



# City of Richmond

## Report to Committee

**To:** General Purposes Committee **Date:** October 24, 2022  
**From:** Peter Russell **File:** 10-6125-07-02/2022-  
 Director, Sustainability and District Energy Vol 01  
**Re:** **Community Energy & Emissions Plan 2050: Local Government Climate  
 Action Program Funding Allocation**

### Staff Recommendation

That, as described in the report titled ‘Community Energy & Emissions Plan 2050: Local Government Climate Action Program Funding Allocation’ from the Director, Sustainability & District Energy dated October 24, 2022, two new Temporary Full Time staff positions and related annual program budget totaling \$566,000 funded by Provincial revenue, be considered for endorsement in the 2023 operating budget.

Peter Russell  
 Director, Sustainability and District Energy  
 (604-276-4130)

Attachments 1

REPORT CONCURRENCE		
<b>ROUTED TO:</b>	<b>CONCURRENCE</b>	<b>CONCURRENCE OF GENERAL MANAGER</b>
Building Approvals	<input checked="" type="checkbox"/>	
Policy Planning	<input checked="" type="checkbox"/>	
Transportation Planning	<input checked="" type="checkbox"/>	
Parks Department	<input checked="" type="checkbox"/>	
Finance	<input checked="" type="checkbox"/>	
<b>SENIOR STAFF REPORT REVIEW</b>	<b>INITIALS:</b> 	<b>APPROVED BY CAO</b> 

## Staff Report

### Origin

The Government of British Columbia (the Province) announced the Local Government Climate Action Program (LGCAP) in May 2022 as a replacement to the previous Climate Action Revenue Incentive Program (CARIP) program, which was discontinued in 2021. Council received a report in June 2021 highlighting the many benefits of the CARIP program over the ten years it was in place. Council endorsed that a Union of BC Municipalities Conference (UBCM) resolution asking the Province to reinstate an updated grant program at this meeting. Members of Council also met with the Minister of Municipal Affairs to convey the City's concerns at the 2021 UBCM Conference. In May 2022, the Province announced \$76 million in funding over three years for LGCAP, with annual funding to be distributed to municipalities and Modern Treaty Nations based upon each community's population. The new LGCAP uses a revised model for allocating funding to local governments that will see the City receive \$566,000 annually from 2022 through to fiscal 2025, approximately 2.5 times the previous CARIP amount.

This report proposes that LGCAP funding be strategically used over the next three budget years to accelerate progress in reducing emissions from existing buildings and vehicle transportation, noted as *Major Moves for 2030* in the Community Energy & Emissions Plan (CEEP) 2050. This funding would support two, temporary full-time staff to implement actions from CEEP 2050, including program development, demonstration projects, outreach and engagement activities.

This report supports Council's Strategic Plan 2018-2022 Strategy #2 A Sustainable and Environmentally Conscious City:

*Environmentally conscious decision-making that demonstrates leadership in implementing innovative, sustainable practices and supports the City's unique biodiversity and island ecology.*

*2.2 Policies and practices support Richmond's sustainability goals.*

This report supports the implementation of the City's CEEP 2050 and OCP emission reduction policies through:

#### **Strategic**      Retrofit Existing Buildings

##### **Direction 1:**

- Actions:
- Create a multi-year plan to accelerate the retrofit of existing buildings
  - Set enhanced energy and emission standards for existing buildings
  - Create incentives and remove barriers to low-carbon energy retrofits
  - Advance building energy and emissions performance reporting

#### **Strategic**      Transition to Zero Emissions Vehicles

##### **Direction 2:**

- Actions:
- Expand public electric vehicle charging opportunities
  - Expand electric vehicle charging opportunities on private property
  - Encourage zero emission vehicle adoption

## Analysis

### LGCAP Funding to Support Local Climate Action

LGCAP will provide \$566,000 in dedicated annual funding to the City starting in September 2022, for a three-year period, for a total of \$1,698,000 to support local climate initiatives aligned with the CleanBC Roadmap to 2030 and the draft Climate Preparedness and Adaptation Strategy. In receiving the funding, two conditions have been placed on local governments: (a) a commitment to expend all LGCAP funds by March 31, 2025; and, (b) the City show that matching investment of a minimum of 20% of LGCAP funding will be used for climate change mitigation and/or adaptation (totalling \$339,600 over three years).

With respect to the City's matching contribution, staff in-kind salaries and operational funding allocated to climate mitigation and adaptation in Richmond already exceeds the 20% criteria. The overall intention of provincial LGCAP funding is to initiate and accelerate impactful climate action by municipalities and Modern Treaty First Nations during the next three years.

### Council Policy Direction on Reducing Community GHG Emissions

On February 14, 2022, Council adopted the CEEP 2050, which includes 77 primary actions and 199 related implementation steps that set a roadmap to achieve a 50% reduction in community GHG emissions from 2007 levels by 2030, and reach net zero emissions by 2050. These actions are organized within eight Strategic Directions that will enable the City to achieve the deep emission reduction targets consistent with the International Panel on Climate Change (IPCC) 1.5° Celsius global warming limit.

CEEP 2050 identifies three, *Major Move* strategies (Carbon Neutral New Buildings, Retrofit Existing Buildings and Transition to Zero Emission Vehicles) that will require significant progress in the current decade to achieve a 50% reduction in community emissions by 2030. The plan also recognizes that the burdens, or negative impacts of climate change are not evenly distributed, with some groups more vulnerable and feeling the effects sooner, or to a greater degree than others do. This plan responds to this challenge with a framework of intentions and objectives to centre equity as actions are being implemented.

### Strategic Allocation of LGCAP Funding

Staff undertook a detailed assessment of objectives and opportunities to utilize LGCAP funding to advance actions defined in the CEEP 2050. This analysis reviewed the actions for all eight Strategic Directions, identifying critical policy, program and regulatory actions already underway, or to be launched within the next three fiscal years, with strategic allocation of LGCAP funding during this time period. **Attachment 1** summarizes the results of this review.

