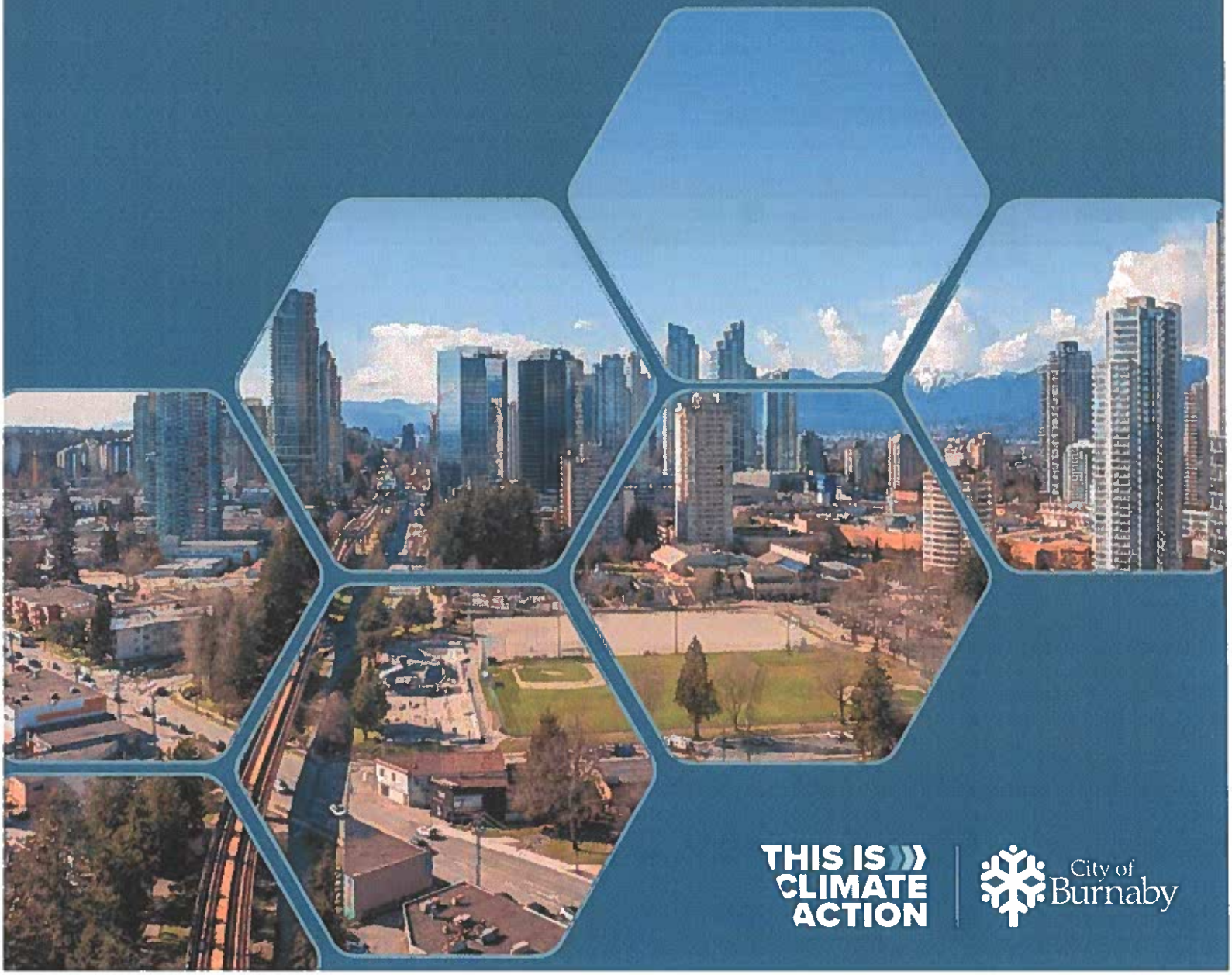
Attachment I

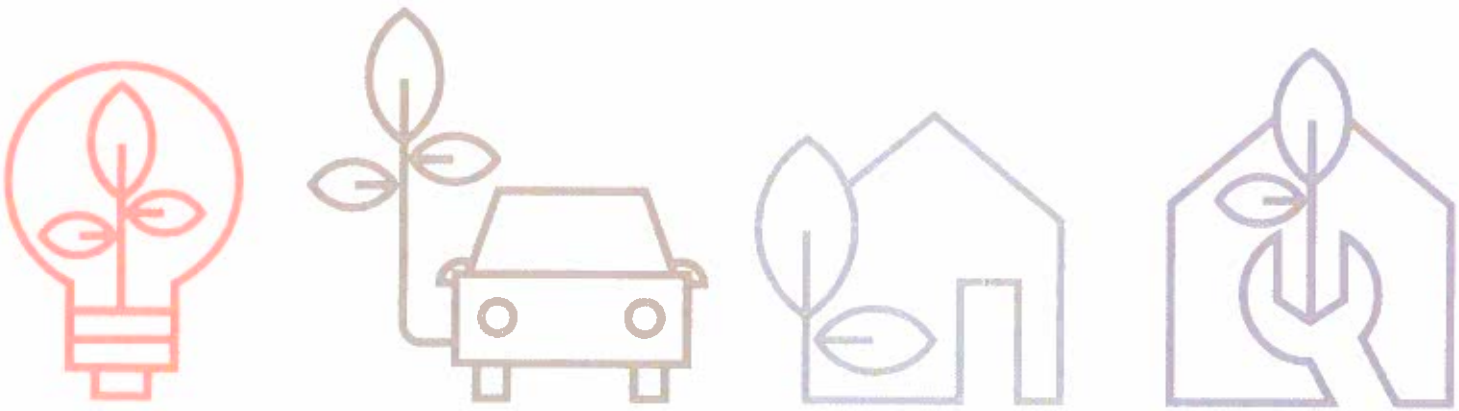
BURNABY CITY ENERGY STRATEGY

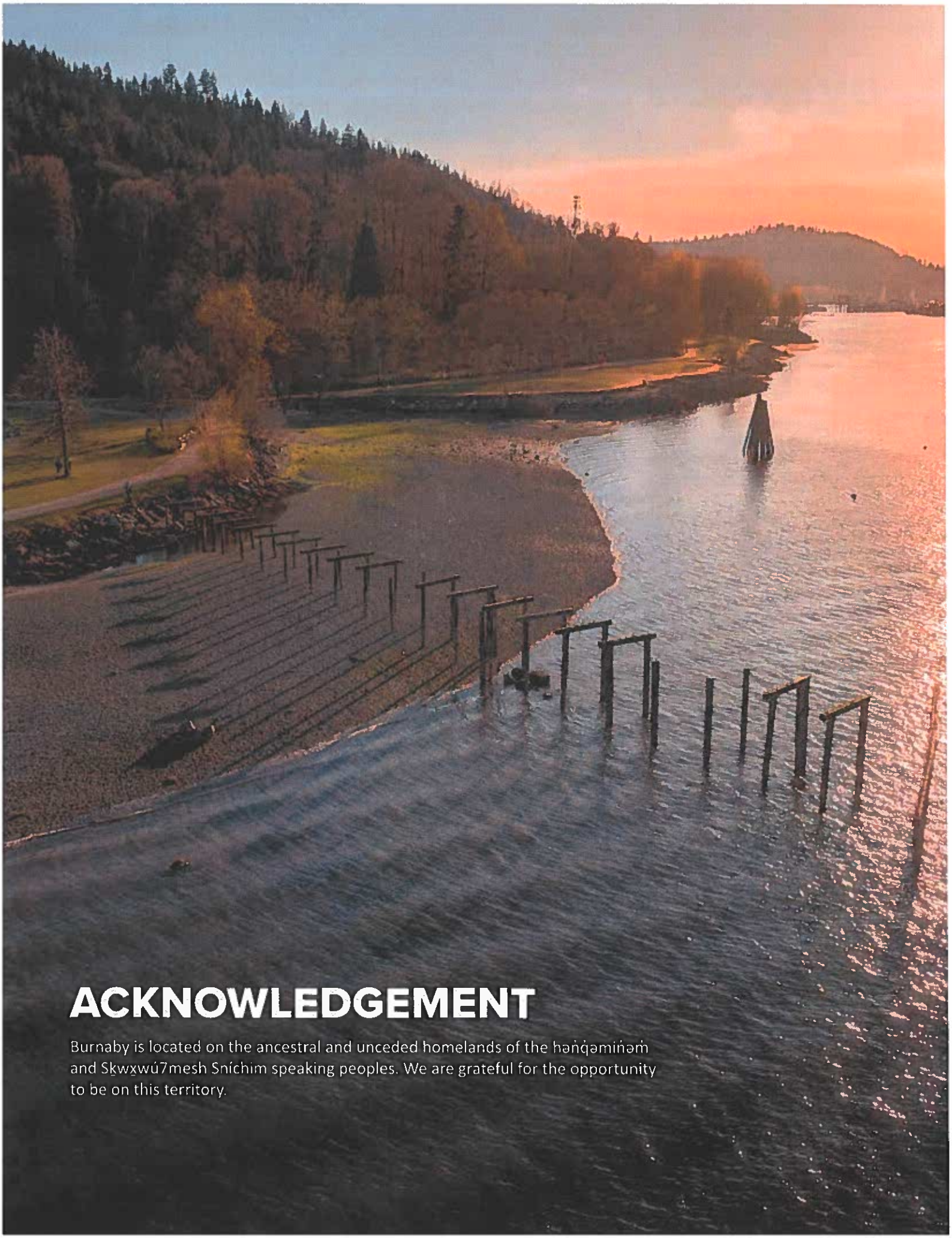
PROGRESS REPORT
2023



THIS IS CLIMATE ACTION

City of Burnaby





ACKNOWLEDGEMENT

Burnaby is located on the ancestral and unceded homelands of the hən̓q̓əmin̓əm̓ and Sḵwx̱wú7mesh Sníchim speaking peoples. We are grateful for the opportunity to be on this territory.

