

**ENVIRONMENT COMMITTEE**

*TO: MAYOR AND COUNCILLORS*

**SUBJECT: CITY ENERGY STRATEGY PROGRESS REPORT 2020-2022**

**RECOMMENDATION:**

1. **THAT** Council receive this report and a copy of the Burnaby City Energy Strategy Progress Report 2020-2022 for information.

**REPORT**

The Environment Committee, at its meeting held on February 15, 2023, received and adopted the attached report presenting Council with the Burnaby City Energy Strategy Progress Report for 2020 to 2022.

Respectfully submitted,

Councillor J. Keithley  
Chair

Councillor M. Santiago  
Vice Chair

**TO:** CHAIR AND MEMBERS  
ENVIRONMENT COMMITTEE

**FROM:** GENERAL MANAGER  
PLANNING AND DEVELOPMENT

**DATE:** 2023 February 2

**FILE:** 33000-01  
*Reference: Climate Action Framework,  
City Energy Strategy*

**SUBJECT:** CITY ENERGY STRATEGY PROGRESS REPORT 2020-2022

**PURPOSE:** To inform Environment Committee of the progress made in the last two years to advance the Burnaby *City Energy Strategy*.

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**RECOMMENDATION:**

1. **THAT** the Committee recommend that Council receive this report and a copy of the Burnaby *City Energy Strategy* Progress Report 2020-2022 for information.

**REPORT**

**1.0 INTRODUCTION**

At its meeting on 2022 September 21, Environment Committee received the second annual *Climate Action Framework* Progress Report detailing the work done to reduce community-wide emissions. Arising from the discussion, Environment Committee directed staff to bring forward a progress report on exclusively the *City Energy Strategy* (the *Strategy*). The purpose of this report is to provide Environment Committee an update on the City's progress in reducing corporate carbon emissions.

*Enclosed as Appendix A* is the City's first *City Energy Strategy* Progress Report (2020-2022). The report provides an overview of the progress made by the City to advance the Big Moves and Quick Starts identified in the city operations-oriented *City Energy Strategy*. This report covers the first two years of implementation of the *City Energy Strategy*; subsequent reports will cover one year of progress. Through cross-departmental partnerships, the City has advanced action in every one of the *City Energy Strategy* Big Moves.

**2.0 POLICY CONTEXT**

The actions summarized in the *enclosed* report build upon the City of Burnaby's *Climate Action Framework* (2020), *Environmental Sustainability Strategy* (2016) and *Community Energy and Emissions Plan* (2016) and align with the *Corporate Strategic Plan* (2022), and *Official Community Plan* (1998).

### 3.0 DISCUSSION

The City of Burnaby's *City Energy Strategy*<sup>1</sup> guides the energy transition in corporate operations, which complements the carbon emissions reduction pathways outlined in the City's *Climate Action Framework*. The *Strategy* focuses on the City's two largest sources of operational carbon emissions: buildings (from natural gas) and fleet (from gasoline and diesel fuel). Together with identifying the most significant emission reduction opportunities, the *Strategy* encompasses a vision for the City's energy system; principles and decision-criteria to guide energy decisions going forward; a commitment to a carbon neutral target date for City operations; and, four Big Moves with associated actions to set the transition pathway. Each Big Move has three or four associated "Quick Starts" that outline near-term actions such as policies, programs and infrastructure projects that will help the City meet its longer-term targets.

The City's annual operational carbon emissions increased by 2.8% between 2020 and 2021. Emissions inventories for the previous calendar year are completed mid-year, due to data availability; the City's 2022 operational carbon emissions will be released in the next *City Energy Strategy* Progress Report in fall 2023. Since the declaration of a climate emergency in 2019 and adoption of the *City Energy Strategy* in 2020, corporate emissions have remained relatively constant. There was a slight decrease in annual operational emissions in 2020, likely due to the global COVID-19 pandemic.

The work necessary to dramatically reduce operational carbon emissions in the next 17 years (to 2040) requires a corporate reduction in energy consumption, and the transition away from fossil fuels. This is an opportunity to showcase City leadership by developing and adopting strategic policies, guidelines and frameworks that embody current and emerging best practices, and bold and sustained implementation of these policies. In the first two years of the implementation of the *City Energy Strategy*, the emphasis has been on building leadership and capacity within the City, including:

- Development of an internal carbon pricing policy that guides applicable City decisions and processes with carbon emissions in mind. By evaluating the operational carbon emissions from a project or new initiative, the City can assess the true cost of a project or initiative over the project's lifetime to make informed, low-carbon decisions;
- Installation of corporate electric vehicle infrastructure at City Hall and other City facilities in preparation for fleet transition to an electric municipal fleet;
- Design of new civic buildings as zero-emission facilities; and
- Completion of a low-carbon transition plan feasibility study for more than 50 city-owned buildings; the study provides an assessment of carbon reduction measures, potential savings, costs and limitations to assist in decision-making.

