

Agenda

Public Works & Transportation Committee

Anderson Room, City Hall 6911 No. 3 Road Wednesday, February 19, 2014 4:00 p.m.

Pg. # ITEM

MINUTES

PWT-4 Motion to adopt the minutes of the meeting of the Public Works & Transportation Committee held on Wednesday, January 22, 2014.

NEXT COMMITTEE MEETING DATE

Wednesday, March 19, 2014, (tentative date) at 4:00 p.m. in the Anderson Room

ENGINEERING AND PUBLIC WORKS DEPARTMENT

1. **AMENDMENT BYLAWS FOR WATER AND SEWER** (File Ref. No. 12-8060-20-009099/009101) (REDMS No. 4123647 v.2)

PWT-10

See Page **PWT-10** for full report

Designated Speaker: Lloyd Bie

STAFF RECOMMENDATION

(1) That Waterworks and Water Rates Bylaw No. 5637, Amendment Bylaw No. 9099 be introduced and given first, second, and third readings; and (2) That Drainage, Dyke and Sanitary Sewer System Bylaw No. 7551, Amendment Bylaw No. 9101 be introduced and given first, second, and third readings.

2. CANADIAN NATIONAL RAILWAY COMPANY AGREEMENTS WITH THE CITY RELATED TO RAILWAY CROSSINGS FOR CITY CAPITAL AND OTHER INFRASTRUCTURE PROJECTS (File Ref. No. 10-6340-20-P.11203) (REDMS No. 4134938 v.3)

PWT-20

See Page **PWT-20** for full report

Designated Speaker: Milton Chan

STAFF RECOMMENDATION

That:

- (1) the City enter into agreements related to railway crossings (including, without limitation, Crossing Agreements and Right of Entry Agreements) with Canadian National Railway Company from time to time as needed in connection with the construction and maintenance of current and future City capital and other infrastructure projects; and
- (2) the Chief Administrative Officer and the General Manager, Engineering and Public Works be authorized to sign such agreements on behalf of the City.

3. 2014 PAVING PROGRAM

(File Ref. No. 10-6340-20-P.14201) (REDMS No. 4135360)

PWT-23

See Page PWT-23 for full report

Designated Speaker: Milton Chan

STAFF RECOMMENDATION

That the staff report dated January 31, 2014, titled 2014 Paving Program from the Director, Engineering be received for information.

4. **SUSTAINABLE HIGH PERFORMANCE BUILDING POLICY UPDATE** (File Ref. No. 10-6000-01/2013) (REDMS No. 4060769 v.15)

PWT-30

See Page PWT-30 for full report

Designated Speaker: Levi Higgs

STAFF RECOMMENDATION

- (1) That the City's Sustainable "High Performance" Building Policy City Owned Facilities Policy #2306 be rescinded; and
- (2) That the City adopt the revised Sustainable "High Performance" Building Policy – City Owned Facilities as per the attached report from the Director of Engineering dated January 24, 2014.

5. MANAGER'S REPORT

ADJOURNMENT



Minutes

Public Works & Transportation Committee

Date: Wednesday, January 22, 2014

- Place: Anderson Room Richmond City Hall
- Present: Councillor Linda Barnes, Chair Councillor Chak Au Councillor Derek Dang Councillor Linda McPhail Councillor Harold Steves
- Call to Order: The Chair called the meeting to order at 4:00 p.m.

MINUTES

It was moved and seconded That the minutes of the meeting of the Public Works & Transportation Committee held on Wednesday, November 20, 2013, be adopted as circulated.

CARRIED

NEXT COMMITTEE MEETING DATE

Wednesday, February 19, 2014, (tentative date) at 4:00 p.m. in the Anderson Room

ENGINEERING AND PUBLIC WORKS DEPARTMENT

1. LETTER SUPPORTING CONTINUATION OF LIVESMART BC: SMALL BUSINESS ENERGY EFFICIENCY PROGRAM (File Ref. No. 10-6125-05-01) (REDMS No. 4125963)

Peter Russell, Senior Manager, Sustainability and District Energy, introduced Brendan McEwen, Manager, Sustainability, and commented on Mr. McEwen's past work experience. Discussion ensued and it was suggested that Metro Vancouver members receive a copy of Richmond's letter given that this matter was initiated by Metro Vancouver.

It was moved and seconded

That a letter supporting the continuation of the LiveSmart BC: Small Business Program be sent to the B.C. Minister of Energy and Mines under the Mayor's signature with copies to Metro Vancouver members.

CARRIED

2. WEEKLY/BI-WEEKLY GARBAGE COLLECTION PILOT PROGRAM

(File Ref. No. 10-6405-01) (REDMS No. 4108801)

Suzanne Bycraft, Manager, Fleet and Environmental Programs, provided background information and commented on the proposed pilot program's comprehensive outreach program.

It was moved and seconded

- (1)That a pilot program for single-family garbage collection to evaluate weekly and bi-weekly service levels be undertaken commencing March, 2014;
- (2)That the Chief Administrative Officer and General Manager, Engineering & Public Works be authorized to negotiate and execute an amendment to Contract T.2988, Residential Solid Waste & Recycling Collection Services, to service, acquire, store, assemble, label, deliver, replace and undertake related tasks for the carts, undertake program evaluation and related items associated with this temporary pilot program;
- That staff report back with a progress update of the pilot in July, (3)including recommendations for:
 - (a) services to those residents in the pilot at the conclusion of the program; and
 - *(b)* City-provided garbage collection service levels as a permanent program to all residents serviced by the City.

CARRIED

PLANNING AND DEVELOPMENT DEPARTMENT

3. RICHMOND ACTIVE TRANSPORTATION COMMITTEE **PROPOSED 2014 INITIATIVES** (File Ref. No. 01-0100-20-RCYC1) (REDMS No. 4047203)

Donna Chan, Manager, Transportation Planning, acknowledged Linda Love and Mark Heath, members of the Richmond Active Transportation Committee (RATC), and sent regrets on behalf of Larry Pamer, Chair, ATC, as he could not attend due to health matters.

On behalf of the Public Works and Transportation Committee, the Chair extended get well wishes to Mr. Pamer.

Ms. Chan then distributed copies of page three of the staff report (attached to and forming part of these Minutes as Schedule 1) and advised that 'Figure 3' has been revised to reflect 2013 figures.

In reply to queries from Committee, Ms. Chan and Victor Wei, Director, Transportation, advised that staff have not received any negative feedback regarding the various modes of active transportation permitted along the Railway Avenue Greenway. Also, Mr. Wei commented on safety concerns with regard to users of the greenway not obeying traffic signals, and noted that staff are closely monitoring the usage of the greenway to determine if any adjustments to signage need to be made.

It was moved and seconded

- (1) That the proposed 2014 initiatives of the Richmond Active Transportation Committee, as described in the staff report titled Richmond Active Transportation Committee – Proposed 2014 Initiatives, be endorsed; and
- (2) That a copy of the staff report titled Richmond Active Transportation Committee – Proposed 2014 Initiatives be forwarded to the Richmond Council / School Board Liaison Committee for information.