Based on this analysis, staff propose that LGCAP funds be utilized to support two, temporary full-time positions for a three-year period that would advance significant action in two *Major Move* directions: Retrofit Existing Buildings and Transition to Zero Emission Vehicles. At this time, these two Directions are not resourced. Proposed allocation of LGCAP funds for the next three budget years is summarized in **Table 1**, including rationale and summarized work program for these new positions.

**Table 1: Proposed Utilization of LGCAP Funding to Support CEEP 2050 Implementation**

<b>DIRECTION 1 – RETROFIT EXISTING BUILDINGS</b>	
<b>Staff Resource:</b> One new staff position	
<b>Term:</b> Temporary Full Time for three years; extension after 2025 contingent upon LGCAP continuation	
<b>Funding:</b> \$160,400 per year covered by LGCAP for three years (fiscal 2023 to 2025)	
<p><b>Rationale:</b> GHG emissions from Richmond’s 34,000 existing buildings represents 40% of total annual community emissions. To achieve Richmond’s 50% by 2030 emission reduction target, significant progress must be achieved in retrofitting and decarbonising existing residential, commercial and industrial buildings at a scale and pace that greatly exceeds current conditions. A number of related initiatives are also in play that support building retrofits, including potential regional air quality regulation, development of the BC Alteration Code, as well as energy and emission reporting (benchmarking) and disclosure requirements. The City will need to be engaged in these initiatives to ensure that Richmond’s specific priorities are addressed.</p>	
<p><b>Work Program:</b> This staff position will develop a detailed Retrofit Plan that facilitates near zero emission space heating and hot water equipment, introduces energy benchmarking and associated greenhouse gas reduction targets, assesses financing options, engages building renovators and mechanical system installers, creates demonstration projects with partners, and integrates with Provincial and regional programs. This position will also develop a robust citywide spatial database with visualization capability to support progress reporting on retrofit initiatives and achievement of equity objectives with respect to enhanced occupant health and comfort, resiliency to climate change and improved affordability.</p>	
<b>DIRECTION 2 – TRANSITION TO ZERO EMISSION VEHICLES</b>	
<b>Staff Resource:</b> One new staff position	
<b>Term:</b> Temporary Full Time for three years; extension after 2025 contingent upon LGCAP continuation	
<b>Funding:</b> \$160,400 per year covered by LGCAP for three years (fiscal 2023 to 2025)	
<p><b>Rationale:</b> GHG emissions from cars, light and heavy-duty trucks accounted for 57% of the city’s total annual emissions. Building upon Richmond’s leadership in creating a Bylaw requirement that all new residential parking spaces feature Level 2 electric vehicle (EV) charging, there is a significant need to support similar onsite EV charging capacity into existing residential, commercial and industrial buildings.</p>	
<p><b>Work Program:</b> This staff position will expand EV charging opportunities for local residents, workers and visitors, and encourage car share providers to electrify their fleets. Emphasis will be given to facilitating installation of EV charging infrastructure within existing multi-unit rental and strata apartment buildings, and partnering with other local governments on cost-shared regional programs and technical guidance. This position will also work with local agencies, senior level governments and other partners to accelerate transition of medium and heavy duty vehicles to zero emission fuels or battery electric power, and co-create a citywide public EV charging plan with a cross-departmental staff team.</p>	
<b>LGCAP annual funding for two new staff positions:</b>	<b>\$325,000</b>
<b>LGCAP annual funding to support program / plan activation:</b>	<b>\$241,000</b>
<b>Total:</b>	<b>\$566,000</b>



LGCAP would also provide three years of operating funding for data analysis / visualization and annual reporting, pilot demonstration initiatives and case studies, training and capacity-building, as well as outreach and engagement materials and processes that would support implementation within these two Strategic Directions.

### **Financial Impact**

Two new temporary full time staff positions are proposed for the 2023, 2024 and 2025 operating budget years, fully funded by proceeds from the Provincial Local Government Climate Action Program, for a total of \$325,000 per year for that period.

These two positions would be brought forward in the forthcoming 2023 Operating budget as an additional level request with no tax impact, since these positions would be fully funded by LGCAP revenue for budget years 2023 to 2025. Staff will assess and report back in 2024 should the Province decide to not extend the LGCAP program beyond 2025.

Remaining LGCAP annual funding in the amount of \$241,000 for 2023, 2024 and 2025 operating budget years is proposed to be utilized for conducting stakeholder engagement, research and technical assessments, as well as identifying financing and/or technology solutions to support policy and program development for implementation of CEEP 2050 actions.

### **Conclusion**

The proposed allocation of LGCAP funding over the next three years is focused on reducing citywide GHG emissions by retrofitting and decarbonising existing buildings, and facilitating the transition toward zero emissions vehicles, with emphasis on introducing EV charging infrastructure in buildings currently lacking 'at home' or 'at work' EV charging capacity. The proposed approach utilizes new revenue from the Province's Local Government Climate Action Program to support two staff positions for the next three budget years to undertake actions and facilitate market transformation within two CEEP 2050 Strategic Directions that are presently under-resourced with respect to the anticipated level of activity necessary to reach Richmond's 50% community GHG emission reduction target by 2030.



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Manager, Sustainability  
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Att. 1: CEEP 2050 Priority Actions and Deliverables 2023 to 2025

**CEEP 2050 Priority Actions and Deliverables 2023 to 2025**

**OVERVIEW**

Attachment 1 provides a summary of Community Energy and Emissions Plan 2050 actions identified for implementation in the 2023 to 2025 period. Organized sequentially by CEEP Strategic Direction, a summary is provided on why citywide action is important, as well as existing and proposed resourcing for implementation in fiscal 2023. Allocation of LGCAP funding for two proposed staff positions is specifically noted for Retrofit Existing Buildings and Transition to Zero Emissions Vehicles.

Within each Direction, the current status of priority CEEP 2050 actions is shown in a table summary, as well as studies, information resources and/or data that would inform implementation. Also noted are external initiatives and partner organizations that could assist and be synergistic for local implementation of each action. CEEP actions where there is an opportunity to advance climate equity in Richmond are also indicated.