While there was a slight rise in emissions in the past year, the foundation has been set in the past two years to reach our carbon reduction goals. Cross-departmental teams have advanced action in

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<sup>1</sup> <https://www.burnaby.ca/our-city/strategies-and-plans/climate-action/city-energy-strategy>

To: *Environment Committee*  
From: *General Manager Planning and Development*  
Re: *City Energy Strategy Progress Report 2020-2022*  
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all of the quick starts in the *Strategy*. The *enclosed* report enumerates both progress on the Quick Starts and highlights particular successes for the City.

#### **4.0 CONCLUSION**

Building on the new policies and actions advanced through the *City Energy Strategy*, this progress report provides an opportunity to review and evaluate the City's advancement in achieving carbon neutrality by 2040. In order to achieve the committed targets, many of these components need to work together in concert. For example, the City has installed EV infrastructure, and is ready to receive EV vehicles once supply chain issues are rectified; applying the carbon pricing policy is helpful when considering options for fossil fuel free building retrofits. Although the City recorded a slight increase in operational carbon emissions, more work is planned for 2023 and beyond to reduce the City's operational carbon emission, including the introduction of a Green Fleet Action Plan, advancing zero-emission new buildings, and the low-carbon retrofit of existing buildings. The *City Energy Strategy* has laid the foundation to transition away from fossil fuels in City operations and will continue to guide actions needed to achieve carbon neutrality by 2040.

#### **5.0 RECOMMENDATION**

The *enclosed* report marks the City's first annual reporting on the implementation of Burnaby's *City Energy Strategy*. It is provided for the Committee and Council's information.



E.W. Kozak, General Manager  
PLANNING AND DEVELOPMENT

JoC/CE:sa  
*Attachment*

Copied to: Chief Administrative Officer  
Deputy Chief Administrative Officer & Chief Financial Officer  
General Manager Engineering  
General Manager Parks, Recreation and Culture  
General Manager Lands and Facilities  
General Manager Corporate Services  
Director Legislative Services

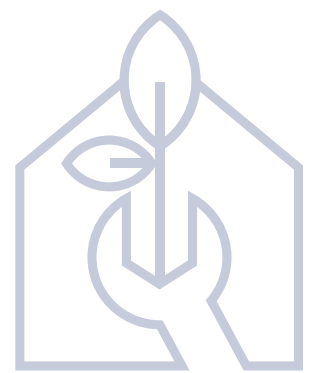
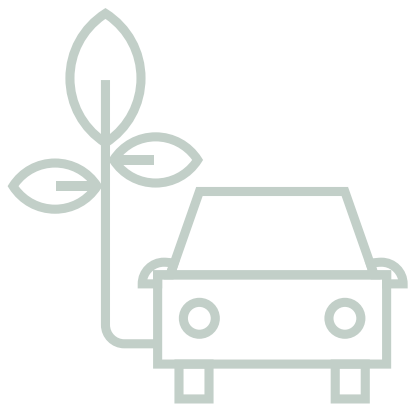
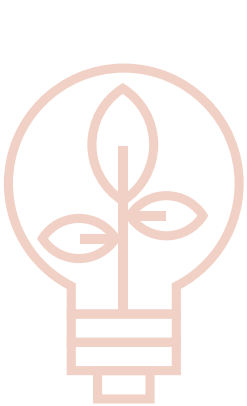
# BURNABY CITY ENERGY STRATEGY

PROGRESS REPORT  
2020-2022



**THIS IS** >>>  
**CLIMATE**  
**ACTION**





# ACKNOWLEDGEMENT

Burnaby is located on the ancestral and unceded homelands of the hə́nqə́mihə́n and Sḵwə́wú7mesh speaking peoples. We are grateful for the opportunity to be on this territory.



# OVERVIEW

Climate change is a global problem with significant local impacts. Recognizing the dangers posed by climate change and the need for collaboration to maximize carbon reduction opportunities, Burnaby City Council declared a Climate Emergency in 2019.