CARRIED

4. PROVINCIAL 2013-2014 BIKEBC PROGRAM – SUBMISSIONS FOR COST-SHARING

(File Ref. No. 01-0150-20-THIG1/2013) (REDMS No. 4054527)

Ms. Chan thanked Dr. James Lu, Medical Health Officer, Vancouver Costal Health, and Dianne Bissenden, Director, Population and Family Health, Vancouver Costal Health, for their continued support.

It was moved and seconded

(1) That the submission for cost-sharing to the Province's 2013-2014 BikeBC Program for the upgrade of an off-street multi-use pathway as part of the Crosstown Neighbourhood Bike Route, as described in the staff report dated December 20, 2013 from the Director, Transportation, be endorsed; and (2) That should the above applications be successful, the Chief Administrative Officer and the General Manager, Planning and Development, be authorized to execute the funding agreement.

CARRIED

5. MANAGER'S REPORT

(i) Dredging – Cannery Channel

John Irving, Director, Engineering, distributed a letter from Port Metro Vancouver (PMV) dated January 22, 2014 (copy on file, City Clerk's Office), and noted that PMV will update staff daily on the status of the work.

(ii) Capital Works Open House

Mr. Irving spoke of the upcoming Capital Works Open House, noting that the event is tentatively scheduled for April 9, 2014.

(iii) Storm Response

Lloyd Bie, Manager, Engineering Planning, commented on a recent storm that went through Richmond, noting that the City's infrastructure performed well.

The Chair and Romeo Bicego, Manager, Sewerage and Drainage, thanked the Public Works staff for their efforts in managing the City's infrastructure.

(iv) Transportation Updates

Ms. Chan advised that the Province has opened an office at Ironwood Plaza for the George Massey Tunnel Replacement Project.

Also, Ms. Chan noted that she presented the ICBC – City of Richmond Road Safety Partnership report to the Richmond School Board.

(v) Regional Engineering Advisory Committee

Robert Gonzalez, General Manager, Engineering and Public Works, highlighted that he has been selected as the Vice-Chair of the Metro Vancouver Regional Engineering Advisory Committee.

In reply to queries from Committee, Mr. Gonzalez commented on (i) the City's response to snowfall in December 2013; (ii) the status of the Steveston Harbour Long-Term Development Concept; (iii) a potential bylaw to regulate the recycling of materials from homes scheduled to be demolished; and (iv) forthcoming amendments to Policy 2306 – Sustainable 'High Performance' Building – City Owned Facilities as it relates renewable energy and energy consumption.

ADJOURNMENT

It was moved and seconded That the meeting adjourn (4:41 p.m.).

CARRIED

Certified a true and correct copy of the Minutes of the meeting of the Public Works & Transportation Committee of the Council of the City of Richmond held on Wednesday, January 22, 2014.

Councillor Linda Barnes Chair Hanieh Berg Committee Clerk

Schedule 1 to the Minutes of the Public Works and Transportation Committee meeting held on Wednesday, January 22, 2014.



Figure 2: Before & After Off-Street Path along Perimeter of Walter Lee School

<u>Westminster Highway Pathway (No. 6 Road-No. 8 Road)</u>: Removal of centre bollards from the existing off-street pathway and review of further potential improvements including the addition of new streetlights, painted white edge lines and reflectors to improve visibility and the legibility of the pathway at night.</u>

<u>No. 6 Road Pathway (Westminster Hwy-Commerce Parkway)</u>: Construction of a new twoway off-street multi-use pathway on the west side of No. 6 Road as part of the scope of a road widening project.

<u>City Paving Program</u>: Worked with Engineering and Public Works staff to identify priorities for the restoration of roadways with cycling facilities impacted by development activities.

<u>Cycling Improvements in Steveston</u>: Identified additional locations for bike racks along Chatham Street in Steveston Village as well as potential improvements to Bayview Street east of No. 1 Road to enhance cycling (e.g., removal of raised granite pavers).

1.2 Promotion

The Committee participated in the following activities to promote cycling and other active transportation modes in Richmond.

<u>Bike to Work Week (May and October</u> <u>2013)</u>: The Committee worked with organizers of this region-wide annual initiative to continue to successfully stage these events in Richmond. Four bike commuter stations recorded a total of 398 cyclists (i.e., stopping at the commuter station or passing by) during 2-hour periods in May and 272 cyclists were recorded at two bike commuter stations during 2-hour periods in October (see Figure 3).





Re:	Amendment Bylaws for Water and Sewer		
From:	John Irving, P.Eng. MPA Director, Engineering	File:	12-8060-20- 009099/Vol 01
To:	Public Works and Transportation Committee	Date:	January 24, 2014

Staff Recommendation

That

- a) Waterworks and Water Rates Bylaw No. 5637, Amendment Bylaw No. 9099 be introduced and given first, second, and third readings; and
- b) Drainage, Dyke and Sanitary Sewer System Bylaw No. 7551, Amendment Bylaw No. 9101 be introduced and given first, second, and third readings.

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

REPORT CONCURRENCE			
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER	
Sewerage & Drainage Water Services Finance Law	ম ত্ব ত্ব	<u>(4</u>)	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	INITIALS:	APPROVED BY CAO	

Staff Report

Origin

Waterworks and Water Rates Bylaw No. 5637 (the "Water Bylaw") and Drainage, Dyke and Sanitary Sewer System Bylaw No. 7551 (the "Sewer Bylaw") govern the use of and access to the City's water distribution system and drainage and sewer system, respectively. Updates to the bylaw are required periodically to address new or emerging issues.

Analysis

The following is a description of the recommended changes to the Water Bylaw, as proposed with Amendment Bylaw No. 9099 (Attachment 1), and the Sewer Bylaw, as proposed with Amendment Bylaw No. 9101 (Attachment 2).

Water Bylaw Amendments

Mandatory Water Metering for Single-Family Dwellings

Starting in 2014, unmetered single-family dwellings will receive mandatory water meters through the Universal Single-Family Water Meter Program. Other single-family metering programs (volunteer, watermain construction, water service maintenance, building permit applications valued at over \$75,000) will continue in parallel with the new universal program. The proposed Water Bylaw amendment includes the requirement for all single-family dwellings to be metered.

Metered Water Charge Guarantee

The current Water Bylaw provides a first-year guarantee to single-family properties where, if a customer's metered water charge is substantially higher than the flat water charge over the first 12 months, they would be eligible to receive a credit for the difference. The proposed Water Bylaw amendment extends the eligibility criteria to single-family properties with water meters installed through the Universal Single-Family Water Meter Program.

Toilet Rebate Requirements

The proposed Water Bylaw amendment includes the addition of WaterSense as an accepted toilet performance certification. WaterSense, which is a US Environmental Protection Agency (EPA) Program, ensures that products conform to water efficiency specifications.

