide Plan.
Renewable energy targets	Vancouver has no official community plan, but a City-wide Plan is currently in development (as of summer 2021). Our existing renewable energy policies (i.e., Climate Emergency Action Plan, Neighbourhood Energy Strategy) are foundational pieces that will be integrated into the City-wide Plan.
Waste management targets	Vancouver has no official community plan, but a City-wide Plan is currently in development (as of summer 2021). Our existing waste management policy (Zero Waste 2040) is a foundational piece that will be integrated into the City-wide Plan.

(1.6) Please provide information on the overall impact of COVID-19 on climate action in your city.

	Impact of COVID-19 on climate action in your city	Comment
Response	Other, please specify Mixed	The impact of COVID-19 on Vancouver related to climate action was mixed. On the one hand there was and will continue to be significant financial impacts on the City of Vancouver, which mean less funding for all priorities, including climate action. However, social distancing needs provided the social licence for street closures, more bike routes and outdoor patios in place of parking. These all saw positive benefits and will lead to more social acceptance for these types of interventions and therefore accelerated climate action. Work from home (meaning less commuter traffic) and better work-life balance will also continue after the pandemic is over.

(1.7) Please provide information specifically on the impact of the COVID-19 economic response on climate action in your city and synergies between COVID-19 recovery interventions and climate action.

	Impact of COVID-19 economic response on city's budget for financing climate action in your city	COVID-19 recovery interventions and climate action synergies	Explanation
Response	Reduced finance available for climate action	Do not know	See 1.6 above.

2. Climate Hazards and Vulnerability

Climate Risk and Vulnerability Assessment

(2.0) Has a climate change risk and vulnerability assessment been undertaken for your city?

Yes

(2.0a) Please select the primary process or methodology used to undertake the risk and vulnerability assessment of your city.

	Primary methodology	Description
Risk assessment methodology	Building Adaptive and Resilient Cities (BARC) toolkit (regional – Canada)	A climate change risk and vulnerability assessment was done as part of the City's Climate Change Adaptation Strategy. A more detailed risk and vulnerability assessment was done specifically for sea level rise, which is referred to as the City's Coastal Flood Risk Assessment. Methodology included ICLEI workbook for municipal climate change adaptation with risk and vulnerability assessment methodology, down-scaled climate models, and Hazus (GIS-based model: we are using the version adapted to the Canadian context). We used the ICLEI methodology prior to it being rebranded as BARC.

GCoM Additional Information

(2.0b) Please attach and provide details on your climate change risk and vulnerability assessment. Please provide details on the boundary of your assessment, and where this differs from your city's boundary, please provide an explanation.

Publication title and attach the document

Vancouver Climate Change Adaptation Strategy

Vancouver-Climate-Change-Adaptation-Strategy-2012-11-07.pdf

Web link

http://vancouver.ca/files/cov/Vancouver-Climate-Change-Adaptation-Strategy-2012-11-07.pdf

Year of publication or approval from local government

2012

Boundary of assessment relative to city boundary (reported in 0.1)

Same – covers entire city and nothing else

Explanation of boundary choice where the assessment boundary differs from the city boundary

n/a

Primary author of assessment

Dedicated city team

Does the assessment identify vulnerable populations?

Yes

Areas/sectors covered by the risk and vulnerability assessment

Energy
Water Supply & Sanitation
Transport
Environment, Biodiversity and Forestry
Industrial
Commercial
Residential
Public health
Emergency Management
Tourism

Please explain

Publication title and attach the document

Vancouver Climate Change Adaptation Strategy (2018 Revision)

climate-change-adaptation-strategy.pdf

Web link

https://vancouver.ca/files/cov/climate-change-adaptation-strategy.pdf

Year of publication or approval from local government

2018

Boundary of assessment relative to city boundary (reported in 0.1)

Same – covers entire city and nothing else

Explanation of boundary choice where the assessment boundary differs from the city boundary

n/a

Primary author of assessment

Dedicated city team

Does the assessment identify vulnerable populations?

Yes

Areas/sectors covered by the risk and vulnerability assessment

Energy
Water Supply & Sanitation
Transport
Environment, Biodiversity and Forestry
Industrial
Commercial
Residential
Public health
Community & Culture
Emergency Management

Please explain

Publication title and attach the document

City of Vancouver Coastal Flood Risk Assessment

CFRA-phase-2-final-report-oct-2016-revision.pdf

Web link

https://vancouver.ca/files/cov/CFRA-phase-2-final-report-oct-2016-revision.pdf

Year of publication or approval from local government

2016

Boundary of assessment relative to city boundary (reported in 0.1)

Same – covers entire city and nothing else

Explanation of boundary choice where the assessment boundary differs from the city boundary

n/a

Primary author of assessment

Consultant

Does the assessment identify vulnerable populations?

Yes

Areas/sectors covered by the risk and vulnerability assessment

Energy
Water Supply & Sanitation
Transport
Waste Management
Environment, Biodiversity and Forestry
Industrial
Commercial
Residential
Public health
Community & Culture
Emergency Management
Land use planning

Please explain

(2.0d) If the city's climate change risk assessment has been conducted more than 4 years ago, what update/revision process does your city have in place?

Update/revision process

Update/revision process in place

Plan to revise/update assessment 2-5 years from now

Provide more details on the update / revision process for your climate risk or vulnerability assessment

The review cycle for the Strategy should be in step with the Intergovernmental Panel on Climate Change (IPCC) five-year reporting process. The next IPCC AR6 report is scheduled to be published in early 2023. Upon release of the next IPCC report, climate projections will be downscaled to address the City of Vancouver context. As this new information becomes available the City will review and update our Adaptation Strategy. The City aims for a five-year review cycle of the Adaptation Strategy and associated action plan, with the next one due to Council in late 2023 or early 2024.

The City will complete a risk and vulnerability assessment every 10–15 years, to capture any changes. and support action plan updates.

Climate Hazards

(2.1) Please list the most significant climate hazards faced by your city and indicate the probability and consequence of these hazards, as well as the expected future change in frequency and intensity. Please also select the most relevant assets or services that are affected by the climate hazard and provide a description of the impact.

Climate Hazards

Extreme Precipitation > Rain storm

Did this hazard significantly impact your city before 2021?

Yes

Current probability of hazard

High

Current magnitude of hazard

Medium Low

Social impact of hazard overall

Increased demand for public services
Increased risk to already vulnerable populations
Increased resource demand
Population displacement

Most relevant assets / services affected overall

Water supply & sanitation
Transport
Public health

Please identify which vulnerable populations are affected

Women & girls
Children & youth
Elderly
Indigenous population
Marginalized groups
Persons with disabilities
Persons with chronic diseases
Low-income households
Unemployed persons
Persons living in sub-standard housing

Future change in frequency

Increasing

Future change in intensity

Increasing

Future expected magnitude of hazard

Medium High

When do you first expect to experience those changes in frequency and intensity?

Medium-term (2026-2050)

Please describe the impacts experienced so far, and how you expect the hazard to impact in the future

Increases in private property sewer back-ups in combined sewer areas due to high rainfall volume in sewer system; increased costs for response actions and clean-up after heavy rain events; new and existing buildings may be maladapted as the climate changes in terms of water ingress, rain or snow loads, etc.; increase in landslide risk affecting public infrastructure and private property; increased volume of third-party liability claims against the city from major rain events; transportation and mobility impacted by street flooding; property damage from flooding

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Climate Hazards

Storm and wind > Severe wind

Did this hazard significantly impact your city before 2021?

Yes

Current probability of hazard

Low

Current magnitude of hazard

Medium

Social impact of hazard overall

Increased demand for public services
Increased risk to already vulnerable populations
Increased resource demand
Population displacement

Most relevant assets / services affected overall

Energy
Transport
Environment, biodiversity, forestry
Emergency services

Please identify which vulnerable populations are affected

Persons living in sub-standard housing

Future change in frequency

Do not know

Future change in intensity

Increasing

Future expected magnitude of hazard

Do not know

When do you first expect to experience those changes in frequency and intensity?

Short-term (by 2025)

Please describe the impacts experienced so far, and how you expect the hazard to impact in the future

New and existing buildings may be maladapted as the climate changes in terms of wind durability; increase in impacts to urban forests, green spaces and trees from temperature extremes and wind storms resulting in increased maintenance and replacement costs and changes to aesthetics and use; increased duration and occurrence of power outages causing cascading impacts.

Climate Hazards

Extreme hot temperature > Heat wave

Did this hazard significantly impact your city before 2021?

Yes

Current probability of hazard

Medium High

Current magnitude of hazard

Medium High

Social impact of hazard overall

Increased incidence and prevalence of disease and illness
Increased demand for public services
Increased demand for healthcare services
Increased risk to already vulnerable populations
Increased conflict and/or crime
Increased resource demand

Most relevant assets / services affected overall

Water supply & sanitation
Environment, biodiversity, forestry
Public health
Emergency services

Please identify which vulnerable populations are affected

Women & girls
Children & youth
Elderly
Indigenous population
Marginalized groups
Persons with disabilities

Persons with chronic diseases
Low-income households
Unemployed persons
Persons living in sub-standard housing

Future change in frequency

Increasing

Future change in intensity

Increasing

Future expected magnitude of hazard

High

When do you first expect to experience those changes in frequency and intensity?

Immediately

Please describe the impacts experienced so far, and how you expect the hazard to impact in the future

Increased health and safety risks, especially to frontline communities during extreme heat events and air quality events; decreased thermal comfort in buildings in the summer due to lack of air conditioning or increasing electricity costs with air conditioning; increasing stress on green infrastructure in the summer time; water supply shortages felt in late summer due to a decreased spring snow pack and higher summer temps could result in increased costs for water and imperative conservation measures.

Climate Hazards

Extreme hot temperature > Extreme hot days

Did this hazard significantly impact your city before 2021?

Yes

Current probability of hazard

Medium Low

Current magnitude of hazard

Medium

Social impact of hazard overall

Increased incidence and prevalence of disease and illness
Increased demand for public services
Increased demand for healthcare services
Increased risk to already vulnerable populations
Increased conflict and/or crime
Increased resource demand

Most relevant assets / services affected overall

Education
Public health
Emergency services

Please identify which vulnerable populations are affected

Women & girls
Children & youth
Elderly
Indigenous population
Marginalized groups
Persons with disabilities
Persons with chronic diseases
Low-income households
Unemployed persons
Persons living in sub-standard housing

Future change in frequency

Increasing

Future change in intensity

Increasing

Future expected magnitude of hazard

High

When do you first expect to experience those changes in frequency and intensity?

Medium-term (2026-2050)

Please describe the impacts experienced so far, and how you expect the hazard to impact in the future

Increased health and safety risks, especially to frontline communities during extreme heat events and air quality events; decreased thermal comfort in buildings in the summer due to lack of air conditioning or increasing electricity costs with air conditioning; increasing stress on green infrastructure in the summer time; water supply shortages felt in late summer due to a decreased spring snow pack and higher summer temps could result in increased costs for water and imperative conservation measures.

Climate Hazards

Water Scarcity > Drought

Did this hazard significantly impact your city before 2021?

No

Current probability of hazard

Medium Low

Current magnitude of hazard

Medium Low

Social impact of hazard overall

Fluctuating socio-economic conditions
Increased demand for public services
Increased resource demand
Loss of traditional jobs
Migration from rural areas to cities

Most relevant assets / services affected overall

Water supply & sanitation
Environment, biodiversity, forestry
Public health

Please identify which vulnerable populations are affected

Indigenous population
Marginalized groups
Persons with disabilities
Persons with chronic diseases
Low-income households
Unemployed persons
Persons living in sub-standard housing

Future change in frequency

Increasing

Future change in intensity

Increasing

Future expected magnitude of hazard

Medium High

When do you first expect to experience those changes in frequency and intensity?

Medium-term (2026-2050)

Please describe the impacts experienced so far, and how you expect the hazard to impact in the future

Water supply shortages felt in late summer due to a decreased spring snow pack and higher summer temps could result in increased costs for water and imperative conservation measures; increased tree loss, especially newly planted trees due to drought.

Climate Hazards

Flood and sea level rise > Flash / surface flood

Did this hazard significantly impact your city before 2021?

Yes

Current probability of hazard

Medium

Current magnitude of hazard

Medium

Social impact of hazard overall

Fluctuating socio-economic conditions
Increased incidence and prevalence of disease and illness
Increased demand for public services
Increased risk to already vulnerable populations
Increased resource demand
Population displacement

Most relevant assets / services affected overall

Transport
Residential
Public health

Please identify which vulnerable populations are affected

Persons with disabilities
Low-income households
Persons living in sub-standard housing

Future change in frequency

Increasing

Future change in intensity

Increasing

Future expected magnitude of hazard

High

When do you first expect to experience those changes in frequency and intensity?

Short-term (by 2025)

Please describe the impacts experienced so far, and how you expect the hazard to impact in the future

Increased surface water flooding from ponding of rainfall in low-lying areas or heavy rainfall overcoming the capacity of drainage system; increase in landslide risk affecting public infrastructure and private property.

Climate Hazards

Flood and sea level rise > Coastal flood

Did this hazard significantly impact your city before 2021?

No

Current probability of hazard

Low

Current magnitude of hazard

High

Social impact of hazard overall

Fluctuating socio-economic conditions
Increased incidence and prevalence of disease and illness
Increased demand for public services
Increased risk to already vulnerable populations
Increased resource demand
Loss of traditional jobs
Migration from rural areas to cities
Population displacement
Loss of tax base to support public services

Most relevant assets / services affected overall

Commercial
Residential
Emergency services

Please identify which vulnerable populations are affected

Persons with disabilities
Low-income households
Persons living in sub-standard housing

Future change in frequency

Increasing

Future change in intensity

Increasing

Future expected magnitude of hazard

High

When do you first expect to experience those changes in frequency and intensity?

Long-term (after 2050)

Please describe the impacts experienced so far, and how you expect the hazard to impact in the future

Increased flooding along the Coast and Fraser River as sea level rises and the storm surge and waves breach height of land; gradual inundation of low-lying land along the coast and the Fraser River; increasing costs of flood insurance where available for floodplain areas; increase in shoreline erosion affecting natural environment and public amenities such as parks, trails and access to the water; shoreline habitat squeeze resulting from rising water and hard infrastructure solutions (dikes); increased damage to structures (seawalls) and shoreline resulting in greater discontinuity of use; reduced gravity drainage of the existing drainage system.

Climate Hazards

Storm and wind > Storm surge

Did this hazard significantly impact your city before 2021?

Yes

Current probability of hazard

Medium Low

Current magnitude of hazard

High

Social impact of hazard overall

Fluctuating socio-economic conditions
Increased demand for public services
Increased risk to already vulnerable populations
Increased resource demand
Migration from rural areas to cities
Population displacement

Most relevant assets / services affected overall

Commercial
Residential
Emergency services

Please identify which vulnerable populations are affected

Persons with disabilities
Low-income households
Persons living in sub-standard housing

Future change in frequency

Increasing

Future change in intensity

Increasing

Future expected magnitude of hazard

High

When do you first expect to experience those changes in frequency and intensity?

Immediately

Please describe the impacts experienced so far, and how you expect the hazard to impact in the future

Increased flooding along the Coast and Fraser River as sea level rises and the storm surge and waves breach height of land; gradual inundation of low-lying land along the coast and the Fraser River; increasing costs of flood insurance where available for floodplain areas; increase in shoreline erosion affecting natural environment and public amenities such as parks, trails and access to the water; shoreline habitat squeeze resulting from rising water and hard infrastructure solutions (dikes); increased damage to structures (seawalls) and shoreline resulting in greater discontinuity of use; reduced gravity drainage of the existing drainage system.

Climate Hazards

Chemical change > Salt water intrusion

Did this hazard significantly impact your city before 2021?

No

Current probability of hazard

Do not know

Current magnitude of hazard

Medium Low

Social impact of hazard overall

Increased demand for public services
Increased resource demand

Most relevant assets / services affected overall

Energy
Water supply & sanitation
Food & agriculture

Please identify which vulnerable populations are affected

Future change in frequency

Increasing

Future change in intensity

Increasing

Future expected magnitude of hazard

Low

When do you first expect to experience those changes in frequency and intensity?

Medium-term (2026-2050)

Please describe the impacts experienced so far, and how you expect the hazard to impact in the future

Overland flooding of marine water onto property within the City. Saltwater intrusion in built up areas affecting the longevity of underground infrastructure and pump stations.

Climate Hazards

Biological hazards > Vector-borne disease

Did this hazard significantly impact your city before 2021?

No

Current probability of hazard

Medium Low

Current magnitude of hazard

Do not know

Social impact of hazard overall

Increased incidence and prevalence of disease and illness
Increased demand for healthcare services
Increased risk to already vulnerable populations
Increased resource demand

Most relevant assets / services affected overall

Public health
Society / community & culture
Other, please specify
Impacts to pets and wildlife

Please identify which vulnerable populations are affected

Children & youth
Elderly
Indigenous population
Marginalized groups
Persons with disabilities
Persons with chronic diseases
Low-income households
Unemployed persons
Persons living in sub-standard housing

Future change in frequency

Increasing

Future change in intensity

Do not know

Future expected magnitude of hazard

Do not know

When do you first expect to experience those changes in frequency and intensity?

Short-term (by 2025)

Please describe the impacts experienced so far, and how you expect the hazard to impact in the future

Introduction and/or movement of exotic vectors from areas outside the region to within the City.

Climate Hazards

Biological hazards > Insect infestation

Did this hazard significantly impact your city before 2021?