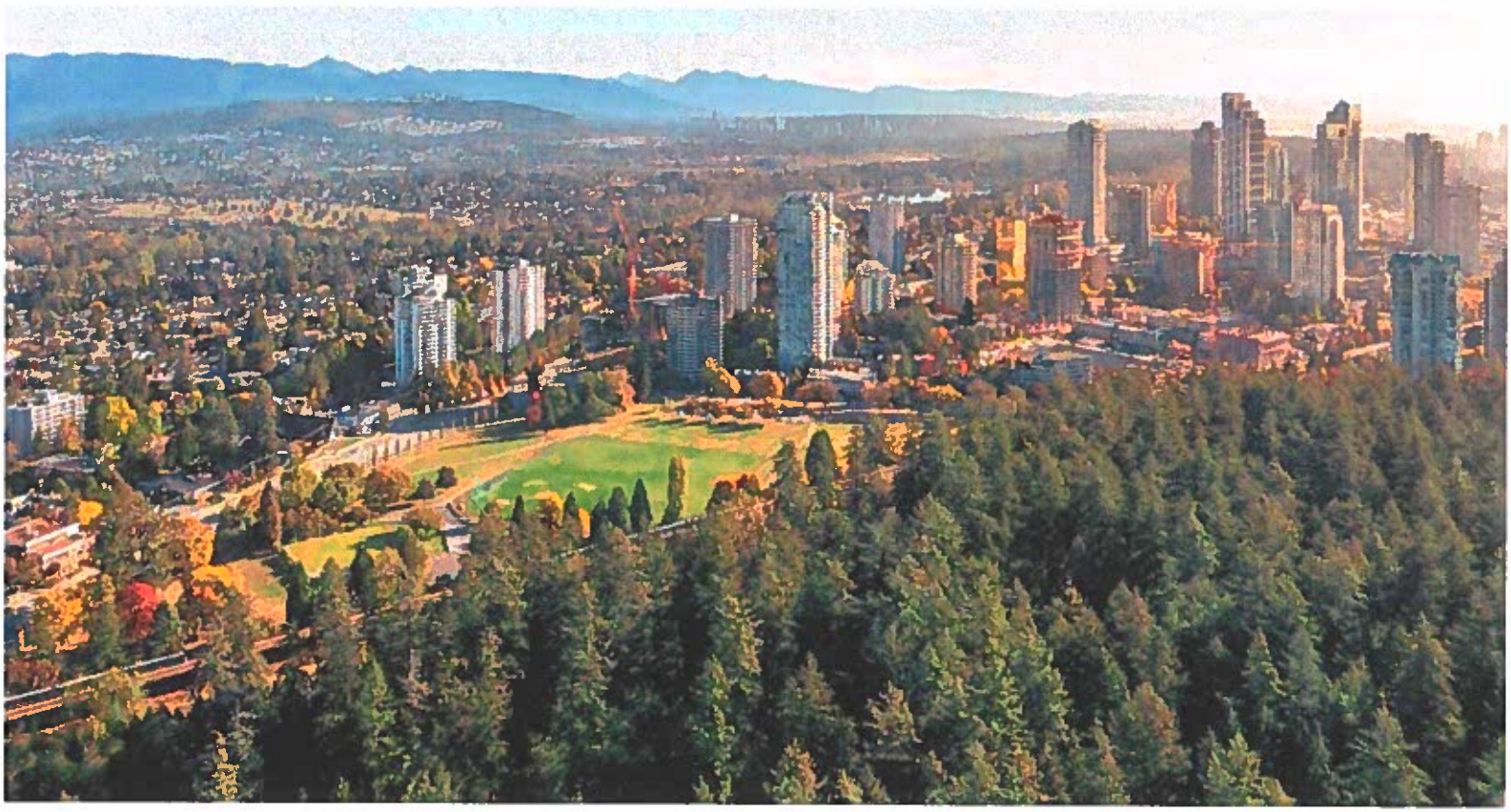
OVERVIEW

Climate change is a global problem that presents local challenges as well as opportunities. In 2019, Burnaby City Council declared a Climate Emergency and set community-wide greenhouse gas (GHG) emission reduction targets of 45% by 2030, 75% by 2040 and carbon neutrality by 2050.

In its own operations, the City committed to meeting the carbon neutral target for GHG emissions from traditional services[1] by 2040—a full 10 years ahead of the community-wide target for carbon neutrality. To guide us toward those goals, the City developed the Climate Action Framework and City Energy Strategy, which map the pathways to carbon neutrality for citywide and traditional services emissions, respectively.

This report summarizes the progress we made in 2023 on Burnaby's City Energy Strategy. The Strategy is built around 4 key areas of transition that we call "Big Moves", focusing on our 2 main sources of GHGs: buildings (especially from natural gas) and fleet (from gasoline and diesel