## DIRECTION 1 RETROFIT EXISTING BUILDINGS



### STRATEGIC DIRECTION MAJOR MOVE FOR 2030

Accelerate deep energy retrofits to existing residential, institutional, commercial and industrial buildings, and shift to low-carbon heating and cooling using in-building systems or district energy.

### WHY ACTION IS IMPORTANT

Retrofitting and decarbonizing a significant proportion of existing buildings over the next ten years is essential to achieve our 2030 GHG emission reduction targets, and build momentum for continued action to 2050. While this represents a challenge in terms of scale of effort, it also offers a clear opportunity to bring benefits to local residents and businesses, with improved health and comfort, reduced energy costs, and a boost to the local economy.

### REQUIRED RESOURCES

As there is no funding allocated for this service level, it is recommended to use LGCAP funding for one new staff position, starting in 2023, and related operating funding for engagement, technical analysis and pilot programs.

### IMPLEMENTATION ROADMAP ACTIONS FOR 2023-2025

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[1.1] CREATE A RICHMOND BUILDING RETROFIT PLAN</b>			
Create Richmond Building Retrofit Plan (5-year plan) <i>EQUITY OPPORTUNITY</i>	Identify sector partners and synergies for each action step	Not yet activated	Targeted outreach and engagement with building owners and representatives (BOMA, CHOA BC, Landlord BC), equity-seeking organizations and housing providers, other local governments and Province of BC to inform the Retrofit Plan
Integrate building, energy and spatial data to identify priority buildings types and optimal strategies to incent or require low-carbon energy improvements <i>EQUITY OPPORTUNITY</i>	Create citywide inventory of parcel-level building information, including mechanical system and energy benchmarking data, and CEEP 2050 geospatial emission forecasting data	Partially activated	Integrate key findings from Metro Vancouver's Social Equity and Regional Growth Study (2021)
<b>[1.2] SET ENHANCED ENERGY AND EMISSION STANDARDS</b>			
Support BC Building Alteration Code development to 2024 (per Intention Papers)	Review Building Benchmark BC data to help inform Alteration Code targets	Not yet activated	Work with Province of BC staff and Local Government Retrofit Peer Network on Code energy efficiency requirements

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[1.2] SET ENHANCED ENERGY AND EMISSION STANDARDS (continued)</b>			
Advocate for opt-in GHG emissions performance requirements in the BC Alteration Code (2024)	Align with GHGI limits already set or being contemplated by other local governments	Partially activated	Work with Province of BC staff and Local Government Retrofit Peer Network on provincial GHG emission intensity (GHGI) limits for existing buildings
<b>[1.3] PARTICIPATE IN REGIONAL BUILDING RETROFIT INITIATIVES</b>			
Design and deliver a retrofit program for existing strata and rental apartment buildings incenting low carbon heating systems and energy improvements focused on occupant health, comfort and affordability	Tied to development of a service establishment bylaw for Metro Vancouver Regional District (MVRD) allowing long-term delivery of a regional initiative	Not yet activated	Partner with utilities and interested Metro Vancouver municipalities to develop a program for long term delivery  Work regionally to engage landlords, property managers Strata Councils and affordable housing providers
<i>EQUITY OPPORTUNITY</i>			
<b>ENABLE REGION-WIDE DELIVERY OF CLIMATE ACTION PROGRAMS</b>			
Extend the mandate of Metro Vancouver Regional District (MVRD) to enable cost-effective, regional delivery of climate action programs, in cooperation with member municipalities	Engage other municipalities in region to build support for proposed MVRD mandate	Not yet activated	Work with MVRD staff to create a service establishment bylaw empowering regional delivery of climate action programs on behalf of member municipalities  [CEEP 2050 enabling action]
<i>EQUITY OPPORTUNITY</i>			
<b>[1.4] CREATE INCENTIVES AND REMOVE BARIERS TO LOW CARBON ENERGY RETROFITS</b>			
Explore policy, program and regulatory options to encourage installation of low carbon mechanical systems during retrofits	Tied to above actions re: creating comprehensive citywide existing building data reporting platform	Not yet activated	Support Development Applications and Building Approvals staff in creating new tools for regulatory review of mechanical systems
Develop a heat pump incentive program targeting residential buildings that currently lack mechanical cooling	Integrate findings from Richmond Energy Poverty Reduction Strategy (2023), and create an inventory of residential buildings that lack mechanical cooling	Not yet activated	Integrate findings from Metro Vancouver's Regional Social Equity & Regional Growth Study (2021) into existing buildings reporting platform
<i>EQUITY OPPORTUNITY</i>			

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[1.4] CREATE INCENTIVES AND REMOVE BARIERS TO LOW CARBON ENERGY RETROFITS (continued)</b>			
Create a decarbonisation strategy for affordable housing in partnership with stakeholders <i>EQUITY OPPORTUNITY</i>	Integrate findings from Richmond Energy Poverty Reduction Strategy and include with citywide building reporting platform	Not yet activated	Engage with Province of BC, utilities and housing providers to ensure that all stakeholders and targeted sectors can benefit from building electrification and decarbonisation
Partner with other interested municipalities, Metro Vancouver and the Province to implement a low-interest financing program for building energy retrofits	Conduct a study to review program options and develop a recommended approach	Not yet activated	Work with other interested municipalities and/or Metro Vancouver to secure needed funding for a building retrofit financing program
<b>[1.5] BUILD INDUSTRY SUPPORT / COMPETENCY WITH LOW CARBON MECHANICAL SYSTEMS</b>			
Improve building electrification awareness, coordination and advocacy among key stakeholders	Promote implementation of heat pump systems by developing technical guides for building owners and manager  Support City Building Approvals staff in creating new tools for regulatory review of mechanical systems, within the scope of the BC Building Code	Not yet activated	Partner with municipalities, Province of BC and Thermal Comfort Association of BC to increase industry knowledge and capacity  Feature case studies of deep energy retrofits of ground-oriented housing at Richmond's Builder Breakfast learning events
<b>[1.6] ADVANCE BUILDING ENERGY AND EMISSIONS PERFORMANCE REPORTING / DISCLOSURE</b>			
Advance building energy benchmarking and disclosure for larger buildings	Update Richmond's covered building data for buildings 25,000 ft <sup>2</sup> and larger in floor area  Integrate benchmarking results with citywide existing building data reporting platform	In progress	Continue support of Building Benchmark BC (BBBC) for voluntary benchmarking, and work towards a mandatory requirement by 2025  Integrate with new or proposed policies implemented by City of Vancouver and MVRD
Require homeowners to disclose at time of sale energy performance for prospective buyers	Real estate industry listings and disclosure statements (home energy score)	Not yet activated	Work with Province of BC (CleanBC Roadmap to 2030), OPEN Technologies, and home Realtor representatives to implement pilot program

## DIRECTION 2    TRANSITION TO ZERO EMISSION VEHICLES



### STRATEGIC DIRECTION    MAJOR MOVE FOR 2030

Facilitate electrical mobility for all residents and businesses in Richmond, with expanded options for charging at home, at work, and on-the-go for personal electric vehicles, electric car-share, e-bicycles and e-scooters.