No

Current probability of hazard

Do not know

Current magnitude of hazard

Do not know

Social impact of hazard overall

Increased incidence and prevalence of disease and illness
Increased demand for healthcare services

Most relevant assets / services affected overall

Food & agriculture
Environment, biodiversity, forestry
Public health

Please identify which vulnerable populations are affected

Future change in frequency

Increasing

Future change in intensity

Increasing

Future expected magnitude of hazard

Do not know

When do you first expect to experience those changes in frequency and intensity?

Medium-term (2026-2050)

Please describe the impacts experienced so far, and how you expect the hazard to impact in the future

Changing invasive plants and pests, affecting existing ecosystems and the services they provide. Risk to urban forest and native species.

Climate Hazards

Wild fire > Forest fire

Did this hazard significantly impact your city before 2021?

Yes

Current probability of hazard

High

Current magnitude of hazard

High

Social impact of hazard overall

Increased incidence and prevalence of disease and illness
Increased demand for public services
Increased demand for healthcare services
Increased risk to already vulnerable populations
Increased conflict and/or crime
Increased resource demand
Migration from rural areas to cities
Population displacement

Most relevant assets / services affected overall

Public health
Society / community & culture
Emergency services

Please identify which vulnerable populations are affected

Children & youth
Elderly
Persons with chronic diseases
Persons living in sub-standard housing

Future change in frequency

Increasing

Future change in intensity

Increasing

Future expected magnitude of hazard

High

When do you first expect to experience those changes in frequency and intensity?

Immediately

Please describe the impacts experienced so far, and how you expect the hazard to impact in the future

Increased health and safety risks, especially to frontline communities during air quality events (e.g., smoke from wildfires).

(2.2) Please identify and describe the factors that most greatly affect your city's ability to adapt to climate change and indicate how those factors either support or challenge this ability.

Factors that affect ability to adapt	Indicate if this factor either supports or challenges the ability to adapt	Level of degree to which factor challenges/supports the adaptive capacity of your city	Please describe how the factor supports or challenges the adaptive capacity of your city
Cost of living	Challenges	Moderately challenges	City has a high cost of living, diverting attention and resources away from longer-term adaptation measures. Community resilience to recover from events may be low as few excess resources.
Housing	Challenges	Moderately challenges	City has urgent housing-affordability challenges, diverting attention and resources away from longer-term adaptation measures. Homeless population is more highly impacted by many climate related hazards.
Poverty	Challenges	Significantly challenges	Affordable housing and homelessness issues divert attention and resources away from longer-term adaptation measures. Homeless and poorly housed individuals are at greater risk of impact from climate-related hazards.

Public health	Supports	Moderately supports	Significant commitment from public health sector to address adaptation impacts and collaborate.
Political stability	Supports	Significantly supports	Generally good local political engagement and commitment to the environment. Currently, Federal and Provincial governments are politically committed to and supportive of environmental and climate action. Provincial government is working on release of their adaptation strategy this year.
Political engagement / transparency	Supports	Moderately supports	Generally good local political engagement and commitment to the environment. Currently, Federal and Provincial governments are politically committed to and supportive of environmental and climate action.
Government capacity	Supports	Significantly supports	The City has dedicated staff to address resilience, adaptation and emergency response.
Economic health	Supports	Significantly supports	Vancouver's good economic health makes it feasible to address climate change impacts. In the medium-term, recovery from COVID pandemic has impacted local economics and may make it more difficult for adaptation measures to be implemented.
Resource availability	Challenges	Moderately challenges	Federal and Provincial resources are required to implement many of the resilience building infrastructure changes.
Environmental conditions	Supports	Moderately supports	Vancouver's relatively good environmental health is a point of leverage to support adaptation.
Infrastructure conditions / maintenance	Supports	Somewhat supports	Generally good infrastructure condition.
Land use planning	Challenges	Significantly challenges	Resilience to climate change and other hazards is being increasingly integrated into land use planning, through community plans and large

			site rezonings. High property values, land scarcity, and political/resident resistance to development present challenges in translating adaptation actions into land-use planning.
Community engagement	Supports	Moderately supports	The City has worked hard on engagement and has an engaged community. Culturally, Vancouver has a history of climate and environmental activism.
Access to quality / relevant data	Challenges	Somewhat challenges	The City could benefit from more sophisticated data on hazards and impacts to vulnerable populations
Other, please specify Opioid crisis	Challenges	Moderately challenges	City is facing an opioid-overdose challenge in its most vulnerable populations, diverting attention and resources away from longer-term adaptation measures.
Other, please specify COVID 19 pandemic	Challenges	Moderately challenges	The pandemic diverts resources and attention to other non-climate related hazards
Other, please specify Site-specific land use	Challenges	Moderately challenges	To address housing affordability, diversity of housing and full lot coverage is being championed. Natural assets that buffer climate impacts are likely to be lost as a result.

(2.3) Is your city facing risks to public health or health systems associated with climate change?

Yes

(2.3a) Please report on how climate change impacts health outcomes and health services in your city.

Area affected by climate change

Health outcomes

Health systems (service provision, infrastructure and technologies)

Areas outside the health sector (e.g. agriculture, water and sanitation, transport, power generation, built environment)

Health-related risk and vulnerability assessment undertaken

No

Identify the climate hazards most significantly impacting the selected areas

Extreme hot temperature > Heat wave
Extreme hot temperature > Extreme hot days
Wild fire > Forest fire
Flood and sea level rise > Flash / surface flood

Identify the climate-related health issues faced by your city

Heat-related illnesses
Vector-borne infectious diseases (e.g. malaria, dengue, Lyme disease, tick-borne encephalitis)
Air-pollution related illnesses
Mental health impacts
Disruption to health service provision
Disruption of health-related services (e.g. roads, electricity, communications, emergency/ambulatory response, laboratories, pharmacies)

Timescale of climate-related issues for the selected health area

Medium-term (2026-2050)

Please identify which vulnerable populations are affected by these climate-related impacts

Women
Children and youth
Elderly
Indigenous populations
Marginalized groups
Outdoor workers
Persons with disabilities
Persons with pre-existing medical conditions
Persons living in sub-standard housing

Please explain

We know that heat and smoke events impact the elderly (especially those living alone), individuals that are homeless or living in sub-standard housing, pregnant women, children and people with pre-existing medical conditions most. Those working outside have higher exposure.

3. Adaptation

Adaptation Actions

(3.0) Please describe the main actions you are taking to reduce the risk to, and vulnerability of, your city's infrastructure, services, citizens, and businesses from climate change as identified in the Climate Hazards section.

Climate hazards

Extreme Precipitation > Rain storm

Action

Stormwater capture systems

Action title

Rain City Strategy

Status of action

Implementation

Means of implementation

Awareness raising program or campaign
Infrastructure development
Development and implementation of action plan

Co-benefit area

Improved resource quality (e.g. air, water)
Improved public health
Ecosystem preservation and biodiversity improvement

Sectors/areas adaptation action applies to

Building and Infrastructure
Water

Action description and implementation progress

Implementation of an Integrated Rainwater Management Plan. Our goal is to capture and treat 90% of the rainwater that falls in Vancouver using a combination of green infrastructure and conventional pipe systems.

Finance status

Feasibility undertaken

Majority funding source

Local

Total cost of the project (currency)

Total cost provided by the local government (currency)

Total cost provided by the majority funding source (currency)

Web link

https://vancouver.ca/home-property-development/green-infrastructure-documents-and-policies.aspx

Climate hazards

Storm and wind > Severe wind

Action

Tree planting and/or creation of green space

Action title

Urban Forest Strategy Resilience Actions

Status of action

Implementation

Means of implementation

Development and implementation of action plan

Co-benefit area

Ecosystem preservation and biodiversity improvement

Sectors/areas adaptation action applies to

Building and Infrastructure
Agriculture and Forestry

Action description and implementation progress

Support implementation and integration across departments of the Urban Forest Strategy Action Plan, especially those actions for climate resilience: Action 14: Update tree selection guidelines to reflect the City's goals for climate adaptation, rainwater management, food production, biodiversity and reconciliation. Action 8: Double the street tree canopy in the Downtown Eastside, Marpole and False Creek Flats and other priority neighbourhoods with below average urban forest cover. Actions 16 – 19: Plant trees to support green infrastructure and reduce climate change impacts. Action 32: Update integrated pest management policies to address current and future threats to Vancouver's urban forest. Action 33: Work with Vancouver Fire and Rescue Services to update procedures for preventing, minimizing and controlling wildfire in urban forests.

Finance status

Feasibility finalized, and finance partially secured

Majority funding source

Local

Total cost of the project (currency)

Total cost provided by the local government (currency)

Total cost provided by the majority funding source (currency)

Web link

https://vancouver.ca/home-property-development/urban-forest-strategy.aspx

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Climate hazards

Extreme hot temperature > Heat wave

Action

Tree planting and/or creation of green space

Action title

Urban Forest Strategy Resilience Actions

Status of action

Implementation

Means of implementation

Awareness raising program or campaign
Stakeholder engagement
Development and implementation of action plan

Co-benefit area

Improved resource efficiency (e.g. food, water, energy)
Social inclusion, social justice
Ecosystem preservation and biodiversity improvement

Sectors/areas adaptation action applies to

Agriculture and Forestry
Public Health and Safety

Action description and implementation progress

Address mitigation of urban-island heat effect by increasing tree canopy cover in the city. Implementation across disciplines prioritizing neighbourhoods with high temperature and frontline communities.

Finance status

Finance secured

Majority funding source

Local

Total cost of the project (currency)

Total cost provided by the local government (currency)

Total cost provided by the majority funding source (currency)

Web link

https://vancouver.ca/home-property-development/urban-forest-strategy.aspx

Climate hazards

Extreme hot temperature > Extreme hot days

Action

Resilience and resistance measures for buildings

Action title

Climate Resilient Buildings

Status of action

Implementation

Means of implementation

Stakeholder engagement
Policy and regulation

Co-benefit area

Enhanced resilience

Sectors/areas adaptation action applies to

Building and Infrastructure

Action description and implementation progress

Continue to incorporate new summer normals related to active cooling and thermal comfort in building policy and bylaws: encourage heat pumps, reduce cooling demand in new buildings, detailed thermal comfort guidance, exploration of future weather data for building design and modelling, etc.

Finance status

Feasibility finalized, and finance partially secured

Majority funding source

Local

Total cost of the project (currency)

Total cost provided by the local government (currency)

Total cost provided by the majority funding source (currency)

Web link

https://vancouver.ca/green-vancouver/homes-climate.aspx

Climate hazards

Water Scarcity > Drought

Action

Water use restrictions and standards

Action title

Alternative Water Usage

Status of action

Implementation

Means of implementation

Awareness raising program or campaign
Monitor activities
Policy and regulation

Co-benefit area

Improved resource efficiency (e.g. food, water, energy)
Improved resource security (e.g. food, water, energy)

Sectors/areas adaptation action applies to

Water

Action description and implementation progress

Continue water conservation and efficiency actions; develop regulations to support the usage of alternative water sources including groundwater, graywater and blackwater for non-potable demand. The 'fit for purpose' approach to water end use will reduce pressure on the regional supply and delivery of treated drinking water.

Finance status

Feasibility undertaken

Majority funding source

Local

Total cost of the project (currency)

Total cost provided by the local government (currency)

Total cost provided by the majority funding source (currency)

Web link

https://council.vancouver.ca/ctyclerk/cclerk/20181205/documents/cfsc2.pdf

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Climate hazards

Flood and sea level rise > Flash / surface flood

Action
Stormwater capture systems

Action title
Combined Sewer Overflow Elimination

Status of action
Implementation

Means of implementation
Stakeholder engagement
Development and implementation of action plan

Co-benefit area
Improved resource quality (e.g. air, water)
Ecosystem preservation and biodiversity improvement

Sectors/areas adaptation action applies to
Building and Infrastructure
Water
Waste

Action description and implementation progress
City strategic priority is to accelerate the separation of Vancouver's combined sewer system into storm and sanitary. Goal is to achieve the elimination of combined sewer overflows by 2050.

Background: The system delivers sanitary waste to the treatment facilities operated by the Greater Vancouver Sewerage and Drainage District (GVS&DD - Metro Vancouver) and stormwater to outfalls along
the City's waterfront. Sanitary waste and stormwater are collected from more than 100,000 service connections from homes and businesses, and stormwater is collected from more than 45,000 catch basins through a system that is 1,380 km in length, with a replacement value of approximately $6.1 billion.

During periods of rainfall, Combined Sewer Overflows (CSOs) can occur inwhich the combined sewer system can overflow into receiving waters. Originally the sewersystem was built as a combined sewer system in which sanitary waste and storm flows were collected in a single combined sewer pipe in the street. Since the late 1950s, the system has been built and replaced as a separated system with both sanitary and storm pipes in the street. Approximately 54.6% of the system has now been separated as of 2020.

Finance status
Finance secured

Majority funding source
Local

Total cost of the project (currency)

Total cost provided by the local government (currency)

Total cost provided by the majority funding source (currency)

Web link

https://vancouver.ca/home-property-development/separating-sewage-from-rainwater.aspx

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Climate hazards

Flood and sea level rise > Coastal flood

Action

Sea level rise modelling

Action title

Sea Level Rise Coastal Design Challenge

Status of action

Pre-implementation

Means of implementation

Capacity building and training activities
Awareness raising program or campaign
Stakeholder engagement

Co-benefit area

Disaster Risk Reduction
Enhanced resilience
Disaster preparedness
Enhanced climate change adaptation
Resource conservation (e.g. soil, water)
Ecosystem preservation and biodiversity improvement
Improved access to data for informed decision-making

Sectors/areas adaptation action applies to

Transport (Mobility)
Building and Infrastructure
Industry
Spatial Planning
Agriculture and Forestry
Water
Waste

Public Health and Safety

Action description and implementation progress

The Sea Level Rise Coastal Design Challenge will advance solutions for the most flood-vulnerable areas. With roughly $1 billion of flood management infrastructure needed in Vancouver by 2100, building public awareness and support will be critical. A high-profile design challenge, modelled on successful programs implemented in New York City and San Francisco, would engage local, national and international experts, along with local residents and businesses, to co-develop implementable designs. This approach is expected to deliver outcomes that are more holistic, and with greater community buy-in, than a traditional public consultation process. The focus of Vancouver's sea level rise design challenge be False Creek and along the Fraser River (within City boundaries), but we will approach neighbouring municipalities and other organizations as well, to potentially broaden the scope to a more regional effort.

Finance status

Feasibility finalized, and finance partially secured

Majority funding source

Local

Total cost of the project (currency)

1,000,000

Total cost provided by the local government (currency)

500,000

Total cost provided by the majority funding source (currency)

Web link

https://council.vancouver.ca/20180725/documents/pspc2.pdf

Climate hazards

Storm and wind > Storm surge

Action

Sea level rise modelling

Action title

Sea Level Rise Coastal Design Challenge

Status of action

Pre-implementation

Means of implementation

Assessment and evaluation activities

Co-benefit area

Disaster Risk Reduction
Enhanced resilience
Disaster preparedness
Improved resource security (e.g. food, water, energy)
Resource conservation (e.g. soil, water)
Ecosystem preservation and biodiversity improvement
Improved access to data for informed decision-making

Sectors/areas adaptation action applies to

Action description and implementation progress

The Sea Level Rise Coastal Design Challenge will advance solutions for the most flood-vulnerable areas. With roughly $1 billion of flood management infrastructure needed in Vancouver by 2100, building public awareness and support will be critical. A high-profile design challenge, modelled on successful programs implemented in New York City and San Francisco, would engage local, national and international experts, along with local residents and businesses, to co-develop implementable designs. This approach is expected to deliver outcomes that are more holistic, and with greater community buy-in, than a traditional public consultation process. The focus of Vancouver's sea level rise design challenge be False Creek and along the Fraser River (within City boundaries), but we will approach neighbouring municipalities and other organizations as well, to potentially broaden the scope to a more regional effort.

Finance status

Feasibility finalized, and finance partially secured

Majority funding source

Local

Total cost of the project (currency)

1,000,000

Total cost provided by the local government (currency)

500,000

Total cost provided by the majority funding source (currency)

Web link

https://council.vancouver.ca/20180725/documents/pspc2.pdf

Climate hazards

Chemical change > Salt water intrusion

Action

Diversification of water supply

Action title
Groundwater Strategy

Status of action
Scoping

Means of implementation
Development and implementation of action plan

Co-benefit area
Enhanced resilience
Improved resource security (e.g. food, water, energy)
Resource conservation (e.g. soil, water)

Sectors/areas adaptation action applies to
Water

Action description and implementation progress
None at present

Finance status

Majority funding source

Total cost of the project (currency)

Total cost provided by the local government (currency)

Total cost provided by the majority funding source (currency)

Web link

Climate hazards
Biological hazards > Vector-borne disease

Action
Other, please specify
None at present

Action title

Status of action
Scoping

Means of implementation

Co-benefit area

Sectors/areas adaptation action applies to

Action description and implementation progress
None at present

Finance status

Majority funding source

Total cost of the project (currency)

Total cost provided by the local government (currency)

Total cost provided by the majority funding source (currency)

Web link

Climate hazards
Biological hazards > Insect infestation

Action
Other, please specify
Pest Management and Resilient Trees

Action title
Pest Management Strategy

Status of action
Implementation

Means of implementation
Capacity building and training activities

Monitor activities
Development and implementation of action plan

Co-benefit area
Ecosystem preservation and biodiversity improvement

Sectors/areas adaptation action applies to
Agriculture and Forestry

Action description and implementation progress
Consideration of pest management with climate change. Maintaining tree diversity within the urban forest population, and selecting trees that are expected to thrive in future climate, is important for the health of the urban forest. A diverse and well-adapted tree population will be less vulnerable to insect and disease attack, more resilient to climate change, and provide a stable supply of ecosystem services.

