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**Public Works and Transportation Committee**

**Anderson Room, City Hall  
6911 No. 3 Road**

**Wednesday, November 18, 2015  
4:00 p.m.**

Pg. #      ITEM

MINUTES

**PWT-4**

*Motion to adopt the **minutes** of the meeting of the Public Works and Transportation Committee held on October 21, 2015.*



NEXT COMMITTEE MEETING DATE

December 16, 2015, (tentative date) at 4:00 p.m. in the Anderson Room

ENGINEERING AND PUBLIC WORKS DIVISION

1. **UPDATE ON 2015/2016 SNOW AND ICE RESPONSE PREPARATIONS**

(File Ref. No.) (REDMS No. 4757418)

**PWT-13**

**See Page PWT-13 for full report**

*Designated Speaker: Ben Dias*

STAFF RECOMMENDATION

*That the staff report titled "Update on 2015/2016 Snow and Ice Response Preparations," dated October 23, 2015, from the Director, Public Works Operations be received for information.*



Pg. #      ITEM

2.      **2016 PAVING PROGRAM**  
(File Ref. No. 10-6340-01) (REDMS No. 4757078)

PWT-20

See Page PWT-20 for full report

*Designated Speaker: Milton Chan*

STAFF RECOMMENDATION

*That the staff report titled, “2016 Paving Program,” dated October 28, 2015, from the Director, Engineering be received for information.*



3.      **COMMUNITY ENERGY AND EMISSIONS PLAN – 2015 UPDATE**  
(File Ref. No. 10-6125-07-02) (REDMS No. 4748952 v. 4)

PWT-27

See Page PWT-27 for full report

*Designated Speaker: Brendan McEwen*

STAFF RECOMMENDATION

*That the staff report titled "Community Energy and Emissions Plan – 2015 Update," dated October 24, 2015, from the Director, Engineering, be received for information.*



4.      **CARBON NEUTRALITY AND RICHMOND CARBON MARKETPLACE UPDATE**  
(File Ref. No. 10-6000-01) (REDMS No. 4758152 v. 19)

PWT-48

See Page PWT-48 for full report

*Designated Speaker: Levi Higgs*

STAFF RECOMMENDATION

- (1)    *That the staff report titled, “Carbon Neutrality and Richmond Carbon Marketplace Update,” from the Director of Engineering, dated October 30, 2015 be received for information; and*
- (2)    *That the Chief Administrative Officer and the General Manager, Engineering and Public Works be authorized to negotiate and execute agreements with each of the five prospective Richmond-based business organizations to support community greenhouse gas emissions reductions and to ensure that the City of Richmond corporate carbon neutrality is maintained.*



Pg. #      ITEM

**5.    MANAGER’S REPORT**

ADJOURNMENT





## Public Works and Transportation Committee

Date: Wednesday, October 21, 2015

Place: Anderson Room  
Richmond City Hall

Present: Councillor Chak Au, Chair  
Councillor Harold Steves  
Councillor Derek Dang  
Councillor Ken Johnston  
Councillor Alexa Loo  
Mayor Malcolm Brodie

Also Present: Councillor Carol Day

Call to Order: The Chair called the meeting to order at 4:00 p.m.

The Chair advised that "Port Metro Vancouver Habitat Enhancement Projects" and "Traffic Conditions Along River Road" would be added to the Agenda as Items No. 5A and 5B respectively.

### MINUTES

It was moved and seconded

*That the minutes of the meeting of the Public Works and Transportation Committee held on September 23, 2015, be adopted as circulated.*

**CARRIED**

### NEXT COMMITTEE MEETING DATE

November 18, 2015, (tentative date) at 4:00 p.m. in the Anderson Room

## Public Works & Transportation Committee

### Wednesday, October 21, 2015

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#### DELEGATION

1. With the aid of a PowerPoint presentation (copy on file, City Clerk's Office), Ken Carrusca, Vice President, Environment and Marketing (Western Region), Cement Association of Canada, provided background information regarding the Cement Association of Canada and spoke to reduction of greenhouse gas emissions (GHG) through the use of resilient and long-lasting concrete infrastructure.

Mr. Carrusca highlighted that Contempra / Portland Limestone cement reduces GHG emissions by approximately 10% when compared to the use of regular cement. Also, he commented on features of cement, noting that it is non-combustible and is impervious to moisture to name a few and spoke on concrete pavements.

In reply to queries from Committee, Mr. Carrusca provided the following information:

- the cost of Contempra / Portland Limestone cement is competitive to that of regular cement
- the cost of concrete pavements versus asphalt pavements vary due to variations in installation, maintenance, and life-cycle; and
- pre-cast concrete sections have been utilized at intersections in metropolitan areas in central Canada.

Discussion took place on the use of cement as opposed to asphalt for paving and Robert Gonzalez, General Manager, Engineering and Public Works, commented on its benefits while noting that concrete transmits vibration, which is why it is often utilized for paving freeways and not roads in urban areas.

#### ENGINEERING AND PUBLIC WORKS DIVISION

2. **ALEXANDRA DISTRICT ENERGY UTILITY BYLAW NO. 8641 AMENDMENT BYLAW NO. 9298**

(File Ref. No. 12-8060-20-009298; 10-6600-10-01) (REDMS No. 4729245 v. 3)

It was moved and seconded

*That the Alexandra District Energy Utility Bylaw No. 8641 Amendment Bylaw No. 9298 be introduced and given first, second and third reading.*

**CARRIED**

**Public Works & Transportation Committee**  
**Wednesday, October 21, 2015**

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3. **OVAL VILLAGE DISTRICT ENERGY UTILITY BYLAW NO. 9134, AMENDMENT BYLAW NO. 9299**

(File Ref. No. 12-8060-20-009299; 10-6600-10-02) (REDMS No. 4732576 v. 4)

It was moved and seconded

*That the Oval Village District Energy Utility Bylaw No. 9134, Amendment Bylaw No. 9299 be introduced and given first, second and third readings.*

**CARRIED**

4. **SMALL AND MEDIUM ENTERPRISE GREENHOUSE GAS MANAGEMENT PROGRAM**

(File Ref. No. 10-6125-07-02) (REDMS No. 4673854 v. 5)

It was moved and seconded

*That the development and implementation of a Greenhouse Gas Management program for small and medium enterprises be endorsed.*

The question on the motion was not called as in reply to queries from Committee, Peter Russell, Senior Manager, Sustainability and District Energy and Nicholas Heap, Sustainability Project Manager, spoke to the benefits of the Small and Medium Enterprise Greenhouse Gas Management Program, highlighting that it primarily enables the City to honour targets set out in the Community Energy and Emissions Plan.

Also, Mr. Heap recounted successes of the Program for Richmond businesses.

The question on the motion was then called and it was **CARRIED**.

5. **MANAGEMENT OF WASTE AND RECYCLABLE MATERIALS FROM DEMOLITION ACTIVITIES**

(File Ref. No. 10-6370-01) (REDMS No. 3822689 v. 8)

Suzanne Bycraft, Manager, Fleet and Environmental Programs, accompanied by Gavin Woo, Senior Manager, Building Approvals, provided background information and spoke to the consultation process with Richmond's Small Builders Group. Also, Ms. Bycraft introduced Esther Bérubé, Senior Project Engineer, Solid Waste Services, Metro Vancouver.

Discussion took place on the proposed fee structure and the potential to provide incentives to preserve or relocate homes as opposed to demolish them. Mr. Woo advised that the proposed fee structure does not prohibit home owners from demolishing their homes. Also, Joe Erceg, General Manager, Planning and Development, advised that demolition fees are calculated based on a cost-recovery model; the City cannot impose demolition fees that are punitive in nature in an effort to discourage demolition activities.

Mr. Erceg advised that should Council wish to have staff lobby the Provincial government to permit such a fee structure for demolitions, a Council resolution would be in order. It was noted that incentives to preserve homes may address this matter.

3.

## Public Works & Transportation Committee

### Wednesday, October 21, 2015

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In reply to queries from Committee, Ms. Bérubé provided the following information:

- the cities of Vancouver, Port Moody and North Vancouver, and the District of West Vancouver have enacted bylaws related to the management of waste and recyclable materials from demolition activities;
- Metro Vancouver encourages all member municipalities to adopt a bylaw to regulate waste and recyclable materials from demolition activities; and
- Metro Vancouver's model bylaw is available to all municipalities; however, Metro Vancouver is cognizant of the varying realities in each municipality and therefore, the model bylaw can act as a starting point for those wishing to tailor it to suit the needs of their communities.

Ms. Bycraft commented on the proposed approach, noting that it would allow industry to mature independent of any additional requirement or regulations placed on builders by the City; once industry responds to the need, staff would report back with recommended next steps.

Discussion took place on the difference between diversion and recycling of waste and materials from demolition activities and Mr. Gonzalez noted that the pilot project demonstrated that diversion rates of up to 90% can be achieved with low to moderate time and cost impacts.

Jim Wright, 8300 Osgoode Drive, was of the opinion that the proposed recommended approach of 70% diversion was not sufficient. Mr. Wright read from his submission (attached to and forming part of these Minutes as Schedule 1). Also, he suggested that Council consider a fee structure that provides incentives based on the level of diversion achieved, with higher diversion rates being recognized with increased refunded fees.

The Chair remarked that a review of the management of waste from single-family home demolitions one year following its implementation would allow staff to examine the program and report back on its operation, including its fee structure.

Also, discussion further ensued regarding the lack of incentives for homeowners to preserve their homes as opposed to demolish them.

As a result of the discussion, the following **motion** was introduced:

It was moved and seconded

***(1) That staff prepare a Demolition Waste and Recyclable Materials Bylaw, which establishes the following requirements for management of waste from single-family home demolitions:***

***(a) achieve a minimum of 70% diversion of demolition waste;***

**Public Works & Transportation Committee**  
**Wednesday, October 21, 2015**

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- (b) establish a \$250 non-refundable fee assessed as part of the demolition permit application process;*
- (c) establish a \$2/square foot refundable fee, based on demolition waste recycling performance; and*
- (d) require that demolition contractors/builders submit a Waste Disposal and Recycling Services Plan as part of their demolition permit application, and a Compliance Report at the conclusion of the demolition process;*
- (2) That a new Building Inspector 1 position be approved and a position complement control number assigned;*
- (3) That this program be considered as part of the 2016 Operating Budget process;*
- (4) That staff examine incentives for house preservation, including a fee structure; and*
- (5) That the management of waste from single-family home demolitions be reviewed one year after its implementation.*

**CARRIED**

**5A. PORT METRO VANCOUVER HABITAT ENHANCEMENT PROJECTS**

(File Ref. No. 01-0140-20-PMVA1)

Councillor Steves distributed a map titled “Steveston Community Fishing Harbour Long Term Development Plan” (attached to and forming part of these Minutes as Schedule 2) and spoke of Port Metro Vancouver’s Steveston Island Tidal Marsh Habitat Enhancement Project.

Discussion took place on how this Project would affect Richmond’s shoreline as Port Metro Vancouver has applied for an environmental assessment certificate exemption for this Project.