### WHY ACTION IS IMPORTANT

Transitioning to zero emission vehicles, and reducing overall vehicle use through active modes (walking, rolling, cycling) and public transit are key strategies to dramatically reduce transportation emissions to near zero by 2050. Since most of BC’s electricity comes from clean energy sources, zero emission vehicles are a highly effective strategy at reducing community emissions, emitting approximately 97% less GHGs than equivalent internal combustion vehicles.

### REQUIRED RESOURCES

As there is no funding allocated for this service level, it is recommended to use LGCAP funding for one new staff position, starting in 2023, and related operating funding for engagement, technical analysis and pilot programs.

### IMPLEMENTATION ROADMAP ACTIONS FOR 2023-2025

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[2.1] EXPAND PUBLIC ELECTRIC VEHICLE CHARGING OPPORTUNITIES</b>			
Build out network of public EV charging stations at City facilities to accelerate rate of EV adoption	Annually update inventory and map of public Level 2 and Level 3 EV charging points throughout Richmond	In progress	Further expansion of public EV charging opportunities would pursue available Federal, CleanBC and BC Hydro grant funding when available
<i>EQUITY OPPORTUNITY</i>			
Create mobility hubs with EV charging stations near transit stations, within neighbourhood service and community centres	Develop guidelines for provision of mobility hubs as part of a Transportation Demand Management (TDM) approach for new developments	Not yet activated	Develop Mobility Hub activation plan and pursue potential external funding as demonstration project Note: Lansdowne Mall and Richmond Centre have been identified as future locations
<i>EQUITY OPPORTUNITY</i>			
Support curbside EV charging stations in areas where residents are less likely to be able to charge at home, and encourage car share providers to electrify their fleets	Assess projected demand in neighbourhoods that would benefit from public EV charging, and develop spatial inventory of potential locations	Not yet activated	Work with Province of BC (CleanBC Roadmap to 2030) and home Realtor representatives
<i>EQUITY OPPORTUNITY</i>			

<b>Priority Actions &amp; Deliverables</b>	<b>Information &amp; Resource Needs</b>	<b>Current Status</b>	<b>External Initiatives &amp; Synergies</b>
<b>[2.2] EXPAND ELECTRIC VEHICLE CHARGING OPPORTUNITIES ON PRIVATE PROPERTY</b>			
Extend current residential EV charging requirements to include visitor and car share parking stalls	Create a 'how to' guide for retrofitting existing visitor and car-share parking stalls with Level 2 EV charging capability	Not yet activated	Review bylaws from other local governments that have implemented this requirement
Establish light-duty EV charging requirements for parking stalls in new commercial and industrial development	Develop Zoning Bylaw requirements for Level 2 EV charging capacity for visitor and workforce parking stalls	In progress	Engage NAIOP (Commercial Real Estate Development Association) and UDI (Urban Development Institute) members on proposed Zoning Bylaw requirements
<i>EQUITY OPPORTUNITY</i>			
Support an EV Charging Retrofit Advisor program for existing multi-unit residential buildings	Review policy, regulatory and program options to incentivize retrofit of existing parking spaces with EV charging	Not yet activated	Partner with other municipalities to develop project scope and implementation plan for a regional EV Charging Advisor program for strata and rental apartment buildings
<i>EQUITY OPPORTUNITY</i>			
	Explore City's ability to reduce the per-unit cost of electrical transformer upgrades by aggregating EV retrofit upgrades in adjacent buildings		Work in partnership to identify incentives and secure funding for a regional-scale program, launch and promote the new program
Support homeowners wanting to implement Level 2 EV charging at home	Create how-to guides and bulletins on installing Level 2 EV charging in existing single-family, semi-detached homes, and townhouses	Not yet activated	Partner with BC Hydro to update
<b>[2.3] ENCOURAGE ZERO EMISSION VEHICLE ADOPTION</b>			
Advocate for low-GHG requirements in ride-hailing services	Review regulatory options for local governments to require low-emission ride-hailing services within Richmond	Not yet activated	Work with other local governments to advocate for changes to Provincial regulations on ride-hailing services
Increase public awareness of, and support for, car-sharing and electric mobility	Promote and distribute information on electric vehicles, e-bicycles and e-scooters	In progress	Partner with organizations advocating use of low-carbon mobility (e.g. Emotive BC, TransLink, car-share providers, Fraser Basin Council)



<b>Priority Actions &amp; Deliverables</b>	<b>Information &amp; Resource Needs</b>	<b>Current Status</b>	<b>External Initiatives &amp; Synergies</b>
<b>[2.3] ENCOURAGE ZERO EMISSION VEHICLE ADOPTION (continued)</b>			
Support implementation of Provincial Zero Emission Vehicle (ZEV) sales requirements, and advocate for further improvements		In progress	Work with Metro Vancouver and other local governments to support ZEV Act implementation and continued improvements to its sales mandate
Work with partners to accelerate transition of heavy duty vehicles to zero emission fuels and/or battery electric power	Conduct technical review of electric and other low-carbon fuel options (i.e., hydrogen, renewable natural gas, and biofuels)	Not yet activated	Work with Metro Vancouver TransLink and other agencies to advance low-carbon fuel and EV charging infrastructure, as well as regulatory measures on land use to support this transition
<b>[2.4] ENCOURAGE LOWER EMISSIONS FROM INTERNAL COMBUSTION ENGINE VEHICLES</b>			
Support continued implementation and further improvements to Federal vehicle fuel-efficiency regulations		Not yet activated	Work with Metro Vancouver and other local governments to support implementation and further improvements to Federal Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations, as well as Federal Heavy-duty Vehicle and Engine Greenhouse Gas Emission Regulations



## DIRECTION 3 CARBON NEUTRAL NEW BUILDINGS



### STRATEGIC DIRECTION MAJOR MOVE FOR 2030

All new buildings will be serviced by low carbon energy systems and built to the top performance level of the BC Energy Step Code by 2027.