Finance status
Feasibility finalized, and finance partially secured

Majority funding source
Local

Total cost of the project (currency)

Total cost provided by the local government (currency)

Total cost provided by the majority funding source (currency)

Web link
https://vancouver.ca/files/cov/urban-forest-strategy.pdf

Climate hazards
Wild fire > Forest fire

Action
Air quality initiatives

Action title
Clean Air Shelters

Status of action
Operation

Means of implementation
Infrastructure development

Co-benefit area

Social inclusion, social justice
Improved public health

Sectors/areas adaptation action applies to

Building and Infrastructure

Action description and implementation progress

A priority action in the City's updated Climate Adaptation Strategy:

"Address wildfire smoke events through proactive planning for communications, filtered air assessment and pilot clean air shelters, and worker safety. "
"Choose several pilot cooling facilities to be designated clean air shelters for use during poor air quality events during the summer. Evaluate how they are used and program needs moving forward"

Explore using City facilities and community centres to collectively support people in increasing and different ways – extreme weather, heat, poor air quality etc. Providing clean air shelters with highly filtered indoor air in community centres would be one way to provide areas of refuge for vulnerable populations during air quality events.

Finance status

Feasibility undertaken

Majority funding source

Local

Total cost of the project (currency)

Total cost provided by the local government (currency)

Total cost provided by the majority funding source (currency)

Web link

https://vancouver.ca/files/cov/Vancouver-Climate-Change-Adaptation-Strategy-2018.pdf

Adaptation Planning

(3.2) Does your city council, or similar authority, have a published plan that addresses climate change adaptation and/or resilience?

Yes

GCoM Additional Information

(3.2a) Please provide more information on your plan that addresses climate change adaptation and/or resilience and attach the document. Please provide details on the

boundary of your plan, and where this differs from your city's boundary, please provide an explanation.

Publication title and attach the document

Vancouver Climate Change Adaptation Strategy

climate-change-adaptation-strategy.pdf

Web link

https://vancouver.ca/files/cov/climate-change-adaptation-strategy.pdf

Sectors/areas covered by plan that addresses climate change adaptation

Energy
Transport (Mobility)
Building and Infrastructure
Industry
Spatial Planning
Water
Public Health and Safety
Business and Financial Service
Social Services

Climate hazards factored into plan that addresses climate change adaptation

Extreme Precipitation > Rain storm
Storm and wind > Severe wind
Storm and wind > Storm surge
Extreme hot temperature > Heat wave
Extreme hot temperature > Extreme hot days
Water Scarcity > Drought
Wild fire > Forest fire
Flood and sea level rise > Flash / surface flood
Flood and sea level rise > River flood
Flood and sea level rise > Coastal flood
Flood and sea level rise > Permanent inundation
Chemical change > Salt water intrusion
Mass movement > Landslide
Biological hazards > Insect infestation

Year of adoption of adaptation plan by local government

2018

Boundary of plan relative to city boundary (reported in 0.1)

Same - covers entire city and nothing else

If the city boundary is different from the plan boundary, please explain why

n/a

Stage of implementation

Plan in implementation

Type of plan

Standalone

Has your local government assessed the synergies, trade-offs, and co-benefits, if any, of the main mitigation and adaptation actions you identified?

Yes

Describe the synergies, trade-offs, and co-benefits of this interaction

Low carbon resilience (LCR) will be a focus of Vancouver's adaptation efforts moving forward. LCR refers to climate change strategies that integrate and achieve co-benefits between carbon pollution reduction (mitigation) and planning designed to reduce vulnerability to climate change impacts (adaptation). In Vancouver, planning leads for both functions work together to identify opportunities to achieve low carbon adaptation and to ensure mitigation efforts don't lead to greater climate change risk. Co-beneficial actions such as installing heat pumps for heating and cooling, heat recovery ventilators important for improving energy efficiency and improving indoor air quality, and increasing the health and area of natural assets are prioritized. Through greater coordination and mainstreaming, adaptation and mitigation will become foundational considerations across City work.

Primary author of plan

Dedicated city team

Description of the stakeholder engagement processes

In order to review and update the Adaptation Plan, two phases of work were carried out: Review and Gap Analysis, and New Action Planning. The review phase included reviewing best practices in adaptation globally, speaking with international colleagues and identifying areas where we could strengthen our approach. With these gaps in hand, interviews were carried out with staff accountable for implementing the 2012 Strategy actions and with new action area staff.

Interviews focused on further development of the gap analysis: actions completed, actions underway or planned, barriers to implementation, and assessment of identified gaps and potential actions to fill them. The original risk and vulnerability assessment and impact statements were reviewed but not repeated. Action planning occurred across a variety of engagement styles including: a workshop with cross-departmental staff, one on one interviews and meetings with staff, and working with partners such as BC Housing and Vancouver Coastal Health.

Adaptation Goals

(3.3) Please describe the main goals of your city's adaptation efforts and the metrics / KPIs for each goal.

Adaptation goal

Minimize rainfall-related flooding and associated consequences

Climate hazards that adaptation goal addresses

Extreme Precipitation > Rain storm
Flood and sea level rise > Flash / surface flood

Target year of goal

2050

Description of metric / indicator used to track goal

Target year associated only with the indicator to manage urban rainwater form 40% of impervious areas in the city.
Target to capture and treat 90% of Vancouver's average annual rainfall; as well, adopt upcoming Rain City Strategy indicators and targets where appropriate. No target year chosen yet. Other indicators and target years to be determined as indicators frameworks in Adaptation Strategy and related strategies (e.g., Rain City Strategy, etc.) are developed.

Does this goal align with a requirement from a higher level of government?

Yes, and it exceeds its scale or requirements

Select the initiatives related to this adaptation goal that your city has committed to

Individual City Commitment

Comment

Adaptation goal

Design robust built form to do well in a range of climates while providing co-benefits such as seismic resilience, energy efficiency, accessibility and supporting health and well-being.

Climate hazards that adaptation goal addresses

Extreme hot temperature > Heat wave
Extreme hot temperature > Extreme hot days

Target year of goal

2030

Description of metric / indicator used to track goal

Target: ZEB target of 100% floor area in newly permitted buildings near-zero emissions by 2030. Indicator: Floor area of newly permitted buildings that are near zero-emissions. Other indicators and target years to be determined as indicators frameworks in Adaptation Strategy and related strategies (e.g., Rain City Strategy, Climate Emergency Action Plan, etc.) are developed.

Does this goal align with a requirement from a higher level of government?

Yes, and it exceeds its scale or requirements

Select the initiatives related to this adaptation goal that your city has committed to

Declaring Climate Emergency
Individual City Commitment

Comment

Adaptation goal

Increase resilience to coastal and riverine flooding

Climate hazards that adaptation goal addresses

Storm and wind > Storm surge
Flood and sea level rise > Coastal flood
Flood and sea level rise > Permanent inundation

Target year of goal

Description of metric / indicator used to track goal

Target: Coastal projects using SLR information and adaptation actions. Indicators: rate of new development employing flood proofing measures in floodplain areas; number of residents and prop owners engaged or receiving applicable information from the City. No target year chosen yet. Other indicators and target years to be determined as indicators frameworks in Adaptation Strategy and related strategies (e.g., Rain City Strategy, etc.) are developed.

Does this goal align with a requirement from a higher level of government?

No

Select the initiatives related to this adaptation goal that your city has committed to

Individual City Commitment

Comment

Adaptation goal

Enhance the long term health and vigour of green spaces, trees and biodiversity

Climate hazards that adaptation goal addresses

Extreme Precipitation > Rain storm
Extreme hot temperature > Heat wave

Extreme hot temperature > Extreme hot days
Water Scarcity > Drought

Target year of goal

2050

Description of metric / indicator used to track goal

Goal: Increase the canopy cover in the city. Target 30% by 2050. Latest measurement (23%) in 2018. Additional indicator: Street tree density in neighbourhoods with higher measured heat and vulnerability to heat. Other indicators and target years to be determined as indicators frameworks in Adaptation Strategy and related strategies (e.g., Rain City Strategy, successor to Greenest City Action Plan, etc.) are developed.

Does this goal align with a requirement from a higher level of government?

No

Select the initiatives related to this adaptation goal that your city has committed to

Individual City Commitment

Comment

Adaptation goal

With a focus on equity, minimize the health and safety impacts of climate change on communities and maximize their preparedness

Climate hazards that adaptation goal addresses

Extreme hot temperature > Heat wave
Extreme hot temperature > Extreme hot days

Target year of goal

2050

Description of metric / indicator used to track goal

Indicators: Social support network size, measured with targets through the Healthy City Strategy; Excess deaths or hospitalizations due to heat; Percentage of City and BC Housing owned non-market housing with access to a cool room during summer months; Number of public water fountains; Number of City facilities open to the public that provide a MERV 13 or higher standard of air filtration during summer months. No target date or year chosen yet. Other indicators and target years to be determined as indicators frameworks in Adaptation Strategy and related strategies (e.g., successor to Greenest City Action Plan, etc.) are developed.

Does this goal align with a requirement from a higher level of government?

No

Select the initiatives related to this adaptation goal that your city has committed to

Individual City Commitment

Comment

Adaptation goal

Continue maximizing adaptation knowledge and mainstreaming across the organization.

Climate hazards that adaptation goal addresses

Extreme Precipitation > Rain storm
Storm and wind > Storm surge
Extreme hot temperature > Heat wave
Extreme hot temperature > Extreme hot days
Water Scarcity > Drought
Wild fire > Forest fire
Flood and sea level rise > Flash / surface flood
Flood and sea level rise > Coastal flood
Flood and sea level rise > Permanent inundation
Biological hazards > Vector-borne disease
Biological hazards > Insect infestation

Target year of goal

Description of metric / indicator used to track goal

City CFO has committed City to incorporating climate-risk disclosure in mainstream financial reporting. Vancouver included TCFD disclosure in 2019 Statement of Financial Information. No target year chosen yet. Additional indicators: Number of staff that have taken the adaptation CityLearn course (to be developed); Number of City staff involved in a climate change risk assessment through the Infrastructure Canada Lens or Envision system. Other indicators and target years to be determined as indicators frameworks in Adaptation Strategy and related strategies (e.g., successor to Greenest City Action Plan, etc.) are developed.

Does this goal align with a requirement from a higher level of government?

No

Select the initiatives related to this adaptation goal that your city has committed to

Individual City Commitment
Other, please specify
Taskforce for Climate-related Financial Disclosures (TCFD)

Comment

Adaptation Planning Process

(3.4) Does your local/regional government apply a Monitoring and Evaluation (M&E) system for monitoring the implementation of adaptation goals and targets as part of the climate adaptation plan (or integrated climate action plan)?

Monitoring & Evaluation (M&E) system

Response

Yes

Description of Monitoring and Evaluation (M&E) system applied

Vancouver's 2012 Adaptation Plan included possible indicators in the appendices and monitored for implementation progress but not for actual outcomes toward a more resilient city. Adaptation to climate change
is challenging to measure for a number of reasons. For example, when defining success the city must decide if it's a single outcome that can be achieved or an ongoing set of processes. Lengthy time horizons also pose challenges when interpreting if actions have reduced our risk (as with sea level rise). Changes in baseline conditions during the monitoring period can also alter the clarity of the results/outcomes. Counterfactual indicators are common but difficult to measure and inaccurate such as the dollars of flood damage prevented compared to not taking flood mitigation action. Adaptation indicators are also frequently proxy measures as measuring the true goal is impossible and it is challenging to tell when measures have negative unintended consequences.

There are various types of indicators from those that measure inputs to those that measure efficiency of a project or process. The focus of the indicators is to build a program that over time ensures the actions taken are making the City of Vancouver more climate resilient. Another set of indicators the city will monitor over time are explanatory indicators, or those that support why we are doing this work. For example, how many days of air quality alerts there are each summer.

There are a range of existing indicators measured across the City already and more to come through the Resilient Vancouver Strategy, Rain City Strategy, Greenest City Action Plan (GCAP) refresh and others. Many of these provide indications of how well we are doing on adaptation. For example, the Rain City Strategy will include targets for infiltrating or detaining rain water. A preliminary list of indicators and targets are listed in the Climate Change Adaptation Strategy (already attached to this CDP submission). If they are existing indicators as marked, they will be measured on the existing basis. If new indicators, they will be measured twice per Adaptation Strategy review cycle (five years). Staff aim to return to finalize indicators following completion of the aforementioned plans which are under development at the time of writing. Strategy implementation progress reporting will continue annually.

(3.5) Please explain how your city has addressed vulnerable groups through transformative action.

The adaptation work has been transformative in isolated aspects: e.g., the coastal flooding work, given its novelty.
The Resilient Vancouver Strategy completed through the 100 Resilient Cities initiative addresses building resilience across communities with a focus on equity.
The Adaptation Strategy prioritizes actions that aim to minimize impacts on those most highly impacted or most vulnerable to an impact. For example, extreme heat planning engagement, data collection and actions are focused on marginalized groups, homeless and those living in sub-standard housing.
Recently, the City adopted an Equity Framework that will be applied to implementation projects moving forward.

4. City-wide Emissions

City-wide GHG Emissions Data

(4.0) Does your city have a city-wide emissions inventory to report?

Yes

GCoM Common Reporting Framework Reporting Requirements for Canadian Cities

(4.1) Please state the dates of the accounting year or 12-month period for which you are reporting your latest city-wide GHG emissions inventory.

	From	To
Accounting year dates	January 1, 2020	December 31, 2020

(4.2) Please indicate the category that best describes the boundary of your city-wide GHG emissions inventory.

	Boundary of inventory relative to city boundary (reported in 0.1)	Excluded sources / areas	Explanation of boundary choice where the inventory boundary differs from the city boundary (include inventory boundary, GDP and population)
Please explain	Same – covers entire city and nothing else	Excluded AFOLU, IPPU, Other Scope 3.	AFOLU emissions considered negligible within Vancouver IPPU emissions included within Scope 1/2 buildings/transportation estimates and cannot be disaggregated due to lack of source-data availability Insufficient data currently available for Scope 3 compilation

(4.3) Please give the name of the primary protocol, standard, or methodology you have used to calculate your city's city-wide GHG emissions.

	Primary protocol	Comment
Emissions methodology	Global Protocol for Community Greenhouse Gas Emissions Inventories (GPC)	The City has compiled a GPC-compliant inventory as a Global Covenant of Mayors signatory.

(4.4) Which gases are included in your city-wide emissions inventory?

CO2

CH4

N20

GCoM Additional Information

(4.5) Please attach your city-wide inventory in Excel or other spreadsheet format and provide additional details on the inventory calculation methods in the table below.

Document title and attachment

Vancouver Community GHG Inventory - CIRIS_Standard_v2.4__EN MULTI-YEAR.xlsx

Vancouver Community GHG Inventory - CIRIS_v2.4 MULTI-YEAR (no macros).xlsx

Emissions inventory format

I have attached my inventory in the GPC format: City Inventory Reporting and Information System (CIRIS)

Web link

Emissions factors used

Other, please specify

2020 BC Methodological Guidance for Quantifying GHGs (https://www2.gov.bc.ca/assets/gov/environment/climate-change/cng/methodology/2020-pso-methodology.pdf)

Global Warming Potential (select relevant IPCC Assessment Report)

IPCC 4th AR (2007)

Please select which additional sectors are included in the inventory

No additional sectors included

Population in inventory year

654,000

Overall level of confidence

High

Comment on level of confidence

Our inventory undergoes continual improvements in methodology, base data, and emission factors. We have high confidence in the emission factors (external assurance from Provincial source; ultimately derived from Federal-level National Inventory Reports) and the precision of the base data we collect. Confidence in methodology is high in some sectors (buildings, waste) but medium in others (e.g., appropriateness of retail fuel sales data to estimate transportation GHGs). Population is estimated (interpolation between Census years).

NOTE: CIRIS sheet attachment contains no macros (ORS does not accept macro-enabled Excel files). Some functionality may be lost.

GCoM Common Reporting Framework Reporting Requirements for Canadian Cities

(4.6a) The Global Covenant of Mayors requires committed cities to report their inventories in the format of the new Common Reporting Framework, to encourage standard reporting of emissions data. Please provide a breakdown of your city-wide emissions by sector and sub-sector in the table below. Where emissions data is not available, please use the relevant notation keys to explain the reason why.

	Direct emissions (metric tonnes CO2e)	If you have no direct emissions to report, please select a notation key to explain why	Indirect emissions from the use of grid-supplied electricity, heat, steam and/or cooling (metric tonnes CO2e)	If you have no indirect emissions to report, please select a notation key to explain why	Emissions occurring outside the city boundary as a result of in-city activities (metric tonnes CO2e)	If you have no emissions occurring outside the city boundary to report as a result of in-city activities, please select a notation key to explain why	Please explain any excluded sources, identify any emissions covered under an ETS and provide any other comments
Stationary energy > Residential buildings	487,976		19,832			NE	

Stationary energy > Commercial buildings & facilities	871,945		37,987			NE	Utility provides only aggregated commercial, institutional and industrial sector data. Estimate includes institutional and industrial facilities.
Stationary energy > Institutional buildings & facilities		IE		IE		NE	Utility provides only aggregated commercial, institutional and industrial sector data. Estimate included in commercial facilities.
Stationary energy > Industrial buildings & facilities		IE	2,683			NE	Utility provides only aggregated commercial, institutional and industrial sector data. Estimate included in commercial facilities.
Stationary energy > Agriculture		NO		NO		NO	No large-scale agricultural activities within City boundary. Negligible emissions from urban agriculture included in commercial buildings/facililities.