The proposed bylaw amendment also revises the date-of-construction requirement for the dwelling submitting the toilet rebate application, in order to correspond with the last change in the BC Plumbing Code.

Reduced Rate for Water Leaks on Private Property

The current Water Bylaw provides a reduced rate for leaked water when a leak is promptly repaired by the property owner (within 96 hours). The reduced leak rate applies to a maximum of two consecutive billing quarters, where the water charge is determined based on average

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historical usage at the regular rate, plus excessive usage at the leak rate. This fee adjustment occasionally results in hardship for the property owner, particularly when a leak is undetected until the meter is read, which could be up to three months later.

The proposed Water Bylaw amendment revises the fee adjustment by charging for consumption based only on average historical usage at the regular rate, for a maximum of two consecutive quarters. In addition, the proposed amendment expands the criteria from only underground leaks to all types of leaks, and increases the time for repairing the leak to 14 days.

Sewer Bylaw Amendments

Metered Sewer Charge Guarantee

Sewer is charged based on water consumption for properties with water meters. The proposed Sewer Bylaw amendment includes the same water meter charge guarantee as the proposed Water Bylaw amendment.

Reduced Rate for Water Leaks on Private Property

The current Sewer Bylaw provides monetary relief to properties that have leaks by charging a reduced rate when a leak is promptly repaired by the property owner. The proposed revision to the sewer fee adjustment charges for consumption based only on average historical usage at the regular rate, for a maximum of two consecutive quarters. In addition, the proposed amendment expands the criteria from only underground leaks to all types of leaks, and increases the time for repairing the leak to 14 days.

Drainage System Infrastructure Replacement Fee

The proposed Sewer Bylaw amendment revises the drainage system infrastructure replacement fee to \$133.68, to correspond with the amount presented to Council at the November 25, 2013 Regular Council Meeting.

Financial Impact

None.

Conclusion

Amendment Bylaw No. 9099 proposes changes to Waterworks and Water Rates Bylaw No. 5637, and Amendment Bylaw No. 9101 proposes changes to the Drainage, Dyke and Sanitary Sewer System Bylaw No. 7551. These amendment bylaws include mandatory water metering for single-family dwellings, extending the eligibility criteria for the metered charge guarantee to

meters installed through the universal program, a new accepted performance certification for toilet rebates, revised fee adjustment for leaks on private property, and revised drainage system infrastructure replacement fee.

Lloyd Bie, P.Eng. Manager, Engineering Planning (4075)

18 2

Jason Ho, P.Eng. Project Engineer (1281)

LB:jh

Attachment 1



Bylaw 9099

Waterworks and Water Rates Bylaw No. 5637 Amendment Bylaw No. 9099

The Council of the City of Richmond enacts as follows:

- 1. The Waterworks and Water Rates Bylaw No. 5637, as amended, is further amended:
 - (a) by deleting sections 13(d) and substituting the following:
 - "(d) Every owner of a one-family dwelling or two-family dwelling which has a water meter installed:
 - (i) pursuant to section 14(b) or section 22A of this bylaw; or
 - (ii) as a consequence of a City infrastructure renewal program,

will receive a credit to be applied to future water charges equal to the difference between the metered charges for the first 12 months of consumption subsequent to the initial meter reading for billing purposes and the amount that would have been payable on a flat rate basis, provided:

- (iii) the metered charges exceed the flat rate by more than \$10;
- (iv) the **property owner** submits a request for the credit to the **City** in writing within 15 months of the initial metered billing start date; and
- (v) there has been no change in ownership of the property."

(b) by deleting section 14 and substituting the following:

"14. Right to Substitute a Meter Service

- (a) The General Manager, Engineering & Public Works shall have the right at any time to substitute a meter service in lieu of an ordinary service to any premises.
- (b) Commencing January 1, 2014, the General Manager, Engineering & Public Works shall establish a schedule for substituting a meter service in lieu of an ordinary service for all existing one-family dwellings in the City that do not have meter service, and the City will supply and install water meters at these one-family dwellings at no charge to the property owner.

- (c) For water meters installed pursuant to section 14(a) or (b), meter rates will be payable from the time such meter is installed notwithstanding that the customer may have paid in advance a flat rate for the current year which has not expired, but a rebate of part of such advance payment proportionate to the unexpired part of the current year shall be credited and allowed to the customer's meter rate account for such meter service."
- (c) by deleting subsection 22B(a)(i) and substituting the following:
 - "(i) the **dwelling unit** was constructed prior to October 3, 2011;"
- (d) by deleting subsection 22B(a)(iii) and substituting the following:
 - "(iii) the replacement toilet is approved by the Canadian Standards Association (CSA), the Canadian Uniform Plumbing Code (CUPC), the Warnock Hersey (WH) Mark or WaterSense; and"
- (e) by deleting sections 25A and substituting the following:
 - "25A. Leaks

Notwithstanding section 25, in the case of a leak in the customer's waterworks, if:

- (a) the General Manager, Engineering & Public Works is satisfied that the customer did not know or could not reasonably have known about the leak; and
- (b) the customer repairs the leak to the satisfaction of the General Manager, Engineering & Public Works within 14 days of the customer's discovery of the leak,

the City will charge the customer in accordance with section 25B below for both the billing period in which the leak was discovered and the previous billing period.

- 25B. Leak Calculation
 - (a) When a customer qualifies under section 25A above, the City will determine the average amount of water recorded by the water meter per billing period for the customer's property over the last twelve months, or if that information is unavailable, by using the average for all users with the same type of property (as categorized in Schedule B or C, as applicable) over the past 12 months (the "average amount").
 - (b) If the amount recorded by the water meter for the billing period in which the leak was discovered is greater than the average amount, or if the amount recorded by the water meter for the previous billing period is greater than the average amount, the customer will pay, for both the billing period in which the leak was discovered and the previous billing

period, the regular rate per cubic metre (in Schedule B or C, as applicable) for all amounts recorded up to the average amount."

- (c) Where the General Manager, Engineering & Public Works is satisfied that a customer was not notified of a leak until more than 30 days after the City became aware of the leak, the customer will pay the regular rate per cubic metre (in Schedule B or C, as applicable) for the period from the most recent billing until notification was provided, based on the average amount for that period."
- (f) by deleting the following from item 1 of Schedules B and C:

"Undetected leak rate per cubic meter (per section 25B of this bylaw) \$0.6996"

2. This Bylaw is cited as "Waterworks And Water Rates Bylaw No. 5637, Amendment Bylaw No. 9099".

FIRST READING	 CITY OF RICHMOND
SECOND READING	APPROVED for content by originating dept
THIRD READING	 U3
ADOPTED	APPROVED for legality by Solicitor

MAYOR

CORPORATE OFFICER



Drainage, Dyke and Sanitary Sewer Bylaw No. 7551 Amendment Bylaw No. 9101

The Council of the City of Richmond enacts as follows:

- 1. The Drainage, Dyke and Sanitary Sewer System Bylaw No. 7551, as amended, is further amended:
 - (a) by deleting section 2.1.2 and substituting the following:
 - "2.1.2 Every property owner whose property has been connected to the City drainage system must pay the drainage system infrastructure replacement fee of \$133.68 per property for the period January 1 to December 31 of each year."
 - (b) by adding the following after section 2.1.2:
 - "2.1.3 Every owner of a one-family dwelling or two-family dwelling which has a water meter installed:
 - (a) pursuant to the universal or voluntary water metering program under section 14(b) or 22A of the *Waterworks and Water Rates Bylaw No.* 5637; or
 - (b) as a consequence of a City infrastructure renewal program,

will receive a credit to be applied to future sewer charges equal to the difference between the metered charges for the first 12 months of consumption subsequent to the initial meter reading for billing purposes and the amount that would have been payable on a flat rate basis, provided:

- (c) the metered charges exceed the flat rate by more than \$10;
- (d) the **property owner** submits a request for the credit to the City in writing within 15 months of the initial metered billing start date; and
- (e) there has been no change in ownership of the property."