### WHY ACTION IS IMPORTANT

As a growing City, Richmond is expecting to add more than 28,000 new housing units during the next 20 years. Provincial and National building codes for new construction are moving toward ‘near zero’ energy performance standards for new buildings (like Net Zero Energy Ready and the Passive House standard) by 2030 and 2032 respectively. The City of Richmond has signaled in our OCP that it intends to achieve the top level of the BC Energy Step Code by 2027 for all new buildings, as well as near zero emissions by 2027 using the new Carbon Pollution Standard to be added to the BC Building Code in 2023.

### REQUIRED RESOURCES

Existing operating budget funding for analysis of embodied carbon targets and development of incentive framework and guidance materials on building electrification in 2023.

### IMPLEMENTATION ROADMAP ACTIONS FOR 2023-2025

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[3.1] ACCELERATE TRANSITION TO THE TOP LEVEL OF BUILDING PERFORMANCE</b>			
Support the construction of flagship high-performance, low-carbon buildings in Richmond  <i>EQUITY OPPORTUNITY</i>	Identify incentives for specific building types to drive construction of low energy and zero emission buildings (i.e., Passive House, Net Zero Energy Ready)	In progress	Partner with local governments and organizations to develop a regional high-performance incentive program, with targeted incentives and support for new affordable housing  Partner with Zero Emissions Innovation Centre and Passive House Canada on education
Support training on designing, constructing and commissioning of high performance buildings	Offer subsidized training for builders, designers and trades, to increase competency with advanced envelope and mechanical systems  Continue Richmond’s successful Builder Breakfasts for builders, designers and trades	In progress	Promote technical bulletins, webinars, training sessions and accreditation opportunities offered by BC Institute of Technology, BC Housing, Small Planet Supply, Passive House Canada, Zero Emissions Innovation Centre (ZEIC), Zero Emission Building Exchange (ZEBx) and Building to Electrification (B2E) Coalition

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[3.1] ACCELERATE TRANSITION TO THE TOP LEVEL OF BUILDING PERFORMANCE (continued)</b>			
Accelerate use of low-embedded carbon content materials in new construction	Assess policy and incentive options to help drive use of construction materials with low embodied carbon	Partially activated	Review embodied carbon reporting requirements and limits (rezoning and bylaw requirements) in place or contemplated in BC
<b>[3.2] SUPPORT CONTINUOUS IMPROVEMENT TO THE BC ENERGY STEP CODE</b>			
Support ongoing improvements to Energy Step Code regulation and performance standards	Advocate for extending the Energy Step Code to other building types not currently covered in regulation	In progress	Work with Province of BC and other local governments Advocate for improvements (as needed) to existing Provincial Step Code regulations
Advocate for adoption of emission intensity (GHGI) targets that local governments can reference in tandem with the Energy Step Code		In progress	Participate in a Province-led process to develop carbon pollution (GHGI) targets for the BC Energy Step Code that local governments can adopt into bylaw
Ensure good practices in mechanical equipment design, installation and commissioning		Not yet activated	Work with Technical Safety BC and industry associations to establish mechanical system permitting guidelines and requirements, and enable City building inspectors to review records of equipment installations by contractors
<b>[3.3] ADVANCE LOW CARBON ENERGY SYSTEMS IN NEW CONSTRUCTION</b>			
Raise awareness of the benefits of building electrification <i>EQUITY OPPORTUNITY</i>	Develop a workshop and engagement series beginning in fall 2022 for builders, developers, architects and designers	Partially activated	Support implementation of recommendations from the Building Electrification Roadmap (BERM) and outreach and awareness through the Building to Electrification (B2E) Coalition
Maximize low carbon energy in new construction	Develop Energy Step Code and greenhouse gas intensity (GHGI) Bylaw requirements in consultation with local development community  Adopt Provincial Carbon Pollution Standard into City Bylaw regulation when available (2023)	In progress	Continue to participate in Local Government Step Code Peer Network, the Energy Step Code Council, Community Energy Association and technical subcommittees convened by Building & Safety Standards Branch at the Province of BC

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[3.3] ADVANCE LOW CARBON ENERGY SYSTEMS IN NEW CONSTRUCTION (continued)</b>			
Encourage local availability of low carbon domestic hot water and space heating systems with a high coefficient of performance		Partially activated	Partner with other local governments, MVRD and/or Province of BC to provide training on heat pump systems  Engage Vancouver Economic Commission, Province of BC (Ministry of Energy, Mines & Low Carbon Innovation) and heat pump suppliers to advocate for increased availability of high coefficient of performance equipment
<b>[3.5] IMPLEMENT BUILDING ENERGY AND EMISSIONS REPORTING AND DISCLOSURE</b>			
Build capacity and momentum for a mandatory energy and emissions reporting requirement for new buildings	Continue participation and support of energy and emissions reporting initiatives such as Building Benchmark BC	In progress	Advocate for a Provincial requirement that owners of larger (Part 3) commercial, institutional and multi-unit residential buildings annually measure, report and/or disclose their properties' energy usage and greenhouse gas emissions  Report as-built energy performance information for smaller (Part 9) residential buildings built to Energy Step Code requirements, once data on a sufficient number of buildings is available
<b>[3.6] ENCOURAGE ONSITE RENEWABLE ENERGY</b>			
Encourage cost-effective on-site renewable energy generation in new construction  <i>EQUITY OPPORTUNITY</i>	Develop a policy and incentive approach to encourage on-site renewable energy, such as solar photovoltaic systems, electric heat pumps, and waste heat recovery with a net positive internal rate of return	In progress	Promote and distribute information on new building-scale renewable energy systems (from analysis completed in June 2022), and engage design and construction community to inform development of an incentive framework (per City Council direction July 2022)

## DIRECTION 4 COMPLETE COMMUNITIES



### STRATEGIC DIRECTION

Implement Official Community Plan (OCP) and Local Area Plan objectives for compact, complete neighbourhoods throughout Richmond, with a range of services, amenities and housing choices, and sustainable mobility options within a five-minute walk of homes.