Stationary energy > Fugitive emissions	22,359			N/A		NE	
Total Stationary Energy	1,382,281		60,502			N/A	
Transportation > On-road	864,969			IE		NE	Electricity consumption for plug-in electric and battery-electric vehicles; included in stationary electricity totals
Transportation > Rail	12,378			IE		NE	Electricity consumption for light rail and trolley buses; included in stationary electricity totals
Transportation > Waterborne navigation		NO		NO		NE	No significant marine navigation occurring that completely originates and terminates within city boundary
Transportation > Aviation		NO		NO		NE	No significant aviation occurring that completely originates and terminates within city boundary
Transportation > Off-road	21,994					NE	Any electricity use for off-road transportation estimated to be negligible and included in

							stationary energy totals
Total Transport	899,342			N/A		N/A	
Waste > Solid waste disposal		IE		N/A	64,444		No landfilling of waste within city boundary
Waste > Biological treatment		NO		N/A	20,645		No biological treatment of waste within city boundary
Waste > Incineration and open burning		NO		N/A		IE	No incineration of waste within city boundary
Waste > Wastewater		NO		N/A	5,561		No wastewater treated within city boundary
Total Waste		N/A		N/A	90,650		All waste treatment occurs in neighbouring city
IPPU > Industrial process		NE		N/A		NE	Not estimated for BASIC inventory
IPPU > Product use		NE		N/A		NE	Not estimated for BASIC inventory
Total IPPU		NE		N/A		NE	Not estimated for BASIC inventory
AFOLU > Livestock		NE		N/A		NE	Not estimated for BASIC inventory
AFOLU > Land use		NE		N/A		NE	Not estimated for BASIC inventory

AFOLU > Other AFOLU		NE		N/A		NE	Not estimated for BASIC inventory
Total AFOLU		N/A		N/A		NE	Not estimated for BASIC inventory
Generation of grid-supplied energy > Electricity-only generation		NO		N/A		NE	Not estimated for BASIC inventory
Generation of grid-supplied energy > CHP generation		NO		N/A		NE	Not estimated for BASIC inventory
Generation of grid-supplied energy > Heat/cold generation	5,935			N/A		NE	
Generation of grid-supplied energy > Local renewable generation		NO		N/A		NE	Not estimated for BASIC inventory
Total Generation of grid-supplied energy	5,935			N/A		N/A	
Total Emissions (excluding generation of grid-supplied energy)	2,281,623		60,502		90,650		

(4.8) Please indicate if your city-wide emissions have increased, decreased, or stayed the same since your last emissions inventory, and describe why.

	Change in emissions	Primary reason for change	Please explain and quantify changes in emissions
Please explain	Decreased	Other, please specify Activity reduction due to COVID-19	Largest year-over-year change due to reduction in gasoline sales (15% year-over-year) due to COVID-19 related decrease in vehicle activity. City-wide buildings GHGs are dominated by natural gas use for space and hot-water heating: year-over-year natural gas use was within annual weather-related variation. Landfill gas fugitive emissions decreased back to pre-2019 levels as landfill-gas capture system approached peak efficiency again, following construction-related decreases in collection efficiency in 2019.

(4.9) Does your city have a consumption-based inventory to measure emissions from consumption of goods and services by your residents?

	Response	Provide an overview and attach your consumption-based inventory if relevant
Please complete	Yes	The City partnered with the BC Institute of Technology (Dr. Jennie Moore) to update its ecoCity Footprint-generated CBEI in 2017, for 2015 inventory year. CBEI begins page 18 of attached Summary Report. The CBEI provides sectoral inventories for buildings, transportation, food, consumables and waste, and water. 1

[1]PDS - SUS - EcoCity Footprint Tool - Vancouver Summary Report - USDN - 2018-01.PDF

(4.11) Does your city have a strategy, or other policy document, in place for how to measure and reduce consumption-based GHG emissions in your city?

Food

Response

No

Please provide more details on and/or a link to the strategy or highlights of any specific actions the city is implementing

Food waste reduction and circular economy work is governed separately in the Zero Waste 2040 Strategy and in other work through the Vancouver Local Food Strategy. These reference food-consumption GHGs compiled as part of our consumption-based emissions inventory (CBEI); however these policies do not currently give explicit direction to tackle these emissions.

PDS - SUS - EcoCity Footprint Tool - Vancouver Summary Report - USDN - 2018-01.PDF

Construction

Response

Yes

Please provide more details on and/or a link to the strategy or highlights of any specific actions the city is implementing

To begin addressing Vancouver's scope 3 carbon emissions, Big Move 5 in the forthcoming Climate Emergency Action Plan is focused on the embodied emissions in new buildings and construction projects, including a target that by 2030, those sources be reduced by 40 per cent as compared to 2018 typical practice.

Success for this Big Move will mean a shift in construction practices to: use more mass timber and low carbon concrete, rely more on prefabricated and modular construction, eliminate spray foam insulation with high-carbon blowing agents, and use more recycled aggregate and asphalt. Further, a shift in design practices to less underground parking and the retention or re-use of existing materials will also be outcomes of this Big Move.

Initial work towards this Big Move is expected to include removing regulatory barriers to increased mass timber construction and introducing requirements for lower embodied emissions. As with the Zero Emissions Building Plan, the work to achieve the target cannot depend on regulations alone. To recognize the steep learning curve for many designers, developers and building occupants, the work will include incentives for early adopters, industry capacity-building and City leadership.
The City will need to work with regional, provincial, national and international partners to improve standards and protocols for embodied emissions accounting in order for this work to be successful.

CEAP Council Report 20201022.pdf

Transportation

Response

Yes

Please provide more details on and/or a link to the strategy or highlights of any specific actions the city is implementing

Embodied emissions from transportation are compiled as part of our consumption-based emissions inventory (CBEI). The Greenest City 2020 Action Plan governed this under its Lighter Footprint goal area; future action on this may come from strategic direction from a future iteration of Greenest City as part of the City-wide Plan (development currently underway).

PDS - SUS - EcoCity Footprint Tool - Vancouver Summary Report - USDN - 2018-01.PDF

Clothing and textiles

Response

No

Please provide more details on and/or a link to the strategy or highlights of any specific actions the city is implementing

Embodied emissions from consumer goods, including clothing and textiles, are compiled as part of our consumption-based emissions inventory (CBEI). The Greenest City 2020 Action Plan governed emissions measurement under its Lighter Footprint goal area. Detailed priorities and actions around textile-waste reduction and circular economy work are governed separately in the Zero Waste 2040 Strategy.

PDS - SUS - EcoCity Footprint Tool - Vancouver Summary Report - USDN - 2018-01.PDF

Electronics

Response

No

Please provide more details on and/or a link to the strategy or highlights of any specific actions the city is implementing

Embodied emissions from consumer goods, including electronics, are compiled as part of our consumption-based emissions inventory (CBEI). The Greenest City 2020 Action Plan governed emissions measurement under its Lighter Footprint goal area. Detailed priorities and actions around waste reduction and circular economy work are governed separately in the Zero Waste 2040 Strategy.

PDS - SUS - EcoCity Footprint Tool - Vancouver Summary Report - USDN - 2018-01.PDF

Aviation

Response

No

Please provide more details on and/or a link to the strategy or highlights of any specific actions the city is implementing

These emissions are not compiled.

City-wide external verification

(4.12) Has the city-wide GHG emissions data you are currently reporting been externally verified or audited in part or in whole?

Yes

(4.12a) Please provide the following information about the city-wide emissions verification.

	Name of verifier and attach	Year of verification	Please explain

	verification certificate		
Please complete	Offsetters Clean Technology 1	2015	The methodology for quantifying the fugitive landfill gas portion of our inventory was assessed for a period of 2012-2015 (aligning with a period when Vancouver's landfill gas capture system was generating BC-relevant carbon credits to offset local government operations). This period for offset-generation eligibility ended as of 2016; no other verification has been undertaken since.

1CMO - SUS - CoV Landfill Gas Assessment Report V4.PDF

Historical emissions inventories

(4.13) Please provide details on any historical, base year or recalculated city-wide emissions inventories your city has, in order to allow assessment of targets in the table below.

Inventory date from

January 1, 2007

Inventory date to

December 31, 2007

Scopes / boundary covered

Total emissions
Scope 1 (direct)
Scope 2 (indirect)

Previous emissions (metric tonnes CO2e)

2,859,119

Is this inventory a base year inventory or a recalculated version of a previously reported inventory?

Base year inventory

Methodology

Global Protocol for Community Greenhouse Gas Emissions Inventories (GPC)

File name and attach your inventory

Vancouver Community GHG Inventory - CIRIS_v2.4 MULTI-YEAR (no macros).xlsx

Vancouver Community GHG Inventory - CIRIS_v2.4 MULTI-YEAR (no macros).xlsx

Web link

Comments

NOTE: Inventory file attached is a multi-year file containing all City of Vancouver GPC inventories back to 2007. Inventory year can be adjusted in "INVENTORY YEAR" tab.

City-wide buildings GHGs has declined 15% from 2007 baseline. Building energy use dominated by natural gas use for space and hot-water heating, and is therefore highly weather-dependent; however, green building policies have shown an increase in efficiency, once building energy is normalized for heating-degree-day annual counts. Grid-electricity has also become cleaner, though electricity use only accounts for <5% of building GHGs.

Overall, fuel sales decreased 22% between 2007 and 2020 but, as previously mentioned, gasoline sales correlate well with local price differential and exchange rate between Canada and US fuel prices, which causes residents to fuel up in the US, decreasing local fuel sales. Some rebound effect has also been observed since the early 2000s, in terms of increasing fuel efficiencies and increased resident uptake of larger light-duty vehicles. In the latest reporting year (2020), COVID-19 had a significant impact on resident activity and therefore vehicle fuel use.

Significant improvements in landfill gas capture have decreased landfill gas fugitive emissions 50% since 2007. Vancouver's inputs to landfill (which accepts regional hauling) have also slowed, despite population growth, pointing to the effectiveness of Vancouver's Zero Waste initiatives.

GCoM Emission Factor and Activity Data

(4.14) State if the emissions factors and activity data used to calculate your cities emissions are accessible within the attached emissions inventory in question 4.5. If so, please describe where these are located within the attached inventory.

Emissions factors and Activity Data Reported

Emissions factors and activity data accessibility

Emissions factors and activity data are accessible within the attached inventory in question 4.5

State the location of emissions factors and activity data within the attached inventory in question 4.5

"Emission Factors" tab in spreadsheet

5. Emissions Reduction

Mitigation Target setting

(5.0) Do you have a GHG emissions reduction target(s) in place at the city-wide level?

Base year emissions (absolute) target

(5.0a) Please provide details of your total city-wide base year emissions reduction (absolute) target(s). In addition, you may add rows to provide details of your sector-specific targets, by providing the base year emissions specific to that target.

Sector

All emissions sources included in city inventory

Where sources differ from the inventory, identify and explain these additions / exclusions

Boundary of target relative to city boundary (reported in 0.1)

Larger – covers the whole city and adjoining areas

Explanation of boundary choice where the inventory boundary differs from the city boundary (include inventory boundary, GDP and population)

Base year

2007

Year target was set

2017

Base year emissions (metric tonnes CO2e)

2,854,000

Percentage reduction target

50

Target year

2030

Target year absolute emissions (metric tonnes CO2e) [Auto-calculated]

1,427,000

Percentage of target achieved so far

15

Is this target considered to be your cities most ambitious target?

No

Does this target align with the global 1.5 - 2 °C pathway set out in the Paris Agreement?

Yes - 1.5 °C

Select the initiatives that this target contributes towards

Global Covenant of Mayors for Climate & Energy

One Planet City Challenge
Deadline 2020 - Delivering the 1.5 degree ambition of the Paris Agreement in a resilient, inclusive way
Declaring Climate Emergency
Individual City Commitment

Does this target align to a requirement from a higher level of government?

Yes, but it exceeds its scale or requirement

Please describe your target. If your country has an NDC and your city's target is less ambitious than the NDC, please explain why.

Target was set as part of Renewable City Action Plan in 2017, the City's former renewable energy plan to 2050. This target was reaffirmed in 2019 with the adoption of the Climate Emergency Response. It is compliant with IPCC-recommended emissions pathways for 1.5'C.

Sector

All emissions sources included in city inventory

Where sources differ from the inventory, identify and explain these additions / exclusions

Boundary of target relative to city boundary (reported in 0.1)

Same (city-wide) – covers entire city and nothing else

Explanation of boundary choice where the inventory boundary differs from the city boundary (include inventory boundary, GDP and population)

Base year

2011

Year target was set

2019

Base year emissions (metric tonnes CO2e)

2,854,000

Percentage reduction target

100

Target year

2050

Target year absolute emissions (metric tonnes CO2e) [Auto-calculated]

0

Percentage of target achieved so far

15

Is this target considered to be your cities most ambitious target?

Yes

Does this target align with the global 1.5 - 2 °C pathway set out in the Paris Agreement?

Yes - 1.5 °C

Select the initiatives that this target contributes towards

Global Covenant of Mayors for Climate & Energy
One Planet City Challenge
Deadline 2020 - Delivering the 1.5 degree ambition of the Paris Agreement in a resilient, inclusive way
Declaring Climate Emergency
Individual City Commitment

Does this target align to a requirement from a higher level of government?

Yes, but it exceeds its scale or requirement

Please describe your target. If your country has an NDC and your city's target is less ambitious than the NDC, please explain why.

Target was set as part of Climate Emergency Response, the City's plan to remain on an IPCC-recommended emissions pathway for 1.5'C.

(5.1) Please describe how the target(s) reported above align with the global 1.5 - 2 °C pathway set out in the Paris agreement.

City Council's motion to declare a climate emergency directed staff to "increase targets and accelerate timelines for actions in line with the IPCC call for 45 per cent reductions in GHG emissions over 2010 levels by 2030, net zero emissions by 2050". Vancouver's 2030 carbon target (50 per cent below 2007) is largely consistent with the global reductions needed to limit warming to 1.5°C (45 per cent below 2010). Converting Vancouver's target to the same base year for consistency, the City's 2030 target is equivalent to 49 per cent below 2010 levels.

For 2050, the IPCC research points to a need for zero net carbon emissions on a global basis. Vancouver's current 2050 carbon target is "at least 80 per cent below 2007". While this looks like a 20 per cent difference from the IPCC research, the actual gap is expected to be smaller because the City will need to exceed the 80 per cent carbon reduction target in order to achieve the 100 per cent renewable energy target. Staff anticipate that transitioning to 100 per cent renewable energy will result in carbon pollution being reduced by approximately 75 per cent in 2040 and more than 95 per cent in 2050. Staff therefore recommended maintaining the 2030 targets and modifying Vancouver's 2050 target to be "carbon neutral" (replacing the previous target of achieving reductions "at least 80 per cent below 2007 levels"). This was approved by City Council in April 2019.

(5.2) Is your city-wide emissions reduction target(s) conditional on the success of an externality or component of policy outside of your control?

Yes

(5.2a) Please identify and describe the conditional components of your city-wide emissions reduction target(s).

Many components of the City's GHG reductions will be conditional on involvement from senior levels of government. Examples of these changes and priorities include mobility pricing (as a tool to limit congestion and raise funds for transit), right-to-charge rules for electric vehicle owners in multi-unit residential buildings, ride-hailing legislation that aligns with zero emissions principles and complements sustainable travel, supporting the All On Board campaign, accelerated transit electrification, a bold vision for the Regional Transportation Strategy, energy performance benchmarking for buildings, counting district energy systems with heat from renewable energy as a contributor towards the targets in BC's new renewable gas standard, and electricity pricing that supports electrification. At implementation level, the City will seek to leverage opportunities from existing Federal and Provincial programs, rather than developing standalone programs (e.g., pilot projects in partnership with the provincial government to retrofit affordable market rental housing and non-market housing).

The City's Climate Emergency Action Plan (CEAP) and the province's CleanBC will contribute to reducing Vancouver's emissions from a baseline of 2.85 million tonnes in 2007 to below 1.43 million tonnes by 2030. To achieve this goal, the most stringent mix of policies must be adopted at both the City and provincial level. Of these reductions, if only CEAP is implemented without any new provincial policies, we could anticipate a reduction of between 42% and 46% of 2007 levels, which is below the City's targets. The addition of provincial policies bring reductions to between 48% and 51% of 2007 levels. It should be noted that these policies work together, in addition to market changes, and technological adoption, as well as federal policies not explicitly modelled. Of the reductions from both plans, 49% would come from existing buildings, 38% would come from zero emissions vehicles and fuels, and 13% would come from active transportation and transit.

(5.3) Does your city-wide emissions reduction target(s) account for the use of transferable emissions units?

Yes

(5.3a) Please provide details on the use of transferable emissions.

Type of transferable emissions

Other, please specify

Carbon sequestration projects

Emissions saved (metric tonnes CO2e)

143,000

What percentage of the target does this unit represent?

5

Please identify which target this refers to and describe the transferable emissions unit in particular the source of the transferable units

PERCENTAGES AND EMISSIONS SAVED ARE ESTIMATES ONLY.

Staff anticipate that transitioning to 100 per cent renewable energy before 2050 will result in carbon pollution being reduced by approximately 75 per cent from 2007 levels in 2040, and more than 95 per cent in 2050. That potentially leaves as much as 5% of the city-wide emissions target that will have to be met using carbon removals of some sort. The Climate Emergency Action Plan includes Big Move 6 to complete forest and coastal ecosystem restoration to sequester carbon sufficient to achieve this 5% and more. Our actual targets are still to be determined, so this 5% serves as an estimate only for the purposes of responding to this question. A Big Move 6 roadmap will be going to Council for approval in late-2021.

Mitigation Actions

(5.4) Describe the anticipated outcomes of the most impactful mitigation actions your city is currently undertaking; the total cost of the action and how much is being funded by the local government.