(c) by deleting section 2.3A and substituting the following:

"2.3A Leaks

2.3A.1 In the case of a leak in a metered property's waterworks, if:

- (a) the General Manager, Engineering and Public Works is satisfied that the property owner did not know or could not reasonably have known about the leak; and
- (b) the property owner repairs the leak to the satisfaction of the General Manager, Engineering and Public Works within 14 days of the property owner's discovery of the leak,

the City will determine and charge sanitary sewer user fees in accordance with section 2.3A.2 for both the billing period in which the leak was discovered and the previous billing period.

- 2.3A.2 The following applies if a metered property qualifies under section 2.3.A.1 above:
 - (a) The City will determine the average amount of water recorded for the metered property per billing period for the last twelve months, and if that information is unavailable, by using the average for the same type of property over the past 12 months (the "average amount").
 - (b) If the amount of water recorded for the metered property for the billing period in which the leak was discovered is greater than the average amount, or if the amount recorded for the metered property for the previous billing period is greater than the average amount, the property owner will pay the regular sanitary sewer metered rate specified in Part 2 of Schedule B for all amounts recorded up to the average amount."
- (d) by deleting the following from item 2 of Schedule B:

"Underground leak rate per cubic metre of water exceeding average amount (as defined in Section 2.3A.2(a)): \$0.8577" 2. This Bylaw is cited as "Drainage, Dyke and Sanitary Sewer Bylaw No. 7551, Amendment Bylaw No. 9101".

FIRST READING	 CITY OF RICHMOND
SECOND READING	 APPROVED for content by originating dept
THIRD READING	53
ADOPTED	APPROVED for legality by Solicitor

MAYOR

CORPORATE OFFICER



То:	Public Works and Transportation Committee	Date:	January 22, 2014
From:	John Irving, P.Eng. MPA Director, Engineering	File:	10-6340-20- P.11203/Vol 01
Re:	Canadian National Railway Company Agreements with the City Related to Railway Crossings for City Capital and Other Infrastructure Projects		

Staff Recommendation

That:

- the City enter into agreements related to railway crossings (including, without limitation, Crossing Agreements and Right of Entry Agreements) with Canadian National Railway Company from time to time as needed in connection with the construction and maintenance of current and future City capital and other infrastructure projects, and
- 2. the Chief Administrative Officer and the General Manager, Engineering and Public Works be authorized to sign such agreements on behalf of the City.

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

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REPORT CONCURRENCE				
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER		
Law	v	aci		
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	INITIALS:	APPROVED BY CAO		

Staff Report

Origin

The City maintains a network of approximately 650 km of roadways that serve the travel needs of Richmond's residents and businesses. As this network is upgraded to meet future needs, some of the upgraded roadways may encroach into land controlled by external agencies and require agreements with the relevant authorities.

The purpose of this report is to seek authorization for the Chief Administrative Officer and the General Manager, Engineering and Public Works to execute agreements related to railway crossings (including, without limitation, Crossing Agreements and Right of Entry Agreements) on behalf of the City with Canadian National Railway Company ("CN Rail") from time to time as needed in connection with the construction and maintenance of current and future City capital and other infrastructure projects.

Analysis

The Westminster Highway / Nelson Road widening project is being constructed to improve the traffic flow in the East Richmond area. As part of the project, two rail crossings will need to be upgraded and widened to match the new roadworks. These are located on Nelson Road south of Blundell Road and Westminster Highway east of No.9 Road.

These rail crossings are under the authority of CN Rail. CN requires the City to enter into written agreements prior to approving the upgrades to these crossings. Staff require Council approval to enter into the proposed agreements due to the indemnity and release clauses contained within them as indemnities represent unfunded contingent liability for the City and consequently require express Council authorization.

Financial Impact

The cost of the two identified rail crossings is included in Capital Projects 41263 (Nelson Road Improvements) and 41268 (Westminster Highway Improvements).

If the City is called upon its obligation to indennify CN Rail for these or any other such agreements, then it is possible there could be costs payable by the City. Such costs cannot be quantified at this time.

Conclusion

Maintaining the City's road network is essential to ensuring the smooth flow of people and goods in Richmond. Periodic upgrades at highly congested areas will be required to reduce delays to traffic. Upgrades to rail crossings will be required in some locations as part of these road upgrades. To complete this work, the City will be required to enter into agreements related to railway crossings (including, without limitation, Crossing Agreements and Right of Entry Agreements) with CN Rail from time to time as needed.

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

MC:mc



То:	Public Works and Transportation Committee	Date:	January 31, 2014
From:	John Irving, P.Eng. MPA Director, Engineering	File:	10-6340-20- P.14201/Vol 01
Re:	2014 Paving Program		

Staff Recommendation

That the staff report dated January 31, 2014, titled "2014 Paving Program" from the Director, Engineering be received for information.

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

REPORT CONCURRENCE				
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER		
Finance Division Roads & Construction Transportation	ष्ठ व	20-		
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	INITIALS:	APPROVED BY CAO		

Staff Report

Origin

In past years, staff have presented the annual paving program to the Public Works & Transportation Committee for information.

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 2014 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 annual 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 in the last few years by low paving contract prices and the allocation of provisional funds including \$700,000 of additional funding that was approved as part of the 2013 Capital Budget. Staff will continue to monitor this funding gap and provide future updates through periodic Ageing Infrastructure Planning updates and the Capital Budget process.

Included in Attachment 1 is a list of the primary paving sites included in the 2014 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. A map for all proposed paving sites is also attached (Attachment 3).

The tender for this year's Paving Program was issued to the market on January 15, 2014 with a bid closing date of January 30, 2014. The low bidder was Columbia Bitulithic (Lafarge Canada).

Paving is tentatively scheduled to commence in April 2014, or earlier as weather permits, and will continue until approximately the end of October 2014. Residents and businesses impacted by construction will receive hand delivered letters in advance of construction, road advisories will be advertised in local newspapers and the schedule will be posted on the City's website.