### WHY ACTION IS IMPORTANT

Compact development policies within our OCP and area plans are critical to achieving the types of land uses that support low- or zero-emission travel modes and energy efficient buildings. Having a wider range of services and amenities closer to home is strongly influenced by land use policies set in these plans, facilitating easy access by transit or active travel modes.

### REQUIRED RESOURCES

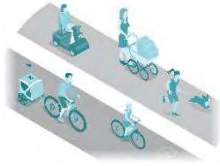
Existing operating budget funding for spatial data modelling and digital visualization to determine energy, GHG emission and equity impact of OCP land use and transportation options in 2023.

### IMPLEMENTATION ROADMAP ACTIONS FOR 2023-2025

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[4.1] APPLY A CLIMATE LENS AS RICHMOND'S OCP AND LOCAL AREA PLANS ARE IMPLEMENTED</b>			
Assess impacts on energy use and greenhouse gas (GHG) emissions as new local area plans are introduced, and when there are amendments or updates to the Official Community Plan (OCP)	Review leading approaches to use data visualization and GHG emissions modelling to inform decision-making on land use and transportation	Partially activated via OCP process	Integrate greenhouse gas intensity metrics for new and existing buildings, as they finalized by Province of BC  Identify target metrics (limits) for embodied carbon in construction materials in tandem with regional partners
Work to achieve a net reduction of community GHG emissions as new development occurs and transportation infrastructure is replaced or extended	Create indicators to assess progress toward climate equity objectives for development and transportation scenarios  Assemble data on building energy use, embodied and operational emissions, travel mode scenarios and emissions avoided	Not Yet Activated	Work with partner organizations to increase awareness and use of transit services, and engage on active mobility infrastructure and travel options
<b>EQUITY OPPORTUNITY</b>			

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[4.2] ENHANCE CHOICES FOR HOUSING AND SERVICES WITHN NEIGHBOURHOODS</b>			
Encourage development of compact and complete communities with a wide range of housing options throughout Richmond, as per OCP direction	Understand the role of innovative building design and construction (prefabrication), low-carbon energy systems and incentives in supporting improved housing affordability	In progress	Liaise with Passive House Canada, BC Housing, Zero Emissions Innovation Centre (ZEIC), Zero Emission Building Exchange (ZEBx), and Building to Electrification (B2E) Coalition on innovative projects and design approaches

## DIRECTION 5 ACTIVE MOBILITY FOR ALL



### STRATEGIC DIRECTION

Prioritize active transportation with investments in walking, rolling and cycling infrastructure that is safe, connected, easy to navigate, and accessible.

### WHY ACTION IS IMPORTANT

Active mobility is zero or near zero emission by definition, as no fossil fuels are required to walk, cycle or roll, and electric scooters and e-bikes use BC’s low-GHG electric grid to recharge batteries. Active modes are also simple, cheap and highly effective for shorter-distance trips. They can make up the majority of trips in compact, complete communities, where most destinations are close by.

### REQUIRED RESOURCES

Maintain the City’s priority on active transportation; utilize TransLink grants and development cost charges to support active mobility; continue e-bike and e-scooter share programs; continued expansion of protected bike lane network.

### IMPLEMENTATION ROADMAP ACTIONS FOR 2023-2025

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[5.1] ACCELERATE CITYWIDE USE OF ACTIVE TRANSPORTATION</b>			
Prioritize walking, rolling and cycling as a preferred way to travel in Richmond  <i>EQUITY OPPORTUNITY</i>	Identify opportunities as they arise where traffic lanes could be closed to traffic and reallocated to pedestrians and cyclists	In progress	Leverage senior government funding opportunities as they arise to accelerate build-out of active mobility infrastructure
	Complete update to the Cycling Network Plan, and implement All Ages and Abilities bike lanes protected from vehicle traffic along major streets	Adopted	
	Review current inventory of public bicycle parking in Richmond, and recommend new bike parking infrastructure where needed	Adopted	



Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[5.1] ACCELERATE CITYWIDE USE OF ACTIVE TRANSPORTATION (continued)</b>			
Allocate annual capital funding for active transportation infrastructure sufficient to achieve OCP 2041 mode share goal by 2030	Coordinate active infrastructure investment with new development, prioritizing connectivity and expansion of active travel routes	In progress	Leverage senior government funding opportunities as they arise to accelerate build-out of active mobility infrastructure
<i>EQUITY OPPORTUNITY</i>	Develop a plan to provide e-bicycle and e-scooter charging at City facilities and mobility hubs		Consider opportunities as they arise to prioritize active travel infrastructure that connects with regional and provincial-controlled roads and bridges, improving inter-municipal links
<b>[5.2] REDUCE BARRIERS TO TRANSPORTATION WITHIN NEIGHBOURHOODS</b>			
Expand existing walking and rolling connectivity within and between neighbourhoods	Review development requirements and urban design guidelines to ensure streets, lanes, and walk / roll infrastructure are accessible, and easy to navigate	In progress	Leverage senior government funding opportunities as they arise to accelerate build-out of active mobility infrastructure
<i>EQUITY OPPORTUNITY</i>	Identify gaps and implement upgrades to existing zero-emission mobility prioritizing areas within City Centre and Neighbourhood Centres		
<b>[5.3] ENGAGE RESIDENTS ON ACTIVE TRANSPORTATION</b>			
Expand active transportation programs and services (e.g. e-bike and e-scooter services) in Richmond	Continue funding of cycling education classes for the community and Richmond elementary school students	In progress	Partner with organizers to co-sponsor community events (e.g., Car Free Day, Go by Bike Week, Emotive EV test drive, e-bicycle test drive)
<i>EQUITY OPPORTUNITY</i>	Engage residents and business owners to encourage e-mobility and active travel modes		