Mitigation action

Private Transport > Infrastructure for non-motorized transport

Action title

CEAP Big Move 2: Active Transport + Transit

Means of implementation

Education
Awareness raising program or campaign
Stakeholder engagement
Infrastructure development
Assessment and evaluation activities
Development and implementation of action plan
Policy and regulation

Implementation status

Implementation

Start year of action

2020

End year of action

2030

Estimated emissions reduction (metric tonnes CO2e)

82,000

Energy savings (MWh)

Renewable energy production (MWh)

Timescale of reduction / savings / energy production

Per year

Co-benefit area

Action description and implementation progress

ALL CEAP BIG MOVES REPRESENT SUITES OF RELATED INDIVIDUAL ACTIONS. IMPLEMENTATION AND FUNDING STATUSES OF INDIVIDUAL ACTIONS VARY. STATUS ABOVE GIVEN FOR MOST ADVANCED PROGRAM/PROJECT STATUS.

Big Move 2 Goal: By 2030, two thirds of all trips in Vancouver will be made on foot, bike or transit.

Big Move 2 Actions:
- Implement Transport Pricing in the Metro Core
- Expand and Improve Our Walking/Rolling, Biking Network
- Improve Bus Speed and Reliability
- Encourage More Walking, Biking and Transit Use
- Promote Remote and Flexible Work Options
- Eliminate Parking Minimums and Introduce Parking Maximums in New Developments
- Implement Residential Parking Permits City-Wide

Some individual projects are funded and underway. A financial framework for the full suite of actions has been developed, but total costs are still to be determined and funded.

Finance status

Finance secured

Total cost of the project

Total cost provided by the local government

Majority funding source

Local

Total cost provided by the majority funding source (currency)

Web link to action website

https://vancouver.ca/green-vancouver/how-we-move.aspx

Mitigation action

Private Transport > Improve fuel economy and reduce CO2 from motorized vehicles

Action title

CEAP Big Move 3: Zero Emission Vehicles

Means of implementation

Education
Capacity building and training activities
Awareness raising program or campaign
Stakeholder engagement
Infrastructure development
Assessment and evaluation activities
Development and implementation of action plan
Policy and regulation

Implementation status

Operation

Start year of action

2020

End year of action

2030

Estimated emissions reduction (metric tonnes CO2e)

234,000

Energy savings (MWh)

Renewable energy production (MWh)

Timescale of reduction / savings / energy production

Per year

Co-benefit area

Action description and implementation progress

ALL CEAP BIG MOVES REPRESENT SUITES OF RELATED INDIVIDUAL ACTIONS. IMPLEMENTATION AND FUNDING STATUSES OF INDIVIDUAL ACTIONS VARY. STATUS ABOVE GIVEN FOR MOST ADVANCED PROGRAM/PROJECT STATUS.

Big Move 3 Goal: By 2030, 50% of the kilometres driven on Vancouver's roads will be by zero emissions vehicles.

Big Move 3 Actions:
• Implement a Carbon Pollution Surcharge on Residential Parking Permits
• Expand Public Charging Network
• Increase EV Charging on Private Property
• Support Charging Infrastructure for Passenger Fleets

Some individual projects are funded and underway. A financial framework for the full suite of actions has been developed, but total costs are still to be determined and funded.

Finance status
Finance secured

Total cost of the project

Total cost provided by the local government

Majority funding source
Local

Total cost provided by the majority funding source (currency)

Web link to action website
https://vancouver.ca/green-vancouver/how-we-move.aspx

Mitigation action
Buildings > Energy efficiency/ retrofit measures

Action title
CEAP Big Move 4: Zero Emissions Space + Water Heating.

Means of implementation
Education
Capacity building and training activities
Awareness raising program or campaign
Stakeholder engagement
Assessment and evaluation activities

Monitor activities
Verification activities
Development and implementation of action plan
Policy and regulation
Financial mechanism

Implementation status

Pre-implementation

Start year of action

2020

End year of action

2030

Estimated emissions reduction (metric tonnes CO2e)

300,000

Energy savings (MWh)

Renewable energy production (MWh)

Timescale of reduction / savings / energy production

Per year

Co-benefit area

Action description and implementation progress

ALL CEAP BIG MOVES REPRESENT SUITES OF RELATED INDIVIDUAL ACTIONS. IMPLEMENTATION AND FUNDING STATUSES OF INDIVIDUAL ACTIONS VARY. STATUS ABOVE GIVEN FOR MOST ADVANCED PROGRAM/PROJECT STATUS.

Big Move 4 Goal: By 2030, the carbon pollution from buildings will be cut in half from 2007 levels.

Big Move 4 Actions:
• Set Carbon Pollution Limits and Streamlined Regulations
• Support Early Owner Action
• Build Industry Capacity
• Facilitate Access to Renewable Energy

Some individual projects are funded and underway. A financial framework for the full suite of actions has been developed, but total costs are still to be determined and funded.

Finance status
Finance secured

Total cost of the project

Total cost provided by the local government

Majority funding source
Local

Total cost provided by the majority funding source (currency)

Web link to action website
https://vancouver.ca/green-vancouver/how-we-build-and-renovate.aspx

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Mitigation action
Buildings > Building codes and standards

Action title
CEAP Big Move 5: Low-Carbon Materials + Construction Practices

Means of implementation
Education
Capacity building and training activities
Awareness raising program or campaign
Stakeholder engagement
Assessment and evaluation activities
Monitor activities
Verification activities
Development and implementation of action plan
Policy and regulation
Financial mechanism

Implementation status
Pre-feasibility study

Start year of action
2020

End year of action

2030

Estimated emissions reduction (metric tonnes CO2e)

98,000

Energy savings (MWh)

Renewable energy production (MWh)

Timescale of reduction / savings / energy production

Projected lifetime

Co-benefit area

Action description and implementation progress

ALL CEAP BIG MOVES REPRESENT SUITES OF RELATED INDIVIDUAL ACTIONS. IMPLEMENTATION AND FUNDING STATUSES OF INDIVIDUAL ACTIONS VARY. STATUS ABOVE GIVEN FOR MOST ADVANCED PROGRAM/PROJECT STATUS.

Big Move 5 Goal: By 2030, the embodied emissions from new buildings will be reduced by 40% compared to a 2018 baseline.

Big Move 5 Actions:
- Set Embodied Carbon Pollution Limits for New Buildings
- Make It Easier and Less Expensive to Use Lower-Carbon Materials in New Buildings
- Support the People Using Low-Carbon Materials in New Buildings
- Low-Carbon Planning and Strategies

Some individual projects are funded and underway. A financial framework for the full suite of actions has been developed, but total costs are still to be determined and funded.

Finance status

Feasibility finalized, and finance partially secured

Total cost of the project

Total cost provided by the local government

Majority funding source

Local

Total cost provided by the majority funding source (currency)

Web link to action website

https://vancouver.ca/green-vancouver/how-we-build-and-renovate.aspx

Mitigation action
Waste > Landfill management

Action title
Landfill Gas Capture

Means of implementation
Infrastructure development
Assessment and evaluation activities
Monitor activities
Verification activities
Development and implementation of action plan

Implementation status
Operation

Start year of action
2002

End year of action

Estimated emissions reduction (metric tonnes CO2e)
360,000

Energy savings (MWh)

Renewable energy production (MWh)

Timescale of reduction / savings / energy production
Projected lifetime

Co-benefit area

Action description and implementation progress
Landfill gas management/ Landfill gas to energy: Landfill gas capture at City-operated landfill (ongoing, but impacts given to 12/2020). Every year the City makes upgrades at the Vancouver Landfill to capture more of this gas for heating and power generation. New opportunities for beneficial use of landfill gas are also under review with the local natural gas utility. In 2020, 73% of the gas emitted by the Landfill was captured.

Finance status
Finance secured

Total cost of the project

Total cost provided by the local government

Majority funding source

Local

Total cost provided by the majority funding source (currency)

Web link to action website

http://www.metrovancouver.org/services/air-quality/climate-action/our-operations/capturing-landfill-gas/Pages/default.aspx

Mitigation Planning

(5.5) Does your city have a climate change mitigation or energy access plan for reducing city-wide GHG emissions?

Yes

GCoM Additional Information

(5.5a) Please attach your city's climate change mitigation plan below. If your city has both mitigation and energy access plans, please make sure to attach all relevant documents below.

Publication title and attach document

Greenest City 2020 Action Plan

Greenest-city-action-plan.pdf

Greenest City 2020 Action Plan (2015-2020).pdf

Web link

http://vancouver.ca/files/cov/greenest-city-2020-action-plan-2015-2020.pdf

Focus area of plan

Climate change mitigation and energy access plan

Year of adoption of plan by local government

2011

Areas covered by action plan

Energy
Transport (Mobility)
Building and Infrastructure
Industry

Agriculture and Forestry
Water
Waste
Business and Financial Service

Boundary of plan relative to city boundary (reported in 0.1)

Same – covers entire city and nothing else

If the city boundary is different from the plan boundary, please explain why and any areas/other cities excluded or included

Stage of implementation

Plan update in progress

Has your local government assessed the synergies, trade-offs, and co-benefits, if any, of the main mitigation and adaptation actions you identified?

Yes

Describe the synergies, trade-offs, and co-benefits of this interaction

The Greenest City Action Plan (GCAP) implementation focusses on three themes: Zero Carbon, Zero Waste, and Healthy Ecosystems. Several of the 10 GCAP goals span all of these themes. For instance, our GHG reduction targets (the Climate and Renewables goal) depend on action on building energy use (Green Buildings), shifting to active transportation modes (Green Transportation), and waste diversion from landfill (Zero Waste). Action in the Lighter Footprint goal (citizen engagement on GCAP) yields multiple co-benefits. One example is a community program that made use of commercial kitchen space at a local City amenity to provide free food skills training to at-risk youth, making food products from discarded but edible produce from local grocers. Benefits ranged from waste reduction, green jobs creation and upskilling, increasing food access, and food-system efficiencies.

Climate action also benefits the local economy, as measured in a variety of ways, including job creation/transition, innovation, process efficiencies, increased revenues, etc. The green economy employs 1 in 15 workers locally, well above any other North American city. This is growing at 7.8% per year on average for the past three years. The carbon intensity of Vancouver's economy (tonnes of carbon pollution per dollar of GDP) has fallen by 29 per cent since 2007. Effective policies that address climate change can accelerate innovation in cleantech, green building technologies, advanced materials, local food, solid waste and transportation options. Green building policies (e.g., Vancouver's Zero Emission Building Plan, BC's Energy Step Code) have jumpstarted an estimated $3.3 billion local opportunity for local manufacturers, installers, and suppliers of green building materials. The environmental ethos and world-renowned recognition of Vancouver as a "green" city has also translated into a US$31.7 billion brand. In a global economy where cities compete for talent, this is an important advantage that helps Vancouver attract the best and brightest to Vancouver's thriving economy in all sectors.

Description of stakeholder engagement process

In the development of GCAP, there were two components to the public engagement process: the External Advisory Committees (EAC) and the broad based public process. Over 130 organisations participated as EAC members, directly advising the staff working groups on finalizing targets and preparing GCAP. Each GCAP goal convened an EAC from 10-35 members representing key stakeholders from the academic, business and industry, non-profit, and government sectors.

The public engagement process consisted of two phases. Phase 1 (Jun– Oct 2010) focused on collecting ideas from the community about how GCAP goals and targets might be achieved. Phase 2 (Dec 2010 – Mar 2011) focused on collecting feedback on the draft actions to finalize the plans. The objectives for the process were: to hear and respond to the perspectives of different communities within Vancouver; to build constituency and garner support to take bold and innovative measures to achieve GCAP goals; to build a sense of ownership from community members and stakeholders for taking action; to build partnerships with organizations for implementation; and to test new and innovative engagement methods and tools.

In the end, over 35,000 people participated in GCAP development, in face-to-face workshops and events, online, and through social media. Over 9,500 people (mostly Vancouver residents) actively added their ideas, insights, and feedback.

The GCAP refresh in 2015 was reviewed and endorsed by the Greenest City Advisory Group, a team consisting of ten people external to the City with broad experience, expertise and interest in each of the goal areas. Additionally, a public consultation campaign called “Bright Green Summer” ran from Jun-Oct 2015. This was aimed at re-engaging residents, businesses and community partners and collecting feedback on the proposed 2015-2020 actions. Feedback received during the public engagement process was used to further refine the actions contained in the strategy. Over 46,000 people participated in this process, 13,000 of these people were introduced to or reminded of GCAP, and asked to participate in the process, including 854 who provided detailed feedback on the proposed 2015-2020 actions and areas of advocacy. The survey results showed broad public support. In summary, across the 10 GCAP goal areas, 78% respondents were supportive of the proposed actions.

Primary author of plan

Relevant city department

Comment

NOTE: GCAP officially ended in 2020. Planning work will get underway for a climate change mitigation plan as part of the City-wide Plan currently in development (as of summer 2021). The current carbon-mitigation policies are contained in the aforementioned Climate Emergency Action Plan.

Publication title and attach document

Climate Emergency Action Plan

CEAP Council Report 20201022.pdf

Climate Emergency Response - Council Report April 2019.pdf

Web link

https://council.vancouver.ca/20201103/documents/p1.pdf

Focus area of plan

Climate change mitigation and energy access plan

Year of adoption of plan by local government

2020

Areas covered by action plan

Energy
Transport (Mobility)
Building and Infrastructure
Industry
Spatial Planning
Agriculture and Forestry
Water
Waste
Business and Financial Service

Boundary of plan relative to city boundary (reported in 0.1)

Larger – covers the whole city and adjoining areas

If the city boundary is different from the plan boundary, please explain why and any areas/other cities excluded or included

Big Move 6 (carbon sequestration) will look at creating nature-based assets for carbon sequestration outside the city boundaries.

Stage of implementation

Plan in implementation

Has your local government assessed the synergies, trade-offs, and co-benefits, if any, of the main mitigation and adaptation actions you identified?

Yes

Describe the synergies, trade-offs, and co-benefits of this interaction

Health and air quality benefits: Solutions to reduce carbon pollution also lead to better health outcomes. Zero emissions buildings have better indoor air quality. Electric vehicles produce less air pollution than their gasoline and diesel counterparts. Walking and cycling are pollution-free and help people stay active.

Improved resilience: Solutions also help residents and businesses become more resilient. In addition to emitting no carbon pollution, the improved ventilation in a zero emissions building helps limit air quality impacts from forest fire smoke, and high levels

of insulation mean that it can stay comfortable in hot or cold weather in the event of a power outage and more extreme weather events. A second example is a resilient transportation network, which provides a range of mobility options that can meet diverse daily needs and respond to and recover from changing circumstances.

Natural ecosystem benefits: Forests and coastal ecosystems (e.g., eelgrass meadows and salt marshes) sequester carbon and play an important role in supporting cultural practices and providing ecosystem services and resilience to people and wildlife.

Reduced costs: The costs of reducing emissions fast enough to limit warming to 1.5°C are far less than the costs that will be incurred if more warming is allowed to happen. That said, it is understandable that many residents and businesses are focused on more immediate cost implications to them as individuals. In some cases, those solutions already represent a net savings for Vancouver residents and businesses (e.g., improved energy efficiency requirements in new buildings, and safer/more convenient active transportation and transit choices). In other cases, there are currently cost premiums that most residents will not recover through energy savings (e.g., electric vehicles, heat pumps). In these cases, the City (and governments more generally) can play an important role of helping to make those solutions more affordable in the near term and building demand for them so that costs come down.

Description of stakeholder engagement process

On approval of the Climate Emergency Response by City Council in 2019, staff began the analysis and engagement required to understand the challenges and opportunities with each component of the Response, and to develop the detailed plans, policies, and funding strategies they will need. Depending on the nature of the challenges that emerge and what we learn from our engagement process, staff may make adjustments, so long as they maintain consistency with the 1.5°C objective. All of this information would come back to Council for further consideration.

Engagement efforts focused internally and on organizations where the City has established relationships. The internal engagement included meetings and workshops with staff from all relevant City departments, including Planning, Urban Design and Sustainability; Engineering; Development, Buildings and Licensing; Real Estate and Facilities Management; Social Policy; Park Board; Legal Services; Finance; and Intergovernmental Relations. An additional half-day workshop was attended by 112 individuals from local businesses, environmental non-governmental organizations, community associations, labour organizations, academia, and other levels of government. During the event, staff collected nearly 900 ideas during sixteen breakout sessions, which focused on new and existing buildings, neighbourhood energy systems, zero emissions vehicles, active transportation and transit, the City's corporate leadership, embodied carbon, and climate equity.

Primary author of plan

Relevant city department

Comment

6. Opportunities

Opportunities

(6.0) Please indicate the opportunities your city has identified as a result of addressing climate change and describe how the city is positioning itself to take advantage of these opportunities.

Opportunity	Describe how the city is maximizing this opportunity
Increase opportunities for trade (nationally or internationally)	The GCAP Green Economy aimed to boost the number of 'green' jobs, through strategies such as creation of trade, attracting innovative businesses to Vancouver, creating demonstration hubs, and hosting green technology demonstrations. The forthcoming Zero Emissions Economic Transition Action Plan will aim to further this work.
Increase opportunities for partnerships	City has partnered with six post-secondary institutions to create the Campus City Collaborative (C3) program, where students across disciplines work on GCAP-related projects.
Extended agricultural seasons	Climate change may impact length of local growing seasons; also may provide more opportunities for urban agriculture.
Improved efficiency of municipal operations	Implementing the Corporate Energy Management Plan will yield cost savings from improving efficiency of City's building portfolio and lighting network.
Improved efficiency of municipal operations	Implementing the Fleet Management Plan will yield cost savings from right-sizing and fuel-switching of City fleets.
Improved efficiency of municipal operations	The GCAP Green Economy goal also aims to increase the number of businesses actively engaged in 'greening' their businesses. A program specifically for businesses is being developed.
Other, please specify Improved food security, resource and natural capital conservation, green business and circular economy development,	The GCAP comprises a comprehensive community sustainability plan that looks at areas such as Local Food, Access to Nature, Clean Water and Green Buildings and others.
Development of climate change resiliency projects	The Urban Forest Strategy Framework and the Integrated Rainwater Management Plan identify opportunities to make progress on green natural infrastructure, stormwater management, climate change adaptation, and biodiversity.