As a result of the discussion, the following **motion** was introduced:

It was moved and seconded

- (1) That the City of Richmond opposes the proposed Steveston Island Tidal Marsh Habitat Enhancement Project as presented to the BC Environmental Assessment Office for the following reasons:*
  - (a) the City of Richmond owns the Gilbert Beach upland area adjacent to the proposed Project;*
  - (b) the City of Richmond assumed that the adjacent waterlot would be accredited to the City as use of Gilbert Beach as a beach will be compromised;*



**Public Works & Transportation Committee**  
**Wednesday, October 21, 2015**

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- (c) the City of Richmond has a public boat launching ramp that will be blocked by the proposed Project;*
- (d) the City of Richmond has alternative proposals for Gilbert Beach and the waterlot that could include the Beach, a new marsh habitat, the boat launching ramp, a harbour, and diking improvements using Steveston Island and a potential replacement beach as shown on the "Steveston Community Fishing Harbour Long Term Development Plan;"*
- (2) That Richmond City Council opposes the exemption of the South Arm Jetty Tidal Marsh and the Steveston Island Tidal Marsh Habitat Enhancement Projects from the BC Environmental Assessment Office's environmental assessment certificate process and wishes to be consulted; and*
- (3) That a letter be sent to Port Metro Vancouver, the Steveston Harbour Authority and the BC Environmental Assessment Office outlining the City's concerns in relation to Port Metro Vancouver's Steveston Island Tidal Marsh and South Arm Jetty Tidal Marsh Habitat Enhancement Projects.*

**CARRIED**

**5B. TRAFFIC CONDITIONS ALONG RIVER ROAD**  
(File Ref. No.)

Victor Wei, Director, Transportation, spoke to various improvements to the new River Road / Gilbert Road intersection in an effort to ameliorate traffic conditions and advised that a staff report on expediting the River Parkway expansion was forthcoming.

As a result, the following **referral** was introduced:

It was moved and seconded

*That staff report back on the implementation of River Parkway.*

**CARRIED**

**6. MANAGER'S REPORT**

None.

**ADJOURNMENT**

It was moved and seconded

*That the meeting adjourn (5:05 p.m.).*

**CARRIED**

**Public Works & Transportation Committee**  
**Wednesday, October 21, 2015**

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Certified a true and correct copy of the Minutes of the meeting of the Public Works and Transportation Committee of the Council of the City of Richmond held on Wednesday, October 21, 2015.

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Councillor Chak Au  
Chair

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Hanieh Berg  
Legislative Services Coordinator

**Jim Wright, 8300 Osgoode Drive, for the Garden City Conservation Society**

We strongly support the recommendations for demolition recycling, with some suggestions.

On the basis of the table on page PWT-40, we point out that the refundable fee needs to be a stronger incentive. Let's look at the first and second examples on the left side of the chart. Each of those two demolished houses was a little under 2,000 square feet, so the refundable fee at \$2 per square foot comes to less than **\$4,000** for each. However, it cost almost **\$4,700** more to achieve the higher diversion for the second house, so the incentive in these cases is to do **less** diversion and save \$700.

Furthermore, the refunding would need to occur in a high-incentive way, unlike the Port Moody example in the report. It appears that a Port Moody demolisher gets back the whole refundable fee at 70% diversion, with no incentive to do better.

We suggest something like this: There is no refunded fee for diversion up to 75%. Above 75%, the refund is 4% of the fee for each incremental percent of diversion. A total refund is possible.

This is all dependent on a reliable and efficient system for measuring diversion.

Along with that, it would be great if there could be positive ways to encourage best practices, such as reuse of parts that are valuable to other homeowners. I can give an example because we want to keep the mid-seventies style of our kitchen while renovating it, and we need to replace some of the cabinet door pulls. There are no new ones of even the right size, let alone the same style, but I bet that a lot that would be just right are being wasted in demolished homes.

Getting to that level of reuse would be ideal, and it's worth aiming for as a next step. For now, at minimum, let's be sure that the incentive system of refundable deposits is calibrated so that it will be as effective as possible.



**PWT - 12**



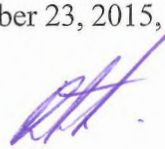
# City of Richmond

## Report to Committee

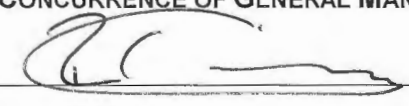
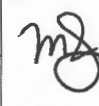
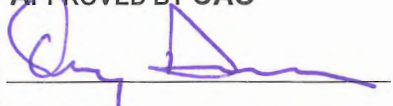
**To:** Public Works and Transportation Committee **Date:** October 23, 2015  
**From:** Tom Stewart, AScT. **File:**  
Director, Public Works Operations  
**Re:** Update on 2015/2016 Snow and Ice Response Preparations

### Staff Recommendation

That the staff report titled "Update on 2015/2016 Snow and Ice Response Preparations", dated October 23, 2015, from the Director, Public Works Operations be received for information.

  
Tom Stewart  
Director, Public Works Operations  
(604-233-3301)

Att. 2

REPORT CONCURRENCE		
<b>ROUTED TO:</b>  Communications Parks Services	<b>CONCURRENCE</b>  <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<b>CONCURRENCE OF GENERAL MANAGER</b> 
<b>REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE</b>	<b>INITIALS:</b> 	<b>APPROVED BY CAO</b> 



## Staff Report

### Origin

This report provides information about the City's 2015/2016 snow and ice preparations.

### Analysis

Public Works has implemented numerous changes over the past several years to enhance the City's readiness and response efforts. These changes include: policy amendments, equipment review, enhancement to public communications/public involvement, record keeping and overall response planning.

### Overview of Existing Initiatives

#### Policy Amendments

Traffic Bylaw 5870 was amended by Council on November 23, 2009, to require commercial, industrial and multi-family property owners or occupiers to clear snow and ice from sidewalks adjacent to their property. City staff will remind the public of Bylaw 5870 through news releases, as well as social media, such as Facebook, YouTube and Twitter. This Bylaw was amended to encourage the use of public transit with improved convenience for pedestrians. Section 6.1 of the Bylaw reads:

*The owner or occupier of any parcel of real property which is developed for, or used in whole or in part for, commercial, industrial or multi-family dwelling use other than a two-family dwelling shall remove all snow and ice from any sidewalk adjacent to such parcel for a distance that coincides with the property line of his real property, not later than 10:00 a.m. of everyday, including Sunday.*

In response to public concerns about the lack of salting and ploughing on residential streets, Council approved an amendment to Bylaw 7013 (Roadways – Ice and Snow Removal) to identify and add third priority routes. These routes include the designated collector roads and roads of local significance in residential subdivisions. This initiative will help improve vehicle access from within subdivisions to the major collector roads. However, it should be noted that third priority routes will only be cleared if first and secondary routes have been fully attended to and resources permit.

#### Equipment

The City has six road temperature sensors. These sensors are monitored 24 hours a day and provide early indications of potential road frost or freezing conditions. Each sensor is strategically located under roadway asphalt throughout the City to provide real time information concerning road conditions. Sensor locations are illustrated in Attachment 1 and a complete list of equipment dedicated for snow response is provided in Attachment 2.

## Public Outreach

Public involvement within the community is vital during the winter season. The City participates in the following programs, working jointly with the public and participating community associations:

- **Snow Angels Program:** This program was introduced in 2010 and connects local volunteer organizations with elderly citizens and residents with mobility/health challenges during a snowfall event. Assistance involves shovelling snow from sidewalks, driveways and/or walkways. A Snow Angels registry is accessible on the City's website and can also be obtained by calling the Community Services Department, Dispatch, City Hall, or any of the Community Centres. The program is activated in the event of a significant snow fall (defined as an accumulation of 5+ centimetres of snow) and is dependent on the severity of the storm and volunteer resources. The City plays a role in coordinating and promoting the Snow Angels program, but the volunteers are recruited, screened and managed by each association participating in the registry.
- **Good Neighbour Program:** This program encourages everyone to clear the walkways around their property and help others who may face challenges. This neighbour-helping-neighbour campaign simply encourages residents to watch for people in their neighbourhood that could use help removing snow from their sidewalks and driveways and offer them a helping hand.

## Communications Strategy

A comprehensive communication strategy has proven to be valuable in delivering accurate, timely and relevant information to the public. By using a cross-functional approach, each division's important messages are delivered in a coordinated fashion over a variety of pre-determined mediums in both a proactive, planned manner as well as reactive when extreme weather occurs and circumstances require it. The communications strategy includes, but is not limited to, using the following mediums:

- Social media: The City's Twitter, Facebook, Youtube; retweeting/sharing information from credible sources i.e. weather warnings.
- Media relations (news releases, media interviews, local newspaper ads)
- City's website (dedicated web pages, news pages)
- City's intranet for employees
- **Social Media:** Social media is incorporated into the overall communication strategy to reach out to the community through Facebook, Twitter and YouTube. Social media provides timely updates during snow and ice events. This includes use of the @RichmondBCAlert Twitter account which is used only to provide emergency-related messages to residents (which include snow or other weather events). These updates include weather forecasts, what preparations are underway for current and upcoming events, current conditions and the status of any road closures due to debris, etc. This 2015/2016 season staff will again incorporate the use of photos and videos through its

social media channels. During the 2013/2014 snow season staff created a number of short videos to visually inform residents of a variety of snow topics (tips on how they can prepare for snow and snow removal preparation done at the Works Yard for any predicted snow events). These videos were shared to the public through the City's Facebook, Twitter and YouTube pages in advance of and during snow and ice events.

- News releases: News releases have been prepared to address common extreme weather/snow and ice topics and will be released to the media as events occur. Some examples include: clearing leaves from storm drains, personal winter preparedness, and how the City is preparing for extreme weather events.
- Website: The City's website provides considerable information about snow response including news releases and a list of contractors that residents, Strata Councils, and business owners can call for snow removal services at their own cost. This information can be found at the following location:  
<http://www.richmond.ca/services/rdws/weather/cityprepares.htm>.
- Coordinated Response: The City's various departments have established communications protocols and key messaging which will reinforce the snow response communications program. Participating departments include Public Works, Parks, Emergency Programs, Corporate Communications and Richmond Fire-Rescue.

## 2015/2016 Weather Forecast

Richmond's unique geography often results in exclusive weather patterns. Richmond-specific weather information and long range forecasts are received daily. According to Northwest Weathernet the 2015/2016 winter forecast is as follows:

*It's all about El Nino this winter, as we are at least going to see a top 3 event, and possibly a record breaking event. What does this mean? A pretty slam dunk warmer than normal forecast for the winter, especially in the Jan-Mar period. We should not expect many arctic outbreaks this winter.*

## Operational Preparations

Operational preparations are underway which include equipment overhauls, meetings to coordinate efforts amongst departments, and training for staff. Training is crucial for preparation and is always an integral part of the groundwork for each winter season. This training is to ensure a sufficient number of personnel are available to respond to inclement weather events.

The City has 800 metric tonnes of salt stored at the Public Works and Sidaway yards.

Through a centralized control centre, staff closely monitor and record equipment locations, route start and completion times, and salt distribution. This allows us to respond accurately to enquiries and to better track expenditures that can be used to forecast costs for future events.



