

City of Richmond

Energy Action in Richmond

Community Energy and Emissions Plan

2015 Update





THE CHANGING CLIMATE

The climate is changing, and an overwhelming scientific consensus points to human greenhouse gas (GHG) emissions as the cause. Globally, the twelve warmest years in recorded history have all come in the last 15 years. Locally, Richmond experienced significant drought and air quality advisories due to forest fires in 2015; these types of climate change impacts, and many others, are projected to become more severe as climate change intensifies.

The City of Richmond recognizes that it shares in the responsibility to reduce our communities' GHG emissions, and help leave a better world for children in Richmond and around the world.



COMMITMENT TO CLIMATE ACTION

Richmond’s 2041 [Official Community Plan \(OCP\)](#) commits the City to greenhouse gas (GHG) reduction targets of 33% by 2020, and 80% by 2050, below 2007 levels. Additionally, the OCP includes a target to reduce energy use 10%. The Area Plans support these commitments.

[Richmond’s Community Energy and Emissions Plan \(CEEP\)](#) includes detailed strategies and actions organized around five themes to achieve City targets:

- **Neighborhoods and Buildings**
- **Mobility and Access**
- **Resilient Economy**
- **Sustainable Infrastructure and Resources**
- **Climate Change Leadership**



[Click to view CEEP Video](#)

This document summarizes the overall benefits of climate action in Richmond, provides an update to the progress made implementing the CEEP in 2014/15, and notes additional opportunities to achieve targets and pursue “Big Breakthroughs”.