fuel). Each Big Move has 3 or 4 associated "Quick Start" actions—near-term initiatives such as policies, programs and infrastructure projects that will help the City meet our longer-term targets. Work in most of these areas continued throughout this reporting period, with progress and highlights summarized in this report.

[1] Emissions for traditional services were formerly called corporate emissions. This terminology change by the Province of BC is at the request of Modern Treaty Nations and local governments during engagement sessions. Traditional services include emissions from: fire protection, solid waste management, recreational and cultural services, road and traffic operations, water and wastewater management, and government administration.



TRACKING OUR PROGRESS

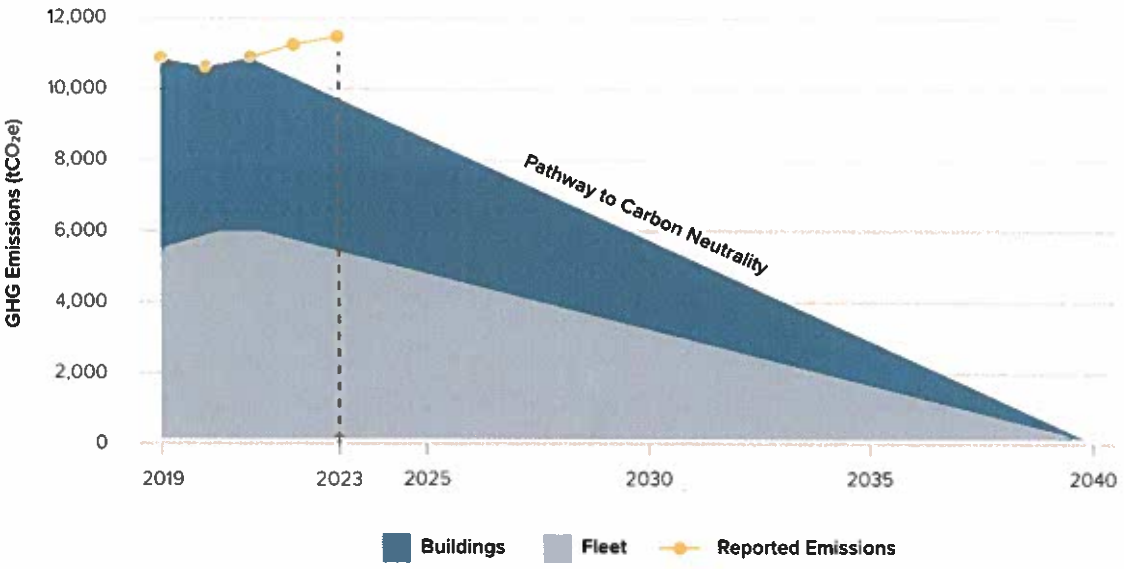
Each year, the City tracks emissions from the delivery of traditional municipal services. This includes emissions from City-owned buildings, City-owned vehicles, and beginning in 2022, contractor emissions.