## Financials – Snow and Ice Non-MRN &amp; MRN

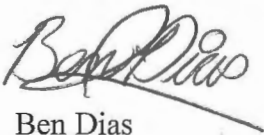
Year	Annual Budget	Actuals 3rd Quarter	Variance
2015	\$480,700	\$188,714	\$291,986
2014	\$491,000	\$330,631	\$160,369
2015 MRN	\$117,900	\$22,834	\$95,066
2014 MRN	\$116,600	\$42,114	\$74,486

## 2014/2015 Winter Season Summary

During the past winter season we experienced one snow event and 15 ice events of varying duration and severity. The City cleared and de-iced 8404 lane kilometres of 1<sup>st</sup> and 2<sup>nd</sup> priority roads.

**Conclusion**

Preparations for the 2015/2016 snow and ice season by all required departments are well underway and will be completed in time for the upcoming winter.

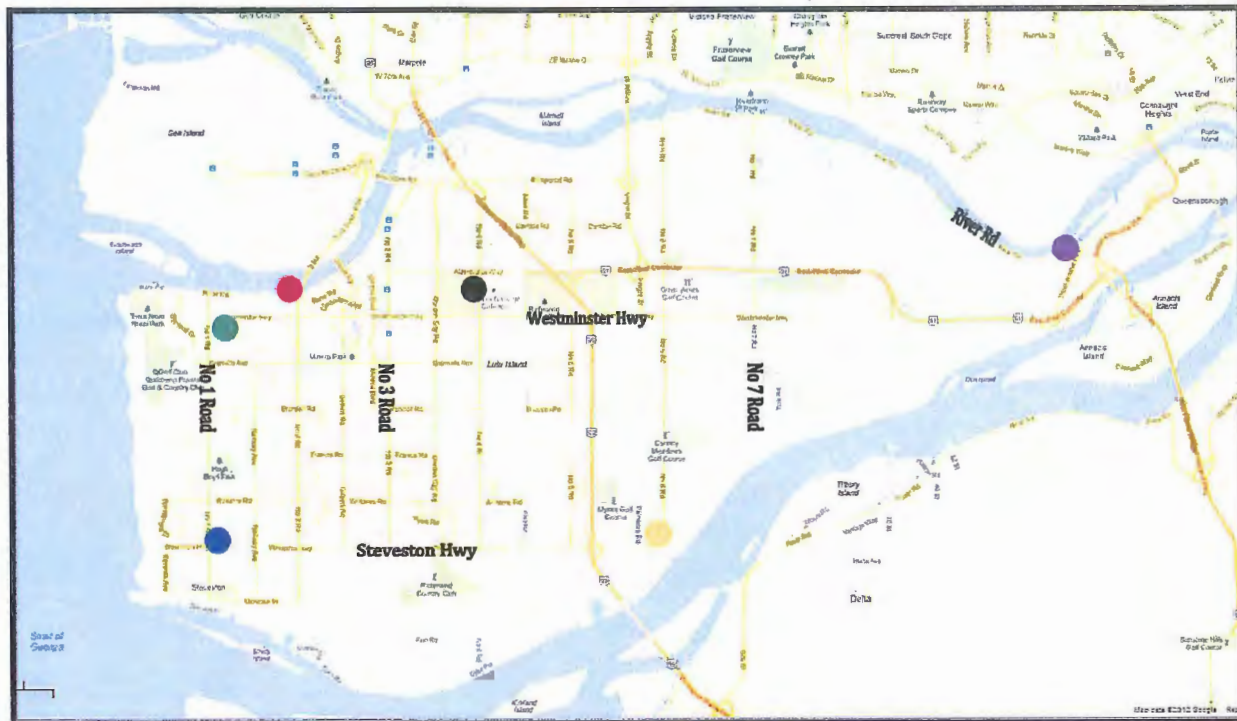


Ben Dias  
Manager, Roads & Construction Services  
(604-244-1207)

Att. 1: City of Richmond – Road Temperature Sensor Locations

Att. 2: City of Richmond – Snow Response Equipment

# City of Richmond - Road Temperature Sensor Locations



## Road Temperature Sensors:

- Armoury
- No. 6 Road South
- Oval
- Queensborough
- Steveston
- Forsyth

## Attachment 2

## City of Richmond - Snow Response Equipment

<b>Number of Units</b>	<b>Description</b>
4	Single-Axle Dump Trucks with Flinks and Belly Plows
1	1-tonne Flat Deck Truck with Insert / Brine Tank
6	Tandem Dump Trucks with Insert and Plough Attachments
1	Crane Truck with Insert
5	F550S with Snow Plows
1	Flusher Truck (Brine)
4	Mobile (Walk-Behind) Snow Blowers
5	Backhoes
1	Front End Wheel Loader
1	Holder
2	Bobcat Skid Steer
3	Hydro Excavators
1	Brine Production and Handling System
2	Brine Applicator Inserts
800 tonnes	Salt



# City of Richmond


## Report to Committee

**To:** Public Works and Transportation Committee  
**From:** John Irving, P.Eng. MPA  
Director, Engineering  
**Re:** 2016 Paving Program

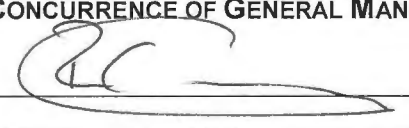

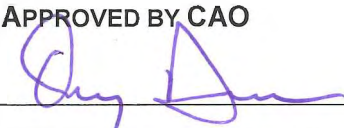
**Date:** October 28, 2015  
**File:** 10-6340-01/2015-Vol  
01

### Staff Recommendation

That the staff report titled, "2016 Paving Program," dated October 28, 2015, from the Director, Engineering be received for information.

  
John Irving, P.Eng. MPA  
Director, Engineering  
(604-276-4140)

Att. 3

REPORT CONCURRENCE		
<b>ROUTED TO:</b>  Roads & Construction	<b>CONCURRENCE</b>  <input checked="checked" type="checkbox"/>	<b>CONCURRENCE OF GENERAL MANAGER</b>  
<b>REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE</b>	<b>INITIALS:</b>  	<b>APPROVED BY CAO</b>  

## **Staff Report**

### **Origin**

As in previous years, staff are presenting the annual paving program report for information purposes. Staff propose to tender this program early to realize favourable asphalt pricing.

### **Background**

The paving program is required to maintain the City's road network to current operating levels as well as reduce the need for costly repairs. Staff have developed a prioritized list of locations which are included in the 2016 Paving Program.

### **Analysis**

The scope of work includes the milling and paving of roads in priority order as identified by the City's Pavement Management System (PMS) and staff. The PMS software takes into account items such as the age, structure, and current condition of the road. Pavement deflection data was gathered for select roads (arterial roads, the TransLink Major Road Network (MRN), recently resurfaced segments, and sections with substantial surface cracking) and is being used in the current PMS model.

The Aging Infrastructure Planning Report has identified a need for additional funding to maintain the City's roads to the current level of service. The impact of this funding gap has been partially mitigated by low paving contract prices over the last few years. This pricing is a result of early tendering of the annual paving contract and low material costs.

Included in Attachment 1 is a list of the primary paving sites included in the 2016 Paving Program. As with past years, it is possible that identified paving locations cannot be completed due to conflict with development projects that are not known at this time. Should the seasonal paving restrictions permit, any new development related paving locations would be replaced with the secondary paving locations. See Attachment 2 for a list of the secondary paving sites. Two maps (Richmond West and Richmond East) of proposed paving sites are attached in Attachment 3.

The tender for this year's Paving Program is scheduled to be issued to the market in December 2015. The 2016 Paving Program also includes an amendment to the City's standard tendering practices that reflects upon the City's environmental initiatives and allows for the use of recycled asphalt. The successful bidder will be encouraged to employ sustainable methodologies, practices and materials that would assist in reducing harmful emissions, in direct alignment with the City's sustainability goals.

The tender also notes that the contract award is subject to approval of the 2016 Capital Budget by Council.

## Financial Impact

Proposed funding for the 2016 Paving Program has been submitted as part of the 2016 Capital Budget as follows:

<b>Proposed Funding</b>	<b>Amount (\$)</b>
2016 Annual Asphalt Re-Paving Program – MRN	\$ 914,000
2016 Annual Asphalt Re-Paving Program – Non-MRN	\$ 2,610,000
<b>Total Proposed Funding</b>	<b>\$ 3,524,000</b>

Award of the 2016 Paving Program will occur once the 2016 Capital Budget is approved by Council.

## Conclusion

The procurement process for the 2016 Paving Program is underway. Contract award and commencement of paving will occur once the 2016 Capital Budget is approved by Council.



Milton Chan, P. Eng.  
Manager, Engineering Design & Construction  
(604-276-4377)



Wasim Memon, C.E.T.  
Supervisor – Inspections  
(604-247-4189)

MC:mc

- Att. 1: 2016 Paving Program – Primary Locations  
2: 2016 Paving Program – Secondary Locations  
3: 2016 Paving Program Proposed Locations – Richmond West and Richmond East

### **2016 PAVING PROGRAM – PRIMARY LOCATIONS**

<b>LOCATION</b>	<b>FAULTS</b>
No. 1 Road (9000 Block)	- Utility Cuts, Pavement Cracking
No. 3 Road (7000 Block)	- Utility Cuts, Pavement Cracking
No. 4 Road (7000 Block)	- Utility Cuts, Pavement Cracking
No. 4 Road (10000 Block)	- Utility Cuts, Pavement Cracking
No. 5 Road (7000 Block)	- Utility Cuts, Pavement Cracking
No. 5 Road (11000 and 12000 Block)	- Utility Cuts, Pavement Cracking
Blundell Road (3000 Block)	- Utility Cuts, Pavement Cracking
Blundell Road (9000 Block)	- Utility Cuts, Pavement Cracking
Blundell Road (11000 Block)	- Utility Cuts, Pavement Cracking
Cambie Road (9000 Block)	- Utility Cuts, Pavement Cracking
Lansdowne Road (8000 Block)	- Utility Cuts, Pavement Cracking
Miller Road (6000 Block)	- Utility Cuts, Pavement Cracking
City Centre Parking Areas	- Utility Cuts, Pavement Cracking
River Road (4000 and 5000 Block)	- Utility Cuts, Pavement Cracking
Williams Road (11000 Block)	- Utility Cuts, Pavement Cracking
No. 5 Road and Bridgeport Road Intersection	- MRN Treatment
Steveston Highway (6000 Block)	- MRN Treatment
Steveston Highway (9000 Block)	- MRN Treatment
Bridgeport Road (Sweden Way to Bridgeport Road Overpass)	- MRN Treatment
Nelson Road (6000 and 7000 Block)	- MRN Treatment
Blundell Road (18000 Block)	- MRN Treatment
Garry Street (4000 Block)	- Utility Cuts, Pavement Cracking
Leonard Road (10000 Block)	- Utility Cuts, Pavement Cracking
Bathgate Way (12000 Block)	- Utility Cuts, Pavement Cracking
McLennan Avenue	- Utility Cuts, Pavement Cracking
Gilmore Crescent	- Utility Cuts, Pavement Cracking
Finlayson Drive	- Utility Cuts, Pavement Cracking
Dennis Laneway (Maddocks Laneway to Wilkinson Road)	- Utility Cuts, Pavement Cracking
Cambie Road (14000 and 15000 Block)	- Utility Cuts, Pavement Cracking

