City of Richmond

Agenda

Public Works and Transportation Committee

Anderson Room, City Hall
6911 No. 3 Road

Wednesday, June 17, 2015
4:00 p.m.

Pg. # ITEM

MINUTES

PWT-5 ***Motion to adopt the minutes of the meeting of the Public Works and Transportation Committee held on Thursday, May 21, 2015.***

NEXT COMMITTEE MEETING DATE

Wednesday, July 22, 2015, (tentative date) at 4:00 p.m. in the Anderson Room

DELEGATIONS

PWT-11 1. (1) James Repenning, Senior Vice President, Harvest Power, to speak on Harvest Power's activities.

(2) Jim Nelson, Senior Manager of Marketing, Power Smart, BC Hydro, to speak to the City's energy conservation efforts.

PLANNING AND DEVELOPMENT DIVISION

2. **GILBERT ROAD WIDENING (DINSMORE BRIDGE-ELMBRIDGE WAY) – IMPLEMENTATION STRATEGY**
(File Ref. No. 10-6360-01) (REDMS No. 4543746 V. 2)

PWT-15 See Page **PWT-15** for full report

Designated Speaker: Victor Wei

STAFF RECOMMENDATION

That the staff report titled "Gilbert Road Widening (Dinsmore Bridge-Elmbridge Way) – Implementation Strategy," dated April 24, 2015 from the Director, Transportation be received for information.

3. **PROPOSED IMPLEMENTATION STRATEGY FOR RIVER PARKWAY: GILBERT ROAD TO CAMBIE ROAD**
(File Ref. No. 10-6360-01) (REDMS No. 4541620 v. 7)

PWT-21 See Page **PWT-21** for full report

Designated Speaker: Victor Wei

STAFF RECOMMENDATION

(1) That the proposed implementation strategy for River Parkway (Gilbert Road-Cambie Road), as described in the staff report dated April 24, 2015 from the Director, Transportation, be endorsed; and

(2) That the project to extend River Parkway from 200 m northeast of Gilbert Road to Cambie Road be submitted for Council's consideration as part of the City's budget process.

ENGINEERING AND PUBLIC WORKS DIVISION

4. **ANNUAL FLOOD PROTECTION REPORT 2015**
(File Ref. No. 10-6060-04-01) (REDMS No. 4591508)

PWT-28 See Page **PWT-28** for full report

Designated Speaker: Lloyd Bie

STAFF RECOMMENDATION

That the staff report titled "Annual Flood Protection Report 2015" (dated May 29, 2015, from the Director, Engineering) be received for information.

5. **2015 CORPORATE ENERGY MANAGEMENT UPDATE**
(File Ref. No. 10-6125-05-01) (REDMS No. 4580306 v. 9)

PWT-40 See Page **PWT-40** for full report

Designated Speaker: Levi Higgs

STAFF RECOMMENDATION

That the staff report titled "2015 Corporate Energy Management Program Update" from the Director, Engineering, dated May 25, 2015, be received for information.

6. **BC CLIMATE LEADERSHIP PLAN**
(File Ref. No. 10-6125-07-02) (REDMS No. 4581892)

PWT-56 See Page **PWT-56** for full report

Designated Speakers: Brendan McEwen & Nicholas Heap

STAFF RECOMMENDATION

That a letter under the Mayor's signature be sent to the Premier's office, with copies to the Minister of Environment, the Chair of the BC Climate Leadership Team, the provincial Climate Action Secretariat, and Richmond MLAs, requesting that the comment period for the draft "Framework for the Climate Leadership Plan" be extended to September 30, 2015, to provide sufficient time for local government review.

7. **WATER AND ENERGY CONSERVATION PROGRAMS FOR BUSINESSES AND RESIDENTIAL PROPERTIES**
(File Ref. No. 10-6125-07-02) (REDMS No. 4588225

PWT-60 See Page **PWT-60** for full report

Designated Speakers: Brendan McEwen & Lloyd Bie

STAFF RECOMMENDATION

That, as presented in the staff report titled "Water and Energy Conservation Programs for Businesses and Residential Properties" dated May 27, 2015, from the Director, Engineering:

(1) the implementation of a program to install efficient, low-flow water fixtures in businesses and institutions be endorsed;

(2) the Chief Administrative Officer and General Manager, Engineering and Public Works be authorized to execute a funding agreement with FortisBC and other potential partners to implement the program; and

(3) the City's existing water conservation kit offered to properties with a water meter be expanded to include all residential customers.

8. **NATIONAL PUBLIC WORKS WEEK - UPDATE**
(File Ref. No. 10-6000-01) (REDMS No. 4585216 v. 2)

PWT-65

See Page **PWT-65** for full report

Designated Speaker: Jatinder Johal

STAFF RECOMMENDATION

That the staff report titled "National Public Works Week – Update" from the Director, Public Works, be received for information.

9. **MANAGER'S REPORT**

ADJOURNMENT

City of Richmond

Minutes

Public Works and Transportation Committee

Date:	Thursday, May 21, 2015
Place:	Anderson Room Richmond City Hall
Present:	Councillor Chak Au, Chair Councillor Harold Steves (entered at 4:05 p.m.) Councillor Derek Dang Councillor Alexa Loo Mayor Malcolm Brodie (entered at 4:41 p.m.)
Absent:	Councillor Ken Johnston
Also Present:	Councillor Carol Day (entered at 4:06 p.m.)
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 and Transportation Committee held on Wednesday, April 22, 2015, be adopted as circulated.

CARRIED

DELEGATIONS

(1) With the aid of a PowerPoint presentation (copy on file, City Clerk's Office), Goran Oljaca, Director, Engineering and Construction, Water Services, Metro Vancouver, spoke on the Seymour-Capilano Twin Tunnels, and the following information was highlighted:

- the Capilano Raw Water Pump Station was commissioned in March 2015, and as one the largest municipal pump stations in Canada, it boasts eight 2,000 horsepower pumps; and

- the Seymour-Capilano commission plan included disinfecting of the tunnels, filling and flushing of the tunnels, and commissioning the Capilano Raw Water Pump Station, Energy Recovery Facility and Break Head Tank.

Mr. Oljaca then commented on water quality benefits as a result of the completion of this decade long infrastructure project, noting turbidity removal, improved primary disinfection, pH adjustment and corrosion control, and lower chlorine dosages for secondary disinfection.

Cllr. Steves entered the meeting (4:05 p.m.)

Cllr. Day entered the meeting (4:06 p.m.)

In reply to queries from Committee, Mr. Oljaca remarked that the decrease in water consumption in Richmond may be a result of increased conservation efforts. Also, he stated that the Seymour-Capilano Twin Tunnels treat approximately 1.8 billion litres of drinking water daily.

(2) Achilles Mallari, Operations Manager, Sierra Waste Services, provided an overview of Sierra Waste Services' operations in Richmond. He commented on the company's commitment to their partnership with the City, noting that they wish to see the City meet its solid waste diversion goals.

Mr. Mallari then spoke to the Sierra Waste Services' safety and customer service training protocols, remarking that both areas are of utmost importance to the company. Also, he commented on Sierra Waste Services' participation in local events such as the City's annual Public Works Open House.

In reply to queries from Committee, Mr. Mallari advised that Sierra Waste Services only operates in Richmond and Langley as this allows the company to provide quality service to both communities. Also, he noted that staff are trained monthly on safety protocol and that new technologies for solid and organic waste collection are examined as the need arises.

PLANNING AND DEVELOPMENT DIVISION

1. **STREET FURNITURE PROGRAM**
(File Ref. No. 10-6360-03-03) (REDMS No. 4491651 v. 4)

In reply to queries from Committee, Victor Wei, Director, Transportation, advised that the bus shelters, including the benches in the shelters are owned by the supplier and therefore, staff are not aware of what happens to them once they are removed.

Also, he stated that the installation of bus shelters is determined by the amount of transit user traffic at any given transit location. Mr. Wei then commented on vandalism of bus shelters, noting that it is not an area of concern.

It was moved and seconded

(1) That staff be directed to issue a Request for Proposals for the supply, installation and maintenance of a city-wide street furniture program that includes advertising, as described in the staff report dated May 4, 2015, from the Director, Transportation; and

(2) That staff report back on the responses to the above Request for Proposals with a recommendation prior to December 1, 2015.

CARRIED

ENGINEERING AND PUBLIC WORKS DIVISION

2. **ALEXANDRA DISTRICT ENERGY UTILITY EXPANSION PHASE 4**
(File Ref. No. 10-6600-10-02) (REDMS No. 4557795 v. 5)

In reply to queries from Committee, Alen Postolka, Manager, District Energy, advised that the business case for the Alexandra District Energy Utility reported that payback for the project is 21 years; however, he highlighted that as a result of ongoing development, the most current business case reports that payback for the project is 17 years. Also, he stated that the project's internal rate of return is comparable to that of other utility projects.

