BURNABY CLIMATE ACTION FRAMEWORK

PROGRESS REPORT 2021-2022









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ACKNOWLEDGEMENT

Burnaby is located on the ancestral and unceded homelands of the həńqəmińəm and Skwxwú7mesh speaking peoples. We are grateful for the opportunity to be on this shared territory.







Reducing the impacts of climate change requires swift action and all of us working together—citizens, businesses, industries, institutions, and all levels of government— to collectively reduce our carbon emissions. The City of Burnaby has set aggressive carbon reduction targets for our community, including for our own operations. We've identified a variety of ways we can cut emissions and we're taking focused steps—big and small—and making progress towards achieving our goals.

Our community-wide carbon reduction targets are:

- » 45% reduction by 2030
- » 75% reduction by 2040
- » Carbon neutral (no longer contributing to the carbon emissions that accelerate climate change) by 2050

Burnaby's City Energy Strategy, developed alongside our Climate Action Framework, commits the City to meeting the carbon neutral target in its own operations by 2040— a full 10 years ahead of the community-wide target.

Our Climate Action Framework, adopted in 2020, lays out seven key areas of transition called "Big Moves" targeting key sources of emission and levers for change. These Big Moves collectively guide Burnaby's climate actions over the next decade and beyond. Each Big Move has three or four associated "Quick Starts"—near-term actions such as policies, programs and infrastructure projects that will help the City meet its longer-term targets. These Quick Starts are intended to be implemented by 2023.

This report highlights actions taken and progress made during the 12 months from July 1, 2021 to June 30, 2022.



HOW WE GOT HERE

Recognizing the dangers posed by climate change and the need for a collaborative effort to maximize carbon reduction opportunities, Burnaby City Council declared a Climate Emergency in 2019. This emergency declaration established our carbon reduction targets, which align with the targets set by the Intergovernmental Panel on Climate Change to limit global temperature increases to a maximum of 1.5 degrees Celsius. These targets are also consistent with targets set at the regional, provincial and national levels.

Before this declaration, the City was already taking action to reduce corporate and citywide carbon emissions. In fact, our recognition of the need for climate action has been demonstrated and documented for decades. Our 1993 State of the Environment report noted the need to take action, as did the 1998 Official Community Plan (OCP). As a result, we added more parks, improved energy efficiency in facilities, added renewable energy sources for City buildings and reduced fleet emissions.

In 2016, we completed an Environmental Sustainability Strategy and a Community Energy and Emissions Plan that further advanced our plans to reduce carbon emissions and secure the benefits of taking action to combat climate change. By 2019 the need to reduce carbon emissions had become more urgent and apparent, leading to the climate emergency declared by City Council. In 2020, staff presented two reports to City Council the Climate Action Framework and the City Energy Strategy—outlining recommendations for strategic carbon emission reduction actions to reach the targets committed to in the Climate Emergency Declaration.

In 2021, the unprecedented heat dome and atmospheric river events in British Columbia provided reminders that climate change is already happening, and of the immediate necessity for the City to plan, prepare and respond to extreme weather events and long-term climate stressors. The City's climate action initiatives are examples of interdisciplinary thinking and are driven forward by a cross-departmental working group for each Big Move. This work was reinforced by the City Council motion, carried unanimously in August 2021, that "any policy work related to climate action addresses [the City's] goals of reconciliation and equity, and are nature-based wherever possible."

Actions and progress-to-date are summarized on the following pages.



CLIMATE LEADERSHIP

Through projects big and small, the City is demonstrating leadership on climate action and helping move Burnaby towards its carbon reduction targets.

- » Partnered with Burnaby-based Aether Catalyst Solutions in a project to test Aether's emissions abatement technology on select City-owned gas-powered equipment.
- » Embarked on a process to renew Burnaby's Official Community Plan (OCP), which aims to create a climate-focused long-term vision and planning framework to guide the growth and development of Burnaby for the next 25 years.
- » Installed 105 electric vehicle (EV) charging stations and solar panels at City Hall, creating one of the largest EV parking lots for municipal use in Canada.
- » Entered into the three-year co-funded Urban Resilient Futures partnership with the SFU Morris J. Wosk Center for Dialogue and Vancity to accelerate climate action in cities and increase equity in public participation.