Asphalt paving costs are heavily influenced by oil pricing and have fluctuated widely in past years. In an effort to reduce the City's exposure to these price fluctuations, the contract for the 2014 Paving Program will include an extension clause that will allow the City and Contractor to extend the contract through 2015 by mutual agreement.

The 2014 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 2014 Paving Program is funded through the Capital Budget as follows:

Available Funding	Amount (\$)
2014 Annual Asphalt Re-Paving Program - MRN - Recurring	\$ 831,000
2014 Annual Asphalt Re-Paving Program - Non-MRN - Recurring	\$ 2,105,460
Total Available Funding	\$ 2,936,460

Financial Impact

Funding for the 2014 paving program was approved by Council as part of the 2014 Capital Budget.

Conclusion

The 2014 Paving Program is scheduled to commence in April and the contract is in the process of being awarded.

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

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

ATTACHMENT 1 2014 PAVING PROGRAM – PRIMARY LOCATIONS

LOCATION	FAULTS
4000 Block Blundell Road	- Utility Cuts, Pavement Cracking
11000 Block Blundell Road	- Utility Cuts, Pavement Cracking
8000 Block Cambie Road	- Utility Cuts, Pavement Cracking
7000 Block Garden City Road	- Utility Cuts, Pavement Cracking
9000 Block Blundell Road	- Utility Cuts, Pavement Cracking
6000 Block Miller Road	- Utility Cuts, Pavement Cracking
5000 Block Jacombs Road	- Utility Cuts, Pavement Cracking
7000 Block Minoru Boulevard	- Utility Cuts, Pavement Cracking
9000 Block Granville Avenue	- Utility Cuts, Pavement Cracking
4000 Block Garden City Road	- Utility Cuts, Pavement Cracking
9000 Block Leonard Road	- Utility Cuts, Pavement Cracking
Hammersmith Gate	- Utility Cuts, Pavement Cracking
Hammersmith Way	- Utility Cuts, Pavement Cracking
Trites Road (Trites to Westwater Drive)	- Utility Cuts, Pavement Cracking
8000 Block Lansdowne Road	- Utility Cuts, Pavement Cracking
6000 Block No. 5 Road (gas station frontage)	- Utility Cuts, Pavement Cracking
2000 Block Sweden Way	- Utility Cuts, Pavement Cracking
10000 Block No. 3 Road	- Utility Cuts, Pavement Cracking
No. 7 Road from 1000m south of Westminster to Cambie	- Utility Cuts, Pavement Cracking
Road and from Cambie Road to 800m west	
6000 Block No. 2 Road	- MRN Treatment
6000 Block Westminster Highway	- MRN Treatment
Bridgeport Road and No. 5 Road Intersection	 MRN Treatment
6000 Block Steveston Highway	- MRN Treatment
22000 Block Westminster Highway	- MRN Treatment
Knight Street	 MRN Treatment
9000 Block Geal Road	- Utility Cuts, Pavement Cracking
5000 Block Wallace Road	- Utility Cuts, Pavement Cracking
5000 Block Garrison Road	- Utility Cuts, Pavement Cracking
8000 Block Bowcock Road	- Utility Cuts, Pavement Cracking
Cessna Drive	- Utility Cuts, Pavement Cracking
Jaskow Drive	- Utility Cuts, Pavement Cracking
Evancio Crescent	- Utility Cuts, Pavement Cracking
Viscount Way	- Utility Cuts, Pavement Cracking
Garry Street (No. 1 Road to Fentimen Place)	- Utility Cuts, Pavement Cracking

ATTACHMENT 2 2014 PAVING PROGRAM – SECONDARY LOCATIONS

LOCATION	FAULTS		
6000 Block Blundell Road	- Utility Cuts, Pavement Cracking		
7000 Block No.5 Road	- Utility Cuts, Pavement Cracking		
12000 Block Garden City	- Utility Cuts, Pavement Cracking		
8000 Block Finn Road	- Utility Cuts, Pavement Cracking		
7000 Block No.4 Road	- Utility Cuts, Pavement Cracking		
Westminster Hwy (Jacombs Rd to 400 m west)	- Utility Cuts, Pavement Cracking		







Re:	Sustainable High Performance Building Policy Update		
From:	John Irving, P.Eng, MPA Director, Engineering and Public Works	File:	10-6000-01/2013-Vol 01
To:	Public Works and Transportation Committee	Date:	January 24, 2014

Staff Recommendation

- 1. That the City's Sustainable "High Performance" Building Policy City Owned Facilities Policy #2306 be rescinded.
- 2. That the City adopt the revised Sustainable "High Performance" Building Policy City Owned Facilities as per the attached report from the Director of Engineering dated January 24, 2014.

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

Att. 3

REPORT CONCURRENCE					
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL			
Arts, Culture & Heritage Community Social Development Parks Services Recreation Services Fire Rescue RCMP	অ ত্র ত্র ত্র ত	I WANAGER			
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	INITIALS:				
REVIEWED BY POLICY AND PROCEDUR SUBCOMMITTEE	RES INITIALS:	APPROVED BY CAO			

Staff Report

<u>Origin</u>

In support of Council Term Goal #8.1 ("<u>Continued implementation and significant progress</u> towards achieving the City's Sustainability Framework, and associated targets) and in the context of ongoing corporate energy planning and Council's adoption of the Community Energy and Emissions Plan, a Resource Management Study for Corporate Buildings Energy Use was completed to estimate the projected energy demand from corporate buildings over the next twenty years.

The study examined the impacts to corporate building energy use that may result from increased service levels to serve a growing population. Evaluating costs and benefits for implementing energy efficiency strategies were central to the study. Based on key findings, a report was brought forward to Council to seek support for revising the Sustainable High Performance Building Policy. On June 24, 2013, Council endorsed the following recommendations:

- 1. That the High Performance Building Policy No. 2306 be updated to include specific emphasis on corporate energy and GHG emissions targets and conservation priorities that reduce long term energy consumption and operational costs.
- 2. That staff report back to Council with the updated High Performance Building Policy No. 2306.

The existing policy is presented as **Attachment 1**. This report summarizes key findings of the policy review and the proposed revised policy (**Attachment 2**).

Background

In 2012, 72% of the City's corporate energy use and 67% of the City's GHG emissions were from corporate buildings. With anticipated population growth over the next 20 years, a resulting increased demand for corporate infrastructure and services are expected, creating the potential for increased energy use and GHG emissions. With no additional mitigating measures in place beyond Building Code regulated efficiency gains, it is estimated that corporate building energy use could increase by up to 25% and GHG emissions could increase by 22% by 2020, as compared to 2007 to 2009 average energy usage.