It was moved and seconded

That funding of up to $7.6 million through borrowing from the Utility General Surplus be approved for capital expenditure for design, construction and commissioning of the Phase 4 expansion of the Alexandra District Energy Utility and that the Five Year Financial Plan (2015-2019) be amended accordingly.

CARRIED

3. **SMART THERMOSTATS PILOT PROGRAM**
(File Ref. No. 10-6125-07-02) (REDMS No. 4565860)

In reply to queries from Committee, Brendan McEwen, Manager, Sustainability, stated that should the smart thermostat project be successful, staff would report back to Council to consider increasing funding for the program to add to the number of maximum dparticipants.

Discussion ensued regarding other manners in which residents can save costs associated with energy consumption, and it was suggested that a list of these methods be compiled in an effort to promote energy savings.

Mayor Brodie entered the meeting (4:31 p.m.)

It was moved and seconded
That the development and implementation of a "Smart Thermostats Pilot Program" for homes be endorsed.

CARRIED

4. **2014 ANNUAL WATER QUALITY REPORT**
(File Ref. No. 10-6375-01) (REDMS No. 4550012)

Bryan Shepherd, Manager, Water Services, noted that the City's water meter program, leak protection program, and washing machine rebate program have likely contributed to the reduction in water consumption in Richmond.

In reply to queries from Committee, Mr. Shepherd stated that water turbidity has likely decreased as a result of the quality of water delivered by Metro Vancouver. Also, he commented on water infrastructure, noting that ongoing maintenance and Capital projects ensure that the infrastructure can properly deliver drinking water. Mr. Shepherd then stated that if residents suspect they may have a leak, the City has a leak rebate program and staff will assist residents in investigating their concerns.

It was moved and seconded
That the staff report titled "2014 Annual Water Quality Report," dated April 28, 2015, from the Director, Public Works be received for information.

CARRIED

5. **BI-WEEKLY GARBAGE COLLECTION**
(File Ref. No. 10-6405-03-01) (REDMS No. 4567623)

Suzanne Bycraft, Manager, Fleet and Environmental Programs, provided background information, highlighting that residents in single-family homes met the 70% waste diversion target in 2013. She commented on the number of garbage and recycling options provided to residents, such as the large item pick up program, noting that bi-weekly garbage collection will further encourage residents to recycle. Ms. Bycraft then stated that in an effort to meet the City's objective to divert 80% of waste by 2020, the bi-weekly garbage collection initiative is important in advancing recycling performance in the single-family residential sector.

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

- overall cost savings under the proposed bi-weekly garbage collection program will be minimal in the initial transition year as a result of the purchase of new garbage carts and the loss in collection efficiency as these carts take longer to service when compared to the manual collection process;
- with regard to odour concerns, organics collection will continue to be provided weekly with the proposed bi-weekly garbage collection;

- depending on the cart size selected by residents, staff are projecting a cost saving of approximately 2% to 15%; for instance, residents who opt for a smaller cart will be rewarded with costs savings;
- the 240-litre cart was utilized for the bi-weekly garbage collection pilot and will be the standard size of cart for the proposed program;
- residents will have the opportunity to influence their garbage collection costs; for instance, a 120-litre cart will result in costs savings, and should residents with a 120-litre cart wish to have additional garbage collected, they may purchase an additional garbage tag for $2;
- garbage tipping fees are set by Metro Vancouver; although there may be a decrease in tipping fees as a result of the proposed bi-weekly garbage collection program, the City will incur costs related to communication and outreach initiatives and illegal dumping; and
- the City's garbage collection provider is committed to customer service and in the event a resident has missed their scheduled collection, an additional collection service may be provided; however, should this circumstance become reoccurring, staff would identify options to address this need and report to Council accordingly.

Discussion ensued on the potential for a garbage bin at the Works Yard for residents who have missed their scheduled collection, and it was noted that such a program is not advisable.

It was moved and seconded

(1) ***That City garbage collection service for single-family dwellings be changed from weekly to every other week (bi-weekly) commencing the first quarter of 2016, with recycling services (i.e. Blue Box and Green Cart) continuing to be provided on a weekly basis;***

(2) ***That, as part of implementation of bi-weekly collection service, the City provide one garbage cart per household to residents in single-family dwellings, where residents have the opportunity to select the cart size of their choice;***

(3) ***That the Chief Administrative Officer and General Manager, Engineering and 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 garbage carts, and related operational service changes associated with this program;***

(4) That an amendment to the City's Five Year Financial Plan (2015 – 2019) to include capital costs of $2.6 million with $2.3 million funding from the City's General Solid Waste and Recycling Provision and $300,000 from the City's General Utility Surplus, be approved; and

(5) That appropriate bylaw amendments be brought forward as part of the 2016 solid waste and recycling utility budget process and amending rates, to enact this service.

CARRIED
Opposed: Cllr. Loo

6. **MANAGER'S REPORT**

(i) Utility Box Art Wraps

With the aid of photographs, Romeo Bicego, Manager, Sewerage and Drainage, commented on the attractiveness of utility boxes that have been wrapped in art.

(ii) Project WET

Tom Stewart, Director, Public Works, highlighted that over 600 kids from 13 Richmond elementary schools participated in Project WET – an interactive program aimed at educating students about the importance of water.

(iii) Public Works Open House

Mr. Stewart stated that the annual Public Works Open House is scheduled for Saturday, May 23, 2015 at the Works Yard from 11 a.m. to 3 p.m.

ADJOURNMENT

It was moved and seconded
That the meeting adjourn (5:14 p.m.).

CARRIED

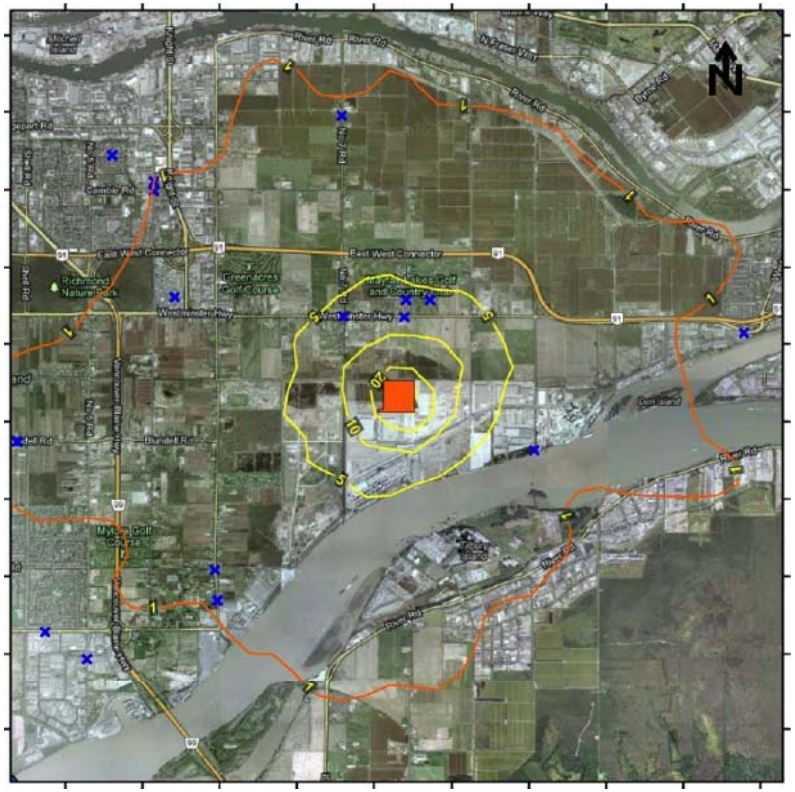
Certified a true and correct copy of the Minutes of the meeting of the Public Works and Transportation Committee of the Council of the City of Richmond held on Thursday, May 21, 2015.