**2016 PAVING PROGRAM – SECONDARY LOCATIONS**

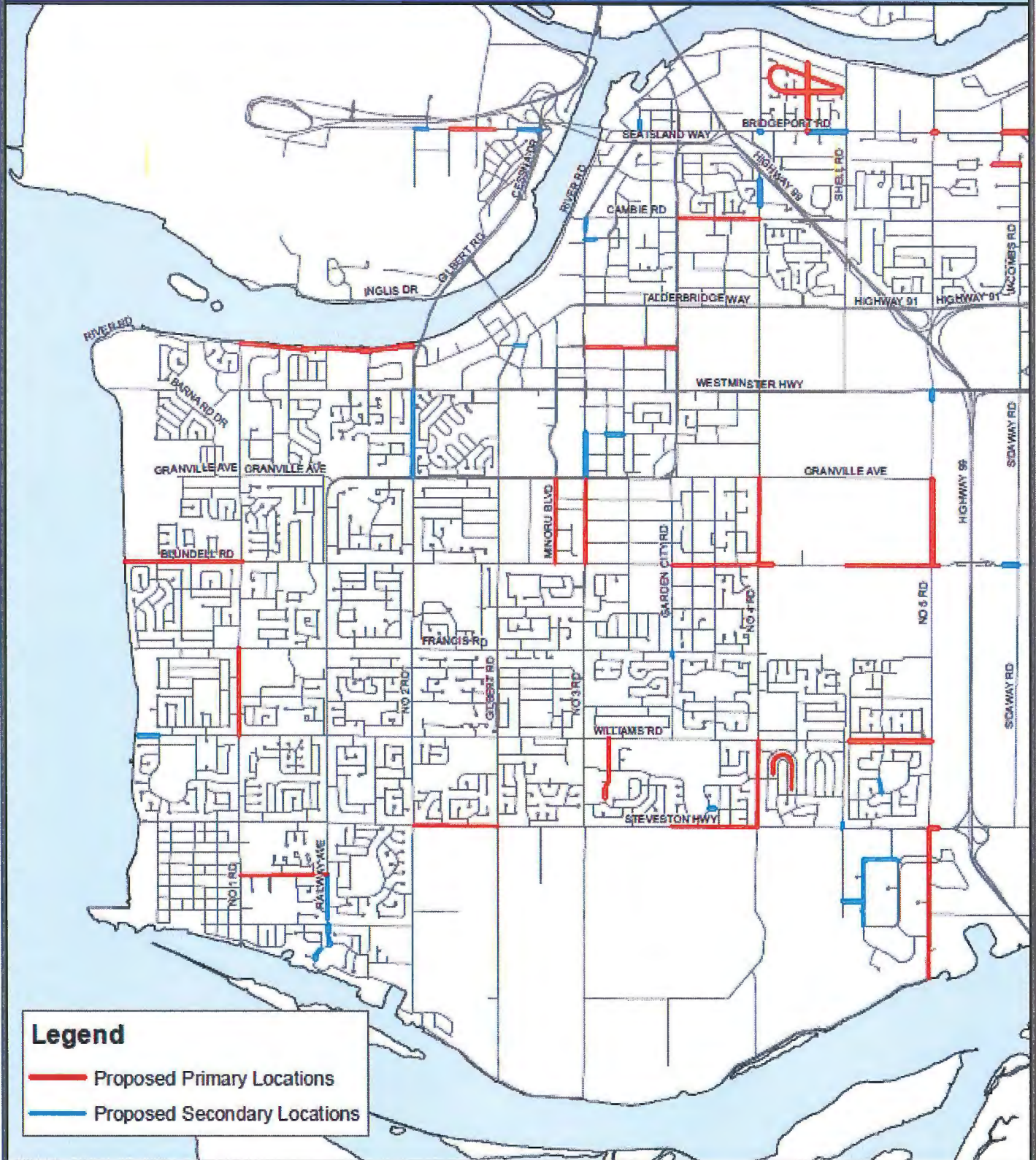
<b>LOCATION</b>	<b>FAULTS</b>
No. 2 Road (6000 Block)	- MRN Treatment
Berry Road (Mortfield Road to Southdale Road)	- Mill / Overlay
Blundell Road (Highway 99 Overpass to Sidaway Road)	- Mill / Overlay
Bridgeport Road (McLennan Avenue to Shell Road)	- Mill / Overlay
Browngate Road (No. 3 Road to Hazelbridge Way)	- Mill / Overlay
Cook Road (Buswell Street to Cooney Road)	- Mill / Overlay
Coppersmith Way (Horseshoe Way to Hammersmith Way)	- Utility Cuts, Pavement Cracking
Garden City Road (Francis Road to Glenallan Gate)	- Mill / Overlay
Hammersmith Way (Horseshoe Way to Coppersmith Way)	- Utility Cuts, Pavement Cracking
Hammersmith Gate (Shell Road to Hammersmith Way)	- Utility Cuts, Pavement Cracking
Lansdowne Road (Gilbert Road to Alderbridge Way)	- Mill / Overlay
Miller Road (Jericho Road to Access Road)	- Mill / Overlay
Miller Road (Wellington Crescent to Russ Baker Way)	- Mill / Overlay
No. 3 Road (Cook Road to Granville Avenue)	- Mill / Overlay
No. 3 Road (Cambie Road to Browngate Road)	- Mill / Overlay
No. 3 Road (Bridgeport Road to Beckwith Road)	- Mill / Overlay
No. 4 Road (Kilby Drive to Highway 99)	- Mill / Overlay
No. 4 Road at Bridgeport Road	-
No. 5 Road at Westminster Hwy	- Mill / Overlay
No. 6 Road at 800 metres north of Blundell Road	- Mill / Overlay
Railway Avenue (Westwater Drive to Britannia Drive)	- Mill / Overlay
Railway Avenue (Brunswick Drive to Garry Street)	- Mill / Overlay
River Road (14000 and 15000 Block)	- Utility Cuts, Pavement Cracking
Seacote Road (Sealord Road to Seaham Crescent)	- Mill / Overlay
Shell Road at Steveston Highway	- Mill / Overlay
Westminster Highway North (Fraserwood Place to Muir Drive)	- Mill / Overlay
Williams Road (west leg of Springmont Drive to dyke)	- Mill / Overlay





# 2016 Paving Program Proposed Locations Richmond West

Attachment 3



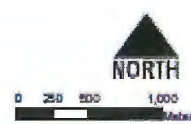
## Legend

- Proposed Primary Locations
- Proposed Secondary Locations

Note:  
The information shown on this map is compiled from various sources and the City makes no warranties, expressed or implied, as to the accuracy or completeness of the information.  
Users are reminded that lot sizes and legal description must be confirmed at the Land Title office in New Westminster.  
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PWT - 25

Print By: jacob.schultz  
Print Date: October 22, 2015

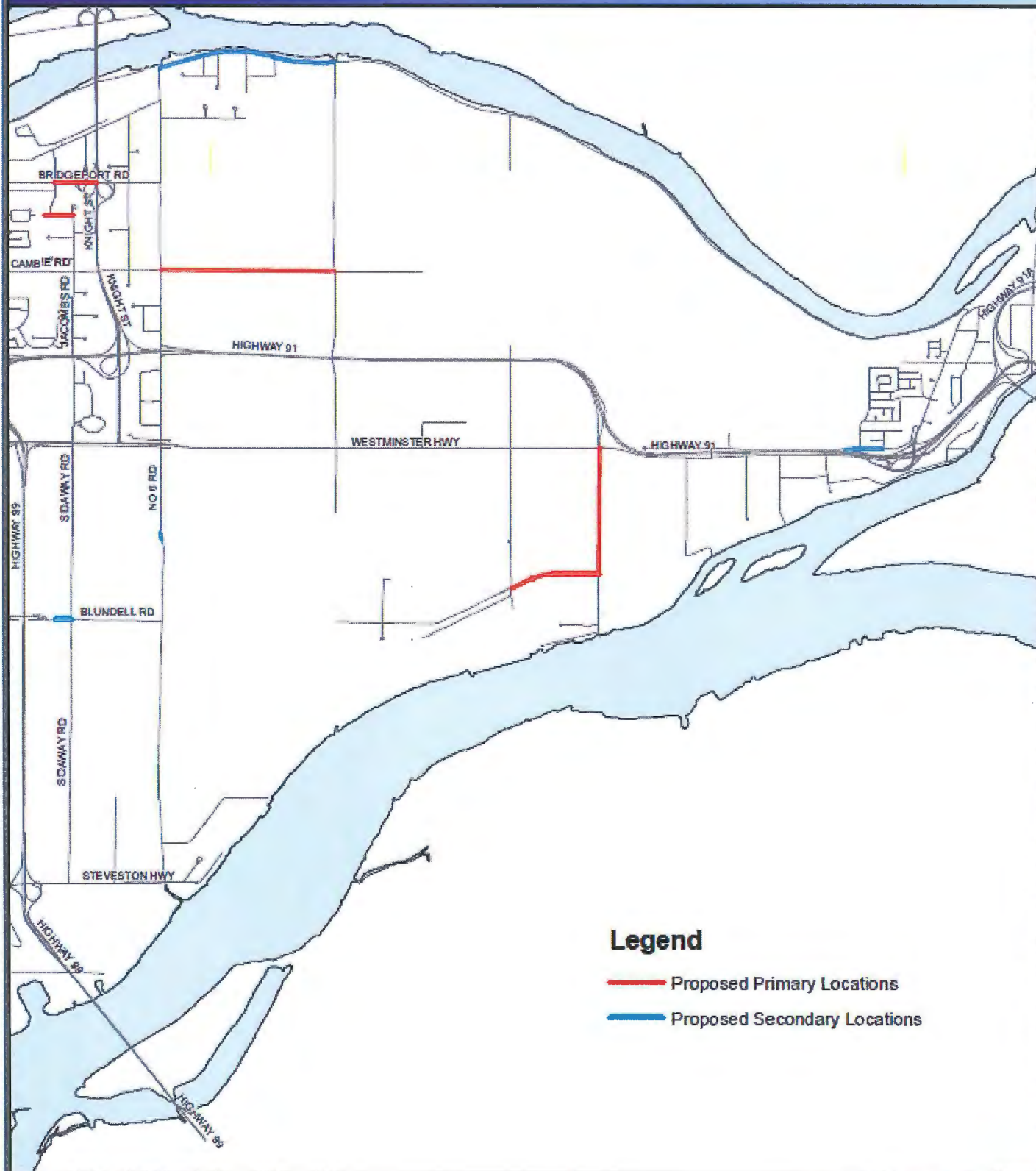






# 2016 Paving Program Proposed Locations Richmond East

Attachment 3



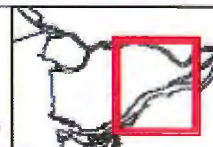
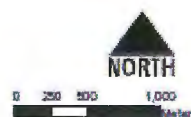
## Legend

- Proposed Primary Locations
- Proposed Secondary Locations

**Note:**  
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**PWT - 26**

Drawn By: [illegible]  
Print Date: October 22, 2015





# City of Richmond

## Report to Committee

**To:** Public Works and Transportation Committee

**Date:** October 24, 2015

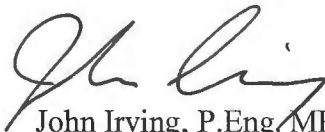
**From:** John Irving, P.Eng. MPA  
Director, Engineering

**File:** 10-6125-07-02/2015-  
Vol 01



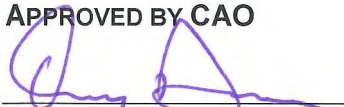
**Re:** Community Energy and Emissions Plan - 2015 Update

### Staff Recommendation

That the staff report titled "Community Energy and Emissions Plan – 2015 Update," dated October 24, 2015, from the Director, Engineering, be received for information.

