

RETROFIT EXISTING BUILDINGS

DIRECTION 1

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.

Short to medium term emission reductions

CARBON REDUCTION IMPACT BY 2030

- Retrofit buildings representing half of all GHG emissions, achieving an average GHG reduction of 70% in these buildings, through partnerships with senior levels of government, utilities and building operators.
- Where possible, apply the anticipated future Provincial energy retrofit code when implemented, as per Clean BC Plan.
- Achieving net zero requires 25% of remaining gas use in existing buildings to be renewable natural gas by 2050.

This is a 'major move' direction that is prioritized for 2020 to 2030.

Space heating is the largest energy use in Richmond's buildings, and is responsible for more than a third of total community emissions. Richmond's 33,617 existing buildings emitted 398,000 tonnes of greenhouse gas emissions in 2017 (40% of total community emissions).

Greater use of low-GHG grid electricity for building heating and cooling would greatly reduce overall emissions. Energy efficient heat pumps will play a big role in the transition to low carbon mechanical systems, and will require the City and partners to develop a comprehensive program to incentivize and accelerate building energy retrofits.

The proposed approach will target the highest

emitting buildings expected to remain in place by 2050 through building energy retrofits and low-carbon mechanical system upgrades. As the City's district energy systems mature, there may be opportunities for larger buildings to be retrofitted to receive low-carbon district heating over time.

SHARED BENEFITS

- Buildings become more comfortable and energy efficient
- Drives technical innovation and demand for low-carbon energy systems

ENABLING POLICIES AND PROGRAMS

Policies and Plans

- Building Regulation Bylaw
- Building Energy Benchmarking Pilot Program
- Clean BC Plan: Provincial intent to develop building retrofit Code

Successes to Date

- Richmond's Building Energy Challenge (2016–17) for large commercial buildings to implement energy upgrades
- Provincial and City incentives

TOP THREE IMPLEMENTATION TOOLS

- Incentives
- Policy and Regulation
- Collaboration and Partnerships

ENGAGEMENT HIGHLIGHTS

- Survey respondents would like to see innovative finance and/or incentive options for low-carbon energy in existing homes.



TRANSITION TO ZERO EMISSION VEHICLES

DIRECTION 2

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

Short to medium term emission reductions

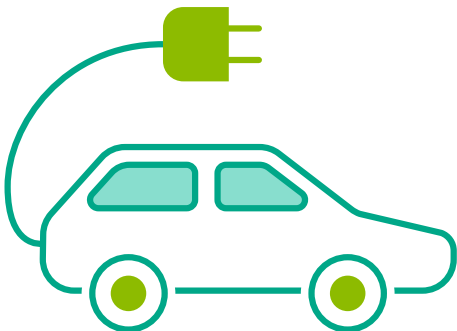
CARBON REDUCTION IMPACT BY 2030

- Reduce total annual GHG emissions from light-duty vehicles in Richmond to 50% below 2017 levels by 2030.
- Reduce total annual GHG emissions from heavy-duty vehicles in Richmond to 33% below 2017 levels by 2030.

This is a 'major move' direction that is prioritized for 2020 to 2030.

The combustion of gasoline by passenger cars is the City's single biggest source of emissions, responsible for 38% of GHGs emitted in 2017. Diesel combustion by heavy-duty trucks within Richmond adds a further 19% to total emissions. Given significant emissions from these sources, Richmond has the potential to cut vehicle emissions to near zero if we fully transition light-duty vehicles and heavy-duty trucks to be zero emission by 2050.

Electric mobility is a very effective strategy for reducing GHG emissions in BC because almost all of our electricity comes from low-emission renewable sources. As of fall 2019, there are already more than 1,500 EVs in Richmond. These EVs will emit just 90 tonnes of CO₂ annually, about 98% less than a thousand equivalent internal combustion vehicles.



SHARED BENEFITS

- Cleaner air and quieter streets
- EVs have fuel costs less than 1/3 of gasoline and diesel

ENABLING POLICIES AND PROGRAMS

Policies and Plans

- Community Energy & Emissions Plan
- Corporate Energy & Emissions Plan
- Official Community Plan
 - Mobility and Access section

Successes to Date

- The City now has 10 Level 2 and two DC Fast Charging stations in place, with more on the way.
- As of March 31, 2018 all new residential parking spaces must have an energized outlet capable of providing Level 2 EV charging.