Councillor Chak Au
Chair

Hanieh Berg
Committee Clerk

Off-Site Odour Monitoring

PWT - 11



- **Dispersion modeling:** to assess the potential impact, based on emissions, climate and topography

- **Complaint tracking**: weather conditions are recorded from regional weather stations around the time of a complaint

- **Odour Risk Forecast**: operations can be tailored based on a daily emailed forecast indicating high, medium, low odour risk for each hour of the day

On-Site Odour Monitoring

PWT - 12

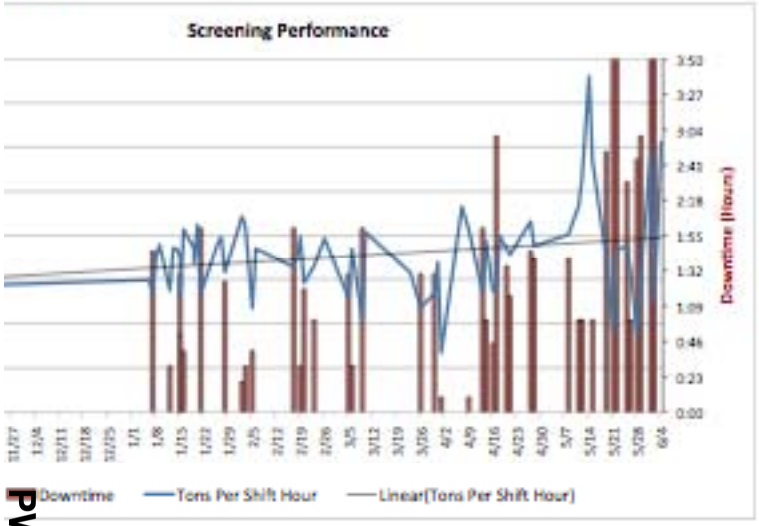
- **Portable Dynamic Olfactometer: Staff regularly quantitatively assess the odour levels**
- **Gas Monitoring: Process air and ambient gases are checked weekly for odour indicator gases (especially hydrogen sulphide and methane)**
- **Independent checks: A third party regularly checks emissions at the source and the efficiency of emission control technologies**

Monitoring Alone Does not Control Odours

- **The best way to reduce emissions is to follow BMPs at every step of the way, all the time**
  - Follow feedstock recipe
  - Monitor moisture, oxygen, temperature
  - Move material on low odour risk days
  - Screen on low odor risk days
  - Minimize fugitive emissions
  - Minimize dust
- **We've gone from the tipping point of odour issues to good neighbour relations with strict attention and adherence to improving our practices**

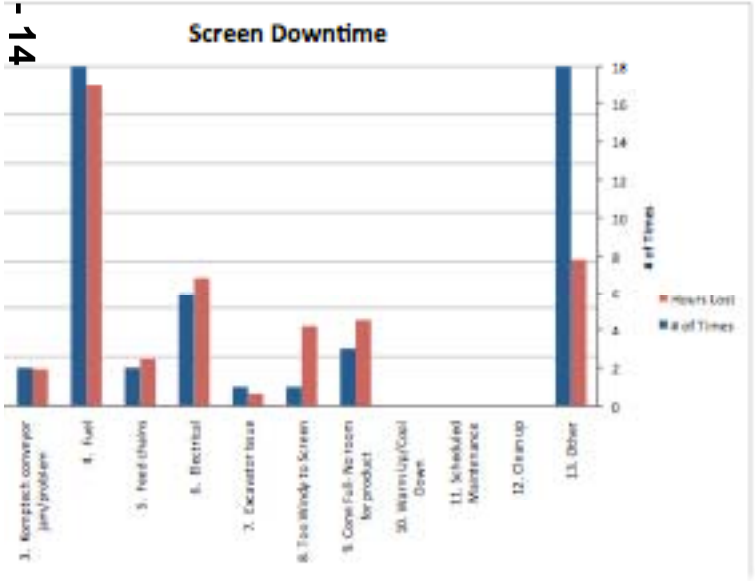
PWT - 13

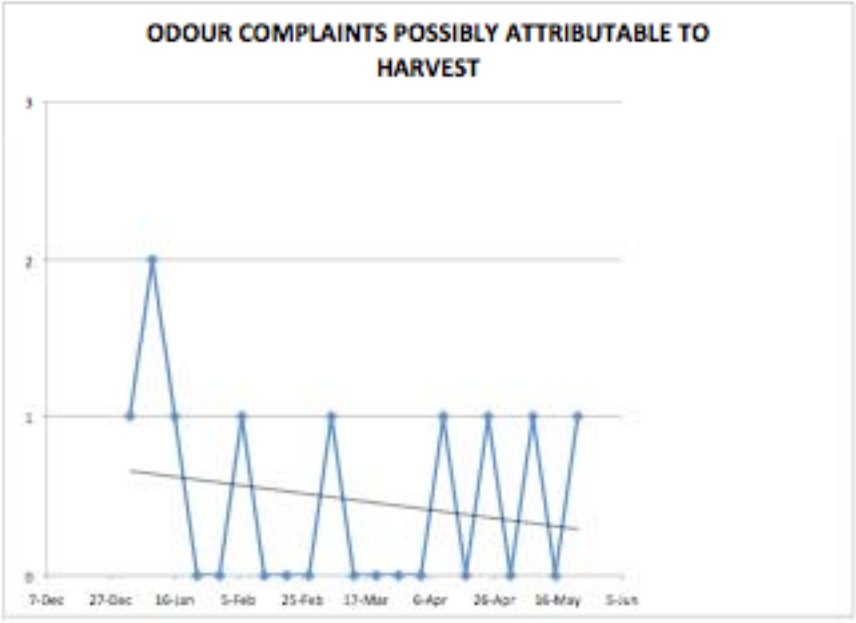
Through 6/5/15



PWL - 14

time % 3.23% **Avg Tons Per Hr** 32.4





City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	April 24, 2015
From:	Victor Wei, P. Eng. Director, Transportation	**File:**	10-6360-01/2015-Vol 01
Re:	**Gilbert Road Widening (Dinsmore Bridge-Elmbridge Way) – Implementation Strategy**		

Staff Recommendation

That the staff report titled "Gilbert Road Widening (Dinsmore Bridge-Elmbridge Way) – Implementation Strategy," dated April 24, 2015 from the Director, Transportation be received for information.

Victor Wei, P. Eng.
Director, Transportation
(604-276-4131)

Att. 1

REPORT CONCURRENCE		
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**
Engineering Development Applications	☑ ☑	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	**INITIALS:**	**APPROVED BY CAO**

Staff Report

Origin

As identified in the *City Centre Area Plan* (CCAP), the section of Gilbert Road between Dinsmore Bridge and Westminster Highway is designated as a major thoroughfare functioning as a gateway connection to YVR and Vancouver as well as a critical link in the City Centre road network. While the ultimate configuration of Gilbert Road is to consist of four travel lanes with full frontage improvements including sidewalks, boulevard and off-road cycling facilities, some portions of this roadway between Dinsmore Bridge and Elmbridge Way today have only two travel lanes with no curb, gutter or sidewalk, thereby limiting the traffic capacity travelling through the signalized intersection at River Parkway and resulting in recent public complaints on travel delays.

In recognition of the reduced capacity within this un-widened section of Gilbert Road and the need to support continued growth in regional and local traffic through this growing Oval Village area, this report is to present an implementation strategy to complete the ultimate urban upgrade of Gilbert Road by providing a consistent four-lane standard. The widened Gilbert Road, coupled with the implementation of River Parkway (along the previous CPR right-of-way), is expected to significantly reduce traffic delays at the Gilbert Road/River Road intersection and remove the need for providing an interim road connection between the old and new sections of River Road.

Findings of Fact

The section of Gilbert Road between Dinsmore Bridge and Westminster Highway averages 30,000 weekday vehicle trips and provides a road connection to a number of local and regional destinations including: YVR, City Centre, Richmond Olympic Oval, Richmond General Hospital, and the fast developing Oval Village area. Together with the Russ Baker Way-Arthur Laing Bridge corridor, this road facility also functions as a gateway corridor connecting Richmond to Vancouver and other regional centres. This section is also part of TransLink's Major Road Network (MRN) in recognition of its regional significance.

The CCAP defines the following components for a major thoroughfare: four traffic lanes, left-turn lanes, centre medians, bike lanes, and pedestrian facilities. The Gilbert Road widening project aims to achieve these standards established for a City Centre thoroughfare.

Analysis

Existing Conditions

Currently, Gilbert Road south of Dinsmore Bridge to Elmbridge Way has a mix of two-lane and four-lane road sections. Some sections have no curb, gutter or sidewalks. The existing conditions in different sections of this corridor are described below.

- Dinsmore Bridge to River Road: This section was recently widened, through an adjacent development, from two to four lanes with left turn lanes and median treatments. A new intersection at Gilbert Road-River Road was also constructed with full traffic signalization.

- River Road to Lansdowne Road: This section is primarily a two lane facility with no curb and gutter. At the two end intersections, there is additional road capacity to support a five lane cross-section with left turn lanes. There are no sidewalks or other frontage improvements.
- Lansdowne Road to Elmbridge Way: This section has a five lane cross-section. There is a northbound on-street bike lane (but not in the southbound direction).

Ultimate Configuration

The ultimate configuration of this corridor, from the south end of Dinsmore Bridge to Elmbridge way would consist of the following elements:

- Two northbound and two southbound traffic lanes with additional left turn lanes at intersections.
- On-street bike lanes on both sides of the road.
- Signalized intersections at River Road, Lansdowne Road, and Elmbridge Way.
- Raised/landscaped median treatments.
- Frontage improvements to include treed boulevards, sidewalks and greenways for pedestrians and cyclists, and rain garden treatments.

Project Scope of Work

The overall scope of the project from Dinsmore Bridge to Elmbridge Way aims to upgrade Gilbert Road from existing partial two-lane configuration to an ultimate full four-lane configuration and is summarized below.