Urban Small Motors Emission Abatement Project

In March 2021, the City and Burnaby-based Aether Catalyst Solutions launched a collaborative project to optimize and demonstrate the effectiveness of Aether's products in lowering emissions from small gas-powered engines, such as grass mowers. For the project, now in its second year, catalytic converters were installed on six of Burnaby Parks' riding mowers, and air compressors (to cool the catalytic converters) were installed on three of the units. Catalytic converters are exhaust emission control devices that convert toxic gases and pollutants into exhaust gases.

The results are impressive. During the 2022 mowing season, after 70+ hours of use, four of the catalyst-equipped mowers had achieved 100% conversion of Nitric Oxide (NO). The remaining two mowers also had achieved a high level of NO conversion but with fewer operating hours.

NO emissions lead to the formation of ground-level ozone and Nitrogen Dioxide (NO₂), both of which are Criteria Air Pollutants known for negative effects on the human respiratory system. NO₂ is a greenhouse gas with a Global Warming Potential of 298—meaning that every kilogram of NO₂ released has the same impact on climate change as 298 kilograms of Carbon Dioxide (CO₂).

This collaborative project has allowed the City to reduce greenhouse gas emissions from its operations and help a local company in developing its product. Aether plans to use the data collected from this project to approach equipment manufacturers in the power equipment sector to discuss options for integration of the technology with their products. This could potentially lead to new equipment being manufactured with the catalytic converter technology installed, as well as retrofit options for legacy equipment.

QUICK STARTS	COMPLETION DATE	STATUS
Develop the City Energy Strategy and create an Energy Transition Team.	2021	COMPLETE
Show leadership through City projects, policies, plans and actions.	ONGOING	AHEAD
Advocate for climate action with partners and senior government.	ONGOING	ON TRACK
4 Expand climate engagement and awareness.	ONGOING	ON TRACK

RESILIENT NEIGHBOURHOODS

Resilient neighbourhoods are those that are equipped to adapt and thrive when faced with change and challenges, ensuring basic needs are met while minimizing environmental impact.

ACTIONS

- » Received City Council adoption of the finalized Bainbridge and Lochdale Urban Village Community Plans, as well as the Burnaby Urban Village Design Guidelines, following an extensive, multi-phased public consultation process for both plans.
- » Incorporated climate change adaptation features in the Grosvenor Brentwood Master Plan with recommendations related to drought tolerant plant species, reducing potable water consumption, improving biodiversity and carbon sequestration, and decreasing greenhouse emissions—including embodied carbon during the construction process.
- » Continued to implement rainwater management amenities (more commonly known as rain gardens) via development projects in Burnaby's Town Centres—consistent with the City's Town Centre Standards—to help capture, store, convey and treat urban runoff collected from City roads, sidewalks and multi-use paths.
- » Updated the City's Extreme Heat Operational Response Plan, activated cooling centres during the extreme heat events in 2021 and held cooling centre open houses in the spring of 2022 to help prepare the community to cope with future extreme heat events.



BIG MOVE 2



Bainbridge and Lochdale Urban Village Community Plans

In the fall of 2020, the City began the process of developing new community plans for the Bainbridge and Lochdale neighbourhoods in northeast Burnaby, both of which were earmarked in the Official Community Plan (OCP) as Urban Villages. Following extensive public and stakeholder engagement, City Council approved the two draft plans in early 2022, clearing the way for a final round of consultation and final adoption of the plans in the summer of 2022.

The plans envision Bainbridge and Lochdale as thriving, mixed-used Urban Villages featuring:

- » new public spaces, community services and amenities for residents
- » an expanded mix of market and non-market housing options
- » local employment opportunities
- resources to accelerate the shift to more sustainable forms of transportation (walking, transit, cycling)

- » preservation and enhancement of riparian habitats, forested areas, watercourses and other environmental assets
- high-quality urban design to promote buildings, public spaces and streetscapes that are climateadaptive and contribute to creating unique and resilient neighbourhoods

Both plans were developed around the foundational concepts of climate action, striving for sustainable placemaking and creating resilient neighbourhoods. The plans were also developed alongside Burnaby's Transportation Plan, prioritizing active transportation and identifying Transportation Demand Management (TDM) strategies that may be applied to future developments.