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[5.4] MAKE ACTIVE TRANSPORTATION THE CONVENIENT CHOICE FOR SHORTER TRIPS</b>			
Ensure supportive land use along frequent transit routes so that active transportation is a convenient choice for shorter trips		In progress	Review current land use and zoning along frequent transit routes for alignment with 'Goal One' in TransLink's Transport 2050 plan, as part of the Official Community Plan review
<i>EQUITY OPPORTUNITY</i>			
<b>[5.5] SET PARKING STANDARDS TO SUPPORT SUSTAINABLE TRAVEL OPTIONS</b>			
Establish further reductions for parking space requirements in new development, where appropriate	Review existing policy allowing for deeper reductions in parking stall requirements in exchange for provision of additional low-carbon transportation measures	In progress	
Explore options to enable the conversion of parking spaces within existing buildings to support active transportation	Investigate conversion of parking stalls in existing residential and commercial buildings to dedicated space for bicycles and e-scooters, including secure storage	Not Yet Activated	Potential for policy, program and incentive synergy between Retrofit Existing Buildings and Active Mobility for All
<i>EQUITY OPPORTUNITY</i>			



## DIRECTION 6 SUPPORT FREQUENT TRANSIT



### STRATEGIC DIRECTION

Work with TransLink to increase transit service frequency and foster wider use of transit by implementing and upgrading transit stops that are well integrated with active transportation (walking/rolling, cycling) and car-sharing networks.

### WHY ACTION IS IMPORTANT

For medium to longer distance trips, public transit is an essential strategy to reduce GHG emissions from transportation. Travel by bus is much more energy efficient (on a per-person basis) than a private automobile. Traveling on a diesel bus, rather than driving a conventional internal combustion vehicle, reduces emissions per kilometre by 50%, while taking rapid transit (Canada Line or SkyTrain) or a battery electric-powered bus can reduce emissions by up to 99%.

### REQUIRED RESOURCES

Maintain current City contribution to bus shelter expansion as proposed in the 2023 Capital Budget; continued work with TransLink on bus speed and reliability program, and route planning on future Richmond to Metrotown R7 rapid bus.

### IMPLEMENTATION ROADMAP ACTIONS FOR 2023-2025

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[6.1] ENSURE TRANSIT-SUPPORTIVE LAND USE</b>			
Ensure supportive land use along high frequency transit routes so that transit is a convenient choice for most trips <i>EQUITY OPPORTUNITY</i>		In progress	Review current land use and zoning along Frequent Transit Network (FTN) for alignment with 'Goal One' in TransLink's Transport 2050 plan, as part of OCP review
Increase the range of housing types, supply and tenure close to frequent transit <i>EQUITY OPPORTUNITY</i>		In progress	Ensure mix of land uses, diversity of housing types, tenures and incomes along frequent transit routes (per 'Goal Three' in TransLink's Transport 2050 plan)
<b>[6.2] INCREASE TRANSIT PROVISION AND SERVICE IMPROVEMENTS</b>			
Facilitate expansion of high frequency local and regional transit service <i>EQUITY OPPORTUNITY</i>		In progress	Work with the Mayors' Council on Regional Transportation and TransLink to secure senior level government funding for transit improvements, and TransLink on rapid bus service on frequent transit routes identified in the Southwest Area Transport Plan

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[6.3] ENCOURAGE HIGHER TRANSIT RIDERSHIP</b>			
Reduce barriers to transit by investing in supportive, accessible, people-friendly infrastructure  <i>EQUITY OPPORTUNITY</i>	Work towards 100% of bus stops and connecting pedestrian facilities being wheelchair accessible  Define sustainable travel services and infrastructure that would be available to transit riders at Mobility Hubs, and combine funding of Mobility Hub and transit service improvements	In progress	Leverage senior government and transit agency funding opportunities as they arise to accelerate build-out transit infrastructure
<b>[6.4] SUPPORT TRANSITION TO 100% ZERO EMISSION TRANSIT</b>			
Expand battery electric bus service and implement e-bus charging facilities within Richmond		Not Yet Activated	Work with TransLink on to implement the 2050 Low Carbon Fleet Strategy to advance battery electric bus service in Richmond
<b>[6.5] ENGAGE RESIDENTS ON TRANSIT SERVICE AND MOBILITY HUB IMPROVEMENTS</b>			
Engage residents on transit service and mobility hub improvements and benefits	Build local awareness of Mobility Hub benefits for public EV charging, access to car sharing, cycling and walk / roll infrastructure, and seamlessly integrated with transit  Promote the benefits and necessity of the transit system in meeting social, economic and environmental objectives, and re-establish confidence in safety in Transit as the COVID pandemic recedes	Not Yet Activated	Encourage TransLink's TravelSmart outreach team's continued participation in local community events  In advance of future Mobility Hubs in Lansdowne Mall and Richmond Centre, consider external partner funding for a pilot Hub in City Centre, to create public awareness and promote benefits of well-located, quick and easy way to change travel modes

## DIRECTION 7

## ENHANCE GREEN INFRASTRUCTURE



### STRATEGIC DIRECTION

Maximize the climate benefits of Richmond’s green infrastructure by protecting and expanding existing carbon stores in trees, vegetation and soils.

### WHY ACTION IS IMPORTANT

Green infrastructure refers to natural and built biological environments that provide functions similar to traditional civic infrastructure. Green infrastructure can enhance Richmond’s resiliency and adaptability to climate change by managing and filtering stormwater, reducing ‘urban heat island’ effects, improving local air quality, and supporting biodiversity. Carbon-smart land management has potential to sequester additional CO<sub>2</sub>, thereby helping reduce the City’s net emissions. Keeping Richmond’s natural, below-grade ‘carbon bank’ intact is an important way to limit unwanted release of GHG emissions.

### REQUIRED RESOURCES

Existing operating budget for undertaking detailed analysis and review of above grade and below grade carbon sequestration options and enhancement pathways for Richmond in 2023.