- Dinsmore Bridge to River Road: This section was completed recently to the ultimate configuration.
- River Road to Lansdowne Road: This section will be widened from two lanes to four lanes with left turn lanes and a raised median. Full curb and gutter will be built with the exception of a short distance on both sides of the road north of Lansdowne Road (along part of the frontages of adjacent properties that are not currently under redevelopment). Full behind the curb frontage improvements on the west side of the road (except along the Winter Club frontage) will be built. Temporary walkways will be built (east side of the road and along the Winter Club frontage) as part of the Transportation Demand Management (TDM) contributions from area developers to provide a complete walkable corridor before the full behind the curb frontage improvements are achieved.
- Lansdowne Road to Elmbridge Way: Widening on the west side of the road to provide a southbound bike lane. Frontage improvements will include landscaped boulevard, sidewalk and minor widening of both end intersections.

Implementation Strategy

Typically, new road construction or road widening is development-driven. A developer, as part of the development process, would be responsible for all frontage improvements including road works. In the case of the Gilbert Road widening, four separate developments (Aspac, Onni, Intracorp, and Cressey) with different completion time lines are involved. Adding to the

complexity of the project is that due to the length of the corridor, there are frontage 'gaps' (i.e., Winter Club and the east side of Gilbert Road north of Lansdowne Road) with no active redevelopment. The coordination of road works among the developments and completing the widening over the full length of the corridor with these frontage 'gaps' are logistical challenges in the implementation of this project.

To meet the above challenges, staff worked closely with the four developers over the last few years to develop an implementation strategy that would achieve the full major thoroughfare standards for this corridor (with the exception of behind-the-curb frontage improvements along properties that are yet to be developed). The full implementation of this project is expected to be completed within the next one to two years. The contributions and cooperation of the four developers and their design teams are acknowledged.

An alternative strategy of the City carrying out the above improvement as a capital project was also considered. This alternative was not pursued due to the following reasons:

- As the 2015 Capital Program is fully committed, the earliest that this road widening project would be constructed is 2016. Therefore, this project would be advanced by only six to twelve months if it were to be carried out by the City.

- The addition of this project in 2016 Capital Program would also require the removal or delaying of other planned transportation projects (such as No. 2 Road south end widening) in the 2016 Capital Program.

- The City would have to upfront significant capital costs, the amount of which would far exceed the DCC credits that would be granted to the developers.

- The developers would not be able to coordinate the road works with their respective frontage improvements.

Construction Management and Public Awareness

Gilbert Road is a major commuter corridor that carries heavy traffic volumes on a daily basis. Keeping this roadway open to traffic and minimizing traffic disruptions during the construction phase of this project will be of high priority as part of the implementation logistics. As such, staff will work with the project contractors to develop and implement a Construction Parking and Traffic Management Plan (per requirements as part of the development approval process for each development) to ensure that inconvenience to the public is kept to a minimum. A public information campaign will also be carried out to advise motorists in advance of the construction status and alternative routes of travel. Council will also be advised of the status of the project by means of memoranda or Committee reports as necessary.

Construction Phases

The Gilbert Road widening project is expected to consist of the following construction phases (see Attachment 1).

- Phase 1 (Dinsmore Bridge to River Road): The works include full five-lane widening and construction of a new signalized intersection at Gilbert Road/River Road). This phase was completed by Aspac in 2014.

- Phase 2 (River Road to Lansdowne Road): The works include full five-lane widening, frontage improvements on the west side of the road (with the exception of the Winter Club frontage), and temporary walkways along the remaining frontages. This phase will be jointly undertaken by Intracorp and Onni with a completion date by early 2016.

- Phase 3 (Lansdowne Road to Elmbridge Way): The works include road widening to complete the on-street bike lane system, full frontage improvements on the west side of the road (east side frontage completed by a previous development), and widening of the two end intersections. This phase will be carried out by Cressey with an anticipated completion date by 2017.

Public Art

As this section of Gilbert Road is one of the key gateways into Richmond, all three developers (Intracorp, Onni and Cressey) will be incorporating public art elements within their respective developments. All of the projects will be within the public realm and visible from Gilbert Road, thereby significantly enhancing the streetscape in this area.

Financial Impact

None. The Gilbert Road widening project will be carried out by the developers in the area. As the various construction phases are completed, DCC credits will be given to the respective developers for works completed to achieve the ultimate road standards. As TransLink has approved the road improvement as part of its 2013 MRN Minor Capital Program, the City will submit a cost-share claim to TransLink for up to one-half of the total Roads DCC credits issued in relation to the construction of this roadway following completion of the work.

Conclusion

Gilbert Road is a gateway corridor and a designated element of the MRN. The Gilbert Road widening project aims to achieve the full standards of a major thoroughfare as identified in the transportation component of the CCAP. The provision of increased capacity for vehicular traffic and other active travel modes in this corridor supports the various policy statements in the OCP pertaining to mobility and access. This project will be carried out by area developers through the Roads DCC Program over three construction phases with an overall completion date of 2017. The proposed implementation strategy for this road widening project has no impact on the City's annual or five-year Capital Road Program.

Gordon Chan, P. Eng.
Special Advisor, Transportation Projects
(604-276-4021)

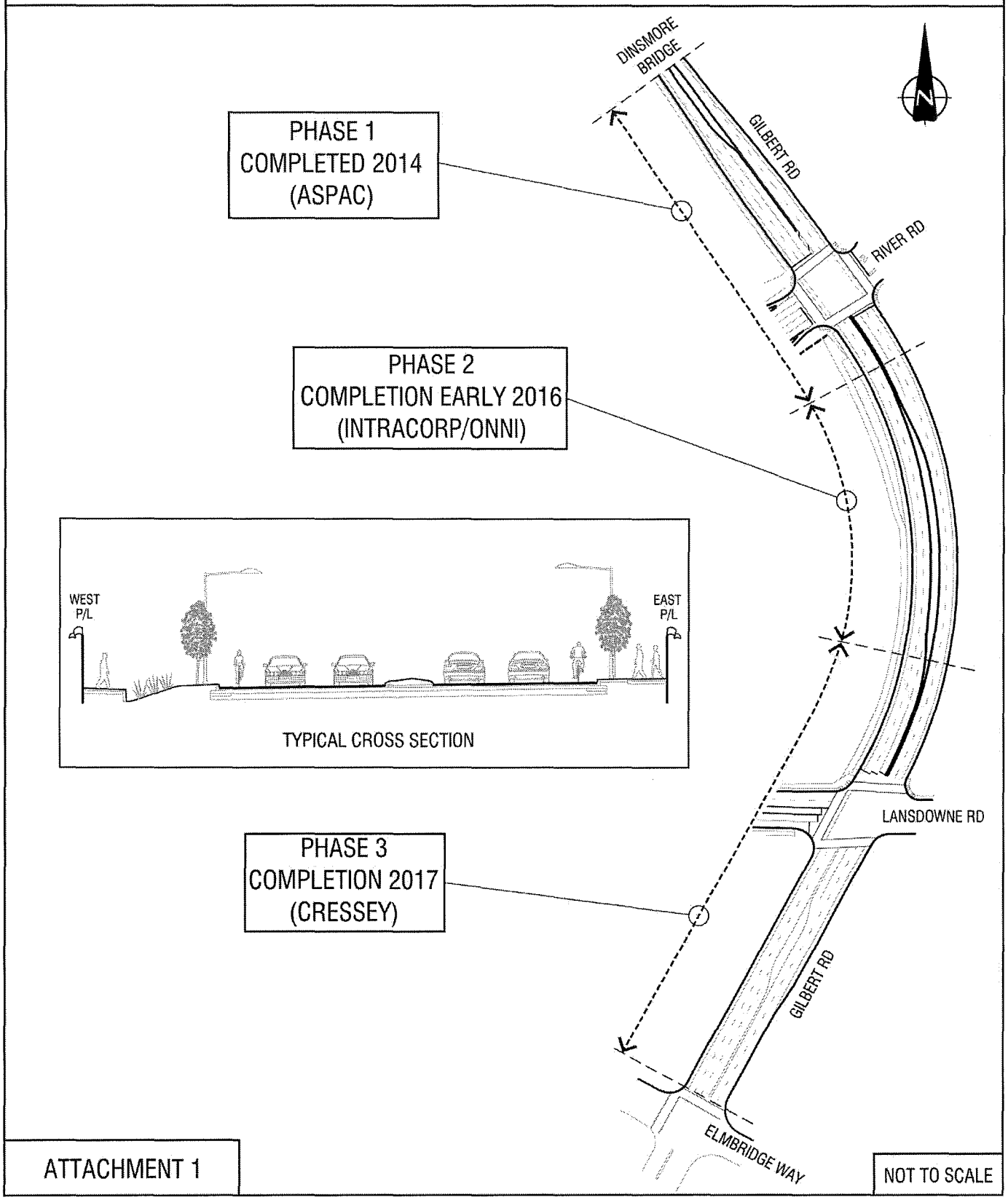
Joan Caravan
Transportation Planner
(604-276-4035)

GFC:jc

Att. 1: Implementation Phases and Typical Cross-Section of Gilbert Road Widening Project

GILBERT ROAD WIDENING (DINSMORE BRIDGE-ELMBRIDGE WAY)

IMPLEMENTATION PHASES AND TYPICAL CROSS SECTION



City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	April 24, 2015
From:	Victor Wei, P. Eng. Director, Transportation	**File:**	10-6360-01/2015-Vol 01
Re:	**Proposed Implementation Strategy for River Parkway: Gilbert Road to Cambie Road**		

Staff Recommendation

1. That the proposed implementation strategy for River Parkway (Gilbert Road-Cambie Road), as described in the staff report dated April 24, 2015 from the Director, Transportation, be endorsed; and

2. That the project to extend River Parkway from 200 m northeast of Gilbert Road to Cambie Road be submitted for Council's consideration as part of the City's budget process.