TOP THREE IMPLEMENTATION TOOLS

- Infrastructure
- Incentives
- Outreach and Capacity Building

ENGAGEMENT HIGHLIGHTS

- Survey respondents want more public EV charging stations installed.
- Many respondents are considering purchasing an EV in the future.



CARBON NEUTRAL ENERGY FOR NEW BUILDINGS

DIRECTION 3

All new buildings will meet the applicable (for building type) top performance level of the BC Energy Step Code starting in 2025, and be powered by low carbon energy systems (in-building or district energy).

Short to medium term emission reductions

CARBON REDUCTION IMPACT BY 2030

- Achieve 80% low-carbon energy supply for heating and cooling district-energy-connected buildings in Richmond.
- All new buildings completed after 2025 (not connected to district energy) will consume 50% less energy and emit two-thirds less greenhouse gases than new buildings built in 2017.

This is a 'major move' direction that is prioritized for 2020 to 2030.

New buildings are an important opportunity for reducing greenhouse gas emissions by addressing space heating and hot water supply. All new buildings in Richmond will need to be very energy efficient, and use low-carbon heating and cooling systems by 2025 to meet a target of 50% reduction by 2030. The design and construction industry is responding to this challenge, with a growing number of small and large buildings that already meet the top level of the BC Energy Step Code.

Building upon the success of Richmond's low carbon district energy systems, there may be opportunities to expand this service to connect new buildings in other high density areas of the city.



SHARED BENEFITS

- Buildings that are more comfortable and healthy for occupants
- Low energy buildings are more resilient to climate change

ENABLING POLICIES AND PROGRAMS

Policies and Plans

- Official Community Plan
- Zoning & Development Bylaw
- Building Regulation Bylaw
- Community Energy & Emissions Plan
- Lulu Island Energy Company (LIEC)

Successes to Date

- In 2018, Richmond adopted the Step Code for new residential and commercial development.
- Council also adopted a timeline to increase standards so that new buildings are designed to a "net-zero energy ready" performance level starting 2025.

TOP THREE IMPLEMENTATION TOOLS

- Policy and Regulation
- Incentives
- Outreach and Capacity Building

ENGAGEMENT HIGHLIGHTS

- Respondents favoured low-carbon mechanical systems in new buildings over a focus on energy efficiency alone.



COMPLETE COMMUNITIES

DIRECTION 4

Accelerate current OCP objectives for compact, complete communities throughout Richmond, with a range of services, amenities and housing choices, and sustainable mobility options within a five-minute walk of homes.

Medium to longer term emission reductions

CARBON REDUCTION IMPACT BY 2030

- Extend Frequent Transit with supportive zoning, enabling sufficient number of residents and transit-supportive service levels.
- Extend existing complete community policies to expand access to walkable neighbourhood services.

In 2017, Richmond's households on average were located within a five minute walk to 60% of a defined list of nine daily needs (e.g., day care and schools, local shopping, community centres, parks and some work spaces).

Achieving the policies included within our current Official Community Plan is one the strongest mechanisms Richmond has for reducing emissions over the medium- to long-term, making our neighbourhoods less car reliant, people-focused, and healthier. Having homes, jobs, shopping and services closer together reduces travel distance and makes it easy and convenient to walk/roll, bike or take transit to a destination.

SHARED BENEFITS

- Healthier communities
- Walking / rolling is easier within and between neighbourhoods
- Cleaner air, and quieter and safer roads

ENABLING POLICIES AND PROGRAMS

Policies and Plans

- Official Community Plan (OCP)
- Zoning Bylaw
- Mobility and Access section of OCP
- Community Energy & Emissions Plan

Successes to Date

- City Centre Area Plan
- OCP Arterial Road Land Use Policy
- OCP Neighbourhood Service Centre Policy
- Broadmoor Neighbourhood Service Centre and West Cambie Neighbourhood Plan

TOP THREE IMPLEMENTATION TOOLS

- Policy and Regulation
- Infrastructure
- Collaboration and Partnerships

ENGAGEMENT HIGHLIGHTS

- Survey respondents would like to see more apartments within neighbourhoods, as well as better access to transit, and greatly improved walk / roll and bicycle infrastructure.
- Respondents also favour access to park space and locally grown food.