This emergency declaration commits the City to working toward the following citywide carbon emission reduction targets:

- » 45% reduction by 2030
- » 75% reduction by 2040
- » Carbon neutral by 2050

These targets are aligned with the Intergovernmental Panel on Climate Change (IPCC) to keep global temperature increases to a maximum of 1.5 degrees Celsius, as well as other regional, provincial and national targets.

To demonstrate leadership on climate action, the City committed to meeting the carbon neutral target in its own corporate operations by 2040, a full 10 years ahead of the citywide target. The City subsequently developed the Climate Action Framework and City Energy Strategy, providing citywide and corporate pathways (respectively) to carbon neutrality.

This report summarizes the progress we've made to date on the City Energy Strategy. Similar to the Climate Action Framework, the City Energy Strategy is laid out across key areas of transition that we call "Big Moves." The citywide Climate Action Framework encompasses seven Big Moves—the City Energy Strategy focuses on four. These Big Moves focus on the City's two main sources of greenhouse gas emissions: buildings (from natural gas) and fleet (from gasoline and diesel fuel). Each Big Move has three or four associated "Quick Start" actions—near-term initiatives such as policies, programs and infrastructure projects that will help the City meet its longer-term targets. Quick Starts are intended to be implemented within three years and will ensure the policies and infrastructure necessary for our energy transition are put in place as soon as possible.

In the first two years of the implementation of the City Energy Strategy, the emphasis has been on building leadership and capacity within the City. Moving forward, we will be reporting annually on progress made on the City Energy Strategy.







# HOW WE GOT HERE

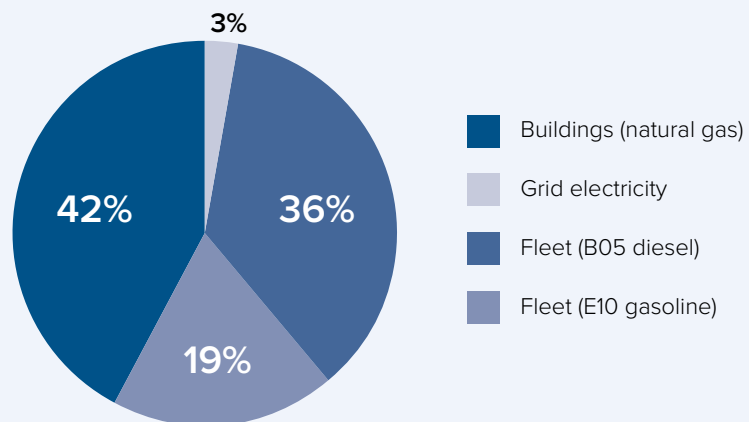
Following the City of Burnaby Climate Emergency Declaration of 2019, staff presented two reports to Council in 2020: the Climate Action Framework and the City Energy Strategy. These documents outline recommendations for strategic carbon emission reduction actions to reach the targets committed to in the declaration. Both build on regional, provincial and federal carbon-reduction strategies and initiatives and recognize the need for cross-departmental work and interdisciplinary thinking.

The Climate Action Framework sets out a pathway for reductions in community-wide emissions. The City Energy Strategy complements this framework, guiding the energy transition in corporate operations, recognizing the need to demonstrate leadership on climate action.

The City of Burnaby first became a signatory to the Province's BC Climate Action Charter for local governments in 2016/17. Since then, the City has reported annually through provincial reporting mechanisms on actions to reduce both corporate and citywide carbon emissions. The Climate Action Revenue Incentive Program (CARIP) (2016-2021) and the new Local Government Climate Action Program (LG-CAP) (2022-onward) document local successes that reduce carbon emissions and prepare communities for the impacts of climate change.

Since the declaration of a climate emergency in 2019 and adoption of the City Energy Strategy in 2020, corporate emissions have remained relatively consistent, with a slight decrease in 2020, likely due to the global COVID-19 pandemic. In 2021, the City's emissions amounted to 10,916 tCO<sub>2</sub>e<sup>1</sup>, a 2.8% increase in emissions over 2020. Burnaby's corporate emissions are split relatively evenly between fleet (gasoline, diesel) and facilities (natural gas). The City Energy Strategy focuses on these two major sources of emissions in three of the strategy's four Big Moves. Actions and progress to date are detailed on the following pages.