Victor Wei, P. Eng.
Director, Transportation
(604-276-4131)

Att. 2

REPORT CONCURRENCE		
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**
Finance Engineering	☑ ☑	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	**INITIALS:**	**APPROVED BY CAO**

Staff Report

Origin

The interim realigned River Road at the south end of Dinsmore Bridge was opened to the public in August 2014. Since the opening, the City had received feedback from the public regarding the new roadway, particularly related to the long wait time at the new Gilbert Road/River Road traffic signal and the configuration of the interim roadway with the 90-degree turns at both ends. To date, a number of short-term traffic measures had successfully been implemented to address these concerns by reducing the overall wait time from all intersection approaches while planning work continued for the extension of River Parkway[1] further to the north to replace the interim re-aligned River Road.

This report outlines the proposed implementation strategy to expedite the River Parkway extension (along the former CP Rail corridor) north of Gilbert Road to Cambie Road as a long-term traffic improvement solution and an ultimate replacement of the existing River Road, which is consistent with the City Centre Area Plan.

Analysis

The construction of a new four-lane arterial roadway along the former CP Rail corridor from No. 2 Road to Capstan Way is a key component of the *City Centre Area Plan* (CCAP) in support of the City's vision to:

- improve public open space and access to the river by establishing and extending the Middle Arm Waterfront Park; and
- establish a continuous north-south major thoroughfare across the City Centre that provides an alternative route for through traffic.

To achieve the City's vision, such a roadway has been implemented sequentially starting from the south/west at No. 2 Road, either through City's capital program or as part of development frontage works. The most recent effort was the construction of a new roadway between Hollybridge Way and Gilbert Road that included a new temporary roadway immediately northeast of Gilbert Road and just south of the Dinsmore Bridge. This interim road transition is necessary to maintain network continuity and accommodate existing traffic flows along existing River Road until River Parkway is extended further to the north to provide a viable alternative to this existing road.

Project Objectives

The planned northward extension of River Parkway will fulfill the following objectives:

- enhance traffic operations of the existing River Road-Gilbert Road intersection by eliminating the interim roadway connection;
- improve overall network traffic operations in the City Centre by providing a continuous alternate route to No. 3 Road and existing River Road;

[1] The name "River Parkway" for this roadway section from Gilbert Road to Capstan Way was announced at the July 28, 2014 open Council meeting.

- facilitate the development of the Middle Arm Waterfront Park as well as the redevelopment of abutting properties by improving access;
- advance the implementation of the CCAP road network and minimize the amount of interim roadway construction that would be rendered obsolete; and
- complete the new roadway connection in advance of the expiry in 2028 of a City-YVR lease agreement that permits the City's interim road connection of the realigned River Road back to the existing River Road to cross YVR property located underneath the Dinsmore Bridge, and thus continue to accommodate existing road users traveling between West Richmond and Cambie Road.

Ultimate and Interim Standards

The interim standard for River Parkway proposed for this project would comprise a two-lane road with paved shoulders for cyclists and pedestrians, streetlights, and traffic control devices at intersections (see Attachment 1 for cross-section). The ultimate standard would comprise a four-lane major arterial road with turning lanes at intersections, centre median, curb and gutter, treed boulevard, directional off-street bike paths, and sidewalks (see Attachment 1 for cross-section). The interim standard will be upgraded to the ultimate standard as fronting properties redevelop.

Initial Construction via Development Process

The River Parkway section from Gilbert Road to 200 m northeast (see Attachment 2) will be constructed via the development process per a Council-approved rezoning application (i.e., RZ 11-585209). Generally, the developer (Onni) will construct the full road cross-section along the length of the north site frontage to the north curb inclusive, which includes two east- and two westbound travel lanes with grass and tree-lined boulevards on either side of an off-street eastbound bike path located between the eastbound vehicle lanes and sidewalk. This roadway section is to be completed as part of Phase 2 of the development, which is anticipated in the next two years.

Continued Extension via City Capital Program: Proposed Project Scope

Beyond the construction scope secured through the development process as described above, the overall scope for the further extension of River Parkway would continue from 200 m northeast of Gilbert Road to Cambie Road and have the following features (see Attachment 2).

- 200 m North of Gilbert Road to Cambie Road: two-lane road approximately 0.95 km in length built to the interim standard with paved shoulders for cyclists and pedestrians, streetlights, and traffic control devices at intersections.
- Intersecting Streets: there would be a connection at Leslie Road on opening day. Staff investigated the potential to establish a connection at Browngate Road as part of this project but recommend that this link be deferred due to limited right-of-way availability (i.e., only approximately 8.5 m wide) and no material benefit at this time given the close proximity of the Cambie Road intersection (i.e., approximately 220 m further north). A connection at Browngate Road would be made in the future as part of frontage works by abutting development as per the CCAP. The intersection configurations at Gilbert Road, Leslie Road and Cambie Road would be further assessed and their exact alignments reported back via the 5-Year Capital Program process.

- Driveways: no private access would be provided to fronting properties at this time. The approved Onni development described earlier will have access from River Parkway via Cedarbridge Way, which will be extended from Alderbridge Way as part of the development requirements.
- Private Crossing: there is an existing private crossing over the road right-of-way for the Ebco site, which is bisected by the former railway corridor. As part of the proposed project, staff would work with Ebco to incorporate any necessary enhancements at the crossing to ensure that it meets current crossing standards.
- West End of Existing River Road: a turn-around will be provided at the west end of the existing River Road alignment near the Dinsmore Bridge (i.e., the existing interim road connection between Gilbert Road and River Road would be closed).

Proposed Implementation Strategy

Staff propose to include the extension of River Parkway from 200 m northeast of Gilbert Road to Cambie Road for implementation starting in 2018 as part of future 5-Year Capital Programs, which are subject to Council approval.

The order of magnitude project cost is anticipated to be $11.3 million by 2019. The updated project scope and costs will be incorporated into the upcoming review of the DCC Program, which will be brought forward to Council for consideration.

The significant expenditure for this project noted above cannot be accommodated within a two-year design and construction period by the Roads DCC Program as allocating this amount would have a significant impact on other transportation projects funded annually by the Program (e.g., Neighbourhood Walkway Program, Traffic Calming Program, Traffic Signal Program, Transit-Related Roadway Improvement Program, Arterial Roadway Improvement Program). The reduction in funding level would also constrain the City's ability to address community-based traffic concerns as they arise as well as limit the opportunities to undertake improvements in the short-term to further other goals of the Official Community Plan.

Therefore, staff will examine various options for a funding strategy, such as borrowing internally or externally, for implementing this project as part of 2016-2020 Five-Year Capital Program process. Should Council wish to implement this project earlier than 2018, staff would include options such as borrowing earlier to secure the necessary project funding to meet the preferred timeline.

Potential Need for Soil Remediation

As the corridor is a former railway line, a contaminated site study would be undertaken to determine the extent of any soil remediation required. Staff note that a contaminated site study completed for the development at the northeast corner of Gilbert Road and River Parkway described earlier found that only minor soil remediation was required.

Public Consultation

Should the detailed design process identify that any fronting businesses may be impacted by the works, staff would undertake direct consultation with those business owners/operators. Consultation with the general public would be undertaken via the City's annual capital projects

open house and associated notices (e.g., local newspaper advertisements, information on City's website).

Financial Impact

None at this time. The financial impact associated with implementation of the project will be presented as part of the City's budget process, which is subject to Council's approval.

Conclusion

Endorsement of the proposed implementation strategy for the northward extension of River Road as River Parkway will enable the timely construction of this key link in the City Centre road network, thereby significantly advancing the vision, goals and objectives of the *City Centre Area Plan*.