  
John Irving, P.Eng. MPA  
Director, Engineering  
(604-276-4140)

Att. 1

REPORT CONCURRENCE		
<b>ROUTED TO:</b>	<b>CONCURRENCE</b>	<b>CONCURRENCE OF GENERAL MANAGER</b>
Development Applications	<input checked="" type="checkbox"/>	
Intergovernmental Relations & Protocol Unit	<input checked="" type="checkbox"/>	
Economic Development	<input checked="" type="checkbox"/>	
Facility Services	<input checked="" type="checkbox"/>	
Fleet	<input checked="" type="checkbox"/>	
Policy Planning	<input checked="" type="checkbox"/>	
Project Development	<input checked="" type="checkbox"/>	
Transportation	<input checked="" type="checkbox"/>	
<b>REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE</b>	<b>INITIALS:</b> 	<b>APPROVED BY CAO</b> 

## Staff Report

### Origin

In January 2014, Council adopted the Community Energy and Emissions Plan. This report provides an update on implementation of the Plan's strategies and actions achieved to date, and key future directions to pursue Richmond's energy and emissions targets.

This report supports Council's 2014-2018 Term Goal #4 Leadership in Sustainability:

*Continue advancement of the City's sustainability framework and initiatives to improve the short and long term livability of our City, and that maintain Richmond's position as a leader in sustainable programs, practices and innovations.*

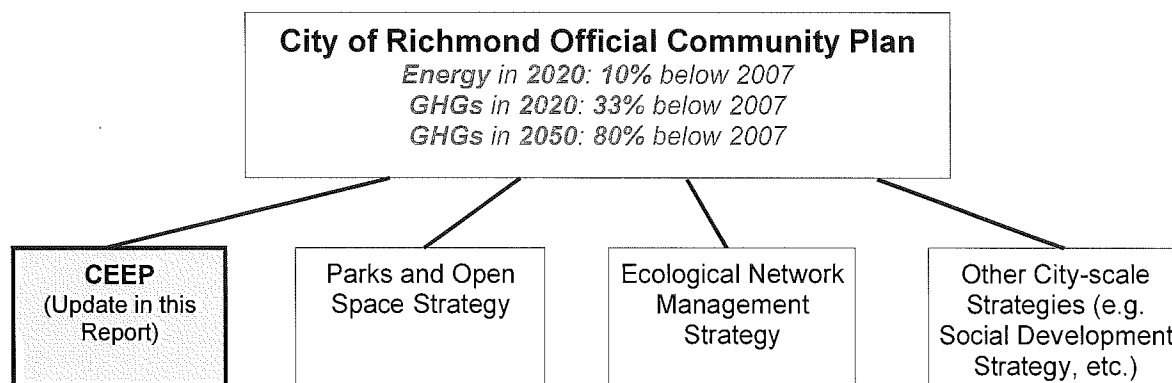
#### 4.1. Continued implementation of the sustainability framework.

This report provides an overview of a variety of strategies and actions the City is taking to reduce emissions community-wide. Another staff report provides an update on the City's corporate Carbon Neutral Strategy, including the Richmond Carbon Marketplace, which focuses on achieving carbon neutrality in City operations.

### Background

In 2010, Council adopted targets in Richmond's Official Community Plan to reduce community greenhouse gas (GHG) emissions 33% below 2007 levels by 2020, and 80% below 2007 levels by 2050. The 2041 Official Community Plan also includes a target to reduce energy use 10% by 2020 below 2007 levels. These targets are in line with what climate science suggests developed nations will need to achieve to have a good chance of avoiding 2 degrees of global average temperature increases above pre-industrial levels; this 2 degrees level is considered a threshold for "dangerous climate change," beyond which the impacts of climate change are substantially more difficult to adapt to, costly and uncontrollable.

Richmond's 2014 Community Energy and Emissions Plan (CEEP) outlines an array of strategies and actions for the City to take to reduce community energy use and GHG emissions. The CEEP impacts multiple areas of City business. The CEEP's relation to the OCP and other corporate wide plans is illustrated in the diagram below.



The CEEP strategies and actions are organized around five themes:

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

The CEEP includes modeling of the impacts of these strategies on Richmond's community emissions out to 2050. The CEEP modeling suggests that these strategies would reduce emissions approximately 25% by 2050 below 2007 levels. This would comprise an important contribution to climate action, but is still below the City's 80% target.

Importantly, the CEEP recognizes that the City's community emissions reduction targets will only be achieved with "Big Breakthroughs," notably:

- Near universal adoption of zero carbon vehicles (e.g. plug-in electric vehicles, fuel cell vehicles, etc.) by 2040.
- Zero carbon new building construction by 2025.
- Deep energy improvements to most existing buildings, sufficient to reduce emissions by over 70% by 2050.

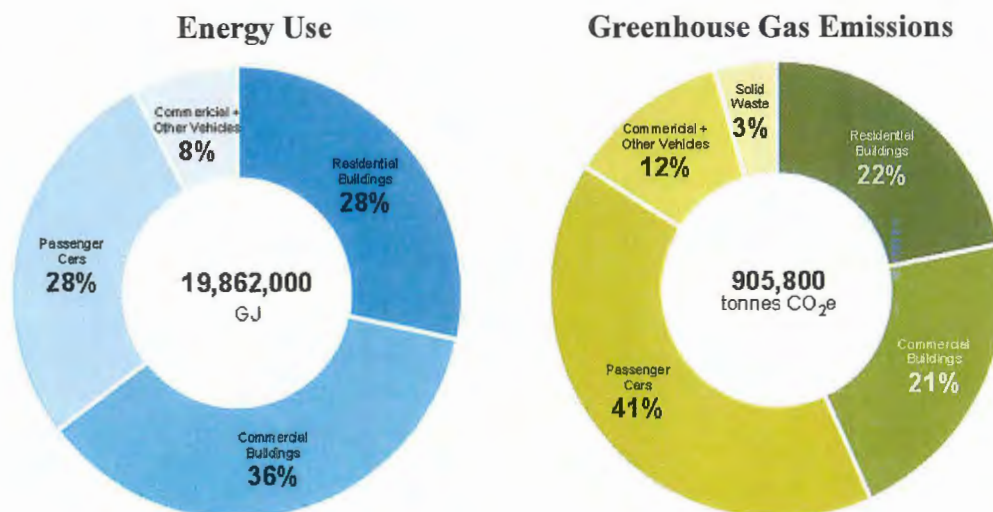
The CEEP recognizes that these reductions are not achievable by the City alone; rather, they require provincial and federal regulatory changes, market innovation, increasing carbon pricing, and coordinated efforts between all levels of government and industry. The CEEP specifies that the City work to pursue the "Big Breakthroughs" in coordination with other levels of government, and the private and non-profit sectors.

## **Analysis**

### **Sources of Energy Use and Emissions**

The Province provides the Community Energy and Emissions Inventory (CEEI), summarizing sources of energy use and emissions in Richmond. The latest year for which the CEEI is available is 2010. As illustrated in Figure 2 below, approximately 43% of Richmond's inventoried GHG emissions are from buildings, 54% from transportation, and 3% from solid waste. Buildings account for 64% of energy use, while transportation accounts for 36%.

The CEEI inventory does not account for global carbon emissions that result from local consumption of goods that were produced in other places, such as building materials, food, and consumer goods. These "consumption based" sources of emissions are a further opportunity to reduce emissions, though they are not within the scope of the CEEI nor the CEEP. The City will continue to investigate means of reducing the emissions and other environmental and social impacts of consumption based sources in Richmond's community and the City's corporate operations, as part of its ongoing commitment to sustainability.

**Figure 2: Energy Use and Emissions Sources, CEEI 2010**

### Achievements Implementing the CEEP

The Community Energy and Emissions Plan 2015 Update (Attachment 1) highlights key achievements that have been made since the CEEP was adopted from across the different themes noted above. Highlights include:

- The expansion of the Alexandra District Energy Utility and the launching of the Oval Village District Energy Utility, both of which will increase energy security, provide cost-competitive energy, and reduce emissions for connected buildings.
- The launch of the “EnergySave Richmond” suite of programs, including the Smart Thermostats Pilot Program, Building Energy Challenge, and Richmond Carbon Marketplace.
- The integration of energy and emissions considerations into the Hamilton Area Plan, setting a precedent for other area plans.
- Facilitating car sharing in Richmond, enabling Modo, ZipCar and Car2Go’s entry and expansion into the market.
- Expansion of transit shelters, to help Richmond’s community travel more comfortably and safely.
- Expanding active transportation infrastructure, including pedestrian walkways on Minoru Boulevard, Shell Road East, and in Blundell Park; and 11 new special crosswalks to enhance safety.
- New waste diversion programs, including expanded Blue Box and Blue Cart programs, and the multifamily Green Cart program, to reduce emissions from the waste sector and help pursue the City’s waste diversion goals.
- Leading by example in the City’s operations, including adopting the Sustainable High Performance Building policy in 2014, and achieving carbon neutral corporate operations.
- Advocating for action by senior levels of government, including providing input on key directions needed in the BC Climate Leadership Plan to help local governments meet their community energy and emissions targets.



### Future Actions

In addition to highlighting achievements, the update briefly summarizes important future directions that the City will be undertaking in the near term to implement the CEEP strategies and the big breakthroughs required to meet the City's emissions goals. These opportunities will be brought forward for Council's consideration as they are developed. Important directions that staff are investigating include:

- Energy reporting and benchmarking policy, facilitating buildings above a certain size to report energy consumption data to the City. Such a policy would allow for improved evaluation of energy policies and customization of energy programs to meet different building types' unique needs.
- Improved energy efficiency standards to be requested of projects undergoing rezoning, and exploring incentives to drive greater energy performance for new developments.
- Continuing to build on the EnergySave Richmond suite of programs, to help residents and businesses save money on energy costs.
- Investigating how to support electric vehicles (EVs), including EV charging in new developments.
- Implementing a "complete streets" approach in new transportation infrastructure to ensure low carbon modes of travel including walking, biking, rolling, and taking transit are supported. Such an approach is being implemented in improvements to Westminster Highway (Nelson Road-McMillan Way), Lansdowne Road Extension (Minoru Blvd-Alderbridge Way), and the No. 2 Road Upgrade with the inclusion of multi-use pathways and upgraded bus stops.
- Evaluate the expansion of district energy nodes in further areas of the City.
- Continue to evaluate green building standards that can enhance civic building performance.