Based on 2007 levels
City GHG reduction targets

33%
by 2020

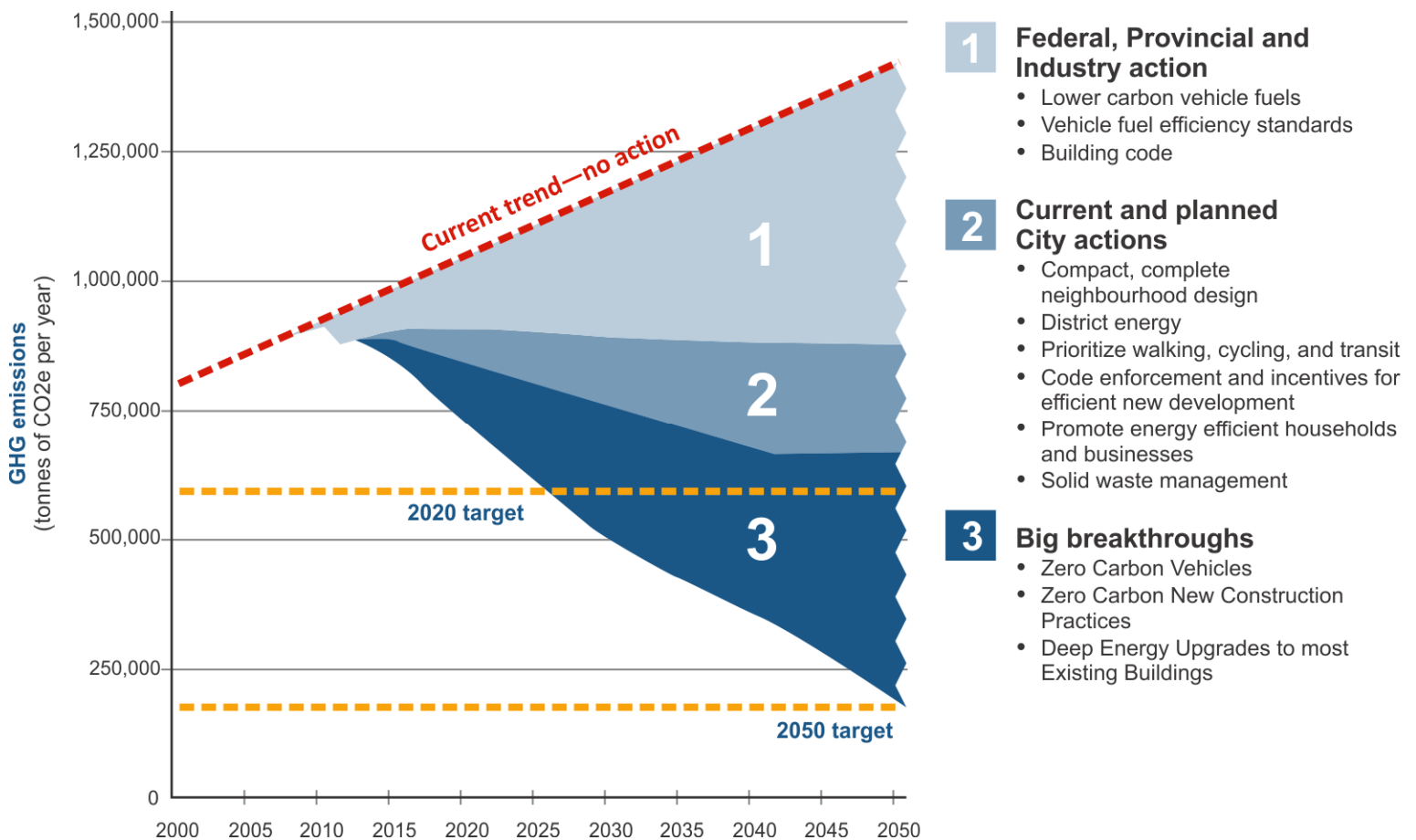
80%
by 2050

Based on 2007 levels
City Energy reduction target

10%
by 2020

THE NEED FOR “BIG BREAKTHROUGHS”

The City is taking meaningful steps to reduce Richmond’s GHG emissions. However, these actions are not sufficient to reach the City’s emissions reduction goals. The CEEP recognizes that to reach Richmond’s targets, three “Big Breakthroughs” are necessary by 2050: 1) Near universal adoption of zero carbon vehicles; 2) Zero carbon new building construction by 2025; 3) Deep energy improvements to most existing buildings.



- 1 Federal, Provincial and Industry action**
 - Lower carbon vehicle fuels
 - Vehicle fuel efficiency standards
 - Building code
- 2 Current and planned City actions**
 - Compact, complete neighbourhood design
 - District energy
 - Prioritize walking, cycling, and transit
 - Code enforcement and incentives for efficient new development
 - Promote energy efficient households and businesses
 - Solid waste management
- 3 Big breakthroughs**
 - Zero Carbon Vehicles
 - Zero Carbon New Construction Practices
 - Deep Energy Upgrades to most Existing Buildings

Achieving these breakthroughs will require innovation and action by the province and federal governments, residents, businesses, and local government. The CEEP commits the City to working with other stakeholders to pursue these breakthroughs.



BENEFITS OF CLIMATE ACTION

Saving residents and businesses money: Energy efficiency reduces spending while cutting emissions. Similarly, Richmond’s district energy systems deliver zero carbon energy at a comparable cost to conventional systems that realize greater GHG emissions. The costs of renewable energy are decreasing dramatically; for example, some analysts estimate that in 5-10 years, residents of Richmond will save money when they invest in solar electricity systems.



Creating jobs and economic opportunity: When households and businesses save on energy, they reinvest it in other sectors of the economy. Natural Resources Canada suggest that realizing increasing investments in energy efficiency could create 300,000 additional jobs per year, while reducing GHG emissions 10 per cent. Encouraging sustainable energy solutions can keep energy spending from leaving our community.



Healthier, more livable communities: Low carbon communities are compact and complete, and allow their residents to travel by transit, walking, biking and rolling. Neighbourhood design features are associated with lower rates of obesity, heart disease, diabetes, and cancer. And reduced climate change pollution also means cleaner air, with reduced emissions from vehicles, industry and buildings. Low carbon communities are healthy communities.