City of Burnaby corporate carbon emissions by source (2021)



<sup>1</sup> tCO<sub>2</sub>e 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 the commitment to transition corporate operations to reach carbon neutrality by 2040, the City is taking steps to strengthen its leadership, administrative capacity and staff engagement on climate and energy.*

## ACTIONS

- » Adopted an Internal Carbon Pricing Policy and established organizational guidelines by incorporating carbon emission costs into applicable City decisions and processes.
- » Established a centralized Energy Transition Team, including a Green Fleet and Equipment Manager.
- » Introduced the first citywide work-from-home policy during the COVID-19 pandemic, contributing to reduced commuting emissions and increased safety while maintaining high-quality customer service.
- » Conducted a preliminary feasibility study for a City-owned green waste processing facility, demonstrating financial viability and recommending a location.



**CLIMATE  
LEADERSHIP**





## HIGHLIGHT

### Internal Carbon Pricing Policy

Recognizing the need to integrate carbon emission considerations into budget requests to achieve the corporate carbon neutral goal by 2040, City Council adopted in March 2021 an Internal Carbon Pricing Policy that guides applicable City decisions and processes with carbon emissions in mind. By evaluating the operational carbon emissions from a project or new initiative, the City can assess the true cost of a project or initiative over the project's lifetime to make informed, low-carbon decisions.

Carbon emissions evaluation looks into the volume of emissions released directly from an activity (i.e. tailpipe emissions from gasoline or diesel vehicles) or from the production of electricity and/or heat that's required for an activity (i.e. emission from generating heat in a building via a boiler, furnace or heat pump). The identified emissions are then multiplied by the carbon price (set in alignment with Metro Vancouver's carbon price) to calculate the operational carbon impact for each project option; this aids with applying a climate lens when making decisions. The inclusion of a carbon price is viewed as a "shadow price" that is not an actual cash outlay but an influence on decision-making only.

Since the implementation of the carbon pricing policy, the City has applied the policy to 148 projects with planned expenditures of \$112.4 million for 2022, which is 38% of the 2022 capital plan. Buildings, electric vehicles (EVs) and EV charging infrastructure make up almost all of the in-scope project costs at \$87.6 million (78%) and \$22.7 million (20%) respectively.

As buildings and transportation account for most of the organization's carbon emissions, applying the internal carbon pricing policy allows the City to evaluate replacing its fleet and equipment with electric alternatives or replacing building components with systems that are not dependent on fossil fuels.

QUICK STARTS	COMPLETION DATE	STATUS
1 Strengthen climate action administration.	2021	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	BEHIND

# ZERO-EMISSION VEHICLES — GREEN FLEET & EQUIPMENT

*The transition to electric vehicles (EVs) and equipment, and the installation of EV infrastructure go hand in hand. The City is leading the way in providing infrastructure for City operations to prepare for the shift to an efficient carbon neutral fleet.*



**ZERO-EMISSION VEHICLES**

## ACTIONS

- » Installed 105 Level 2 fleet-specific EV charging stations at Burnaby City Hall for transition of light-duty vehicles to EVs through scheduled replacement.
- » Installed 28 Level 2 fleet-specific EV charging stations at Still Creek works yard.
- » Completed an E3 Fleet Review of Burnaby's municipal fleet, benchmarking types of vehicles, types of fuel used, greenhouse gas (GHG) emissions and kilometres travelled.
- » Started to transition the City's light-duty fleet, replacing 11 gas-powered vehicles with EVs.
- » Began working on the Green Fleet Action Plan to achieve GHG reduction goals over the next five years.
- » Started transitioning small gas-powered equipment, such as lawn mowers, to electric equipment where feasible.





## HIGHLIGHT

### Corporate electric vehicle infrastructure

In July 2022, the City of Burnaby officially opened one of the largest designated 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 received \$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 power a portion of the chargers with emissions-free energy.

Over the next three years, the City plans to install another 205 EV charging stations, including DC/Fast charging stations, at five additional municipal facilities. That will bring the number of municipal and public EV charging stations installed by the City to over 300, and will solidify electric vehicle infrastructure required for the City’s planned fleet transition.

QUICK STARTS	COMPLETION DATE	STATUS
1 Upgrade fuelling infrastructure.	2026	ON TRACK
2 Transition vehicles and equipment.	2039	BEHIND*
3 Evaluate critical assets for renewable liquid fuel needs.	2024	ON TRACK
4 Efficiently administer and operate Burnaby’s fleet(s).	2021	ON TRACK

\* Vehicle purchase approved by Council and on order. Delays are due to worldwide supply chain issue.