### Communicating Climate Action

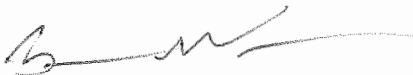
The City will continue to communicate to households and businesses about opportunities for them to save money on energy through various City programs and initiatives. Such initiatives are generally communicated by the City's Energy Save Richmond initiative ([www.energy.richmond.ca](http://www.energy.richmond.ca)). The City's progress on climate action, outlined in the Community Energy and Emissions Plan – 2015 Update, will be communicated via social media, press release, newspaper publications, the City's advisory committees, and other channels.

### **Financial Impact**

None.

### **Conclusion**

This report presents the Community Energy and Emissions Plan – 2015 Update, outlining key achievements implementing the CEEP to date, as well as future directions that staff are exploring to implement the CEEP and pursue Richmond's energy and emissions goals.



Brendan McEwen  
Sustainability Manager  
(604-247-4676)

BM:bm

Att. 1: Community Energy and Emissions Plan Update 2015



City of Richmond

# Energy Action in Richmond

Community Energy and Emissions Plan

**2015** Update







## THE CHANGING CLIMATE

We cannot ignore our strange and increasingly severe weather. 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

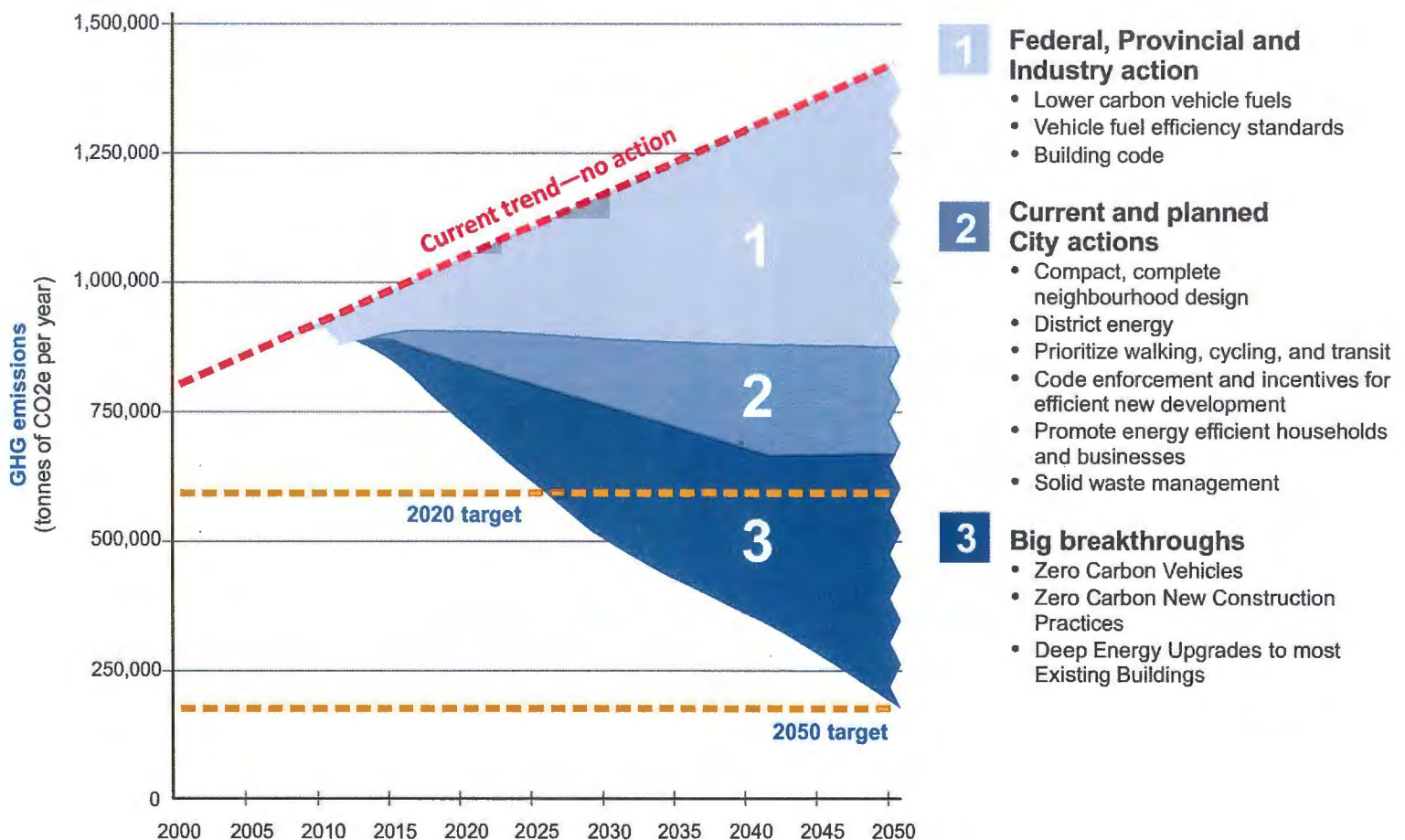
**80%**  
by 2050

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.



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**

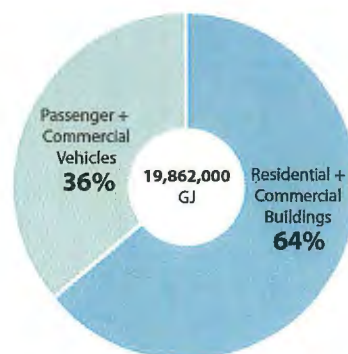
## KEY ACHIEVEMENTS

**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.

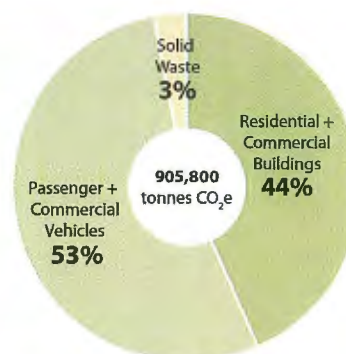
**Promoting energy efficiency in new buildings:** The City requires new homes to be "solar hotwater ready". The City also secures energy performance for new developments as part of rezonings and development approvals. Notably, the [2009 City Centre Area Plan](#) established a LEED Silver standard for 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.

PWT - 38



## 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<sub>2</sub>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:** Tools that allow buildings above a certain size threshold 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

**68km**

Of bike routes and

**56**

Transit shelters as of 2015

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



PWT - 40





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:

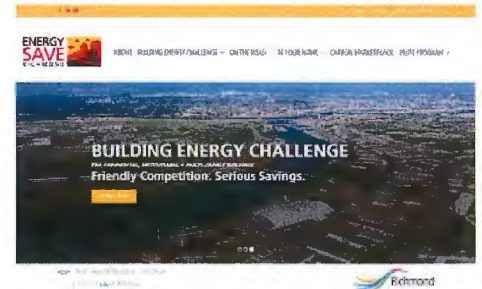
- Westminster Highway (Nelson Road-McMillan Way): a multi-way path will be provided on the south side.
- Lansdowne Road Extension (Minoru Blvd-Alderbridge Way): the upgrade of the existing lane to a three-lane road will include a multi-use path on the north side and a sidewalk on the south side.
- No.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



[Click to view EnergySave Richmond website](#)

## KEY ACHIEVEMENTS

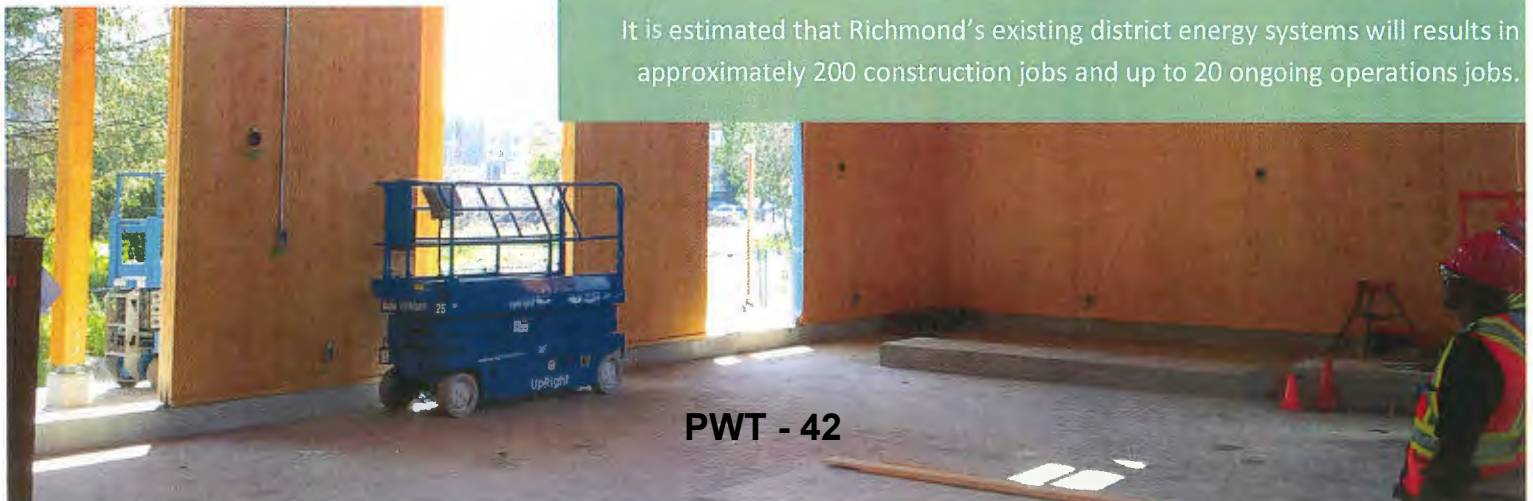
**Energy saving program for businesses:** As part of [EnergySave Richmond](#), a variety of programs that help businesses reduce their carbon footprint were launched:

- **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.