Since the declaration of a Climate Emergency in 2019 and the adoption of the City Energy Strategy in 2020, we've seen a moderate increase in emissions from traditional services. In 2023, the emissions from services delivered directly by the City amounted to 11,454 tCO_2e[2], a 1.7% increase over 2022.

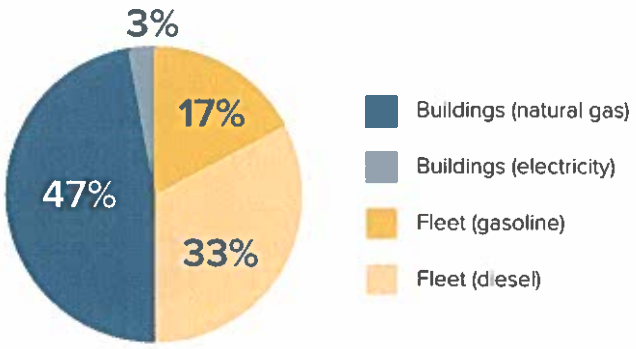
The increase in emissions in 2023, together with the gradual increases in the preceding 2 years, has moved the City away from the path we must follow to achieve our 2040 carbon-neutral commitment. Recognizing the urgency of meeting our traditional services emissions target, we need to reverse our current emissions trend and get on a pathway to carbon neutrality. To do this, the City needs to continue to improve efficiency and decarbonize our buildings and fleet—a challenge as we expand services for a growing and changing population.

With emissions split evenly between fleet and buildings, the City Energy Strategy prioritizes actions aimed at reducing emissions from these 2 sources.

Traditional services emissions: Pathway to carbon neutrality



Corporate emissions by source (2023)



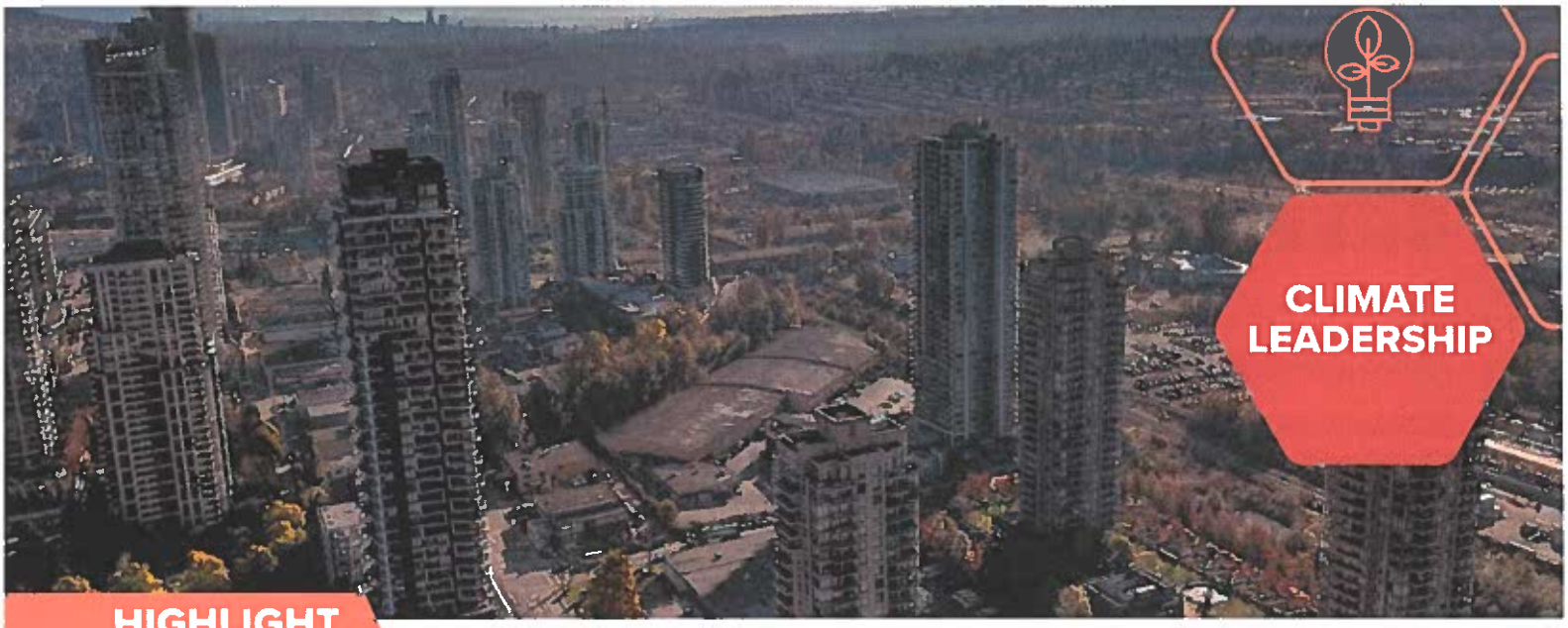
[2] tCO_2e is tonnes of carbon dioxide equivalent, the unit for counting greenhouse gas (GHG) emissions—carbon or otherwise—standardized based on the equivalent global warming impact as 1 metric tonne of carbon dioxide.