City staff are now proceeding with the initial implementation of the plan, including preparing amendments to the Zoning Bylaw to ensure the districts and development regulations are in place to achieve the distinct Urban Village housing forms outlined in the plans. It is anticipated that these amendments will be presented for Council consideration in the fall of 2022.

	QUICK STARTS	COMPLETION DATE	STATUS
(1)	Plan for two resilient Urban Villages.	2022	COMPLETE
(2)	Research and plan for future zero-carbon communities, in advance of the OCP update.	2022	COMPLETE
(3)	Prepare for renewable energy projects: solar and biogas.	2023, ONGOING	ON TRACK
$\langle 4 \rangle$	Develop a climate adaptation strategy.	2023	ON TRACK

HEALTHY ECOSYSTEMS

Burnaby is taking action to expand and improve the health and resilience of our green spaces, including boulevards, streamside areas and our urban forest.

ACTIONS

- » Finalized the groundwork for completing the Urban Forest Management Strategy in the fall of 2022.
- » Added multiple projects to the City's inventory of ecosystem restoration initiatives, including:

BIG MOVE 3

- Riverbend Business Park—involved restoring streamside areas of the Fraser River by planting native trees and shrubs, constructing a new flood protection dike and multi-use pathway away from the Fraser River to preserve streamside areas, and decommissioning of five inactive stormwater outfalls.
- Deer Lake Mews Townhouse Development—included constructing an off-stream channel to enhance fish habitat, removing invasive species, and revegetating with native species to improve wildlife habitat.
- Guichon Creek—involved culvert replacement on Deer Lake Parkway to provide fish passage to upstream areas, installation of woody debris to add complexity for fish, and removal of invasive species and re-vegetation with native species.
- » Engaged with strata councils whose properties have watercourses running through them, consulting with and advising them on drainage and vegetation issues.
- Created guidelines to regulate the use and maintenance of boulevards throughout the city, ensuring Burnaby's boulevard spaces provide a) areas for the City to plant street trees, b) green space for environmental, health, and aesthetic reasons, and c) permeable areas in the streetscape for stormwater management and reduction of the urban heat island effect.
- » Continued to manage and remove invasive species from City parks, watercourse restoration areas and road rights-of-way, and revegetate with native plants where appropriate.





Urban Forest Management Strategy

The City views its urban forest as a living asset. Street trees, urban forests and green spaces in Burnaby provide many important benefits for the health and livability of our city, as well as core ecosystem services related to climate resilience. In 2021, Burnaby embarked on the development of an Urban Forest Management Strategy to equip the City with a long-term forecasting model and direction on how it will manage its urban forest into the future.

By the summer of 2022, the Urban Forest Management Strategy was 80% complete, with finalization expected in the fall of 2022. Initial information collected from the studies and inventories indicates that—due to development and environmental stressors—Burnaby's canopy cover has declined slightly, 0.5%, from 2018 to 2020. And, it is believed to have declined further between 2020 and 2022. An accompanying boulevard tree inventory forecasts the number of City-owned boulevard trees to be more than 34,000. This inventory will enable the City to establish a management system that can actively respond to current tree needs and plan for renewal and expansion with species that are resilient to the changing climate over their lifetime.

The studies conducted for the Urban Forest Management Strategy have the added benefit of generating information relevant to all areas of climate action including water absorption and filtration, air pollution and carbon sequestration, micro and macro climate moderation, socioeconomic equity, community resilience and mental health.

QUICK STARTS	COMPLETION DATE	STATUS
Enhance and expand streamside areas.	ONGOING	ON TRACK
2 Increase green infrastructure.	2023, ONGOING	ON TRACK
Expand and enhance the urban forest: develop and adopt an urban forest strategy.	2023	ON TRACK

ACCELERATED MODE SHIFT

With almost half of all Burnaby's carbon emissions coming from transportation, shifting trips to public transit or active modes will be critical to achieving Burnaby's climate action targets.