Development of local/sustainable food businesses	Under the GCAP Green Economy goal, the Vancouver Economic Commission has laid out a strategy for economic growth for the City which includes supporting the green economy and new businesses, including the local food sector.
Additional funding opportunities	Through the BC Carbon Action Revenue Incentive Program, rebates are provided for the purchase of fuel that incurs carbon tax. This provides a funding source for City's continued work around sustainability and the GCAP.
Additional funding opportunities	Federal funding opportunities (e.g., National Resources Canada; Gas Tax Fund) and others may increase as climate adaptation and resilience are prioritized.
Additional funding opportunities	Investors are becoming increasingly discerning when it comes to where to invest and the extent to which those investments are 'climate ready'. Vancouver expects to not only attract increased green capital through better climate preparedness, but as an ecosystem of excellence on climate action. In 2019, the City of Vancouver also launched its Green Debenture program, with an inaugural green bond offering of CAD $85M.
Increased energy security	Moving away from fossil fuels: renewable energy technologies are more labour intensive than fossil fuels, generating job opportunity. By becoming a centre of excellence in renewable energy, Vancouver expects to grow its economy through research & development, attracting the best talent to the city through its high standard of living.
Increase opportunities for trade (nationally or internationally)	Green and Clean Tech Conferences: Vancouver is attracting significant investment into the city through hosting large international green and clean tech conferences (such as TED and Globe)
Development of clean technology businesses	Under the GCAP Green Economy goal, the Vancouver Economic Commission has laid out a strategy for economic growth for the City which includes supporting the green economy and new businesses, including the cleantech sector.
Development of sustainable construction/real estate sector	Under the GCAP Green Economy goal, the Vancouver Economic Commission has laid out a strategy for economic growth for the City which includes supporting the green economy and new businesses, including the green building design, construction, and supply-chain sector.
Development of sustainable transport sector	Through progressive policies supporting car-share programs, Vancouver has one of the largest per-capita private car-share participation rates in North America.
Development of tourism and eco-tourism sector	In 2016, the City of Vancouver and the Vancouver Economic Commission retained Brand Finance (Canada) Inc. to find out Vancouver's brand value. Brand Finance used an ISO recognized

	Brand Strength Index to measure the strength of our brand relative to five other cities along the Pacific Rim. The Brand Strength Index looks at the investments, equity, and economic performance of a city. Vancouver's Brand Strength Index was in part determined by an international survey of business leaders, students, tourists, and residents. Brand Finance found that Vancouver has one of the strongest brands surveyed, valued at valued at CAD $31 billion as of January 31, 2015. It also found Vancouver is uniquely associated with being clean, green and environmentally sustainable.
Other, please specify COVID-legacy infrastructure changes	Social distancing needs provided the social licence for street closures, more bike routes and outdoor patios in place of parking. These all saw positive benefits and will lead to more social acceptance for these types of interventions and therefore accelerated climate action. Work from home meaning less traffic and better work-life balance will also continue after the pandemic is over.

(6.1) Has your city measured the wider social and economic impacts of delivering climate actions/projects/policies? If so, please provide more details on which benefits are being measured and/or a link to more information.

Response

Which of the impacts has your cities measured

Jobs impacts from climate actions (e.g. city measures number of jobs created from climate actions)

Business impacts from climate actions (e.g. city measures number of local small and medium-sized enterprises (SMEs) benefiting from climate action)

Has your city measured the distribution of these impacts across the city's population (e.g. through the listed actions)

Further information

Vancouver's work to fight climate change over the past decade has helped strengthen its economy, and Vancouver businesses have been early adopters of economic opportunities and business strategies that are better aligned with our environmental objectives. In Vancouver, the green economy employs 1 in 15 workers, well above any other North American city, and is growing at 7.8% per year on average (between 2016 and 2019). The carbon intensity of Vancouver's economy (tonnes of carbon pollution per dollar of GDP) has fallen by 40% between 2007 and 2019.

A key part of moving to a zero emissions world is to ensure it is a "just transition". The principle of just transition is that a healthy economy and a clean environment can and should co-exist. The process for achieving that objective in the Climate Emergency Action Plan should seek to ensure that the substantial benefits of a green economy are

shared widely, while also supporting those who stand to lose economically.

We have committed to centering equity in the Climate Emergency Action Plan. For the actions in the CEAP, staff have initially focused on designing them to consider socio-economic inequities. That said, staff are committed to expanding beyond socioeconomic considerations as we move forward with implementation, particularly to better understand and centre systemic racial inequity, to understand impacts and barriers for people with disabilities, and to use an intersectional approach. One of the cross-cutting actions within CEAP to ensure that equity is integrated is the development of equity indicators, for which we hope to begin gathering disaggregated or spatial data on the impact of climate actions. Meanwhile, another action is the formation of a Climate and Equity Working Group, whose mandate is the development of a Climate Justice Charter. This Charter, developed with disproportionately impacted communities, will identify how City staff creating climate policy and programs can better address and integrate equity and racial justice.

Collaboration

(6.2) Does your city collaborate in partnership with businesses and/or industries in your city on sustainability projects?

Yes

(6.2a) Please provide some key examples of how your city collaborates with business and/or industries in the table below.

Collaboration area	Type of collaboration	Description of collaboration
Business and Financial Services	Capacity development	Vancouver Economic Commission (VEC) has partnered with a local social enterprise that engages and educates small businesses to measure and reduce their GHGs. A recent cohort of businesses in the False Creek Flats (a light-industrial area of Vancouver) was focussed on GHG and waste/resource reduction and building circular-economy business networks.
Business and Financial Services	Convening industry groups	The City has been a long-standing partner in the biennial Globe Forum, North America's largest and longest running leadership summit for sustainable business.
Energy	Collaborative initiative	Vancouver continuously collaborates with local utilities BC Hydro (a Crown Corporation) and FortisBC (a privately held utility) on demand-side management initiatives and consultation regarding energy-efficiency building-code updates.

(6.3) Describe how your local/regional government collaborates and coordinates horizontally on climate action.

	Entity with which your local/regional	Description

	government collaborates and coordinates horizontally on climate action	
Horizontal collaboration and coordination	Other, please specify All of the above, plus utilities, NGOs, universities	The City regularly collaborates with local governments both neighbouring, nationally, and internationally. This can typically be more informal in nature, taking the form of knowledge-sharing or coordinating strategic engagement with senior levels of government. The City also regularly collaborates formally with NGOs, utilities and universities. For example, Memoranda of Understanding formalize the collaborative nature of our relationships with local utilities FortisBC and BC Hydro, and with post-secondary institutions such as the University of British Columbia and Simon Fraser University.

(6.4) Describe how your local/regional government collaborates and coordinates vertically (higher levels of government) on climate action.

The City regularly collaborates formally with Provincial and regional government agencies. For instance, City membership in regional committees helps to inform regional climate action efforts with Metro Vancouver, our regional government. Also, elements of our Climate Emergency Action Plan build on CleanBC, the provincial climate policy of which the City of Vancouver was a collaborator. Another example is in building regulations. The City of Vancouver sets its own building efficiency standards, within the Vancouver Building Bylaw, under the Vancouver Charter. The provincial BC Energy Step Code uses an approach to measuring energy performance that is similar to that used by the City of Vancouver for many building types. The City consulted on the development of the Step Code, with the goal of alignment of energy standards across the province.

Finance and Economic Opportunities

(6.5) List any mitigation, adaptation, water related or resilience projects you have planned within your city for which you hope to attract financing and provide details on the estimated costs and status of the project. If your city does not have any relevant projects, please select 'No relevant projects' under 'Project Area'.

Project area

Energy efficiency / retrofit

Project title

Building Retrofits for Deep Carbon Reductions

Stage of project development

Project structuring

Status of financing

Project partially funded and seeking additional funding

Financing model identified

Yes

Identified financing model description

Part-funded by City government, leveraging partner funding from utilities, private investment, and senior levels of government

Project description and attach project proposal

The Climate Emergency Action Plan makes zero emissions space and water heating a priority, specifically in existing buildings. Actions are outlined in the Zero Emission Buildings Retrofit Strategy (ZEB-R), approved by Council in late 2020 as part of the Climate Emergency Action Plan. The Strategy's $5 million program advances building retrofits through incentives and pilot targeted incentives, heat pumps, pilot projects for detached homes, multi-family and commercial/institutional buildings, implementation support planning and implementation, support for multi-family buildings, and research on Barriers and emerging solutions. It is estimated that this total investment of $5 million will leverage another $5 million from the Provincial government and utilities and catalyze greater than $10 million in private sector investments in deep emission reduction projects for a total of $20 million. These initial investments are critical for catalyzing the transition of existing buildings away from fossil fuel based heating and for removing barriers for widespread adoption of new technologies such as heat pumps.

There are four main actions relating to buildings in the Climate Emergency Action Plan. First, we will set carbon pollution limits and streamline regulations. Second, we will support early owner action. Third, we will build industry capacity by engaging with stakeholders working in industry to ensure there is clarity about upcoming regulations. Fourth, we will work with stakeholders to facilitate access to renewable energy.

The objective of ZEB-R is to chart a path for how key stakeholders, the public and the City will work together to reduce carbon pollution from the operation of existing buildings by 50% by 2030, on the way to a 100% reduction before 2050. The successful implementation of the ZEB-R Strategy is the cornerstone of Vancouver's Climate Emergency Action Plan.

To achieve the 2030 target, annual reductions will need to accelerate five-times compared to what has been achieved over the previous decade. This is a significant departure from "business as usual." Early owner action will not be enough to get us there, and so, as in the Zero Emissions Building Plan for new construction, we must begin to regulate, signal intended future requirements and then build capacity and remove barriers to enable more significant future actions —an approach that is supported by a diverse cross-section of stakeholders, including industry groups.

In addition to setting a clear regulatory signal that is equitable and allows for flexibility in how a building meets the requirements, we need partners who will lead alongside the City—namely industry associations, trades groups, the Province, BC Hydro, FortisBC, district energy utilities and individual home and building and owners.

Council report - Building Energy Retrofit Fund:
https://council.vancouver.ca/20160202/documents/rr1c.pdf
Council report - Building Retrofits for Deep Carbon Reductions:
https://council.vancouver.ca/20190424/documents/cfsc3.pdf
CEAP Council Report 20201022.pdf

Total cost of project

20,000,000

Total investment cost needed

15,000,000

(6.6) Has your city tested their climate actions through pilot/demonstration projects?

	Pilot/demonstration projects	Description of project and weblink
Tested by city government	Yes	The city pilots multiple climate-action projects every year, from curbside residential electric-vehicle charging, to smart-thermostat rebates, to financial support for community-led projects that help further Greenest City goals, to the Green and Digital Demonstration Program, which provides access to City of Vancouver assets and infrastructure (i.e. buildings, streets, vehicles, digital infrastructure) for product testing and showcase opportunities. One recent example of a pilot program involved international collaboration. A new social housing project in East Vancouver aims to address green building practices, energy efficiency, and climate mitigation. The project was selected for the Vienna House/Vancouver House collaboration project between the City of Vienna and City of Vancouver. Both cities have signed a Memorandum of Understanding to share knowledge and advance innovation in low-carbon affordable housing. Each city will ultimately feature a building named after its counterpart and it is hoped via the exchange of knowledge and cooperation, advanced learning outcomes will be achieved, and new approaches to achieve fast, low-carbon affordable housing will be established. Council report - Vienna House/Vancouver House: https://council.vancouver.ca/20190611/documents/a5.pdf

(6.7) Has your city received/secured funding for any climate projects (e.g. energy efficiency, renewable energy, low emission vehicles, waste management, flood defence etc.) from an International Financial Institution (e.g. World Bank, Asian Development Bank, etc.)?

	Funding received/secured for low carbon projects or climate adaptation	Comment
Funding received/secured	No	No funding sought from development banks as yet.

(6.11) Does your city have its own credit rating?

	Does your city have a credit rating?	Rating agency	Rating
International	Yes	S&P Global Ratings	AAA
Domestic	Yes	Moody's	Aaa

Climate Action Planning

(6.12) Describe how your city plans to enhance ambition and scale up Climate Action Plan (integrated/adaptation/mitigation) and actions to achieve climate neutrality, net zero emissions, carbon neutrality or 100% renewables.

In January 2019, Vancouver Council declared a climate emergency in recognition of the urgent threat posed by climate change, and as a call to scale up Vancouver's efforts to cut carbon pollution. In April 2019, Council approved the Climate Emergency Response, which established six new targets (referred to as "Big Moves") to guide the City's efforts in response to the climate emergency.

On November 17, 2020, Council approved the Climate Emergency Action Plan (CEAP). CEAP provides the road map to achieve the Big Move targets (more information submitted in Q5.4 Mitigation Actions) in ways that also bring financial, health and economic benefits while integrating equity into climate action. This puts Vancouver on track to reduce our carbon pollution by 50% by 2030, in alignment with the findings of the United Nations Intergovernmental Panel on Climate Change to limit global warming to 1.5°C. Our plan builds on our previous climate plans and focuses on cutting carbon pollution from our biggest local sources - burning fossil fuels in our vehicles (39%) and in our buildings (54%).

This plan means change. It means residents, businesses and the City doing our part to transition off fossil fuels. It is designed to make it easier for residents to live a carbon-free life. We'll continue to gather public input on the actions as we move forward to make this an effective and equitable climate plan.

(6.13) How many people within your city are employed in green jobs/industries?

	Number of people in your city employed in	If you measure green jobs in your city, please also indicate if you	If you analyse demographic variables, please indicate which	Comment

	green jobs and/or industries	analyze demographic variables	variables from the list below	
Green jobs/industries	24,700	No		The Climate Emergency Action Plan includes direction for Vancouver Economic Commission to begin analyzing demographic variables in the development of a Just Transition Plan, as part of a Zero-Emission Economic Transition Action Plan.

8. Energy

(8.0) Does your city have a renewable energy target?

Yes

(8.0a) Please provide details of your renewable energy target(s) and how the city plans to meet those targets.

Scale

City-wide

Energy sector

All energy sectors

Target type

Renewable energy consumed (percentage)

Base year

2007

Total renewable energy covered by target in base year (based on target type specified in column 3)

28

Percentage renewable energy of total energy in base year

28

Target year

2050

Total renewable energy covered by target in target year (based on target type specified in column 3)

100

Percentage renewable energy of total energy in target year

100

Percentage of target achieved

33

Comment

Vancouver's Climate Emergency Action Plan reaffirmed an existing target to derive 100% of Vancouver's energy use from renewable sources before 2050. This encompasses community-wide energy use in buildings and transportation and envisions a shift to renewable electricity, biofuels, and neighbourhood energy systems.

(8.1) Please indicate the source mix of electricity consumed in your city.

Electricity source

Coal

0

Gas

2

Oil

0

Nuclear

0

Hydro

91

Bioenergy (Biomass and Biofuels)

6

Wind

1

Geothermal

0

Solar (Photovoltaic and Thermal)

0

Waste to energy (excluding biomass component)

0

Other sources

0

Total - please ensure this equals 100%

100

Total electricity consumption (MWh)

5,118,152

Year data applies to

2020

What scale is the electricity mix data

Utility mix reported

Comment

There is a unknown component of electrical heating/cooling in Vancouver; utility does not provide data by usage type. This is included in response to Q8.1 here.

(8.1a) Please indicate the source mix of thermal energy (heating and cooling) consumed in your city.

Thermal energy consumption

Coal

0

Gas

99

Oil

0

Bioenergy (Biomass and Biofuel)

0

Geothermal

0

Solar (Thermal)

0

Waste to energy (excluding biomass component)

1

Other sources

0

Total (auto-calculated)

100

Total consumption (MWh)

7,625,937

Year data applies to

2020

What scale is the thermal energy mix data

City-wide mix reported

Comment

This represents the portion of heating/cooling energy use that is non-electrical. There is a unknown component of electrical heating/cooling in Vancouver; utility does not provide data by usage type. Electricity included in response to Q8.1 above.

(8.2) For each type of renewable energy within the city boundary, please report the installed capacity (MW) and annual generation (MWh).

	Installed capacity (MW)	Annual generation (MWh)	Year data applies to	Comment
Solar PV	175		2017	Conservative estimate from 2017 of aggregate nameplate generating capacity of solar PV installed within City boundaries. This includes an estimate of miscellaneous residential and commercial systems, plus one large downtown commercial system (Telus Garden).
Solar thermal	0		2020	Not estimated
Hydro power	0		2020	None
Wind	0		2020	None
Bioenergy (Biomass and Biofuels)				
Geothermal				
Other, please specify	0		2020	None

(8.3) Does your city have a target to increase energy efficiency?

Not intending to undertake, please specify

The City has no explicit target for energy efficiency, though it forms an foundational component of our CEAP pathway to 100% renewables (reduce overall energy use; replace remaining energy to renewable sources).

(8.4) Please report the following energy access related information for your city.

Energy access

Electrification ratio of the city

100

Average electricity consumption per commercial establishment (MWh/annum)

71.2

Average electricity consumption per residential household (MWh/annum)

0.8

Average unit price of electricity (Currency unit as specified in 0.4/MWh)

0

Percentage of electricity distributed, but not billed

0

Percentage of city population with access to clean cooking

Comment

Electrification ratio assumed to be 100% due to developed and mature electricity infrastructure. There may exist some "off-grid" homes in Vancouver but percentage would be negligible.