Energy Consumption Forecast and City Energy Resources to 2031

Over the last 15 years, significant resources have been put towards increasing energy efficiency and reducing GHG emissions at the City's corporate buildings, with greater than expected results. Staff efforts included the setting of specific management objectives and evaluation criteria for the development of City buildings culminating in the adoption of the Sustainable "High Performance" Building Policy (HPBP) for City Owned Facilities (#2306) in 2005. The policy established the Leadership in Energy and Environmental Design (LEED[®]) rating system as the measurement tool for new buildings and major renovations. The policy sets clear direction for the sustainable construction of City buildings, targeting better than code construction. The results of the HPBP have been evident with the following exceptionally well-designed civic buildings: Community Safety building (renovation), Steveston Fire Hall No.2, Hamilton Community Centre, Richmond Olympic Oval, Sea Island Fire Hall No.4, and Hamilton Fire Hall No.5.

<u>Analysis</u>

As the City plans to replace infrastructure over the coming years, an updated high performance building policy is well timed to have a positive impact on building planning, design, construction and maintenance processes. Standards, construction methods, technology, and building codes have improved since 2005, when the current policy was adopted. In addition, in December 2013, the BC Building Code was updated with new energy performance requirements and now references more stringent energy standards. This policy update aims to help ensure that the sustainable development of the City of Richmond's corporate buildings moves forward with these changes and allows the City to continue to strive for better than code facilities.

During the review of the City's current policy and of industry best practices, the following opportunities were identified that, if implemented, would strengthen corporate building practices:

1. Acknowledge that the most important operating asset in any new building are its people.

- 2. Establish direction for collecting specific energy reduction, efficiency, or renewable energy LEED® credits
- 3. Formalize direction for efficient building operations once buildings are constructed and for existing buildings
- 4. Utilize an integrated design process (IDP) for new buildings, major renovations, and developer delivered spaces. An IDP is a collaborative approach to building planning and design can help achieve higher performing buildings that meet occupant needs, increases energy and water efficiency, and reduces long term operational and maintenance costs.
- 5. Embed energy use and GHG emissions targets to help drive building design and system decision making processes

Best Practices Review

Currently the leading edge of sustainable building design involves looking at LEED[®] and beyond for new buildings criteria, with more time and effort put towards the building planning and design stages. Some trends include the following:

- <u>LEED[®] Gold "plus"</u> with targeted or mandatory points from specific LEED[®] categories to achieve increased energy and operational efficiency.
- <u>Net Zero Energy and Net Positive buildings</u> buildings that on an annual basis produce as much or more energy as they use.
- <u>Living Building Challenge</u> includes stringent requirements for only sustainable products and materials to be used during construction, and energy efficiency is measured after the building has been operating with a net zero requirement.
- Formal Integrated Design Process (IDP) for new buildings through a collaborative team approach during building planning and design, the vision, goals, and objectives for a building and its performance are defined and maintained throughout the entire construction process to reduce costly backtracking and redesign.
- <u>Increased focus on passive design approach for building construction</u> passive design looks to maximize energy efficiency and occupant comfort through minor building architecture alterations to allow for optimized interactions between the building and its environment, and reduce the need for active mechanical systems (such as maximizing the use of daylight and natural ventilation). As compared to energy efficiency retrofits at operating buildings, passive design alterations during building construction can have a dramatic effect on operational costs and efficiencies for significantly less cost.
- <u>Building Energy Performance monitoring and certification</u> LEED[®] for new construction encompasses sustainable design guidelines for new facilities, but increasingly there is interest in energy performance monitoring and benchmarking for operating buildings such as Canadian Energy Star®¹ certification.

¹ Energy Star[®] certified buildings, refers to buildings that meet strict North American energy performance standards. Typically these buildings use 20–30% less energy and cause fewer greenhouse gas emissions than comparable buildings.

• <u>Energy reduction targets</u> – There are a few municipalities in the region that have adopted corporate GHG reduction targets. No jurisdiction in the region (except the City of Seattle) was identified to have adopted a corporate building energy reduction target. Richmond has committed to becoming carbon neutral through Council's endorsement of the Working Towards Carbon Neutrality: Implementation Strategy, and has an opportunity to take a leadership position through the adoption of a building energy target.

Attachment 3 contains for more detailed best practice information.

<u>Options</u>

Based on the above findings and staff analysis, the following options are proposed for consideration.

Option 1 – Maintain the existing policy (Not Recommended)

If the option to not proceed with this update was chosen, City staff would continue to strive and work on increased energy efficiency and reduced GHG emissions at civic facilities through collaboration with consultants for new buildings and through system improvements to existing buildings.

This option is not recommended. Through the review of current building standards, best practices and internal processes, it was determined that an updated policy and additional guidance would be useful to the corporation.

Option 2 – Adopt the revised Sustainable High Performance Building Policy (Recommended)

Updating the High Performance Building Policy as per Attachment 2 is recommended. Highlights of the revised policy improvements include:

- 1. Acknowledgement that a "sustainable" building needs to ensure that occupant comfort and functionality allow for high levels of productivity and overall happiness.
- Clear targets for new buildings in regards to energy performance with targets of 10 points in the LEED[®] Optimize Energy Performance criteria – 10 pts currently is equal to 24% better than code (ASHRAE 90.1 – Energy Standards for Buildings).
- 3. Guidance on following an integrated design process for building planning and design, to help ensure that new civic facilities and spaces meet occupant needs, maximize energy efficiency, maximize water efficiency, and reduce long term operational and maintenance costs in the most cost effective way.
- 4. Reference to sustainable operation and maintenance guidelines for new and existing buildings, including requirements for the re-commissioning of the City's civic facilities. This guideline will help enable new buildings to be maintained at a high performing level, as would be expected, and is also applicable to existing buildings by setting a high performance operational guideline to target and strive for.
- 5. Embedded overall building energy use and GHG emissions targets for no net increase in building energy use and GHG emissions as compared to the 2012 baseline, while incorporating all new energy demands from any increase in infrastructure and service demand.

6. Include a long term stretch goal for the City to strive to build net zero energy and carbon neutral buildings by 2030.

These changes were considered in the context of the planned construction of Fire Hall No.1 and No.3 and the Aquatic and Older Adults Centre. Specific performance requirements for *Optimize Energy Performance* criteria would have a significant effect on reducing energy operational costs and GHG emissions liability. Table 1 provides a summary of the analysis and shows that despite the 100% increase in floor space for these four replacement facilities, energy use would grow by only 55% and GHG emissions by 40% if specific points in *Optimize Energy Performance* criteria are achieved.