CLIMATE LEADERSHIP

With Burnaby's commitment to reach carbon neutrality from the delivery of traditional services by 2040, we're taking steps to strengthen the City's leadership, administrative capacity, and staff engagement on climate and energy.

ACTIONS

- Continued to plan and install Level 2 and fast-charging electric vehicle (EV) charging stations for municipal and public use at civic facilities, including Rosemary Brown Recreation Centre, Fire Hall #1, and the Laurel Street, Still Creek, and Norland works yards. With 147 EV charging stations now in use, this project is on track to be completed in the first quarter of 2025 when approximately 300 municipal charging stations will be operational.
- Adopted the Burnaby District Energy Policy and Connection Guidelines to secure building requirements for future District Energy system readiness.



HIGHLIGHT

Internal Carbon Pricing Policy

In 2023, the City applied the Carbon Pricing Policy to 94 projects totaling $105.2M, which was 36% of the 2023 capital plan. Buildings, EVs and EV charging infrastructure made up most of the in-scope project costs at $82.8M (79%) and $21.4M (20%) respectively.

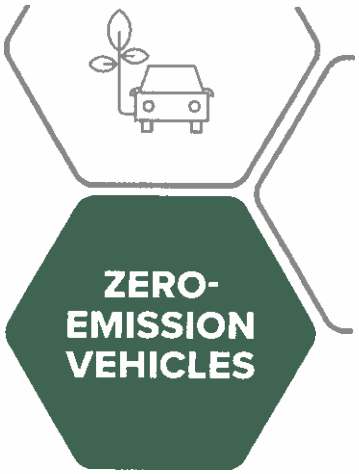
The Internal Carbon Pricing Policy guides applicable City decisions by incorporating GHG emissions consideration into budget requests. The amount of GHG emissions emitted from the project or initiative can vary significantly based on the decision made. By conducting GHG emissions evaluations and embedding Metro Vancouver's carbon price into the financial assessment, we can better understand the true cost of a project or initiative over its lifetime. Tracking the application of the Policy through the budget process helps the City understand the challenges of implementing the lowest carbon options in its service delivery.

Close to one-third of the in-scope projects selected the lowest emissions option. The remaining projects that did not select the lowest emissions option primarily opted for reduced emission alternatives in the decision process. Some heavy equipment, such as dump trucks and loaders, have limited options available for purchase, which created a challenge between balancing emissions reduction and operational needs.

Recognizing the challenges of selecting the lowest carbon option in some of our in-scope projects, the City is actively pursuing interim solutions, piloting different technologies, and exploring other alternatives to reduce emissions. More details are provided in subsequent Big Move updates.

ACTIONS	COMPLETION DATE	STATUS
1 Strengthen climate action administration.	ONGOING	ON TRACK
2 Support climate leadership projects.	ONGOING	ON TRACK
3 Provide workplace EV charging at City facilities.	ONGOING	ON TRACK
4 Accelerate virtual technology development and innovation.	ONGOING	ON TRACK
5 Engage staff in climate commitments.	ONGOING	UNDERWAY

ZERO-EMISSION VEHICLES — GREEN FLEET & EQUIPMENT



Aligning the transition to electric vehicles and equipment with the installation of charging infrastructure is critical to our success in this area. The City is making significant progress in providing infrastructure necessary to support our shift to zero-emission vehicles.