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**





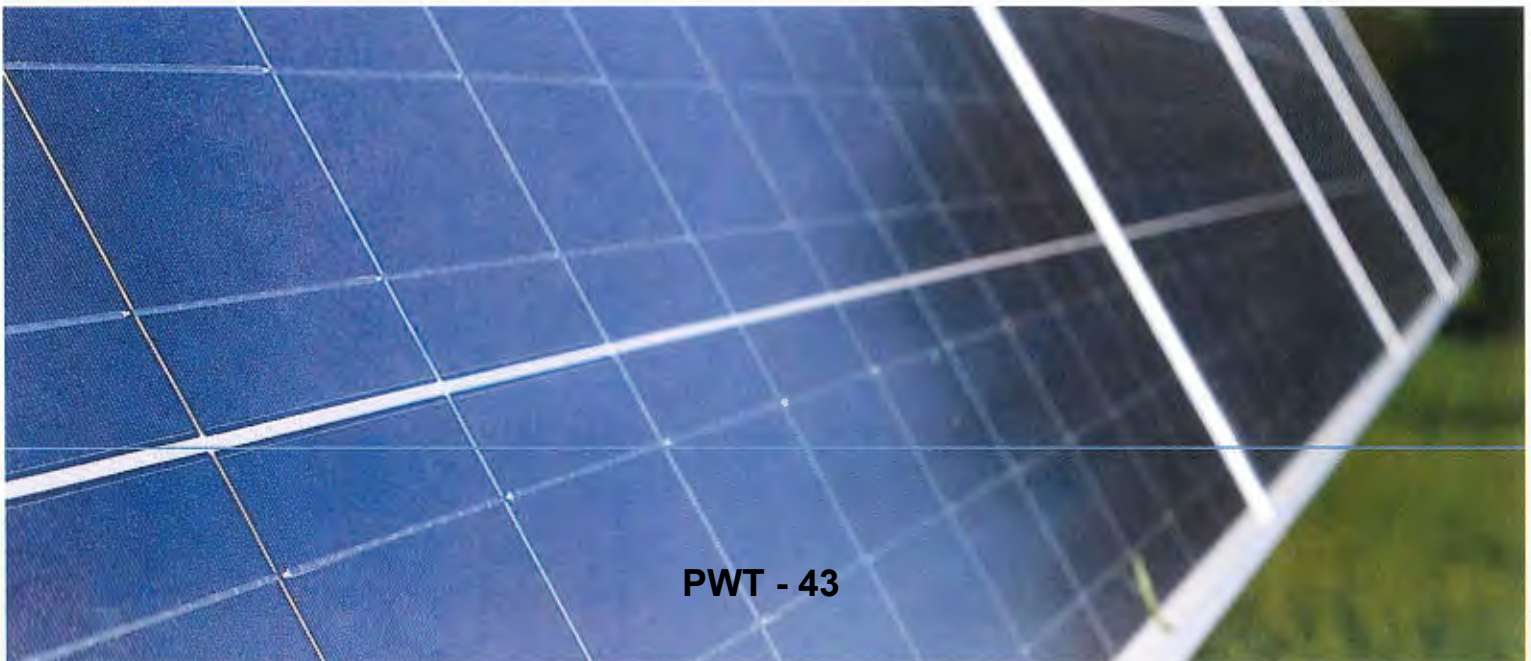


In 2014, Council approved the construction of the new Fire Hall No. 1, which will utilize solar panels on the roof with an expected ability to produce 33% of its electricity needs.

## 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

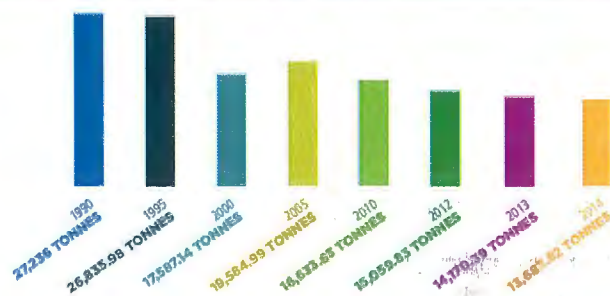
Oval Village District Energy  
Utility is also  
expected to serve  
approximately

500,000 m<sup>2</sup>  
of residential and  
commercial floor  
area



PWT - 44

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

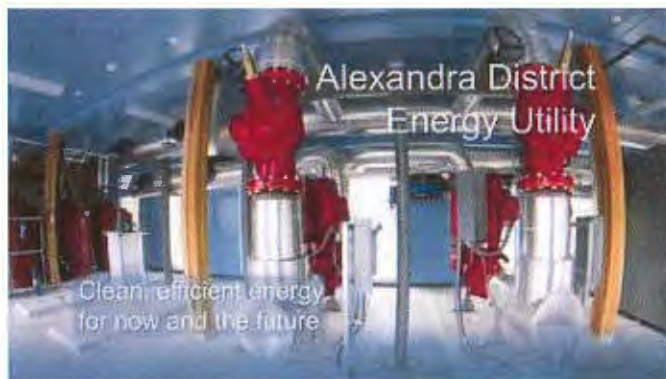




The Alexandra District Energy Utility has received multiple awards, including the 2014 Association of Professional Engineers and Geoscientists Sustainability Award, and the prestigious Energy Globe Award.



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.



# City of Richmond

## Report to Committee

**To:** Public Works and Transportation Committee  
**From:** John Irving, P.Eng., MPA  
Director, Engineering  
**Date:** October 30, 2015  
**File:** 10-6000-01/2014-Vol  
01  
**Re:** Carbon Neutrality and Richmond Carbon Marketplace Update

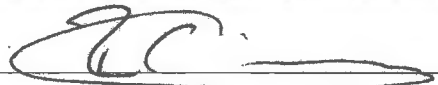

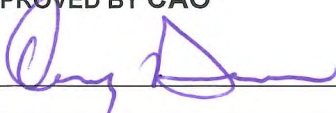
### Staff Recommendation

That:

1. The staff report titled, "Carbon Neutrality and Richmond Carbon Marketplace Update," from the Director of Engineering, dated October 30, 2015 be received for information.
2. The Chief Administrative Officer and the General Manager, Engineering and Public Works be authorized to negotiate and execute agreements with each of the five prospective Richmond-based business organizations to support community greenhouse gas emissions reductions and to ensure that the City of Richmond corporate carbon neutrality is maintained.

John Irving, P.Eng. MPA  
Director, Engineering  
(604-276-4140)

Att. 1

REPORT CONCURRENCE	
CONCURRENCE OF GENERAL MANAGER 	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	INITIALS: 
APPROVED BY CAO 	

## Staff Report

### Origin

The City of Richmond has committed to maintaining carbon neutral corporate operations, which was first achieved in 2013. The purpose of this report is to present to Council a carbon neutrality update, and seek approval to develop and execute partnership agreements with Richmond-based organizations, as part of the Richmond Carbon Marketplace (RCM) pilot program.

This report supports Council's 2014-2018 Term Goal #4 Leadership in Sustainability:

*Continue advancement of the City's sustainability framework and initiatives to improve the short and long term livability of our City, and that maintain Richmond's position as a leader in sustainable programs, practices and innovations.*

4.1. *Continued implementation of the sustainability framework.*

4.2. *Innovative projects and initiatives to advance sustainability.*

The continued successful implementation of the City's corporate carbon neutral strategy also plays a minor part in achieving the Community Energy and Emission Plan goal of 33% reduction by 2020 and 80% reduction by 2050 in community GHG emissions, as compared to 2007 levels (corporate emissions represent approximately 1% of the overall community total).

### Background

In September 2008, Council signed the BC Climate Action Charter, voluntarily committing the City to carbon neutral corporate operations. Carbon neutral corporate operations means that the City will reduce GHG emissions generated from its own operations and invest in additional projects, outside of the City's traditional operations, to compensate for emissions that cannot be avoided at this time. In 2013 Richmond City Council adopted the "*Towards Carbon Neutrality: Implementation Strategy*," which put in place an effective carbon neutrality strategy framework, which includes four key steps towards carbon neutrality; Measure, Reduce, Compensate or Offset, and Report.

Key mechanisms that were identified in the 2013 strategy to address the need for compensation included; assessing and quantifying beyond "business as usual" corporate activities that reduce GHG emissions, and the implementation of the Richmond Carbon Marketplace pilot program to purchase offsets from Richmond-based projects.

### City of Richmond Carbon Neutral Achievement to Date

The City was recognized for achieving carbon neutral status in its corporate operations for the 2013 and 2014 reporting years. Ongoing corporate GHG emissions reductions from a continued focus on the City's Energy Management Program, Green Fleet Action Plan implementation, and High Performance Building Policy implementation, were contributors to achieving this status. Other contributors included achieving carbon offsets by undertaking actions that went beyond 'business as usual', e.g. expanded residential organics collection, organics drop-off service, and participating in the Vancouver Landfill gas capture optimization project. The success of these projects has enabled the City to carry forward a surplus of carbon credits into future years.

For the 2015 reporting year, the City is carrying forward a surplus of 5,332 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) credits accumulated from previous reporting years. This current surplus will help the City to maintain carbon neutral status through the 2016 reporting year. Due to Provincial regulation changes to landfill gas capture requirements (January 1, 2016); the City will not receive GHG emissions reduction credits from the Vancouver Landfill project after 2015. If further GHG emissions credits are not obtained in those years, it is projected that the City will be in a corporate carbon credit deficit starting in 2017.

**Table 1: Projected Corporate GHG Emissions and Credits (tCO<sub>2</sub>e)**

	2016	2017	2018
<b>Corporate Carbon Credits</b>	10,471	7,682	6,016
<b>Corporate Emissions</b>	8,522	8,522	8,522
<b>Net Corporate Emissions</b>	<b>(1,949)</b>	<b>-840</b>	<b>-2,506</b>

Building on the 2013 carbon neutrality framework, City staff are focusing on three main actions to maintain corporate carbon neutral operations after 2016:

1. Reduce and optimize GHG emissions from existing City operations, e.g. heating and ventilation optimization at Watermania, right sizing and downsizing City fleet vehicles, and LEED Gold energy efficient replacement infrastructure.
2. Identify and quantify GHG emissions reduction activities from City operations that are beyond business as usual and outside of traditional services, e.g. district energy, concrete and asphalt recycling at Sidaway yard, and bog land conservation. Current estimates for offsets from these projects ranges from 550 to 2,000 tCO<sub>2</sub>e potential credits. Quantification of these projects are underway with expected completion in 2016.
3. Seek community partnerships and support GHG emissions reduction in Richmond-based projects by purchasing carbon offsets through the Richmond Carbon Marketplace.

## **Analysis**

### Richmond Carbon Marketplace Pilot Program Projects

The Richmond Carbon Marketplace (RCM) pilot program is a tool to reduce GHG emissions and build community resilience by investing in Richmond-based projects through the purchase of carbon offsets for completing emissions reduction projects. When the pilot was introduced, Council endorsed a funding strategy for purchasing offsets that uses funds gained through the Province's Climate Action Revenue Incentive Program. The RCM pilot program was previously approved by Council, and is currently being implemented in a phased approach:

- Phase 1: Determine the Potential for Local GHG Reduction Projects (through outreach)
- Phase 2: Identify Potential Local GHG Reduction / Offset Projects, and complete pre-feasibility assessments
- Phase 3: Complete final assessments and quantify the RCM submissions, and enter into agreements with proponents to offset corporate GHG emissions
- Phase 4: Maintain corporate carbon neutrality
- Phase 5: Continue to help grow the City's low carbon economy

Staff have completed Phase 1 and Phase 2 of this pilot project, and are seeking approval to complete Phase 3.

Five submissions were received as part of this pilot program, and project summaries for each submission are listed below for Council consideration. For further description and information on each organization and submission, please see Attachment 1.