Table 1: Energy Use and GRG Emission Comparison for Fire Halls No.1 and No. 3 and the Minoru Aquatic Centre (including the Older Adults Centre): Existing, Construction with the current High Performance Building Policy, and revised High Performance Building Policy

Construction Scenarios	Energy Consumption (GJ)	Energy Cost (current rates)	GHG emissions (tCO2e)	GHG emissions liability/year	Bldg Area (ft ²)
Actual Energy Consumed in Existing Operations (2012)	24,657	\$276,875	1,040	\$26,005	77,256
Estimated Energy Performance with EXISTING HPBP (LEED Gold)	43,484	\$487,138	1,839	\$45,982	147,500
Estimated Energy Performance with UPDATED HPBP (LEED Gold with 10 Energy & Atmosphere Points)	32,613	\$365,353	1,379	\$34,487	147,500
LEED Gold vs LEED Gold with 10 Energy & Atmosphere Points	10,871	\$121,784	460	\$11,496	0

Adopting this revised policy update will not prevent staff from pursuing greater energy and operational efficiency gains where strong economic business cases exist. As the City is exploring the increased use of district energy and has experience maintaining renewable energy technologies, analysis will be undertaken to determine the most efficient and cost effective options for the new Minoru Park precinct of buildings (Aquatic Centre and Older Adults Centre) and Fire Hall No.1). Part of this analysis will include an assessment of the feasibility of connecting these facilities to the City's district energy system and/or installing technologies that facilitates heat sharing between buildings. With these initiatives, the City has the potential to build a "showcase" net zero energy certified building at one of the new facilities in Minoru Park.

Financial Analysis

Recently approved Phase 1 projects in the Major Capital Facilities program and Fire Hall No.3, have been budgeted to meet the LEED[®] Gold standard, as per the current High Performance Building Policy. Through design optimization and available incentives, staff are reviewing the feasibility of achieving specific points from LEED's Optimize Energy Performance criteria within the current budget projections Phase 1. Similarly, achieving net zero energy and/or carbon neutral operations for one or more of the Phase 1 facilities will require further analysis to determine feasibility.

With respect to financial implications of the policy on future capital programs, it is anticipated that achieving energy-specific LEED points has potential for impacting future corporate building planning, design, implementation, and operation budgets, either increasing or decreasing total investments required. Where capital costs are increased due to energy efficiency measures, lower operating costs would be anticipated, as compared to a building that does not implement Optimize Energy Performance criteria, thus creating payback opportunities for additional investments. The main intent of the policy is to ensure greater emphasis on planning, design and construction practices that lead to innovative outcomes. For instance, high performance buildings are increasingly including passive heating and cooling technologies that can be used to replace costly mechanical systems.

Financial Impact

Staff anticipate that the new policy will have no additional financial impact on future capital projects, as compared to how they are currently budgeted. As per the current approach, each building project will be evaluated on its own merits and circumstances, recognizing that the suite of energy management measures will be tailored to the project, its user groups and the allocated budget. Staff already use acceptable payback periods and life cycle costing during the planning and design process as matter of regular business in an effort to optimize capital and operating expenditures.

Conclusion

The City of Richmond has shown leadership with regards to energy efficient corporate building operations. The City has been consistently recognized by BC Hydro as being a Power Smart Leader for its commitment to reduce energy use and corresponding GHG emissions. An updated Sustainable High Performance Building Policy with strong, better than code targets for energy efficient new buildings and spaces, and improved internal process and requirements will allow the City of Richmond to continue to be proactive when it comes to energy efficiency at its new and existing corporate buildings. In the context of the Council's recently adopted Community Energy and Emissions Plan, the proposed new policy has the potential to stand out as a model for pragmatic, but innovative, private development in the City.

Leví Higgs Corporate Energy Manager (604-244-1239)

Attachment 1	Existing - Sustainable High Performance Building Policy - City-Owned	REDMS# 1409383
	Facilities	
Attachment 2	Proposed - Sustainable High Performance Building Policy - City-Owned	REDMS# 3988334
	Facilities	
Attachment 3	Detailed Best Practice Review	REDMS# 4065692



City of Richmond

Policy Manual

Page 1 of 2	Adopted by Council: January 24 th , 2005		Policy 2306			
File Ref: 06-2045-00 Vol 1	SUSTAINABLE "HIGH P FACILITIES	PERFORMANCE"	BUILDING	POLICY -	CITY	OWNED

POLICY 2306:

It is Council policy to:

1. <u>Undertake Comprehensive Financial Consideration</u>

Projects for new buildings and major renovations will be evaluated based on considerations of life-cycle costing and initial financial investment requirements.

2. <u>Incorporate High Performance Attributes into Building Design and Construction to</u> <u>the Maximum Extent Possible</u>

- LEED[®]BC will be used as the standard by which to assess building performance.
- That LEED Gold accreditation be set as the desired standard of building performance for new City buildings greater than 2000 sq.m (approximately 20,000 sq.ft).
- The City will seek to meet the performance standards of LEED Silver certification as a minimum requirement for major renovations to existing facilities and new City Buildings smaller than 2000 sq.m (20,000 sq.ft), but may not necessarily seek formal accreditation.

3. <u>Pursue Continual Improvement Through Building Retrofit and Efficient Building</u> <u>Maintenance</u>

Existing facilities and equipment will be upgraded to higher efficiencies as budgets and circumstances allow, and where the change offers a simple payback of no more than five years.

Equipment will be maintained to energy-efficient standards.

4. Foster Awareness and Innovation

A continuous education program in resource efficiency procedures and practices will be maintained.

All employees will be encouraged to suggest and initiate projects that will save energy and optimize efficiencies in other resource areas (natural and financial).



City of Richmond

Policy Manual

Page 2 of 2	Adopted by Council: January 24 th , 2005	Policy 2306	
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5. Undertake Regular Monitoring and Reporting

Corporate energy consumption and extent to which the City has met its LEED building objectives will be monitored and reported on a regular basis using existing City reporting tools.



City of Richmond

Policy Manual

Page 1 of 1	Adopted by Council: TBD	Policy TBD
File Ref: 06-2045-00 Vol 1	SUSTAINABLE "HIGH PERFORMANCE" BUILDING FACILITIES	POLICY - CITY OWNED

POLICY TBD:

It is Council policy to:

- 1. Ensure that newly constructed civic buildings or spaces are built with consideration of occupant safety, comfort and indoor environmental quality, in the context of approved budgets.
- 2. Ensure effective internal stakeholder engagement is carried out through an integrated design process during the planning, design, implementation, and completion of new facilities or spaces and associated outdoor areas. An integrated design process utilizes a collaborative design approach, involving consultants, staff and user group representatives, to set a well defined vision and performance objectives for new building or spaces, and to identify strategies for achieving the desired outcomes.
- 3. Incorporate high performance attributes into new civic facility or space design and construction to the maximum extent that relate to:
 - The most current Leadership in Energy and Environmental Design (LEED[®]) New Construction (NC) classification will be used as the standard by which to assess new facility construction. LEED[®] Gold certification be set as the desired target of building performance for new City buildings.
 - That at a minimum score of 10 points be targeted from LEED[®] Optimize Energy Performance criteria where a lifecycle assessment demonstrates reductions in operational costs and/or payback periods are within acceptable levels.
 - For other criteria of LEED[®] for NC, consideration will be given to measures that reduce energy and water use, reduce maintenance and operational costs, reduce greenhouse gas emissions, and optimize indoor environmental quality.
- 4. Follow sustainable operation and maintenance best practices guidelines for new and existing buildings, which emphasize conservation, optimized building performance, and continued improvement in energy use, water efficiency, and indoor environmental quality.
- 5. Maximize energy and operational efficiency through the selective re-commissioning of civic facilities on an on-going basis. Re-commissioning is a form of quality assurance testing that is carried out to ensure that building physical plant systems operate as effectively as possible given occupancy patterns and building function.
- 6. Target no net increase in corporate building energy use and related greenhouse gas emissions, as compared to 2012 levels by:
 - Aiming to not increase energy demand or GHG emissions when constructing replacement infrastructure; and/or
 - Striving to offset increased energy demand and GHG emissions through reductions at other civic facilities.