Unit price of electricity $0.0941/kWh (BC Hydro residential rate, first 1,350 kWh in an average two month billing period, per https://app.bchydro.com/accounts-billing/rates-energy-use/electricity-rates/residential-rates.html referenced on July 28, 2021). ORS field does not allow more than 2 decimal places; recommend changing to cost/kWh in future ORS updates.

Percentage distributed but not billed unknown (not reported by utility).

City population with access to clean cooking unknown (portion of population with electric stoves unknown; portion of population using renewable natural gas, available as opt-in premium from utility) is deemed to be proprietary information by utility).

(8.5) How many households within the municipal boundary face energy poverty? Please select the threshold used for energy poverty in your city.

Energy Poverty

Number of households within the city boundary that face energy poverty

29,235

Threshold used for energy poverty

Other, please specify

6%

Comment

A 2019 study by the Canadian Urban Sustainability Practitioners into energy poverty in Canada showed that according to 2016 Census data, most Canadians spend less than 3% of after-tax income on energy needs; hence, those who pay more than 6% are considered to be experiencing energy poverty. According to their mapping tool, over 29,000 households in Vancouver fall above that threshold for energy poverty.

https://energypoverty.ca/backgrounder.pdf

https://energypoverty.ca/Equity_Energy_Poverty_EN_Nov19.pdf
https://energypoverty.ca/mappingtool/

9. Buildings

(9.0) Is your city implementing any retrofit programs addressing existing commercial, residential and/or municipal buildings?

	Response	Buildings that the program applies to	Please provide more detail and/or link to more information about the programs
Retrofit programs	Yes	Residential Commercial	The Climate Emergency Action Plan makes zero emissions space and water heating a priority, specifically in existing buildings. In order to ensure we can achieve our 2030 and 2050 targets in a way that minimizes disruptions while creating economic opportunities, staff have developed a Zero Emission Buildings Retrofit Strategy,approved by Council in late 2020 as part of the Climate Emergency Action Plan. The Strategy includes recommendations regarding continued use of incentives and investments in industry capacity-building to catalyze voluntary adoption of zero emissions space and water heating over the next six years. Further, it includes a jobs just-transition roadmap. We also plan to set carbon pollution limits for most existing buildings. This means there will be a maximum amount of fossil fuels, such as natural gas, that a building can use in its operations, including space heating and hot water. Ultimately, there will need to be a regulatory structure that requires high efficiency windows, improved insulation, and the installation of zero emissions heating equipment when old inefficient building elements or fossil fuel based heating equipment needs replacing (in the same way higher efficiency furnaces are already required when an old one is replaced). Carbon limits are a policy lever that set a clear long-term signal that drives building owners to plan ahead and make financially informed, proactive low-carbon decisions. Carbon limits also allow long-term flexibility on fuel usage and equipment replacement and selection depending on unique preferences and financial capabilities. Council report - Climate Emergency Action Plan - Big Move 4 https://council.vancouver.ca/20201103/documents/p1.pdf#page=134

			Council report - Building Retrofits for Deep Carbon Reductions: https://council.vancouver.ca/20190424/documents/cfsc3.pdf

(9.1) Does your city have emissions reduction targets (government operations, city wide targets) or energy efficiency targets for the following building types?

	Emissions reduction target	Please provide more details and/or link to more information about the emission reduction target.	Energy efficiency target	Please provide more details and/or link to more information about the energy efficiency target.
Commercial	Yes	https://vancouver.ca/files/cov/zero-emissions-building-plan.pdf The Zero Emissions Building Plan (ZEBP) requires the majority of new buildings in Vancouver to have no operational greenhouse gas emissions by 2025 and that all new buildings have no greenhouse gas emissions by 2030. ZEBP recommends an immediate 65% reduction in GHG emissions for office buildings. Unlike residential develop, new office buildings already rely upon complex mechanical systems and typically have trained and dedicated operations staff. As a result, improvements in this form of development will result from both improved building envelopes as well as a shift to renewable energy heating systems (either connection to a NRES or the use of heat pump technologies). All other building types (excluding residential and office) such as food service, hotels, retail, light industrial, hospitals, schools, etc. represent an estimated 13% - 16% of new development by area in an average year.	No	The transition away from fossil fuels requires significant improvements in energy efficiency and a rapid shift to renewable energy and other zero emissions energy sources. The City continues to require energy efficiency upgrades when a building is retrofitted, which help make the

				switch to zero emissions heating more affordable. That having been said, our experience has revealed that indirect approaches such as regulating energy cost efficiency as compared to a `reference` building (as is the standard approach under the North American building efficiency standard ASHRAE90.1 and in LEED) have not been as effective as anticipated in reducing emissions in

				Vancouver. The Zero Emissions Building Plan (ZEBP) establishes greenhouse gas intensity (GHGI) targets (GHG emissions per unit area per year) by building type and includes a stepped reduction timeline to reflect these targets as maximum permitted limits in Vancouver `s building policies and Building Bylaw.
Municipal	Yes	https://council.vancouver.ca/20170207/documents/rr2presentation.pdf The City is working towards all City buildings having 100% renewable energy and 100% reduction in carbon emissions by 2040. All new City-owned buildings are being built to zero emissions standards (since 2018). Going forward, all capital maintenance projects on energy using equipment in City buildings will	No	Energy retrofits and optimization contribute to the City's strategy for

		transition from gas to high efficiency electric options where viable.		transitioning City buildings to 100% renewable energy and 100% reduction in carbon emissions by 2040, but there is no specific target set.
Residential	Yes	https://vancouver.ca/files/cov/zero-emissions-building-plan.pdf The Zero Emissions Building Plan (ZEBP) requires the majority of new buildings in Vancouver to have no operational greenhouse gas emissions by 2025 and that all new buildings have no greenhouse gas emissions by 2030. Low-rise multi-unit residential buildings are the ideal building form and construction type for cost effective high performing building envelopes and ventilation systems. ZEBP proposes immediate updates to the Building Bylaw targeting a reduction of nearly 50% in GHG emissions for new low-rise residential development and establishes the target for all low-rise MURB developments that are rezoned as of 2020 to achieve Passive House performance. ZEBP also targets an immediate reduction in GHG emissions of 64% for rezoned high-rise MURBs that are not connected to a RNES. This can be achieved by restructuring and updating of the rezoning policy in the fall of 2016 without increasing the cost of new development. The added expense of improved building envelopes and ventilation systems will be offset by the reduced construction costs cost of not forcing developers to install hydronic heating.	No	See "Commercial" response above.
New buildings	Yes	https://vancouver.ca/files/cov/zero-emissions-building-plan.pdf	No	See "Commercial"

		The Zero Emissions Building Plan lays out action strategies to require the majority of new buildings in Vancouver to have no operational greenhouse gas emissions by 2025 and that all new buildings have no greenhouse gas emissions by 2030.		response above.
All building types	Yes	https://council.vancouver.ca/20201103/documents/p1.pdf The Climate Emergency Action Plan sets a target for GHG emissions from all buildings to be cut in half from 2007 levels by 2030.	No	See "Commercial" response above.

10. Transport

(10.0) Do you have mode share information available to report for the following transport types?

Passenger transport

Freight transport is modelled at regional level and apportioned to member local governments. We have GHG outputs from that modelling but not base-unit or mode-share data. NOTE re: question 10.5: GHG data aligns with subset of CRF inventory for transport GHGs from retail fuel sales (passenger) and modelled GHG outputs for "heavy duty vehicles" (deemed to equate to freight).

(10.1) What is the mode share of each transport mode in your city for passenger transport?

This data comes from the City's 2020 Travel Panel Survey. Total transit ridership including Buses included in Rail/Metro/Tram line above. Survey does not distinguish between types of transit (rail/metro/tram vs buses), nor does it capture micro-mobility, shared vehicles, or boats.

Please complete

Private motorized transport

56

Rail/Metro/Tram

7.2

Buses (including BRT)

0

Ferries/ River boats

0

Walking

28.8

Cycling

8

Taxis or shared vehicles (i.e. for hire vehicles)

0

Micro-Mobility

0

Other

0

Comment

Due to COVID, there were 31% fewer trips (or 620,000) in 2020 than in 2019, so while private is a larger share of what remained, the number of trips have declined.

(10.3) Please provide the total fleet size and number of vehicle types for the following modes of transport.

- Private cars, taxis from ICBC Open Data for 2020
- Transport Network Companies (e.g., Uber), while in operation, are fighting City requests to release data
- Carshare figures from https://www.vancity.com/SharedContent/documents/News/Vancity-Report-Car-Sharing-Jan2018.pdf; breakdown of individual provider fleets unknown
- Bus data from 2017 from external public-transit authority (Translink): at https://www.translink.ca/en/About-Us/Corporate-Overview/Operating-Companies/CMBC/Fleet-and-Technologies.aspx. Translink is no longer reporting on fleet size.
- Freight vehicles unknown

	Number of private cars	Number of buses	Number of municipal fleet (excluding buses)	Number of freight vehicles	Number of taxis	Transport Network Companies (e.g. Uber, Lyft) fleet size	Customer-drive carshares (e.g. Car2Go, Drivenow) fleet size	Comment
Total fleet size	330,497	1,456	1,980	0	719	0	2,316	
Electric	6,664	262	145	0	1	0	0	
Hybrid	6,193	226	79	0	599	0	0	
Plug in hybrid	0	0	6	0	0	0	0	Private-car data does not contain breakdown by hybrid vs plug-in hybrid, so figure has been given as zero

Hydrogen	0	0	1	0	0	0	0	

(10.5) Does your city have a low or zero-emission zone or restrictions on high polluting vehicles that cover a significant part of the city? (i.e. that disincentivises fossil fuel vehicles through a charge, a ban or access restriction)

No

The City has committed to the Fossil Fuel Free Streets Declaration to create a low/zero-emission zone in our city in the future. The Climate Emergency Action Plan includes an action to develop a framework to implement transportation pricing in the Metro Core.

(10.7) How many public access EV charging points do you have in your city and/or metropolitan area for the following types.

Totals include City-operated stations (known) and privately operated stations (estimated via plugshare.com). Therefore individual types may not add up to total given. Counts for metropolitan area unknown.

	Number of charging points	Number of charging points in your metropolitan area	Comment
Rapid 43 kw and above	38		Not possible to filter for 43kw up. These are 50kw up, x2.5 ports per station
Fast 7-22kw	350		J-1772, Tesla, and Tesla Roadster plugs x.2.5 ports per station
Slow 3kw or below	37		Nema & Wall plugs, remainder of above.
All types	420		As noted, this isn't tracked by City.

(10.8) Does your city collect air quality data?

No

Air quality data is collected by Metro Vancouver, the regional authority.

11. Urban Planning

(11.0) What is the size of your city's park space in square km?

13

(11.1) Report the total population living within 500m of a mass transit station, with mass transit defined as any Bus Rapid Transit (BRT), light rail, other rail-based transit modes or frequent bus services (average of five times an hour from 7 a.m. to 9 p.m. on a weekday).

Total population living within 500m of a mass transit station

Population

647,500

Comment

Calculated based on estimated 99% of population living with 500m of public transit.

12. Food

Food Consumption

(12.0) Report the total number of meals that are annually served and/or sold through programs managed by your city (this includes schools, hospitals, shelters, public canteens, etc.).

Total meals served or sold through programs managed by your city

Number of meals

Cities facilities

Comment

Data not tracked

(12.0a) Report the tonnes per food group that are served and/or sold through the above mentioned programs.

Vegetables

Tonnes served and/or sold

Comment

Data not tracked

Fruit

Tonnes served and/or sold

Comment

Data not tracked

Dairy foods

Tonnes served and/or sold

Comment

Data not tracked

Whole grains

Tonnes served and/or sold

Comment

Data not tracked

Tubers or starchy

Tonnes served and/or sold

Comment

Data not tracked

Total protein sources

Tonnes served and/or sold

Comment

Data not tracked

Meat (Beef, Pork, Chicken) protein sources

Tonnes served and/or sold

Comment

Data not tracked

Egg protein sources

Tonnes served and/or sold

Comment

Data not tracked

Fish protein sources

Tonnes served and/or sold

Comment

Data not tracked

Plant-based (pulses, nut) protein sources

Tonnes served and/or sold

Comment

Data not tracked

Added fats

Tonnes served and/or sold

Comment

Data not tracked

Foods with added sugar

Tonnes served and/or sold

Comment

Data not tracked

(12.1) What is the per capita meat and dairy consumption (kg/yr) in your city?

Meat consumption per capita (kg/year)

Kg/Year/Capita

50.5

Year data applies to

2020

Is your city calculating emissions associated with this consumption?

Comment

Localized data are not available. National average data from Statistics Canada is provided here; these also formed the basis for Vancouver's consumption-based inventory. Total includes beef, pork, chicken.

Dairy consumption per capita (kg/year)

Kg/Year/Capita

90.2

Year data applies to

2020

Is your city calculating emissions associated with this consumption?

Comment

Localized data are not available. National average data from Statistics Canada is provided here; these also formed the basis for Vancouver's consumption-based inventory. Total includes cream, cheese, fluid milk.

Sustainable Food Policies and Actions

(12.3) Does your city have any policies relating to food consumption within your city? If so, please describe the expected outcome of the policy.

	Response	Please describe the expected outcome of the policy
Please complete	Yes	The Vancouver Food Strategy is the City's tool to meet our social, environmental, economic, and health goals. It is a plan to create a just and sustainable food system for the city. It builds on years of food systems initiatives and grassroots community development, considering all aspects of the food system, from seed to table to compost heap and back again. Our goals express how the City wants the food system to take shape in the future. These goals address five areas of focus: Support food-friendly neighbourhoods: Food-friendly neighbourhoods provide all residents with easy access to fresh, healthy foods, and the means to sustainably dispose of food waste. Building and maintaining strong food systems across the city will require the facilities and organizational support for community and collective gardens; farmers and community markets; food storage facilities; community composting facilities; and healthy corner stores. Make food a centrepiece of a green economy: Creating food-related green jobs, and addressing challenges to growing, processing, warehousing, and distributing local and sustainable foods are essential to building a green economy. Food access: Access to sufficient, safe, nutritious, and affordable food is fundamental to health and equality. To ensure food is accessible, the City will help to create and support communities and neighbourhoods where it is easy to access basic goods, that are socially inclusive, designed to enhance physical and mental well-being, and that protect Vancouver's natural ecology. Resident empowerment: The most effective community food systems are shaped by the people who live there. Knowledge can come from accessing community-based programs, such as neighbourhood food networks, Vancouver Food Policy Council activities, and other food-focused organizations. Advocate for a just and sustainable food system: The food system has many levels — household, neighbourhood, city, region, and beyond. The City can advocate for food issues at the regional, provincial, and national levels by

		placing a food system lens on plans and policies at all levels of government, and with other key partners such as foundations and private institutions.

(12.4) How does your city increase access to sustainable foods?

Do you subsidise fresh fruits and vegetables?

Action implemented

Yes

Please provide details and/or links to more information about the actions your city is taking to increase access to sustainable foods

Through delivery partners, the City supports programs that provide and promote fresh produce. This support ranges from healthy breakfast programs for vulnerable populations to policy and licensing support for access to fresh produce (e.g., farmers markets, etc.).

Do you tax/ban higher carbon foods (meat, dairy, ultra-processed)?

Action implemented

No

Please provide details and/or links to more information about the actions your city is taking to increase access to sustainable foods

Do you use regulatory mechanisms that limit advertising of higher carbon foods (meat, dairy, ultra-processed)?

Action implemented

No

Please provide details and/or links to more information about the actions your city is taking to increase access to sustainable foods

Do you use regulatory mechanisms that limit the sale of higher carbon foods (meat, dairy, ultra-processed)?

Action implemented

Please provide details and/or links to more information about the actions your city is taking to increase access to sustainable foods

Do you incentivise fresh fruit/vegetables vendor locations?

Action implemented

Yes

Please provide details and/or links to more information about the actions your city is taking to increase access to sustainable foods

The City supports programs that provide and promote fresh produce, e.g., farmers markets, etc.

Do you have programs/policies/regulations on food surplus - either food surplus recovery and redistribution, or food waste avoidance programs (i.e. Love Food/Hate Waste)?

Action implemented

Yes

Please provide details and/or links to more information about the actions your city is taking to increase access to sustainable foods

The City is part of a regional initative related to Love Food/Hate waste, as the region produces 13,000 tonnes of food waste per year.

(12.5) Please report the total annual volume of food waste (subset of organic waste) in tonnes.

Total annual volume of food waste

Total annual volume of food waste (subset of organic waste) in tonnes

Comment

Estimate not possible: food waste commingled with garden and yard waste in collection (total organics disposed: 109,000 tonnes in 2019).

(12.6) What percentage of your population is food insecure?

Population that is food insecure

Percentage of population that is food insecure

10

Comment

Estimate produced by local health authority for Vancouver households, based on 2011-2012 data.
Link: http://www.bccdc.ca/pop-public-health/Documents/Household%20food%20insecurity%20in%20BC_Vancouver%20Coastal%20infographic.pdf

13. Waste

(13.0) What is the annual solid waste generation in your city?

	Amount of solid waste generated (tonnes/year)	Year data applies to	Please describe the methodology used to calculate the annual solid waste generation in your city
Please complete	925,400	2019	Derived using a combination of regional and municipal data, including regional solid waste flow estimates, municipal organics pickup data, housing/population data.

(13.1) How much of the solid waste generated in your city is disposed to landfill or incineration (tonnes/year)?

334,000

(13.2) What percentage of the solid waste generated in your city is diverted away from landfill or incineration?

63

(13.3) What is the amount of your city's total solid waste collected for each of the following sectors (tonnes/year)?