- » Completed and adopted Connecting Burnaby—Burnaby's Transportation Plan, setting the City's transportation goals, targets and policies for the next 30 years.
- » Constructed 25 kms of new accessible sidewalks in high priority areas since launching the City's New Sidewalks Program in 2021.
- » Upgraded the bike route along Still Creek Ave between the Burnaby Eco-Centre and Douglas Rd to a protected 2-way cycle track.
- » Identified three priority corridors from Phase 1 Cycle Network for AAA (All Ages and Abilities) improvements:
 - Frances and Union/Burnaby Mountain Parkway Corridor
 - Central Valley Greenway
 - Southeast Bikeway







Connecting Burnaby – Burnaby's award-winning transportation plan

Connecting Burnaby—Burnaby's Transportation Plan, adopted by City Council in December 2021, charts a progressive vision and plan that will guide transportation planning and policy decisions in the city for the next 30 years. It aims to create a vibrant and prosperous community by:

- » connecting people, places and goods
- » providing safe, accessible, healthy and sustainable transportation options and choice for all
- » supporting the ecological integrity of the environment

Connecting Burnaby prioritizes the people-moving capacity of the transportation system and emphasizes sustainable modes. It's supported by six ambitious goals and three measurable citywide targets that empower citizens to shift to more sustainable travel behaviours.

The Burnaby Transportation Plan was recognized by the Canadian Institute of Transportation Engineers (CITE) as the recipient of the 2022 Stan Teply Outstanding Technical Project Award, exemplifying the City's innovative and consultative approach to advancing sustainable transportation.

QUICK STARTS	COMPLETION DATE	STATUS
Accelerate priority pedestrian improvements.	2030	ON TRACK
Design and begin construction of the core cycling network.	2023	ON TRACK
3 Expand transit priority measures.	2023	ON TRACK
Reduce barriers to multi-modal transportation options.	2023	ON TRACK

ZERO-EMISSION VEHICLES

The City of Burnaby is emerging as a leader in providing opportunities for citizens and visitors, as well as City operations and staff, to make the shift to zero-emission vehicles.

BIG

MOVE

- » Installed 105 Level 2 fleet-specific Electric Vehicle (EV) charging stations at Burnaby City Hall.
- » Installed 28 Level 2 fleet-specific EV charging stations at the Still Creek municipal works yard.
- » Continued installing Level 2 public EV charging stations at various City facilities across Burnaby, achieving the goal of making public EV charging stations available in all four quadrants of the city.
- » Completed an E3 Fleet Review of Burnaby's municipal fleet, benchmarking types of vehicles, types of fuel used, GHG emissions and kilometres travelled.
- » Started to transition the City's light-duty fleet, replacing 11 gas-powered vehicles with EVs.





EV charging lot at City Hall

In July 2022, the City of Burnaby officially opened one of the largest municipal electric vehicle parking lots in Canada. With support from the federal government, the west parking lot at City Hall was retrofitted with 105 Level 2 EV charging stalls to support the City's transition to an electric municipal fleet. The City invested \$650,000 in the project and the Government of Canada contributed \$500,000 through the Natural Resources Canada's Zero-Emission Vehicle Infrastructure Program. The EV lot is also equipped with a large-scale solar canopy, which will generate emissions-free energy.

Over the next three years, the City plans to install another 200 EV charging stations at five additional municipal facilities. That will bring the number of municipal EV charging stations installed by the City to over 300.

Burnaby's EV charging station initiative is a centrepiece of the City Energy Strategy, which is utilizing civic facilities and fleet to showcase carbon neutral operations. The strategy commits the City to meeting the carbon neutral climate target across corporate operations by 2040, 10 years ahead of the community target.

QUICK STARTS	COMPLETION DATE	STATUS
Expand and monitor the City's public charging network.	ONGOING	ON TRACK
Adopt non-residential EV charging requirements.	2023	ON TRACK
Plan and design for EV charging stations at civic facilities.	ONGOING	AHEAD

ZERO-EMISSION BUILDINGS NET-ZERO NEW

BIG

MOVE

Through initiatives such as the Green Building Policy and Construction and Demolition Waste Diversion Bylaw, the City is working to reduce and ultimately eliminate new emissions sources from the construction of new buildings as Burnaby's population increases.