# ZERO-EMISSION BUILDINGS — NEW BUILDINGS



*The City is advancing sustainable construction through the building of new zero-emission facilities. This translates initiatives such as applying our own Green Building Policy and Waste Diversion Bylaw to new and future civic facilities and construction projects.*

## ACTIONS

- » Advanced zero-emission as the default for new and replacement civic facilities.
- » Advanced development of sustainable finance strategies to support zero-emission capital projects.








## HIGHLIGHT

### Zero-emission civic buildings

Since the adoption of the Climate Action Framework, the City is leading by example to construct state-of-the-art community facilities with carbon emissions in mind. Zero-emission design is now embedded as the default option for new or replacement civic facilities, which means the life-cycle emission costs and projected operational emission costs of the facility are evaluated from early on.

The City currently makes use of a Sustainability Checklist that includes high-energy efficiency and low-carbon options when designing new facilities. There are several exciting zero-emission facilities on the horizon, including the future Cameron Community Centre and Library, Brentwood Community and Recreational Centre, and Confederation Park Community Centre.

QUICK STARTS	COMPLETION DATE	STATUS
<b>1</b> Advance zero-emission new buildings as the default for new and replacement civic facilities.	<b>ONGOING</b>	 <b>ON TRACK</b>
<b>2</b> Develop sustainable finance strategies to support zero-emission capital projects.	<b>ONGOING</b>	 <b>ON TRACK</b>
<b>3</b> Minimize future demand for renewable natural gas.	<b>ONGOING</b>	 <b>ON TRACK</b>

# ZERO-EMISSION BUILDINGS — EXISTING FACILITIES

*Existing buildings make up about half of the City's corporate carbon emissions. The City is strategically planning for and advancing the transition to zero-emission existing buildings through continued strategic energy management and retrofit planning.*



**ZERO-EMISSION BUILDINGS**

## ACTIONS

- » Developed and implemented an Electrification 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 30 City-owned buildings now publicly disclosing energy use as part of BBBC.
- » Completed LED upgrades of lighting at Edmonds Community Centre Gym, Bill Copeland Arena overhead ice and Oakalla Deer Lake Trail.
- » Replaced old mechanical gas-fired heating equipment at Riverway golf course pro shop with air source heat pumps.











## HIGHLIGHT

### Facilities low carbon transition plan

Recognizing the need to develop and implement an electrification strategy to strategically retire and replace fossil fuel-burning equipment and systems to meet the carbon reduction target, the City has completed a low carbon transition plan feasibility study for more than 50 civic buildings. Buildings included in the study range from those at City Hall to field houses.

The study conducted a holistic assessment of carbon reduction measures, potential savings, associated costs and limitations. In addition to identifying the best way to group energy and GHG reduction measures, the transition plan also aligns with capital renewal plans and bundles projects to maximize the benefits strategically for the City. The study recommends the City take the most aggressive pathway in order to achieve the 2040 carbon reduction target. It recommends a combination of electrification and elimination of natural gas in City-owned facilities—measures that will be crucial in reducing the City’s emission impact.

QUICK STARTS	COMPLETION DATE	STATUS
<b>1</b> Continue strategic energy management.	<b>ONGOING</b>	 <b>ON TRACK</b>
<b>2</b> Develop and implement an Electrification Strategy.	<b>2021</b>	 <b>ON TRACK</b>
<b>3</b> Work with partners on zero-emission retrofits.	<b>ONGOING</b>	 <b>ON TRACK</b>
<b>4</b> Prioritize future demand for renewable natural gas.	<b>ONGOING</b>	 <b>ON TRACK</b>

# NEXT STEPS

Reducing carbon emissions from the City's operations requires a sustained commitment. The following actions are planned for 2023 and beyond:

- » Complete and begin implementing the Green Fleet Action Plan to advance the low carbon fleet transition.
- » Advance workplace EV charging at City facilities.
- » Install Level 2 and fast charging stations for civic facilities including South Burnaby Arena, Fire Hall #1, and the Laurel Street, Still Creek and Norland works yards.
- » Continue to look for available electric technologies to transition medium and heavy equipment to provide efficient service while reducing GHG emissions.
- » Replace 20 more gas-powered vehicles with EVs.
- » Upgrade electrical power at City-owned golf courses to facilitate EV charging for golf carts.
- » Replace 20 gas-powered golf carts with electric golf carts.
- » Transition small gas-powered equipment to electric equipment.
- » Continue to participate in the Building Benchmark BC project.
- » Complete the LED upgrade at Christine Sinclair Community Centre.