ACTIONS

- Completed the Green Fleet Action Plan, which guides the City's transition to zero-emission vehicles and equipment by 2040 to meet our fleet-related carbon-neutral goal.
- Began the green fleet transition:
  - Purchased one electric garbage truck and 3 CNG trucks as part of a pilot to reduce GHG emissions.
  - Transitioned 37 light-duty gas vehicles to EVs.
  - Transitioned over 160 pieces of fossil fuel-powered equipment to electric alternatives.
  - Installed 4 locking charge stations for small equipment charging and storage of chargers.
- Explored financial incentives for carbon credits for green fleet operations.
- Purchased 2 electric E-Transit vans.
- Purchased 3 Compressed Natural Gas (CNG) garbage trucks as part of a pilot program to reduce fleet-related GHG emissions.

ACTIONS	COMPLETION DATE	STATUS
1 Upgrade fuelling infrastructure.	2026	ON TRACK
2 Transition vehicles and equipment.	2040	UNDERWAY*
3 Evaluate critical assets for renewable liquid fuel needs.	2024	ON TRACK
4 Efficiently administer and operate Burnaby's fleet(s).	ONGOING	ON TRACK

** Vehicle purchase approved by Council and on order. Delays are due to lack of suitable technology and availability of vehicles.*

ZERO-EMISSION VEHICLES

HIGHLIGHT

Green Fleet Action Plan

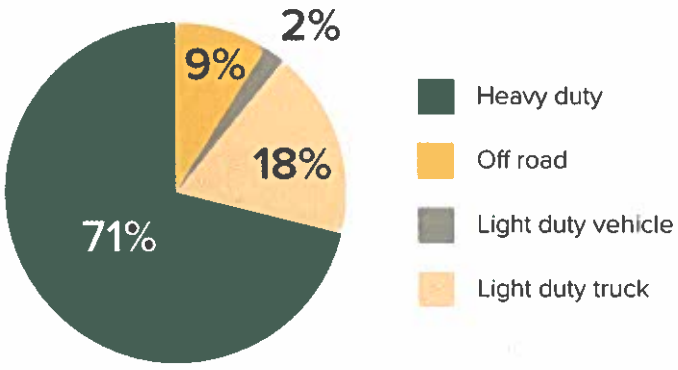
The completion of the Green Fleet Action Plan in 2023 marked a significant step along the pathway to carbon neutrality. The Plan explored different low-carbon technologies, investigated market trends, and assessed the City's needs to meet the fleet-related carbon-neutral goal. It provides the City with a roadmap to transition from a fossil fuel-powered fleet and equipment to electric, where feasible, and to other renewable-fuelled transportation alternatives. The Plan also provides details on the EV charging infrastructure strategy and analysis necessary to accommodate the adoption of electric vehicles and equipment.

Working together with Parks, Recreation and Culture we replaced a number of pieces of fossil fuel-powered equipment with electric-powered alternatives. One hundred and twelve pieces of small equipment—such as leaf blowers, chainsaws and hedge trimmers—were electrified. Over 57 medium to large pieces of equipment—such as golf carts, ice machines and mowers—were replaced with electric powered versions. And to complement these transitions, we installed 4 locking charging stations for storing the equipment and chargers.

Tackling challenges

Recognizing that heavy-duty vehicles generate most of the City's mobile emissions, we've purchased one electric garbage truck and are currently piloting 3 CNG garbage trucks. Although electric medium and heavy-duty fleet and equipment technologies exist, we have concerns about their availability and performance. To meet operational requirements until viable electric alternatives emerge, the City is contemplating transitioning to renewable fuels for our medium and heavy-duty vehicles and equipment. The City is in the final phases of reviewing the feasibility of a renewable/eco diesel, hydrogenation-derived renewable diesel (HDRD). HDRD has the potential to decrease GHG emissions from diesel-powered vehicles and equipment by up to 80%.

Mobile emissions sources by vehicle class (2023)



ZERO-EMISSION BUILDINGS — NEW BUILDINGS

ZERO-EMISSION BUILDINGS

The City is committed to planning and designing high-energy-efficiency and zero-carbon facilities that make use of low-carbon grid electricity or alternative renewable sources.

ACTIONS

- Continued to explore zero-emission design for new and replacement civic facilities.
- Continued to advance the development of sustainable finance strategies to support zero-emission capital projects.