- » Introduced a new Construction and Demolition Waste Diversion Bylaw requiring recyclable and reusable materials generated by building demolitions to be diverted from the landfill.
- Incorporated a sustainability strategy into design development for the new Cameron Community Centre and Library, ensuring the new centre will feature a high-performance building with low operational carbon emissions, a water-considerate design, ecologically restorative landscaping, conscious material selection and resilience readiness.
- » Offered a low-carbon pathway for Part 3 (multi-family/mixed use) buildings, resulting in many rezoning applicants choosing the option of meeting BC Energy Step Code 2 with a low carbon energy system such as an air source heat pump for both heating and cooling.
- Supported a site-specific amendment to the BC Building Code to allow for a new mass timber student residence on the BCIT Burnaby Campus. The City supports anticipated updates to the BC Building Code to permit outright the construction of mass timber or Cross Laminated Timber (CLT) buildings up to 12 storeys. To this end, the newly adopted Lochdale and Bainbridge Urban Village plans provide, in designated areas, a height incentive that aligns with the anticipated BC Building Code change.





Construction and Demolition Waste Diversion Bylaw

In June 2022, City Council adopted a new Construction and Demolition Waste Diversion Bylaw requiring recyclable and reusable materials generated by building demolitions to be diverted from the landfill.

Metro Vancouver estimates that 400,000 tonnes of construction and demolition materials are disposed of at regional and private disposal facilities each year, more than half of which is recyclable. In its Regional Integrated Solid Waste and Resource Management Plan, Metro Vancouver identified the management of this material stream as key to reaching its goal of 80% waste diversion for the region.

Burnaby's Climate Action Framework identified the need for the City to develop a construction and demolition waste policy to reduce the amount of recyclable and reuseable construction and demolition materials currently going to the landfill— specifically wood—as these materials produce strong greenhouse gas emissions.

The bylaw requires that a Waste Diversion Plan be submitted and approved by the City prior to the demolition, tracking and documenting of material diversion and disposal. In addition, a final compliance report is required, outlining the level of diversion achieved. The new bylaw sets out a goal of diverting 70% of all recyclable and reusable material from the landfill and is incented through a refundable Waste Diversion Deposit, refunded based on the level of compliance reached.

QUICK STARTS	COMPLETION DATE	STATUS
Accelerate the roadmap to net-zero emissions from buildings.	2025	ON TRACK
Advance regulations that promote net-zero buildings: thick walls.	2020, ONGOING	COMPLETE
Remove barriers to low-carbon construction methods.	2023	AHEAD
Advance the City's construction and demolition policy.	2023	AHEAD

ZERO-EMISSION BUILDINGS RETROFITS

BIG MOVE

Existing buildings are the largest single source of carbon emissions in Burnaby and represent one of the most significant climate-action challenges for local governments.

- » Formed the Zero-Emission Building Retrofit Task Force to assist the City in developing a Building Retrofit Strategy.
- » Participated in the second year of the three-year Building Benchmark BC (BBBC) pilot project, which aims to inform and inspire public- and private-sector leadership on measuring and reporting the energy performance of buildings. Burnaby has 92 buildings (including all City-owned buildings) now publicly disclosing energy use as part of BBBC.
- » Upgraded lighting to energy-saving LED technology in the Christine Sinclair and Edmonds community centres, the Bill Copeland Sports Centre and along the Oakalla Deer Lake Trail.
- » Replaced old mechanical heating/ventilation and air conditioning (HVAC) and domestic hot water systems in the Riverway Golf Course Pro Shop with electrical systems, reducing reliance on fossil fuels.



Zero-Emission Building Retrofit Task Force

In 2021, Burnaby entered into a three-year Urban Resilient Futures (URF) Initiative partnership with Simon Fraser University's (SFU) Morris J. Wosk Center for Dialogue and Vancity. The partnership aims to employ people-centered dialogue and engagement processes to break through barriers to climate action in Burnaby. In this first year of the URF partnership, the focus has been on Burnaby's largest source of community carbon emissions—existing buildings.

The URF partners co-designed the structure, composition and process for a cross-sectoral Zero-Emission (ZE) Building Retrofit Task Force. The 16-person task force consists of subject matter experts including elected officials, construction and homebuilding industry representatives, commercial and multi-residential property owners, tenants, homeowners, groups reflecting the needs of residents living in energy poverty or with disabilities, and Burnaby's Intercultural Planning Table. During the spring and early summer of 2022, the task force developed a suite of recommendations on advancing building retrofits in the city. This set of recommendations and the accompanying report will be presented to City Council by task force members in the fall of 2022, and will serve as a foundation in the future development of the City's ZE Building Retrofit Strategy.