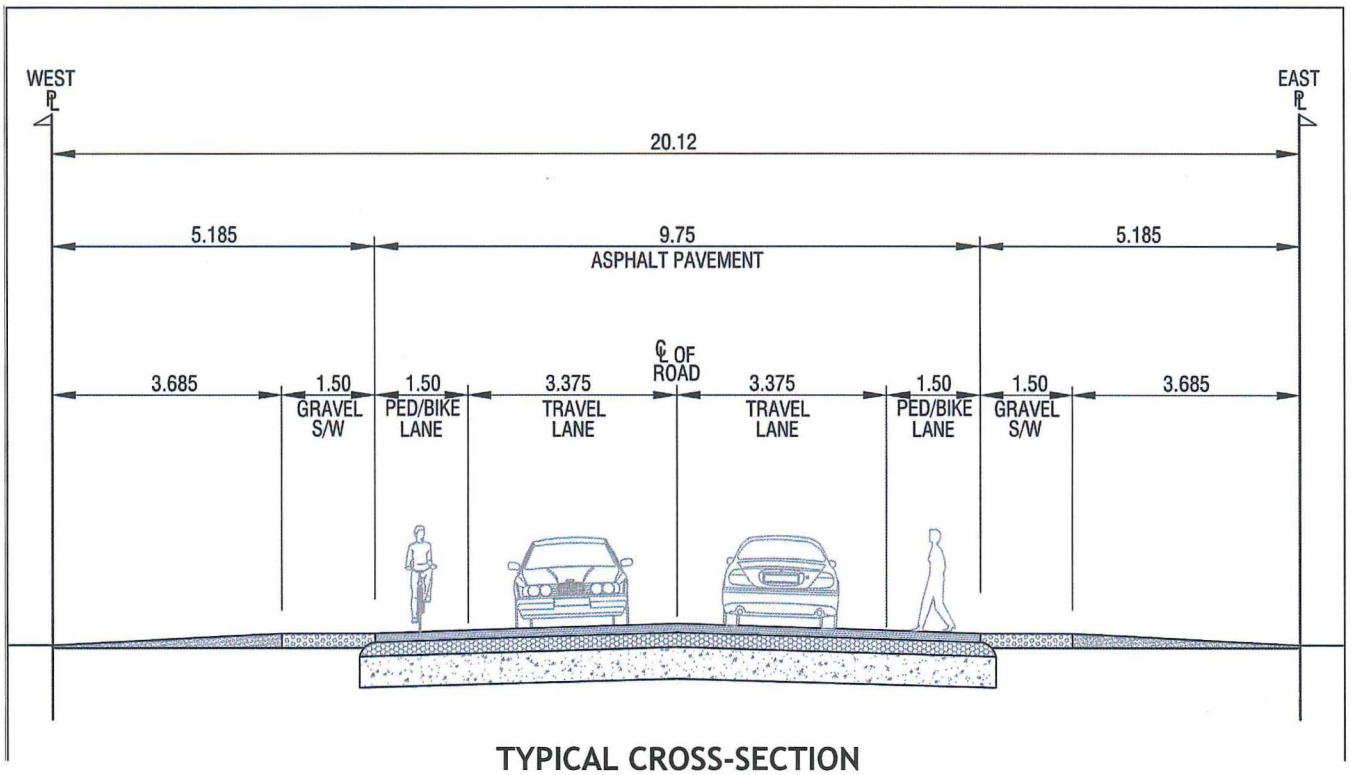
Fred Lin, P.Eng., PTOE
Senior Transportation Engineer
(604-247-4627)

Joan Caravan
Transportation Planner
(604-276-4035)

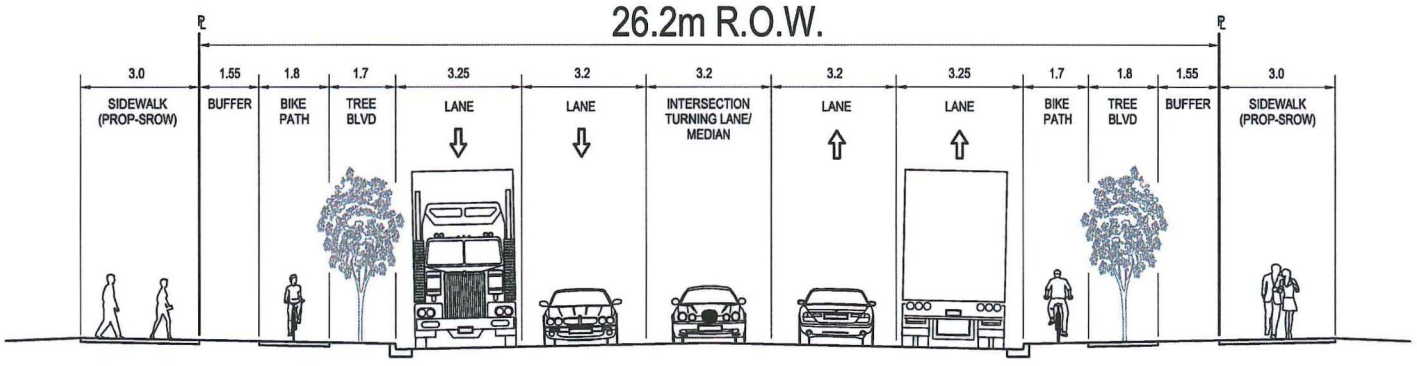
JC:jc

Att. 1: Interim and Ultimate Proposed Cross-Sections of River Parkway
Att. 2: River Parkway: Proposed Project Scope

River Parkway: Proposed Cross-Sections

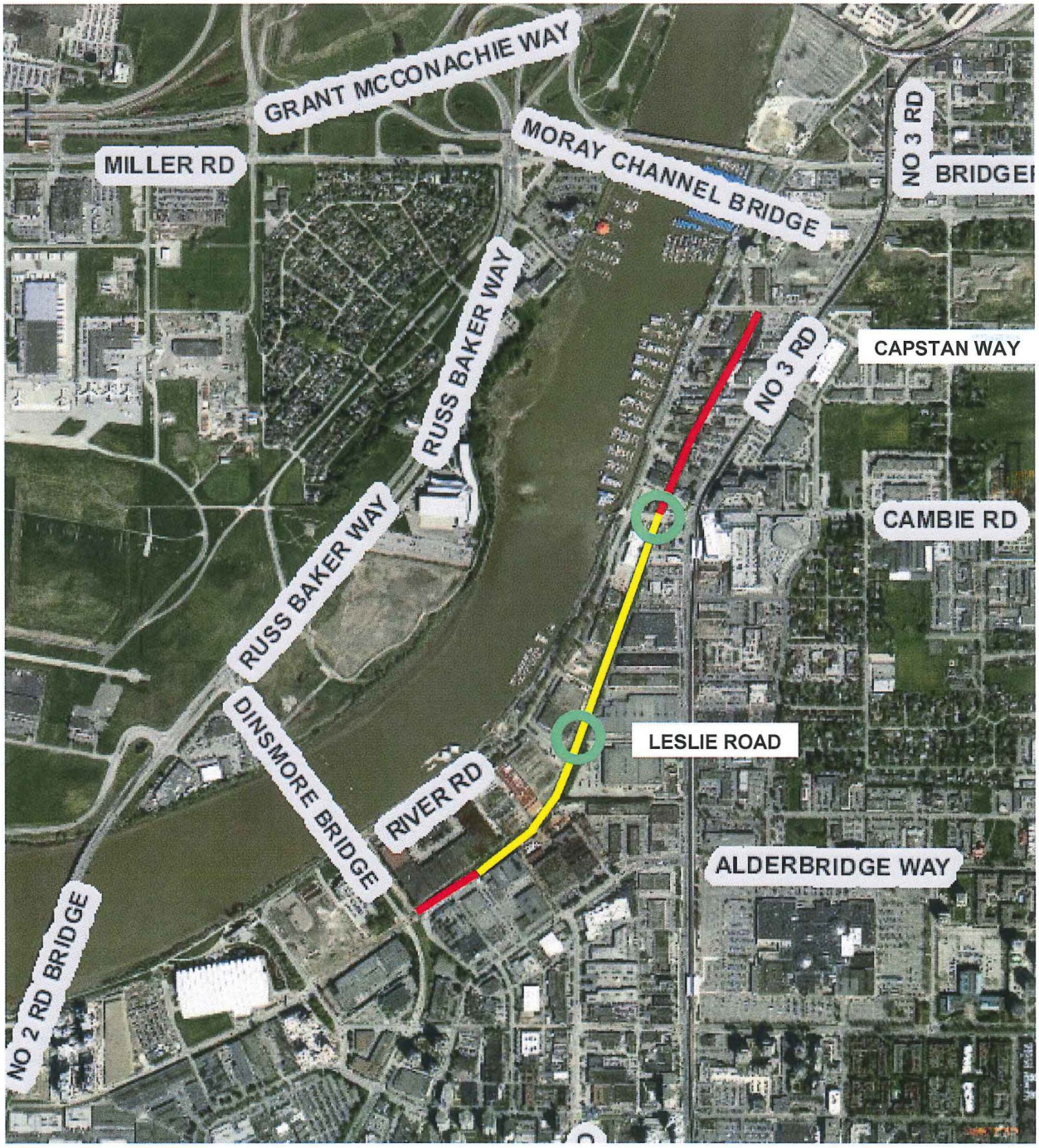


TYPICAL CROSS-SECTION
INTERIM STANDARD



TYPICAL CROSS-SECTION
ULTIMATE STANDARD

River Parkway: Proposed Project Scope



To be Constructed via Development Process to Ultimate Standard

To be Constructed by City to Interim Standard (Proposed 2018-2019) and to Ultimate Standard as Adjacent Development Occurs

New Intersection as Part of City Construction

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	May 29, 2015
From:	John Irving, P.Eng. MPA Director, Engineering	**File:**	10-6060-04-01/2015-Vol 01
Re:	**Annual Flood Protection Report 2015**		

Staff Recommendation

That the staff report titled "Annual Flood Protection Report 2015" (dated May 29, 2015, from the Director, Engineering) be received for information.