### IMPLEMENTATION ROADMAP ACTIONS FOR 2023-2025

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[7.1] EXPAND RICHMOND’S URBAN TREE CANOPY</b>			
Achieve a robust, long-term urban forest on public and private land <i>EQUITY OPPORTUNITY</i>	Implement the Public Tree Management Strategy 2045 (adopted by Council, November 2019)  Develop a city-wide urban forest strategy for private land, as part of the City’s Ecological Network Management Strategy  Consider an incentive framework to encourage tree planting and retention on private urban lands	In progress	Potential for policy, program and incentive synergy between Retrofit Existing Buildings and Enhance Green Infrastructure

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[7.2] PROTECT EXISTING STOCKS OF SEQUESTERED CARBON</b>			
Implement citywide strategy and actions to preserve Richmond's natural carbon stores	<p>Identify policy and regulatory options to protect carbon already stored within Richmond soils, peatlands and urban tree canopy, and investigate additional opportunities</p> <p>Promote the value of central wetlands, Sturgeon Bank, and Richmond's urban tree canopy as long-term carbon storage using natural systems</p>	Partially activated	<p>Evaluate innovative approaches that could be utilized in Richmond from a review of regional, national and international best practices on natural carbon sequestration</p> <p>Maintain and enhance water table levels on City-owned central wetlands to preserve carbon stored in peat soils, partnering with the Federal Government and Province of BC</p> <p>Implement an outreach and education campaign to protect carbon in soils, increasing resiliency for agricultural landowners, in partnership with other organizations</p>
<b>[7.3] PROMOTE SUSTAINABLE REUSE OF SOIL AND WASTE BIOMASS</b>			
Promote sustainable reuse of soil and waste biomass	Assess potential to preserve Richmond soils for use in future agriculture, in partnership with developers and landowners	In progress	
<b>[7.4] PLAN NOW TO SCALE UP CARBON SEQUESTRATION AND OFFSETS IN RICHMOND</b>			
Develop a strategy to achieve up to 200,000 tonnes of CO <sub>2</sub> equivalent sequestration annually by 2050	<p>Assess sequestration capacity of Richmond's Ecological Network as contributions toward the 2050 annual carbon sequestration target</p> <p>Review options to sequester carbon using enhanced land management and identifying areas where Richmond could generate additional carbon offsets</p>	Not Yet Activated	

## DIRECTION 8      TRANSITION TO A CIRCULAR ECONOMY



### STRATEGIC DIRECTION

Create a Circular Economy in Richmond that maximizes the value of resources by design, responsible consumption, minimized waste and re-imagining how resources flow in a sustainable, equitable, low-carbon economy.

### WHY ACTION IS IMPORTANT

Globally, 45% of carbon emissions originate from the production of vehicles, consumer goods and food, as well as construction materials used in buildings. Traditional product development uses a linear ‘take-make-waste’ approach. By contrast, the Circular Economy maximizes value, and reduces or eliminates waste by transforming how products and services are designed, manufactured and used. Innovation is used to extend the lifespan of products and materials, reduce or eliminate emissions, and conserve natural resources.

### REQUIRED RESOURCES

As approved by Council, a citywide material flow analysis and carbon scan identifying actions that yield significant GHG reduction opportunities for products and materials in 2023.

### IMPLEMENTATION ROADMAP ACTIONS FOR 2023-2025

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[8.1] ADVANCE IMPLEMENTATION OF CIRCULAR ECONOMY INITIATIVES BY CITY OF RICHMOND</b>			
Integrate Circular Economy principles into the City’s corporate plans, processes and standards to lead by example	<p>Incorporate circular economic thinking into City project development and operations, with the goal to ‘design out’ waste and pollution</p> <p>Analyze material flows to improve utilization and longevity, minimizing embodied carbon in products and materials that the City uses</p> <p>Increase proportion of recycled and reclaimed materials used by the City, to help drive the market toward a circular economy</p>	In Progress	<p>Transition the City’s product and service suppliers to utilize a circular approach in their business model</p> <p>Stimulate regional innovation through pilot demonstration projects, incubators, and showcasing leading solutions by businesses and organizations</p>

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[8.2] SUPPORT IMPLEMENTATION BY RESIDENTS</b>			
Inspire residents to participate in the Circular Economy and accelerate demand for products derived from circular processes	Support take-back programs that enable residents to return products or materials at end-of-life	Not yet activated	Engage and educate the community on the need to transition toward a circular economy
<i>EQUITY OPPORTUNITY</i>	Encourage use of products derived from renewable materials, contributing to efficient use of sustainable natural capital		Create a City of Richmond Ideas Forum to stimulate innovation by exchanging knowledge across sectors and between organizations
	Improve public awareness of best practices to prevent food waste, and support transition away from single-use plastic		
<b>[8.3] SUPPORT IMPLEMENTATION BY BUSINESSES</b>			
Accelerate adoption of Circular Economy by the private sector in the design, manufacture and retooling of products and services	Create a 'model guide' for reducing food waste to be included with local business licenses and permits	Not yet activated	Implement a promotion and engagement program to drive circular innovation and create new business opportunities within the Richmond market
	Encourage local businesses to adopt circular approaches, such as [refuse, reduce, re-use], [repair or re-manufacture] and [re-purpose or recycle]		
	Enable sharing of products and assets to maximize use and longevity, enhance productivity and create value		

Priority Actions & Deliverables	Information & Resource Needs	Current Status	External Initiatives & Synergies
<b>[8.4] TRANSITION TO LOW EMBODIED CARBON CONSTRUCTION MATERIALS</b>			
Accelerate the use of construction materials with low embodied carbon content	Implement a requirement to report embodied carbon content of materials used in new buildings (reported at Building Permit)	Not yet activated	Participate in regional efforts to develop embodied carbon targets for all new building archetypes, and disclosing the level of embodied energy and carbon at project completion
	Develop a technical guide showing embodied energy and carbon in typical construction materials used in buildings		
	Lead by example and showcase a low embodied carbon approach in the design and construction of a new City of Richmond building / facility		