QUICK STARTS	COMPLETION DATE	STATUS
Transition to heating and cooling permits.	2023	ON TRACK
Advance low-carbon programs for existing buildings.	ONGOING	ON TRACK
Develop a citywide zero-emission building retrofit strategy.	2023	ON TRACK

BIG MOVE

TAKING ACTION TOGETHER

Through our Climate Action Framework and City Energy Strategy, the City of Burnaby has mapped out a plan for lowering carbon emissions in our community. But there is only so much we can do on our own and meeting our carbon reduction targets will require a concerted effort by all the individuals and businesses who call Burnaby "home."

Climate change may seem like a big, insurmountable problem. It feels like anything we do as individuals won't have much of an impact. But everyone doing a little will, in fact, add up to a lot. Here are things you, your family, your strata, your school or your business can do to join in and take climate action.

- » Be a climate leader! Inspire your friends and neighbours by sharing stories and examples of energy-conscious actions you've taken. We learn best by example and from those around us and in our closest communities.
- » Volunteer with organizations dedicated to improving our ecosystems, for example:
 - Streamkeepers are groups of like-minded citizens dedicated to improving the health of streams and rivers in our community. Activities include engaging with the public, removing non-native plants and planting native trees and shrubs in sensitive areas, and reporting on occurrences of pollution to waterways. Burnaby is fortunate to have several Streamkeeper groups that are actively working on Eagle Creek, Stoney Creek and Byrne Creek.
 - The Burnaby Firefighters Charitable Society has, since 2021, been responsible for the volunteer operation of a community fish hatchery in Burnaby. The Sapperton Fish and Game Club constructed and operated the community fish hatchery from 1997 to 2020. The goal of the hatchery is to restore populations of wild salmon impacted by past urban development. Salmon fry raised at this hatchery are released in Burnaby's streams through Fisheries and Oceans Canada's (DFO) Salmonid Enhancement Program.



- If you live in a home or strata with watercourses running through or adjacent to your property, find out from the City what you can do to protect and enhance them. For example, removing invasive plants from channel banks and restoring them with native vegetation can increase bank stability, create shade and improve ecosystem health and resiliency—plus, the benefits extend beyond property boundaries as they also enhance habitat areas farther downstream. In 2022, one Burnaby strata independently worked with a contractor on a phased plan to remove invasive plants from the watercourse on their property and restore it with native vegetation. Their restoration efforts were recognized by the City with an Environmental Star.
- » Participate in Environment Week events throughout Burnaby, such as:
 - Invasive species plant pulls—join other Burnaby residents in removing invasives such as English Ivy and Himalayan Blackberry from Burnaby parks.
 - Car trunk sale—your junk may be someone else's treasure! Find new homes for old items and keep them out of the landfill.
 - Go by Bike Week—challenge your friends, co-workers and other companies to get around using sustainable modes of transportation.
- » Dispose of all green waste—including house plants, yard trimmings and garden refuse—in green bins or at the Eco-Centre. Never dump green waste in a ravine, park or empty lot as it may contribute to the spread of invasive plant or insect species.
- » Get active! Can you get where you need to go without using your car? Each year, the City is expanding our network of sidewalks, cycle tracks and multi-use pathways. Walk, roll or cycle to reach your destination, or to get to a transit stop or station. You'll benefit from both lowering your carbon output and improving your health.
- » Time for a new vehicle? Make the switch to a ZEV! Every year, there are more and more choices, and there are thousands of dollars in federal and provincial incentives available for purchases of eligible zero-emission vehicles. Plus, the network of charging stations is growing, including at City-owned facilities throughout Burnaby.
- » Live in a "green building." If you're in the market for a new condo, townhouse or commercial space, look for a building that has been built to use low-carbon heating, cooling, hot water and cooking systems.
- » If you're building a new home, doing renos or retrofits, or purchasing new appliances, be sure to choose energy-efficient options. Check out CleanBC for advice on making low-carbon improvements and finding rebates.

Thank you for working with us and taking climate action together!



Burnaby.ca