HIGHLIGHT

Rosemary Brown Recreation Centre

The Rosemary Brown Recreation Centre, opened in April 2024, is a high-efficiency building that incorporates a number of sustainability strategies into its design and operation, including:

- minimizing transportation emissions intensity—lowering the often overlooked emissions associated with patrons getting to and from the site
- minimizing building energy intensity—incorporating low heating and cooling loads, adopting more efficient mechanical systems, light fixtures, and plug loads, and educating building occupants on how to use the facility efficiently
- maximizing indoor and outdoor water efficiency—reducing water use and waste by installing efficient fixtures and tracking consumption
- optimizing daylight to reduce energy use

The City Energy Strategy commits to prioritizing zero-emission over high-energy-efficiency design. We will continue to explore options to incorporate zero-emission design into future new buildings and only use renewable natural gas where technology constraints prevent electrification.

ACTIONS	COMPLETION DATE	STATUS
1 Advance zero-emission new buildings as the default for new and replacement civic facilities.	ONGOING	UNDERWAY
2 Develop sustainable finance strategies to support zero-emission capital projects.	ONGOING	UNDERWAY
3 Minimize future demand for renewable natural gas.	ONGOING	UNDERWAY

ZERO-EMISSION BUILDINGS — EXISTING FACILITIES

ZERO-EMISSION BUILDINGS

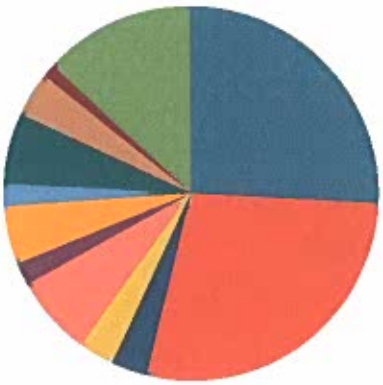
Reducing emissions from existing facilities is one of the most significant climate action challenges facing local governments. To start addressing this challenge, the City engaged in a full review of its facilities to identify GHG reduction opportunities, limitations, associated costs and first priorities.

ACTIONS

- Replaced 2 mid-efficiency boilers at City Hall with 6 high-efficiency boilers.
- Replaced low-efficiency boilers at Kensington outdoor pool with high-efficiency boilers. Also, added a co-generation or combined heat and power (CHP) unit for simultaneously heating pool water and providing electricity for an outdoor sauna.
- Upgraded Kensington Arena with one replacement 83% efficiency dressing room space heater.
- Upgraded Bob Prittie Metrotown Library with 5 replacement 95% efficiency hot water heating boilers.
- Upgraded Christine Sinclair Community Centre with one replacement 93.5% efficiency hydronic heating system boiler.
- Upgraded Deer Lake Park Fieldhouse with one replacement 95% efficiency furnace.
- Upgraded Hart House Restaurant with one replacement 93.5% efficiency hot water heating boiler.
- Upgraded Riverway Golf Course Pro Shop and washroom facilities from natural gas heating systems to fully electric heating and cooling systems.
- Upgraded Baldwin House from an oil furnace to a fully electric air source heat pump.

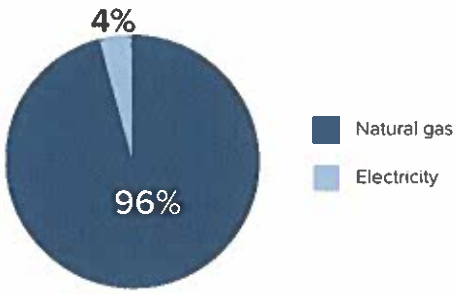
The above-noted improvements are examples of advancing towards carbon neutrality. Another 12 City buildings are receiving high-efficiency heating and cooling system upgrades in 2024.

Emissions by type of facilities (2023)



- Pool (26%)
- Recreation centre (28%)
- Stadium and pool (3%)
- Fieldhouse (3%)
- Firehall (7%)
- Gallery and museum (2%)
- Golf (5%)
- Ice arena and pool (2%)
- Ice arena (6%)
- Library (4%)
- Maintenance (1%)
- Office (13%)

Existing facilities present opportunities and challenges to reduce the City's emissions from traditional sources. Pool and recreation centres make up more than 50% of our building emissions, with natural gas consumption contributing to 96% of the emissions from these 2 building types. We will continue to explore opportunities to advance an electrification strategy, to upgrade equipment to the highest efficiency, and reduce our reliance on natural gas.



QUICK STARTS	COMPLETION DATE	STATUS
1 Continue strategic energy management.	ONGOING	ON TRACK
2 Develop and implement an electrification strategy.	ONGOING	ON TRACK
3 Work with partners on zero-emission retrofits.	ONGOING	ON TRACK
4 Prioritize future demand for renewable natural gas.	ONGOING	ON TRACK

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THIS IS CLIMATE ACTION

City of Burnaby