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

Att. 4

REPORT CONCURRENCE		
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**
Roads & Construction Sewerage & Drainage	☑ ☑	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	**INITIALS:**	**APPROVED BY CAO**

Staff Report

Origin

The City of Richmond has generally flat topography that is largely at 1 m or higher above mean tide level. The City is protected from the Fraser River and the Straight of Georgia by a system that includes 49 km's of dikes. Storm water is drained off Lulu Island via 617 km of drainage pipes, 181 km of ditches and 39 storm water pumping stations.

The 2008 – 2031 Richmond Flood Protection Strategy is the City's guiding framework for continuing upgrading and improvement of the City's flood protection system. Staff will update this strategy as part of their 2015 work program.

This annual report updates Council on the performance of the flood protection system through the 2014-2015 rain and freshet season as well as improvements completed during 2014.

Findings of Fact

Rainfall

Rainfall data highlights for 2014 include the following:

- Approximately 1,332 mm of rain fell on the City of Richmond in 2014, which is approximately 8% more than the average annual rainfall of 1,239 mm.
- October was the wettest month in 2014 with 193 mm of recorded precipitation (based on rainfall data sensors located at City Hall).
- The rainiest day of 2014 was October 25 with 36.6 mm of rainfall in a 24 hour period, which is well below the single day precipitation record for Richmond of 74 mm on December 16, 1979.
- The most significant storm of 2014 was on January 10, which recorded a rainfall intensity of 6.2 mm / hour over six hours and has a statistical return period of over 10 years.
- A very intense but short storm was experienced on Jun 15, 2014, where peak intensity was 57.6 mm / hour of rainfall for a 10 minute duration which has a statistical return period of over 100 years. However, the extreme intensity of the storm was not sustained, and the return period of the storm was 2 years at the 1 hour duration mark.

In general, 2014 was an above average rainfall year with one 10 year return period storm and a short high intensity 100 year return period storm. The City's storm water system is designed to accommodate a 10 year return period event and the system performed well on all events with no capacity related flooding issues identified. Given factors of safety in drainage network design, the interconnectivity of Richmond's drainage system, and the high degree of variables inherent in storm activity, there are many scenarios where the system will adequately convey very intense but short duration storms greater than the 10 year return period design storm.

By definition, a 10 year return period storm is 10 times more likely to occur in any period than a 100 year return period storm. However, the actual rainfall intensity of a 10 year return period storm is approximately 30% less than a 100 year return period storm. For example, the 10 year return period 1 hour intensity is 15 mm/hr for Richmond while a 100 year return period 1 hour intensity is 20.9 mm/hour.

The occurrence of multiple long return period storms supports climate change theory that predicts higher intensity storms going forward. While drainage upgrades have greatly improved service in areas such as Williams and Shell Road, ongoing planning and upgrading of the drainage system will be required to maintain the current level of service. **Attachment 1** is a chart of annual rainfall.

Freshet

Average snow pack (99% of normal) and limited spring major rainfall events lead to a 2014 freshet that was not remarkable. The high flow period lasted 13 days which is shorter than typical (the 2012 high discharge period was 30 days) and briefly reached a 5 year return period flow peak flow of 10,083 m^3/s at Hope. The City's dikes and drainage system performed well, and no related flooding was observed.

For 2015, the snow pack is 60% of normal, which is the lowest it has been in 31 years. There has been very little precipitation so far this spring and Fraser River freshet flows have been below average. Baring a severe weather event, it is unlikely that significant high water levels will be achieved on the Lower Fraser River this season.

2008 – 2031 Richmond Flood Protection Strategy

The 2008 – 2031 Richmond Flood Protection Strategy is the City's guiding framework for continuing upgrading and improvement of the City's flood protection system. The strategy includes a total of 32 short, medium and long term actions listed in **Attachment 2**, which also catalogues the City's considerable progress on these actions. Highlights of accomplishments since 2008 include:

- Approximately $12.1 million in senior government grant funding for drainage and diking projects has been expended or secured;
- Bylaw 8204 – Flood Plain Designation and Protection was adopted by Council in 2008 and sets the flood control elevations for development in Richmond;
- Ongoing work with the Diking Authority to interpret the January 27, 2011, BC Ministry of Environment "Climate Change Adaptation Guidelines for Sea Dikes and Coastal Flood Hazard Land Use Sea Dike Guidelines";
- Ongoing work with the development community to improve form of development and dike heights for development adjacent to dikes;
- Ongoing feasibility work to utilize Steveston Island as a primary dike as identified in the Phase1 – Dike Master Plan; and

- Initiating master planning for dike upgrading for the North West Dike and the North Dike to accommodate sea level rise due to climate change.

Drainage System Performance

78 service requests related to drainage issues were recorded by Public Works in 2014. Service requests were generally associated with local blockage issues. No significant flooding events were recorded. The drainage system performed very well with no major problems identified. **Attachment 3** charts drainage issue related call outs for the last eleven years.

Drainage System Improvements

Staff are constantly upgrading and improving the City's drainage system to accommodate new development and climate change. In 2014, 3,300 liters per second of pumping capacity was added through replacement of both the No. 1 Road North pump station and the Williams Road pump station. The capacity upgrades at these stations meet the 10 year return period storm service level and ensure that the areas of the City served by these stations are appropriately serviced into the future. Staff are currently working on replacement of three pump stations:

- Bath Slough;
- No. 2 Road North; and
- Horseshoe Slough.

Completion of these stations will improve the City's drainage pumping capacity by 2,700 liters per second. **Attachment 4** charts pumping capacity improvements over the last eleven years and includes a projection for 2015 projects included in the approved 2015 Capital Plan.

The City has also completed drainage conveyance system improvements on Saunders Road and Garden City Road. In 2015, staff will start the first year of an eight year program to upgrade the drainage in Burkeville from ditches to a piped system and will trial a lining system on the box culvert on No. 1 Road that has been prone to sink holes.

Lastly, the City has upgraded laneway drainage at:

- 10,000 Block Williams Road
- 11,000 Block Williams Road;
- Dennis Crescent;
- Ainsworth Crescent;
- Aintree Crescent; and
- Seaton Road.

Further laneway drainage improvements for Swinton Crescent, Seabrook Crescent, and Steveston Highway between 6th and 7th Avenue in 2015.

Dike Improvements

Since 2010, the City has performed a large number of dike improvements through capital programs and partnering with development that is adjacent to the dikes. Improvements have raised the dike to elevations between 4.0 m and 4.7 m geodetic, which is over the current Provincial flood protection standard and will help address long term sea level rise. The following is a list of key improvements that have been made:

- Middle Arm Dike from Cambie Road to the Dinsmore Bridge;
- Dikes adjacent to the No. 1 Road North Pump Station;
- Dikes adjacent to Williams Road Pump Station;
- Dikes adjacent to No. 4 Road Pump Station;
- Dikes adjacent to Cambie Road Pump Station;
- Dikes adjacent to ASPAC west of the Richmond Olympic Oval;
- Dikes fronting Kawaki development site at the south end of No. 2 Road;
- Dikes fronting Park Riviera development site from No. 4 Road East;
- Dikes fronting Translink site on the North side of the Lulu Island in Hamilton; and
- Dikes fronting the Lysander site on Sea Island.

Staff are working to perform feasibility work to utilize Steveston Island as the long term diking solution in Steveston Harbour as recommended in the Phase 1 – Dike Master Plan. Staff is also working on developing Phase 2 – Dike Master Plan which is concerned with long term improvements to the North West Dike and the North Dike. The dike master planning effort is working toward a comprehensive dike improvement program that is an important element of the 2008 – 2031 Richmond Flood Protection Strategy

Financial Impact

None.