These figures represent waste collected that is bound for landfill or incinerator. Diverted waste component cannot be broken down by sector.

Industrial total included in commercial category.

	Amount of solid waste generated (tonnes/year)
Total	334,286
Residential	126,298
Commercial	133,556
Industrial	0
Construction and demolition waste	133,556
Other	0

(13.4) What is the amount of solid waste being treated (tonnes/year) through the methods listed.

Re-use total unknown, but forms part of recycling total.
Figure for total organic waste diverted in 2019 has been given. We do not have breakdown by sector.

	Tonnes/year
Re-use	0
Recycling	460,500
Composting	109,000
Anaerobic digestion	0
Incineration or other form of thermal treatment	60,600

Open burning	0
Sanitary landfill	273,400
Non-sanitary landfill	0
Other	0

(13.5) Please provide a waste composition analysis

Metro Vancouver (the regional government) commissions an waste composition study for 2020. Note these data are not disaggregated for City of Vancouver.

2020WasteCompositionStudy.pdf

14. Water Security

Water Supply

(14.0) What are the sources of your city's water supply?

Surface water, from sources located fully or partially within city boundary

(14.1) What percentage of your city's population has access to potable water supply service?

100

(14.2) Are you aware of any substantive current or future risks to your city's water security?

Yes

(14.2a) Please identify the risks to your city's water security as well as the timescale and level of risk.

Water security risk drivers	Anticipated timescale	Estimated magnitude of potential impact	Estimated probability of impact	Risk description
Increased water stress	Medium-term (by 2050)	Less Serious	Medium	Reduced snowpack in winter could reduce storage in reservoirs, exacerbated by longer, hotter summers. At current rates of water consumption, this could cause water stress in terms of availability and accessibility.

Water Supply Management

(14.3) Please select the actions you are taking to reduce the risks to your city's water security.

Risks

Increased water stress

Adaptation action

Municipal water efficiency retrofits

Status of action

Implementation

Action description and implementation progress

The 2016-2020 Clean Water Program will expand water conservation programs across all consumer sectors and all City facilities and parks, with a goal to reduce city and corporate water consumption per-capita by 33% by 2020. Continuing programs include hydrant leak detection improvements (projected annual savings of $200,000 and 2 million litres of water), and water efficiency retrofits in City-owned buildings.

Risks

Increased water stress

Adaptation action

Water metering

Status of action

Implementation

Action description and implementation progress

The 2016-2020 Clean Water Program includes expanding water metering to all sectors.

Risks

Increased water stress

Adaptation action

Conservation awareness and education

Status of action

Operation

Action description and implementation progress

The 2016-2020 Clean Water Program includes "WaterWise" lawn and garden education.

Risks

Increased water stress

Adaptation action

Water use restrictions

Status of action

Operation

Action description and implementation progress

The 2016-2020 Clean Water Program includes lawn sprinkling education and enforcement and revised bylaws.

Risks

Increased water stress

Adaptation action

Use of non-potable water outside

Status of action

Operation

Action description and implementation progress

The 2016-2020 Clean Water Program includes sale of rain barrels and indoor/outdoor water-saver kits. Additionally, in 2018, City Council approved new requirements for designing, operating and maintaining alternative water systems to cut water use and safeguard public health. Alternate water systems safely collect, treat, and use rainwater for irrigation and toilet flushing, replacing the need for drinking water. The City and Vancouver Coastal Health worked together to write a clear standard for rainwater harvesting. Along with the fact all alternate water systems (except in single or duplex family homes) will need operating permits now, this will help to keep these systems safe and well-maintained.

Risks

Increased water stress

Adaptation action

Stormwater management (natural or man-made infrastructure)

Status of action

Pre-implementation

Action description and implementation progress

The City has a target to capture and treat 90% of Vancouver's average annual rainfall by using green infrastructure tools and design guidelines on public and private property.

(14.4) Does your city have a publicly available Water Resource Management strategy?

Intending to undertake in next 2 years

The City is starting to look at managing all the water in Vancouver as one integrated system: "One Water". By understanding water resources both above and below ground, we can start to value water as a resource in all its forms: rainwater, groundwater, drinking water, and sanitary flow. We can improve our readiness to withstand and recover from extreme rain events, flooding, and droughts.

Submit your response

What language are you submitting your response in?

English

Please read and accept our Terms and Conditions

I have read and accept the Terms and Conditions

Please confirm how your response should be handled by CDP.

	Public or non-public submission
I am submitting my response	Publicly (recommended)

Current City owned fleet assets including electric, hybrid and conventional combustion.

Rolling Stock

Group	Conventional	Electric	Hybrid	Total
City	**1271**	**105**	**75**	**1451**
Engineering	651	68	30	749
VPD	430	23	35	488
VFRS	111	3	9	123
Other	79	11	1	91
Park Board	**248**	**43**	**8**	**299**
Park Board	248	43	8	299
Grand Total	**1519**	**148**	**83**	**1750**

Corporate Fleet is part of the City of Vancouver's Green Operations Plan

- Through current projects we are forecasting to have 200 electric vehicles in the fleet by the end of 2022.
- As vehicles come up for replacement electric options are considered.
- Electric options are readily available for the smaller vehicles in the fleet such as cars, pick-ups and the like
- Electric options are not readily available for heavy vehicles. In order to address this we are watching the market, testing new vehicles when they become available and moving to electric options where and when we can.
- There are currently 75 Electric charging stations installed at City works yards to support the 148 Electric vehicles. An additional 70 charging stations will be installed over the next year to support further additions of electric vehicles to the fleet.
- Further growth in the number of charging stations and electric vehicles in the fleet will be outlined in the next 4 year capital plan.

CLIMATE EQUITY WORKING GROUP MEMBERSHIP

Last updated: 2021-11-04

ABOUT THE CLIMATE EQUITY WORKING GROUP

Vancouver is striving to respond to the climate crisis with ambitious carbon reduction policies and the equitable implementation of those policies. This requires ensuring that those facing the greatest impacts are deeply represented in program development and also ensuring that the benefits of our climate actions are felt by communities that have been hit hardest by social and economic injustices.

As part of the Climate Emergency Motion in 2019, Council directed staff to:

> establish a "Climate and Equity" working group to provide guidance and support for the City's efforts to transition off of fossil fuels in ways that prioritize those most vulnerable to climate impacts and most in need of support in transitioning to renewable energy.

In 2020, a group of organizations and individuals with diverse lived experiences formed the Climate and Equity Working Group to provide advice and guidance in the development of the Climate Emergency Action Plan, ensuring staff considered equity impacts in all aspects of the plan. Sixteen members brought a rich mix of perspectives including new immigrants, people with disabilities, people with low income, urban Indigenous people.

Acknowledging that there is still a great deal of work to be done on equity within climate policy, a second iteration of the Working Group was formed in May 2021. Members will advise City staff on climate-related policies, programs, and engagement efforts from an equity perspective, and help to shape the development of a Climate Justice Charter that will integrate and advance equity in climate policy.

The objective of the Climate Equity Working Group (CEWG) is to:

- Advise city staff on draft climate policy, such that equity and reconciliation are advanced through this work.
- Provide suggestions to staff on how to engage particularly under-represented communities
- Where appropriate, inform their networks about relevant opportunities for participation in City engagement events
- Collaborate with staff and consultants to develop a Climate Justice Charter, both by generating content ideas and providing feedback on work as it develops.

DEFINING EQUITY

Climate change impacts everyone, but it impacts some of us more than others. Systemic discrimination and past policy decisions, including City urban and transportation planning policies, have contributed to the continuing oppression of Indigenous people, racialized, and other disproportionately impacted communities. As a result, certain communities are more impacted by issues of poverty, lack of services, and unequal opportunities. Moving forward, City policies need to work to address this. The climate crisis clearly overlaps with other issues—Indigenous rights, racial justice, immigrant rights, housing justice, and gender issues, to name some examples.

The Climate Equity Working Group has adopted the definition of equity from Vancouver's Equity Framework:

> "Equity is both an outcome and a process.
>
> Equity names and addresses systemic inequities that benefit and favour some groups and often disproportionately impact cultural communities, Indigenous, Black and People of Colour (IBPOC). Individuals and communities with intersecting identities of Indigeneity, race, gender, gender expression and sexual orientation, ability and class can be, and often are, negatively affected by favoured social systems.
>
> Therefore, equity efforts seek ways to transform current structures, policies, and processes in order to balance power and influence, expand access, and create new ways of walking together that nourish all people by embedding intersectionality in institutional and sectoral change. Equity amplifies and affirms the dignity and rights of all people by centering the diverse voices of Indigenous and racialized peoples and communities in creative and resilient processes, informed by Indigenous knowledge and different world views across the ways we do our work."

CLIMATE EQUITY WORKING GROUP MEMBERSHIP

Last updated: 2021-11-04

GROUP MEMBERSHIP

The current Working Group, formed in May 2021, consists of members with lived experience representing diversity in gender, race, age, class, sexual orientation, physical ability. Members come to this work with a wide range of lived and professional experiences and intersecting identities. Please refer to the list below of active and inactive members of the Working Group (May 2021-present). Biographies follow below.

Adriana Laurent
Ajay Puri
Alix Krahn
Amy Hennessy *(active May-Oct 2021)*
April Treakle
Asha Sahota
Barbara Joughin *(active May-Oct 2021)*
Cynthia Minh
Jan Bruce *(joined Oct 2021)*
Marcus Reid
Meghan Winters
Naia Lee
Navdeep Chhina
Nicole Montgomery *(inactive)*
Rachelle Grohs
Rita Steele
Sophia Yang
Tatyana Schneider Coin
Will Shelling

MEMBER BIOGRAPHIES

Adriana Laurent (she/her) is originally from Honduras, and is a queer, mixed race immigrant who is passionate about the intersections of climate change, race, gender and migration and has been organizing on these issues for 6 years at an institutional and grassroots level. She's been living in Vancouver, Canada (the lands of Musqueam, Squamish and Tsleil-Waututh nations). Adriana was a co-founder and staff at the Climate Hub at UBC, was a consultant for the City of Vancouver on the scoping of their Climate Justice Charter, and she has also organized international mutual aid projects and grassroots youth climate organizing. She now works as a Digital Campaigner at Leadnow.

Adriana is a returning member from the 2020 iteration of the Climate Equity Working Group.

Ajay Puri (he/him) is a movement builder, strategist, and Justice, Equity, Diversity & Inclusion (JEDI) facilitator. He has 20 years experience in empowering communities and creating social change in the non-profit, academic, government and social innovation sectors. He currently is an JEDI Facilitator at the University of British Columbia, and runs his consulting agency Pē'pəl; which seeks to deepen engagement using JEDI principles.

Mr. Puri was acknowledged for his work as a featured TEDx speaker and recognized as one of Canada's top five volunteers in CBC's Champions of Change contest. He has spoken to over 200 audiences nationally and internationally on topics dealing with social movements, social innovation, leadership, digital engagement, and healthcare transformation.

Alix Krahn *[Bio not yet received]*

April Treakle *[Bio not yet received]*

Asha Sahota (she/her) is a settler situated on the traditional, ancestral, and stolen lands of the Coast Salish, Tsawssasen, Stó:lō, Kwantlen, Stz'uminus, and Musqueam peoples. I am a recent graduate of UBC with a BA in Political Science and a minor in Law and Society (with high distinction). I currently am a Volunteer Assistant Policy Analyst with the BCCIC-Climate Change Branch, a Research and Policy Associated at the CCR2P, and a Client Call Volunteer for Access Pro Bono.

Throughout my life, I have dedicated my work to focus on the nuanced ways in which systemic forms of oppression are perpetuated by institutions and how this impacts the most vulnerable populations. The impacts of climate change

disproportionately impact precarious populations – specifically in Vancouver BIPOC, low-income, disabled, homeless, and low-income individuals. In joining this group, I hope my work is able to: advocate for those who do not always get a seat at the table, push for equitable policies in an institution that often upholds systemic oppression and ensure that legislation takes a bottom-up approach to meet the needs of my community.

I look forward to collaborating, learning, and reflecting on the ways in which the City of Vancouver can become more intersectional, intentional, and just when it comes to the convergence of climate and equity frameworks.

Cynthia Minh *[Bio not yet received]*

Cynthia is a returning member from the 2020 iteration of the Climate Equity Working Group.

Jan Bruce *[Bio not yet received]*

Marcus Reid *[Bio not yet received]*

Meghan Winters (she/her) leads the Cities, Health, and Active Transportation Research Lab at Simon Fraser University. Her research focuses on ways that cities and their infrastructure can play a role in promoting healthy and safe transportation, and social connected and resilient communities. She looks specifically at the impacts of changes in in cities' policies, programs, and design on health and equity outcomes. She is happiest when working in close collaboration with cities and community partners to conduct research and create tools that address real-world challenges. Meghan is a Distinguished Professor in the Faculty of Health Sciences.

Naia Lee (she/they) is an organizer, student, facilitator, and designer. As part of a Momentum Community cohort, she is currently involved in reflecting on the Canadian climate movement's past, and designing its next steps. Naia has also worked as Communications Coordinator at Youth Climate Lab, and mobilized thousands to the streets alongside local and national youth climate groups. Naia is drawn to climate work by shared visions of a more just world, enjoys climbing trees, and you can often find her engaging with stories.

Navdeep Chhina (he/him) grew up in Chandigarh, India and since 1998 has been a settler of colour on the unceded lands of the Coast Salish peoples. With a background in communications and advocacy work, he believes that active transportation has a vital role to play in building sustainable and equitable cities. To this end, as Director of Campaigns and Inclusion at HUB Cycling, Navdeep Chhina aspires to help build a network of safe and connected cycling infrastructure for people of all ages, abilities, and socio-economic backgrounds. At HUB Cycling, Navdeep also leads the development of policy and programming framework that supports a diverse, inclusive, and respectful environment.

Rachelle Grohs (she/her) is a sustainability professional and current Asset Management Coordinator with the BC Non-Profit Housing Association. In her role with BCNPHA, Rachelle helps non-profit housing providers to understand their energy use, explore energy-efficient retrofit opportunities, and connect the low-income housing sector with funding opportunities. With her background in architectural conservation and sustainability engineering, she is passionate about improving existing buildings that lower GHG emissions and contribute to better health and well-being for tenants. Rachelle brings to the Climate and Equity Group her experience working directly with and supporting the non-profit housing sector. She is looking to advocate for equitable climate solutions in the City of Vancouver that prioritize improving housing sustainability and affordability.

CLIMATE EQUITY WORKING GROUP MEMBERSHIP

Last updated: 2021-11-04

Rita Steele (she/her) is a sustainability professional, food systems activist and Vancouver Global Shaper who is passionate about transforming global supply chains into systems that center people, justice, the environment and support a circular economy. She grew up on the traditional and stolen lands of the Sḵwx̱wú7mesh Úxwumixw (Squamish), səl̓ilw̓ətaʔɬ (Tsleil-Waututh), and xʷməθkʷəy̓əm (Musqueam) Nations and loves spending summer days outside hiking and camping through local trails and forests. Rita works as Simon Fraser University's Manager of Campus Sustainability where she implements university-wide initiatives in support of climate mitigation and adaptation. She also works as an independent consultant supporting organizations with sustainable procurement and supply chain efforts.

In her free time she volunteers leading youth climate engagement projects with the Global Shapers Vancouver hub and has recently started an online network called the BIPOC Sustainability Collective – a space for BIPOC to connect with each other and seek support through navigating largely white environmentalist spaces on the West Coast.

Rita is a returning member from the 2020 iteration of the Climate Equity Working Group.

Sophia Yang (she/her) is the Founder & Executive Director of Threading Change, a youth-led ethical fashion organization working at the intersections of climate, gender, and racial justice in alignment with the necessary transition to a circular economy. Threading Change was born because Sophia wanted to help raise young people's voices in one of our world's most polluting industries—the fashion industry. Doing so for our planet, and people. She is also the Urban Greening Project Manager at Prince's Trust Canada.

Originally born in China but raised in Calgary, Alberta, Sophia draws on her multitude of diverse work and volunteer experiences as the drivers for her holistic approach and perspective on the protection of our environment. As a dedicated climate justice changemaker, Sophia has worked for over a dozen environmental organizations ranging from federal government agencies (Parks Canada, Natural Resources Canada), NGOs (Nature Conservancy of Canada, SPEC, Parkbus, CityHive), industry (CNRL), and academia (UBC, SFU).

Sophia is the recipient of the Starfish Canada's Top 25 Under 25 Environmentalists award in 2017 and 2018, has attended the United Nations Climate Change Conference (COP 24 & 25) twice as a British Columbian Youth Delegate, and DJs as 'KALEIDO' in her spare time.

Tatyana Schneider Coin (she/her) My birth name is Tatyana and my given traditional name is leqsaylths. I am of mixed European and Ucwalmicw descent and I am originally from Prince George, BC. I have lived in the Greater Vancouver area for over 13 years and I really do appreciate being able to live in this beautiful place as an uninvited visitor on the unceded traditional territories of the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh (Squamish), and səlilwətaɬ (Tsleil-Waututh) peoples. I wanted to join the Climate Equity Working Group because it gives me a chance to use what I have learned about equity and justice to reciprocate a little of what I can back to this land and in order to be a part of a space where Indigenous women have in the past not been welcomed.

Will Shelling (he/him) is a strategist focusing on social justice, progressive policy, and championing reform for inclusive systems in all facets of his life. He works at Bakau Consulting as an equity strategist, focusing on JEDI, anti-oppression, and working to better understand and combat injustice. His focus in the Climate Equity Working Group focuses on providing his lived experience, academic training, and expert advice in crafting the Climate Justice Charter to better understand how intersectionality and discussions of power can be embedded within work that the City of Vancouver takes on, and how progressive stakeholder engagement can bring about more equitable structures.