NEIGHBOURHOODS AND BUILDINGS

DIRECTIONS

The CEEP supports Richmond towards the following:

1. **Compact, Complete Neighbourhood Design**
2. **Increase Energy Efficiency in New Buildings**
3. **Increase Energy Efficiency in Existing Buildings**

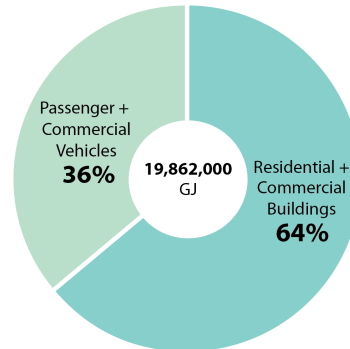
KEY ACHIEVEMENTS

Planning to achieve more sustainable neighbourhoods: The City is partnering with Translink to develop the Southwest Area Transport Plan (SWATP), including Richmond, South Delta, and Tsawwassen First Nation to define Richmond's long-term transportation network and priorities.

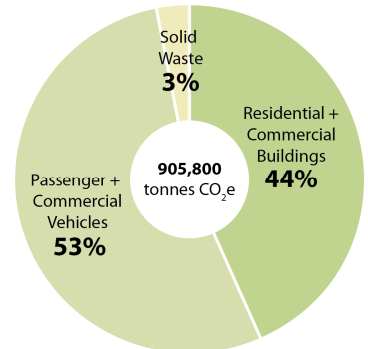
Promoting energy efficiency in new buildings: The City requires new homes to be "solar hotwater ready". The City also secures energy performance for new developments as part of rezonings and development approvals. Notably, the [2009 City Centre Area Plan](#) established a LEED Silver standard for new large buildings, and in 2014 Council adopted a policy of EnerGuide 82/Energystar performance for townhouses. The 2041 Official Community Plan establishes a policy for electric vehicle charging in new developments. New developments in City Centre and West Cambie must be district energy ready, allowing connection to low-carbon systems.

Implementing transportation demand management strategies: By working with developers, the City has achieved reductions in vehicle parking requirements when transportation demand management strategies are secured through development approvals.

Promoting energy efficiency in existing buildings with EnergySave Richmond: The City is undertaking outreach and education, providing incentives for building retrofits, and operating a residential energy conservation program to support housing affordability. [EnergySave Richmond](#) helps residents and businesses save money on energy.



2010 Richmond Energy Consumption



2010 Richmond GHG Emissions

As part of
**EnergySave
Richmond**

150

household
participants in the
Smart Thermostat
pilot

447

units affected by
townhouse policy
for energy efficiency
requirements

As part of EnergySave Richmond, the Smart Thermostat pilot program launched in July 2015 and provided a \$125 incentive to households that install a smart thermostat.



Official Community Plan

Energy (2020) 10% below 2007
 GHGs (2020) 33% below 2007
 GHGs (2050) 80% below 2007

Community Energy and Emissions Plan

NEW BUILDINGS

Policy

Townhouse Rezoning Policy: Energy requirements (2014)	447 units approved by Council
City Centre Area Plan Policy: LEED Silver for new developments	Established in 2009

Infrastructure

Alexandra District Energy Utility (ADEU) (2012)	750 tonnes CO ₂ e reduced
Oval Village District Energy Utility (OVDEU) (2015)	To be determined in 2016

Progress for all initiatives will be regularly monitored and reported

EXISTING BUILDINGS

Programs

Building Energy Challenge (2014-16)	5 M sq. ft. building space represented
Richmond Carbon Marketplace (2015)	6 submissions
Strata Advisor (2016)	Forthcoming
Small & Medium Enterprise Program (2015/16)	Forthcoming

Incentives

Business Water & Efficiency (2015/16)	Forthcoming
Residential Smart Thermostat Pilot (2015)	100 cash incentives
Promotion of BC Hydro, Fortis BC and Metro Vancouver programs	Ongoing

FUTURE ACTIONS

Explore energy reporting: Explore tools that allow buildings above a certain size to report energy consumption data. Energy use benchmarking better positions owners to save energy.

Energy standards for new buildings: Investigate how the City can maximize the energy performance of buildings undertaking rezoning, and evaluate other incentives.

Build on EnergySave Richmond: Expand on energy programs that help residents and businesses reduce energy consumption, working with utilities, the Province, Metro Vancouver and others.

Explore energy improvement requirements at time of sale and/or renovation: Deep energy improvements most often occur at the time of sale, or for other renovations. The City will explore encouraging or requiring energy upgrades at these triggers points.