7. Aim to construct net zero energy and carbon neutral corporate buildings by 2030. **PWT - 39**

Best Practices Review

Building Design and Construction standards

Currently the leading edge of sustainable building design is looking at LEED[®] and beyond LEED when it comes to sustainable new buildings criteria, with more time and effort put towards the building planning and design stages. Some of the leading edge sustainable building requirements and actions that jurisdictions in the region have in place include the following;

- <u>LEED[®] Gold "plus"</u> with targeted or mandatory points from specific LEED[®] categories to achieve increased energy and operational efficiency.
 - The City of Vancouver "Green" Rezoning policy requires that suitable new buildings achieve a minimum of 63 LEED[®] for new construction points (Gold level of certification), with a minimum of six points obtained from the Optimize

Energy Performance criteria, one point from the Water Efficiency criteria, and one point the Storm Water criteria.

 UBC has developed a LEED[®] implementation guide for new buildings, which has mandatory and optional LEED[®] point requirements, including a minimum of twelve Optimize Energy Performance points for new facilities.



Figure 1: UBC CIRS building – certified LEED[®] Platinum

- <u>Energy Net Zero and Net Positive buildings</u> buildings that on an annual basis produce as much or more energy as they use.
 - Recent regional examples of this type of sustainable building are the UBC Centre for Interactive Research on Sustainability (CIRS), the SFU campus UniverCity daycare, and the City of Vancouver VanDusen Garden visitor centre.



Figure 2: VanDusen Garden visitor centre

- <u>Living Building Challenge</u> includes stringent requirements for only sustainable products and materials to be used during construction (low or no VOC paint and plastics, locally sourced material), and energy efficiency is measured after the building has been operating with a net zero requirement.
 - The three facilities mentioned above (UBC CIRS, UniverCity daycare, and VanDusen visitor centre) were constructed to the Living Building Challenge standards.

- The Living Building Challenge is administered through the International Living Future Institute, which has less stringent certification for buildings that can demonstrate Net Zero energy performance.
- <u>Formal Integrated Design Process (IDP) for new buildings</u> where a collaborative team approach by consultants and engineers during building planning and design is undertaken

to ensure that the vision, goals, and objectives for a building and its performance are realized, without undue backtracking and redesign. Part of the purpose of an IDP is to maximize efficiencies and functionality at the outset of the project in order to provide the most cost effective sustainable high performing building.

 Regional District of Nanaimo and the Province of Manitoba have prescriptive expectations of what their integrated design process for building construction consists of.



Figure 3: Integrated Design Process diagram

- <u>Increased focus on passive design approach for building construction</u> a passive design approach for new building looks to maximize energy efficiency and occupant comfort through minor building architecture alterations to allow for optimized interactions between the building and its environment, and reduce the need for active mechanical systems. Typically, as compared to energy efficiency retrofits at operating buildings, energy efficient passive design alterations before the building is constructed can have a dramatic effect on operational costs and efficiencies for significantly less cost.
 - o City of Vancouver passive design toolkit.
- <u>Building Energy Performance monitoring and</u> <u>certification</u> – LEED[®] for new construction encompasses sustainable design guidelines for new facilities, but increasingly there is interest in energy performance monitoring and benchmarking for operating buildings.
 - EnergyStar Portfolio manager is currently being used widely in North America as a performance and benchmarking tool. This online tool can be used to benchmark energy and water use and GHG emissions, and can



Figure 4: Energy Star Certified building promotion

provide a high energy efficient operating building with ongoing recognition if it achieves 75% or higher rating – Certified EnergyStar Building.

Corporate Energy and GHG reduction targets in the region

Partly due to the voluntary legislative commitment by municipalities to be carbon neutral and to reduce GHG emissions, most municipalities in the region and BC have adopted community GHG

reduction targets, with some adopting energy reduction targets as well, similar to the City of Richmond commitment to reduce community GHG emissions by 33% and energy use by 10% % by 2020 as compared to 2007 levels.

There are only a few that have adopted GHG reduction targets for their corporate operations, and none that were identified that have adopted corporate energy reduction targets (Seattle is the nearest identified jurisdiction with corporate building energy reduction target).

City	Energy Target	GHG Target
City of Vancouver	-	Carbon Neutral by 2020
District of Nanaimo	-	Carbon neutral by 2030
City of North Vancouver	-	25% reduction by 2020 (2007)
City of Surrey		20% reduction by 2020 (2007)
City of Coquitlam	<u>-</u>	30% reduction by 2015 (2005)
City of Seattle	20% reduction by 2020 (2008)	-
University of BC		66% reduction by 2020 (2007)
		Carbon Neutral by 2050
Kwantlen University (Richmond)		33% reduction by 2020 (2007)
	-	80% reduction by 2050 (2007)

Table 1: Corporate GHG and energy reduction targets

Pros and Cons of LEED[®] New Construction as a Building Performance Standard

The key advantages and disadvantages with continuing to use LEED[®] were assessed, and are summarized as follows:

- Advantages

- Industry accepted and well established -
 - LEED[®] for new construction has been a building design standard in Canada for over 11 years, and it has been become well established within various building development stakeholders



- Locally and regionally recognized -
 - LEED[®] for new construction is a standard and a brand that Council, corporate staff, and the public recognize, which allows for the City of Richmond's sustainable corporate building efforts to be more easily publicized

- As BC building codes improve, it is anticipated that LEED[®] standards will improve along with the changes -
 - Using LEED[®] will allow the organization to continue to target building better than code buildings.
- Includes the requirement for a commissioning agent -
 - Involving a commissioning agent from the onset of a project helps to ensure that the design intent of the building owner is carried through with throughout the different stages of planning, design, and construction.

- Disadvantages

- LEED[®] for new construction does not specifically consider building operations and maintenance -
 - LEED[®] for new construction focuses on building design and not operational standards. There is a separate LEED[®] program, for existing buildings, which can be used for operating buildings, but the program is stringent.
- LEED[®] for new construction does not specifically consider the building's GHG emission performance -
 - Currently LEED[®] for new construction does not prioritize measures that look to reduce long-term GHG emissions related to building operation.
- Value engineering for LEED® points -
 - If and when budget constraints occur on a project, typically what will transpire is that LEED[®] credits will be sought from the most inexpensive categories, which may have no bearing on the operational efficiency of the building and does not take into consideration life cycle costing.