**Table 2: Community Project Submissions for Richmond Carbon Marketplace Funding**

Proponent	Project Description	Project Status	Est. GHG emissions reduction available (tCO <sub>2</sub> e)	Max Funding (\$25/tCO <sub>2</sub> e)
<b>1. EcoWaste Industries</b>	Enhanced landfill re-vegetation and carbon sequestration	Initial implementation underway – not yet fully implemented	200	\$5,000
<b>2. Harvest Power</b>	Packaged organics separation and recycling	Not yet implemented	1,000-1,500	\$37,500
<b>3. Pacific Gateway Hotels</b>	Building energy efficiency retrofits	Completed in 2015	200	\$5,000
<b>4. RDH Building Engineering</b>	Building energy renewal and retrofits in Richmond	Not yet implemented	300-500	\$12,500
<b>5. TnT Supermarkets</b>	Organic waste diversion and bio-digester, to achieve a zero waste grocery operation	Initial testing underway – not yet fully implemented	400-800	\$20,000
<b>Total</b>			<b>2,100-3,200</b>	<b>\$80,000</b>

The GHG emissions reduction associated with the projects listed above, once verified and confirmed as eligible, could qualify to be used to offset the City's corporate emissions and help maintain carbon neutral status in the long term. In order to be used to offset corporate emissions, project funding agreements will need to be developed with each proponent for the associated GHG emissions reductions only. These agreements will stipulate, but will not be limited to the following items:

1. Project schedule and timeline,
2. Quantification methodology and confirmation of eligibility requirements
3. GHG emission credit amount,
4. Funding amount (not to exceed \$25/tCO<sub>2</sub>e),
5. Clear transfer of GHG emissions credit ownership to the City

The total maximum City funding commitment under these agreements would be \$80,000 in the 2015/16 operating years, as identified in Table 2. Depending on project completion dates, the earliest that associated GHG emissions reductions from these projects could be applied to reduce corporate emissions, would be for the 2016 reporting year. Any surplus carbon credits that the City obtains in any given year can be carried over to the following reporting years. Agreements to purchase GHG emissions credits through this pilot program will be time specific based on the calendar year or years, e.g. Jan 1 to Dec 31, 2016. If further credits were sought by the City from these projects after these initial agreements are executed, additional agreements would need to be drafted and approved by Council.



Based on the City's own experience and investments in corporate energy projects, staff estimate that for every tonne of carbon, valued at \$25/tonne, that was reduced, \$100 will be invested by the private sector in new equipment, technology, and/or services.

The funding for this pilot program, allocated from the Provincial Climate Action Revenue Incentive Program grant, was previously approved in the 2014 operating budget process (\$200,000), and remains in place to fulfill the completion of these potential funding agreements. Once the community projects are completed, it is envisioned that the City will recognize the pilot program participants for their commitment to sustainability and community GHG emission reductions.

#### Additional Benefits to the City

Additional benefits for purchasing community-based carbon offsets for each project is listed in Attachment 1, but in general relate to the following:

- Reductions in organic waste at the landfill, supporting regional landfill diversion targets
- Increase in local generation of renewable energy
- Enhanced landfill reclamation that improves discharge water quality, reduces dust control issues, increases wildlife habitat
- Investments in energy efficiency upgrades that support local jobs and reduce energy related costs for Richmond building owners.
- Reduced truck traffic and exhaust, through the reduction of waste pick-ups and deliveries.

Staff believe the Richmond Carbon Marketplace is a viable tool for delivering community-based carbon offset projects over time. Staff intend to continue issuing calls for proposals of offset reduction projects as needed; this is a key strategy for increasing awareness over time and growing the list of potential projects active in the program.

#### **Financial Impact**

None at this time. Should Council approve the recommendation to purchase community GHG emission reduction credits, approved funding for the maximum total of \$80,000 is already in place to execute the agreements.

#### **Conclusion**

The City of Richmond continues to meet its commitments as a signatory of the BC Climate Action Charter. City staff will continue to work towards Council's objective of maintaining the City of Richmond's carbon neutral status in the long term and support community-based GHG emission reduction projects. Through the continued strategic implementation of its carbon neutral plan, the City is well positioned to maximize corporate and community benefits of transitioning towards lower carbon energy sources and a low carbon economy.



Levi Higgs  
Corporate Energy Manager, Sustainability and District Energy  
(604-244-1239)

Att. 1: Richmond Carbon Marketplace Pilot Program - Submission Summary





## Proponent Submissions Summary

A formal request for community greenhouse gas (GHG) emissions reduction project plans was issued publicly in the June of 2015, as part of the Richmond Carbon Marketplace pilot program. The purpose of this request was to determine the scale of the potential opportunity for the City to invest in community based projects that result in quantifiable GHG emissions reductions, which then could be used to offset the City's corporate GHG footprint.

Five submissions were received as part of this pilot program, and detailed project summaries and organization information is indicated below.

### 1. Ecowaste Industries

- **Business type:** Ecowaste Industries is a waste management group specializing in construction and demolition waste, and recyclables. They have been operating in Richmond since 1971.
- **Location:** Ecowaste Landfill, Triangle Road, Richmond
- **Type of Project:** Enhanced landfill reclamation through re-vegetation and carbon sequestration – Option 2
- **Project Description:** In 2008 Ecowaste initiated an innovative, value added phytoremediation system to the capped areas of the Ecowaste landfill in Richmond. By 2013, an enhanced reclamation process was fully implemented using hybrid coppice willow and poplar, as well as grasses to sequester both above ground and below ground carbon. Currently, the reclamation areas are irrigated, using partially treated leachate collected from the landfill, which helps to accelerate plant growth. The reclamation plants are easily harvested and will be used for composting purposes to return sequestered carbon to soils. In addition, engineered and fabricated soils are used to support this plant biomass system and help to capture fugitive methane that can leak through the landfill cap. Both the irrigation system and the biomass systems are considered to be significant incremental improvements beyond the business as usual landfill reclamation processes. Business as usual practices for landfill reclamation is to cap with a layer of soil, which is then fertilized and seeded with grasses only. The enhanced landfill reclamation areas are part of the long term leachate management and development strategy for the landfill, and are expected to remain in place for over 20 years. The project quantification will assess the difference in GHG emissions between the enhanced landfill reclamation process and business as usual reclamation.
- **Pre-feasibility Estimated GHG Emissions Reduction:** 170 tCO<sub>2</sub>e per year
- **Project Timeline:** Full project implementation date was in 2013, with further enhancement reclamation work occurring in the fall of 2015. The baseline carbon sequestration monitoring period will be conducted for 12 months between the end of 2015 and 2016, with the first sequestration report completed at the end of 2016. After this report, a sequestration report will be completed every three years over the life of the system.

- **Additional Community Benefits:** Enhanced landfill reclamation improves the ecosystem quality of the overall property, improving the water discharge quality, reducing dust control issues, increasing wildlife habitat, and improving the overall aesthetics of the land.

## 2. Harvest Power

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- **Business type:** Harvest Power is an organics and food waste recycling company with locations throughout North America, including Richmond. Harvest Power purchased Fraser Richmond Soil and Fibre, and the existing composting site in East Richmond in 2009. In 2013 Harvest Power opened North America's first large scale high solids bio-digester, called the Energy Garden that began converting food waste to an energy source.
- **Location:** 7028 York Road, Richmond
- **Type of Project:** Packaged organics separation and recycling – Option 1 or 2
- **Project Description:** This project involves the separation of packaged organic material from its packaging to allow for the recycling of both the packaging and organics/food waste. This material and organics recycling is a separate stream than the municipal organics and food waste recycling that is also conducted on-site. Presently there are few recycling options in the region for intermingled packaging and organics waste. With this project Harvest Power will open up new sectors of organics recycling market. The organic material will be introduced as feedstock into the Energy Garden's anaerobic digester, where it will be used to produce biogas and then electricity (which is made available to the main BC Hydro power grid). The project quantification will assess the difference in GHG emissions between business as usual landfilling of the packaged organic material and emissions from the de-packaging and recycling of the waste.
- **Pre-feasibility Estimated GHG Emissions Reduction:** 1,000 tCO<sub>2</sub>e per year
- **Project Timeline:** The de-packing operation is currently completing its permitting process and is anticipated to start operation before the end of 2015.
- **Additional Community Benefits:** Reduce landfilling of inorganic packaging resources and increased renewable energy production through the facility's Energy Garden.

## 3. Pacific Gateway Hotel

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- **Business type:** Pacific Gateway Hotel is a 374 room hotel, resort, and marina operation on Sea Island in Richmond. The hotel is affiliated with Preferred Hotels and Resort International, which represents a global collection of 650 independent hotels in 85 countries.
- **Location:** 3500 Cessna Drive, Richmond
- **Type of Project:** Building energy efficiency retrofits – Option 1
- **Project Description:** The facility has undergone and is continuing to conduct energy efficiency upgrades to the building structure and systems to reduce energy use and GHG emissions, including;
  - Building automation system upgrades
  - Boiler plant replacement with domestic hot water pre-heat
  - Upgrade and replacement of make-up air units and exhaust fans
  - Lighting re-lamp and retrofit
  - Resealing the building envelope to decrease conditioned air leaks.

The project quantification will assess the difference in GHG emissions between business as usual energy use of the building as compared to the post energy efficiency retrofit operation.

- **Pre-feasibility Estimated GHG Emissions Reduction:** 80 tCO<sub>2</sub>e per year
- **Project Timeline:** Most of the energy efficiency upgrades will be completed by the end of 2015, with some building envelope work being conducted in separate phases in 2016 and 2017.
- **Additional Community Benefits:** Economic investments in energy efficiency upgrades at the hotel help support local jobs and economy.

#### 4. RDH Building Engineering

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- **Business type:** RDH Building Engineering is a building engineering and science consultant firm that specializes in energy efficiency integration for existing and new buildings. The firm was founded in 1997 and has its head office in Vancouver, with energy efficiency projects located throughout the Province.
- **Location:** Various multi-family residential buildings in Richmond
- **Type of Project:** Building energy efficiency retrofits – Option 1
- **Project Description:** RDH Building Engineering proposes to aggregate the emissions reductions of several multi-family residential building energy efficiency projects in the City of Richmond that have not yet been completed. RDH will be partnering with building owners to develop and deliver these Richmond based GHG emissions reduction projects. The project quantification will assess the difference in GHG emissions between business as usual energy use of the buildings as compared to their post energy efficiency operations.
- **Pre-feasibility Estimated GHG Emissions Reduction:** 300 tCO<sub>2</sub>e per year
- **Project Timeline:** This project has not yet been implemented.
- **Additional Community Benefits:** Reduced energy related costs for Richmond building owners.

#### 5. T & T Supermarkets

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- **Business type:** T & T Supermarkets is a supermarket chain, which is headquartered in Richmond, BC, and has locations throughout Canada. The first T & T Supermarket was opened in 1993. The supermarket chain was purchased by Loblaw Companies in 2009.
- **Location:** Unit #1000 – 3700 No.3 Rd, Richmond
- **Type of Project:** Organic and Waste Reduction and Recycling – Option 2
- **Project Description:** T&T Supermarkets have been working on creating a zero waste grocery store at the Richmond location for a number of years. One of the keys to this zero waste initiative is to employ on-site technology that can digest organic food waste and in turn produce a liquid fertilizer for agricultural use. T & T Supermarkets have been testing devices that can process on-site organic waste into liquid fertilizer since 2012. Another key component of the T&T Supermarket zero waste strategy is to convert unrecyclable waste into solid recovered fuel pellets that can be used to replace fossil fuels typically used to operate cement kilns (e.g. Lafarge cement plant in East Richmond). The project quantification will assess the difference in GHG emissions between business as usual organic waste and

unrecyclable material disposal, and emissions of the on-site processing of organic waste and the processing and reuse of unrecyclable material.

- **Pre-feasibility Estimated GHG Emissions Reduction:** 100-650 tCO<sub>2</sub>e per year
- **Project Timeline:** The project has been undergoing testing and refinement of the digester system since 2012, but has not been fully implemented yet. The processing of the non-recyclable waste into fuel pellets has not yet been implemented, but is anticipated to be initiated before the end of 2015.
- **Additional Community Benefits:** Reduced truck traffic and exhaust, through the reduction of waste pick-ups and deliveries.