MOBILITY AND ACCESS

DIRECTIONS

1. **Prioritize and Fund Walking, Rolling and Cycling**
2. **Promote Low-Carbon Personal Vehicles**
3. **Facilitate Car-Sharing**

KEY ACHIEVEMENTS

Facilitating car sharing in Richmond: The City supports car-share operations, facilitating Modo, ZipCar and Car2Go's entry to and expansion in the Richmond market, providing access to public infrastructure and off-street parking.

Partnership with TransLink as a TravelSmart municipality: Richmond formally became a TravelSmart municipality working in partnership with TransLink's TravelSmart program to develop and implement transportation demand management (TDM) strategies and programs to manage travel demand specifically associated with single-occupancy private vehicles.

Expansion of transit shelters: Transit shelters provide weather protection, a more comfortable and safer waiting area particularly at night due to shelter lighting, and improved visibility of a bus stop, all of which encourage transit use. The City is supplementing the supply of existing privately-owned shelters with City-owned shelters to provide greater coverage across the city.

Active transportation infrastructure: The City continues to expand the network of active transportation facilities, recent projects include:

- Railway Greenway: 5.6-kilometre off-road cycling and walking route.
- Pedestrian walkways on Minoru Blvd (east side between Elmbridge Way and Alderbridge Way) and Shell Road East (Williams Road to Seahurst Road).
- Paved multi-use path in Blundell Park as part of the Crosstown Neighbourhood Bikeway.
- Implementation of 11 new special crosswalks since 2014 to support pedestrian access.



As a pilot, some
Transit Shelters will be equipped with solar panels to power LED lighting

Richmond's
Travel Smart Actions

Cycling education
School travel planning
Business travel planning

As of 2015

68km
of bike routes and

56
transit shelters

Richmond's Railway Greenway officially opened in 2014, connecting many vibrant communities.





Electrical Vehicle Stations installed (from left to right): City Hall, Thompson Community Centre, Steveston Community Centre, and Cambie Community Centre.

FUTURE ACTIONS

Continue to support electric vehicle charging: By 2050, nearly all vehicle trips in Richmond will need to be made by zero carbon vehicles, the majority of which will likely be plug-in electric vehicles. Since 2012, the City has required that a minimum of 20% of parking stalls in new multifamily developments provide electric charging outlets, with an additional 25% constructed to accommodate future installation. The City will evaluate how to increase charging capacity cost-effectively.

Expansion of transit shelters: In 2016 the City will be seeking to greatly expand the number of transit shelters as well as stand-alone benches throughout the city to support transit use and walking, particularly around neighbourhood centres.

Complete streets: All roadway projects currently under construction or planned will incorporate active transportation infrastructure. Examples include:

- Westminster Highway (Nelson Road-McMillan Way): a multi-way path will be provided on the south side.
- Lansdowne Road Extension (Minoru Blvd-Alderbridge Way): the upgrade of the existing lane to a three-lane road will include a multi-use path on the north side and a sidewalk on the south side.
- No. 2 Road Upgrade (Steveston Highway-Dyke Road): a multi-use path will be provided on the east side.

RESILIENT ECONOMY

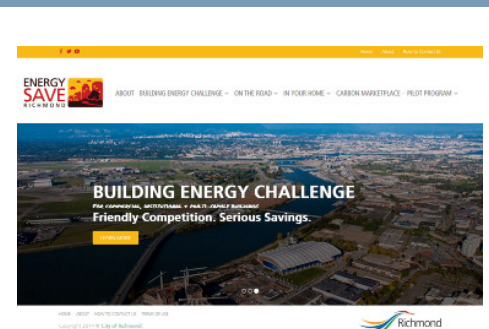
DIRECTIONS

1. Encourage Energy Efficient Businesses
2. Encourage Businesses to Reduce GHG Emissions
3. Promote Investment in Sustainable Energy and Green Jobs

KEY ACHIEVEMENTS

Energy saving program for businesses: As part of [EnergySave Richmond](#), a variety of programs that help businesses reduce their carbon footprint were launched:

- **Building Energy Challenge:** Launched in November 2014, the Challenge is a friendly competition between buildings to reduce energy use. The City provides workshops and supports energy management training for building operators.
- **Carbon Marketplace Pilot Project:** To meet the City's carbon neutral commitment, the Richmond Carbon Marketplace was launched to provide an opportunity for local organizations to reduce emissions and offer carbon credits to the City.
- **Efficient Water Fixtures Program:** In 2015, Council approved a program to provide energy efficient water spray valves and faucet aerators free of charge to Richmond businesses. This program is launching in Fall 2015.
- **Carbon Management:** In October 2015, Council approved a new program to help businesses inventory their carbon emissions, and implement strategies to reduce their carbon footprint while saving money on energy and resources.



[Click to view EnergySave Richmond website](#)

As part of EnergySave Richmond, the **Building Energy Challenge** involved

5

Million sq. ft. of building space

35

Organizations registered

7

Building operators received energy management training

It is estimated that Richmond's existing district energy systems will result in approximately 200 construction jobs and up to 20 ongoing operations jobs.





In 2014, Council approved the construction of the new Fire Hall No. 1, which will utilize solar panels on the roof with an expected ability to produce 33% of its electricity needs.

FUTURE ACTIONS

Communicate sustainability opportunities to businesses and residents: The City interacts with businesses and residents in a variety of fashions, including development permitting, business licensing, and utility billing. The City will continue to communicate sustainability opportunities through existing and new channels.

Integrate sustainability and climate action opportunities into the City's sustainable procurement practices: The City will continue to integrate sustainability criteria into purchasing decisions, working to adopt cost-effective goods and services and encourage its suppliers to increase their sustainability performance.



SUSTAINABLE INFRASTRUCTURE AND RESOURCES

DIRECTIONS

1. Continue Advancement of District Energy Systems
2. Utilize Local Energy Sources
3. Continue to Utilize Waste Management and Minimize the Use of Waste

KEY ACHIEVEMENTS

Expansion of the Alexandra District Energy Utility: The Alexandra District Energy Utility (ADEU) provides renewable heat, cooling, and hot water to customers in the West Cambie neighbourhood. In 2015, the City broke ground on the Phase 3 expansion of the ADEU to serve a further nine developments. These works include the installation of another geo-exchange system and the expansion of the distribution system.

Launching the Lulu Island Energy Company and the Oval Village District Energy Utility: In 2014, the City incorporated the wholly-municipally owned [Lulu Island Energy Company](#) (LIEC) to own and operate district energy systems on the City's behalf. Through LIEC, the City broke ground on the Oval Village District Energy Utility (OVDEU) in 2015, connecting two new multifamily developments, providing space heating and domestic hot water needs.

Solid waste diversion: In 2013, the City achieved its target of 70 per cent diversion of solid waste for single family homes, two years ahead of the target year. The City has been working to help multifamily and commercial buildings meet these same targets. In 2015, the City introduced expanded Blue Box and Blue Cart programs to include more goods, and its multifamily food scraps recycling was introduced.

Piloting innovative technologies: The City implemented a sewer heat recovery system in the Gateway Theatre, to provide renewable heating and cooling services. This innovative technology achieved a reduction in the buildings GHG emissions of approximately 50 per cent, while generating a good return on the City's investment with a payback period of about 6 years.



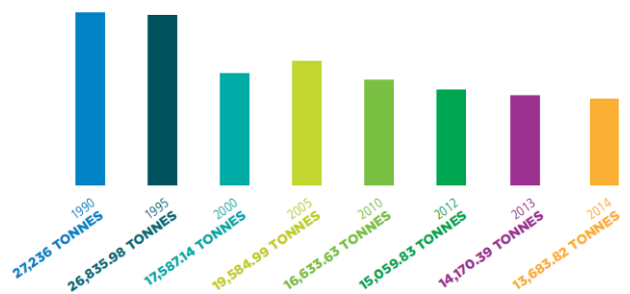
[Click to view Lulu Island Energy website](#)

At build out
Oval Village District
Energy Utility will
meet
67%
of the
neighbourhood's
thermal energy
needs

Oval Village District Energy
Utility is also
expected to serve
approximately
500,000 m²
of residential and
commercial floor
area



Garbage disposal is decreasing in Richmond due to City initiatives such as the Green Cart and Blue Box programs.