ACTIVE MOBILITY FOR ALL

DIRECTION 5

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

Medium to long term emission reductions

CARBON REDUCTION IMPACT BY 2030

- Increase bicycle ridership and micro electric mobility to reach 10% of all trips taken by 2030, with further increases to 2050.
- Increase walk / roll trips to 18% by 2030, with further increases to 2050.

Active transportation prioritizes walking/rolling and cycling as the preferred ways of getting around. New electrically-assisted micro-mobility such as e-scooters are already available. These modes are simple, cheap and highly effective for shorter-distance trips, and can represent a significant number of trips in compact, complete communities where amenities and services are close by. According to the TransLink Trip Diary, 13% of all trips in Richmond were made by walking in 2017.

To make active transportation more attractive, the City can provide infrastructure such as wider sidewalks and benches, curb cuts, pedestrian activated crossing signals, a comprehensive and connected network of separated bike lanes, bicycle-share stations, and plenty of bicycle racks at destination points.

NOTE: Active mode share targets are consistent with current OCP, but have been accelerated to 2030 from 2041.



SHARED BENEFITS

- Cleaner air, healthier and more affordable communities
- Active mobility is zero emission; no fossil fuels required

ENABLING POLICIES AND PROGRAMS

Policies and Plans

- Official Community Plan
 - Mobility and Access section
 - Area and Sub-Area Plans
- Zoning Bylaw

Successes to Date

- Richmond has dedicated bicycle lanes on sections of Granville and Railway Avenues, Westminster Highway, Shell Avenue, Garden City and No. 3 Road.
- Public bike-share pilot (October 2018 to March 2020) operated by U-bicycle that features 40+ stations and 80 bicycles.
- Transit-oriented development measures in new development.

TOP THREE IMPLEMENTATION TOOLS

- Infrastructure
- Policy and Regulation
- Collaboration & Partnerships

ENGAGEMENT HIGHLIGHTS

- Local residents would walk / roll or bicycle more often if destinations were closer, and routes were convenient, direct and safe.
- Survey respondents favour increased investment in active mobility.



SUPPORT FREQUENT TRANSIT

DIRECTION 6

Foster wider use of frequent public transit throughout Richmond by implementing and upgrading transit stops, well integrated with active transportation (walking / rolling, bicycling) and with car-sharing networks.

Medium to long term emission reductions

CARBON REDUCTION IMPACT BY 2030

- Increase transit mode share from 12.5% (2017) to 22% by 2030, with further increases to 2050.

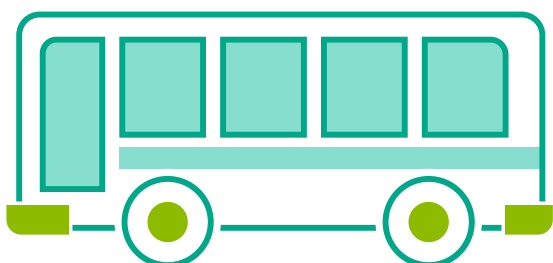
Public transit includes all local and regional transportation services administered within Metro Vancouver by TransLink. For medium to longer distance trips, public transit is an essential strategy to reduce community greenhouse gas emissions from transportation. According to the TransLink 2017 Trip Diary, 12.5% of all trips were made by public transit.

The Canada Line provides frequent rapid transit service between Richmond City Centre area, Vancouver and Vancouver International Airport. Beyond basic city-wide bus coverage, higher frequency bus services operate along No. 3 Road, from City Centre to Steveston and Hamilton, and along Highway 99. TransLink also provides HandyDART services for passengers with limited mobility.

NOTE: Transit mode share targets are consistent with current OCP, but have been accelerated to 2030 from 2041.

SHARED BENEFITS

- Higher transit ridership reduces the number of vehicles on the road
- Frequent transit integrates well with active mobility and car sharing



ENABLING POLICIES AND PROGRAMS

Policies and Plans

- South West Area Transport Plan
- Official Community Plan
 - Mobility and Access section
 - OCP Arterial Road Land Use Policy
 - Area and Sub-Area Plans

Successes to Date

- Richmond is expanding the number of bus stops with shelters. Currently, nearly 100 bus stops have shelters. Over 80% of bus stops are accessible.
- Developers are fully funding the construction of a new Canada Line station at Capstan Way; design work is now underway.

TOP THREE IMPLEMENTATION TOOLS

- Policy and Regulation
- Advocacy
- Collaboration and Partnerships

ENGAGEMENT HIGHLIGHTS

- Survey respondents favour increased investment in transit, with more frequent service, and emphasis on safety and convenience.