The Alexandra District Energy Utility has received multiple awards, including the 2014 Association of Professional Engineers and Geoscientists Sustainability Award, and the prestigious Energy Globe Award.



In 2015, the City broke ground on the expansion of the Alexandra District Energy Utility to serve a further nine developments (above).



[Click to view ADEU video](#)

FUTURE ACTIONS

Expanding on existing district energy systems: The City will continue to serve new developments in the service areas of the Alexandra and Oval Village District Energy Utilities as they occur.

Exploring further district energy nodes: Through Lulu Island Energy Company, the City will be seeking partners to evaluate the potential for district energy systems in the Capstan and Bridgeport Village neighbourhoods of Richmond's City Centre.

Explore implementing innovative technologies throughout the community: Staff continues to evaluate opportunities to implement innovative technologies like sewer heat recovery in partnership with other businesses and institutions in Richmond's community.

CLIMATE ACTION LEADERSHIP

DIRECTIONS

1. **Maintain a Leadership Position on Climate Action**
2. **Continue to Advocate for Support from Senior Levels of Government**
3. **Engage Community on Climate Action**

KEY ACHIEVEMENTS

Achieving carbon neutrality: As a signatory to the Climate Action Charter, Richmond is committed to being carbon neutral in its corporate operations. For the second straight year, Richmond achieved carbon neutrality in 2014, and anticipates achieving neutrality in 2015.

Low Carbon buildings: In 2014, the City revised its Sustainable High Performance Building Policy, committing the City-owned buildings to high levels of energy and climate performance. New buildings were held to rigorous energy performance standards, with a target to achieve LEED® Gold with at least 10 Energy and Atmosphere points, as well as a target for all new buildings to be carbon neutral by 2030. The policy also targets no net increase in GHG emissions from the City's expanding range of facilities.

Construction recycling: In 2014, the City adopted an 80% target for recycling construction and demolition waste from its own City facilities.

Benchmarking City buildings: The City supports the practice of building energy benchmarking, and encourages buildings in the community to track and manage energy performance through programs like the Building Energy Challenge. The City is showing leadership in benchmarking by tracking the energy consumption in all its buildings using ENERGY STAR Portfolio Manager and other tools.

Green Vehicle Fleets: In 2013, the City adopted its [Green Fleet Action Plan](#), outlining strategies to reduce emissions from the City's fleets by 20% by 2020 below 2010 levels. Richmond is reducing its vehicles' carbon footprint by helping employees adopt greener travel choices; procuring more efficient vehicles, including electric vehicles; and continuously improving maintenance and management practices.

Advocating for action by senior government: Achieving a low carbon society requires action by the provincial and federal governments. The City regularly provides input to senior government to note actions that are critical to meeting Richmond's energy and emissions goals. Most recently, the BC Climate Leadership Plan and the Clean Energy Vehicles Program.

Recent
**LEED Gold® City
Buildings**



**Richmond
Community Safety
Building (RCMP)**



Steveston Fire Hall

As part of the
**Green Fleet
Action Plan**

60

**City vehicles and
equipment replaced
since 2014**

The new City Centre Community Centre officially opened in 2015, and is currently applying for LEED® Gold certification.



FUTURE ACTIONS

Continue to evaluate green building standards for City buildings: The City will continue to review appropriate standards that measure green building performance, such as Passive House, and evaluate whether to reference them in City policy.

Achieve green building performance in new buildings: The City is embarking on a range of important facility projects such as the Minoru Civic Precinct, and will pursue a high level of energy performance.

Continue to inform the BC Climate Leadership Plan: The City will continue to forward innovative climate action strategies to inform the development of the BC Climate Leadership Plan.

Coordinate with regional stakeholders to maximize sustainability outcomes: The City will work with other local governments and regional stakeholders to ensure that high impact policies such as building benchmarking, stretch energy standards, and transportation policy can be scaled across jurisdictions for maximum impact.



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