ENHANCE GREEN INFRASTRUCTURE

DIRECTION 7

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

Medium to longer term emission reductions

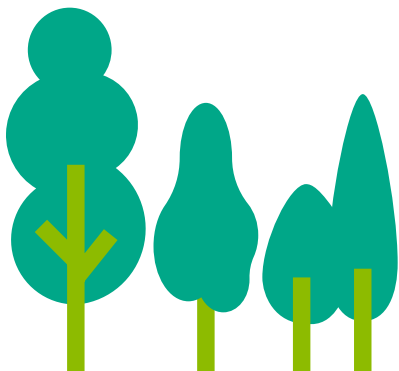
CARBON REDUCTION IMPACT BY 2030

- By 2030, measures have been identified and initiated sufficient to sequester 200,000 additional tonnes of CO₂e per year by 2050.
- Achieving this target in 2050 could provide Richmond a 20% carbon reduction 'buffer' equivalent to 20% of Richmond's GHG emissions relative to the 2007 base year.

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.

Richmond's green infrastructure also includes its soils, which already holds large amounts of carbon, and has some potential to host vegetation that sequesters additional CO₂, thereby helping reduce the City's net emissions.

The target for 2030 implies that once significant emissions have been reduced from new and existing buildings, encouraging sustainable travel options, decarbonizing mobility and reducing waste, additional emissions may still need to be reduced to achieve the City's net zero emissions goal.



SHARED BENEFITS

- Urban tree canopy buffers temperature extremes (shading and cooling)
- Natural areas provide cleaner air and water, and ecological habitat

ENABLING POLICIES AND PROGRAMS

Policies and Plans

- Parks & Open Space Strategy
- Ecological Network Management Strategy
- Integrated Resource Management Strategy

Successes to Date

- The City purchased a portion of Richmond's Northeast Bog in 2011, protecting a large amount of peatland for the long term.
- Richmond has a tree retention bylaw in regulation.

TOP THREE IMPLEMENTATION TOOLS

- Outreach and Capacity Building
- Collaboration and Partnerships
- Infrastructure

ENGAGEMENT HIGHLIGHTS

- Survey respondents see great value in Richmond's natural landscapes (e.g. forest, grasslands, shrub lands, saltwater marshes), as well as agricultural land reserve.

TRANSITION TO A CIRCULAR ECONOMY

DIRECTION 8

Create a circular economy in Richmond that maximizes the value of resources through smart product design, responsible consumption, minimized waste and reimagining how resources flow in a sustainable, low-carbon economy.

Medium term to longer term emission reductions

CARBON REDUCTION IMPACT BY 2030

- By 2030, the City of Richmond's Circular Economic Strategy will be fully implemented, driving innovation by the City and local business community in material use, waste reduction and emission reduction from the manufacture, transport and retailing of products and services.

The circular economy defines growth by focusing on positive environmental outcomes and society-wide benefits. Traditional product development uses a linear 'take-make-waste' approach. In contrast, the circular economy maximizes value, and reduces or eliminates waste by transforming how products and services are designed, manufactured and used. It utilizes innovation to extend the lifespan of products and materials, thereby reducing emissions and conserving natural resources.

From a circular economy perspective, the production, transportation, and retailing of products that ultimately become waste, in total, represents a significant level of GHG emissions.

SHARED BENEFITS

- Drives local innovation, creativity and new employment opportunities
- Decouples economic growth from exploitation of natural resources



ENABLING POLICIES AND PROGRAMS

Policies and Services

- Demolition Waste and Recyclable Materials Bylaw No. 9516
- Residential Solid Waste and Recycling Collection
- Organic Waste Processing Services (Enviro-Smart)
- Procurement Policy revised to include circular economy objectives (in process)

Successes to Date

- The City has introduced new services and programs as part of goal to achieve 80% waste diversion by 2020.
- Zero Waste Council initiative to reduce disposal of wood waste at the landfill, focusing on alternatives such as material reuse and energy generation.

TOP THREE IMPLEMENTATION TOOLS

- Collaboration and Partnerships
- Outreach and Capacity Building
- Policy and Regulation

ENGAGEMENT HIGHLIGHTS

- Local residents want to transition from single-use packaging, use less plastic, and purchase products with extended warranty periods.
- Survey respondents want recycling to be easy and convenient.