Conclusion

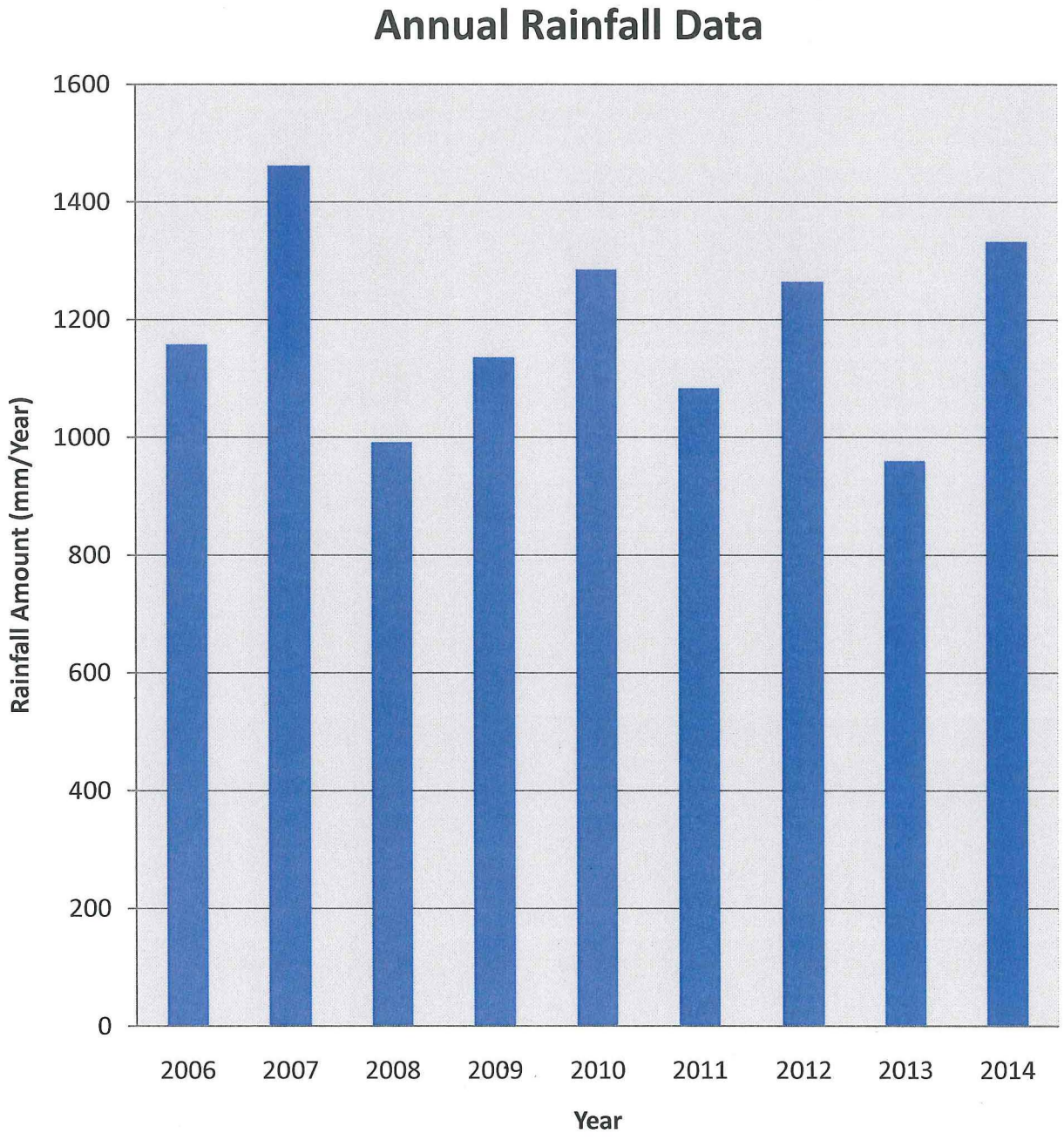
2014 was an above average rainfall year with two significant long return period storms. The drainage system performed well, however, the occurrence of multiple long return period storms supports climate change theory and continuing drainage upgrading will be required to maintain the current level of service. The 2014 freshet water levels in the Fraser River were below average and the freshet period was 13 days, which is shorter than average. The dike and drainage system performed well throughout the year with no significant flooding events reported.

During 2014, the No. 1 Road North and the Williams Road pump stations were replaced increasing over all pumping capacity by 3.3 meters cubed per second. Staff also completed approximately $875,000 in pipeline and ditch improvements throughout the year.

Staff continues to follow the action items identified in the 2008 – 2031 Richmond Flood Protection Strategy. Considerable progress has been made since 2008 and staff will continue to build upon this success.

Lloyd Bie, P.Eng.
Manager, Engineering Planning
(604-276-4075)

Att. 1: Annual Rainfall Data
2: 2008 – 2031 Richmond Flood Protection Strategy Status
3: Annual Drainage Service Requests
4: Total Drainage Pump Station Capacity 2004 – 2014


Annual Rainfall Data
Rainfall Amount (mm/Year)
1600
1400
1200
1000
800
600
400
200
0
2006
2007
2008
2009
2010
2011
2012
2013
2014
Year

Attachment 2

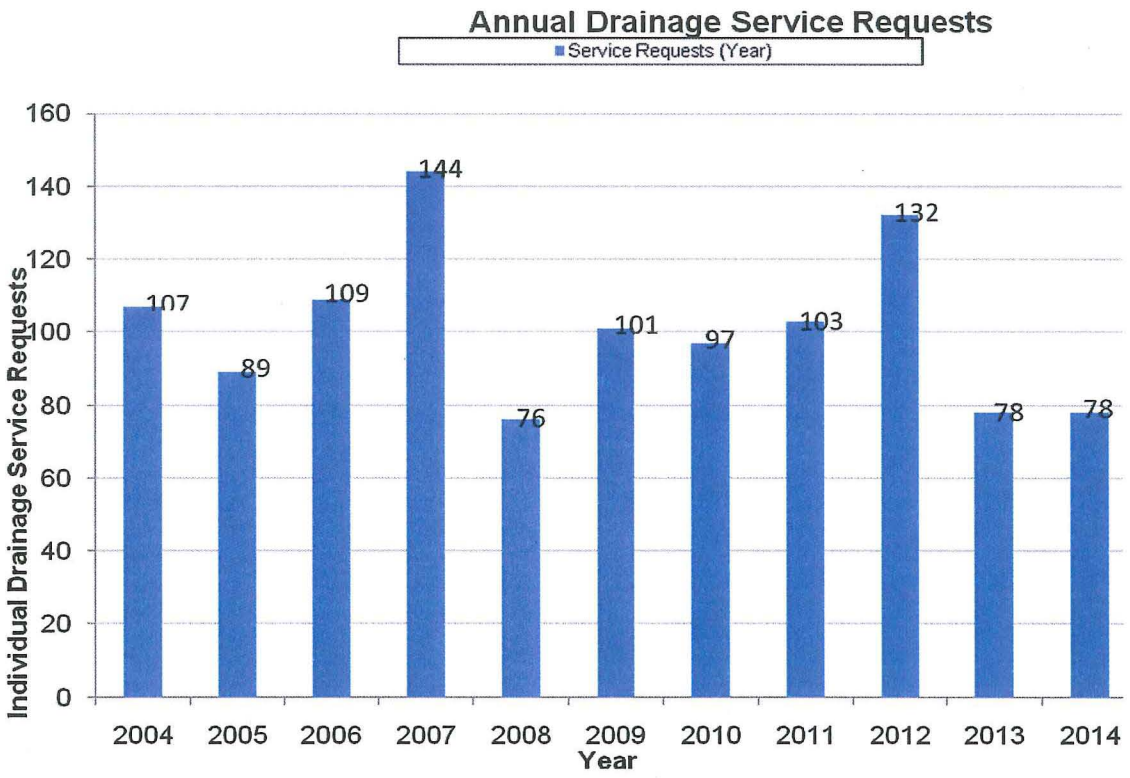
Key Actions	Status	Comments
Short Term (2008)		
Examine and pursue senior government cost sharing to implement the FPMS (Engineering; Public Works; Finance)	Ongoing	Approximately $12.1 million in senior government grant money was achieved since 2008 allocated to the following projects: • Bath Slough PS • No.3 Road Drainage PS Screens • Middle Arm Dike • No. 4 Road PS • Williams Road Drainage PS • No. 1 Road Drainage PS • South Dike from No. 7 Road to 1000 metres east (2007)
Collaborate among City Engineering, Building Approvals, Policy Planning [PPD], Development Applications, Facilities Divisions to develop a phased plan for overall land grade increases (Engineering; Planning)	Regulation changes complete, Implementation Ongoing	This is largely being achieved through Bylaw 8204 – Flood Plain Designation and Protection. Additional effort is being focused on raising the floor plates of large developments to a level above the flood control level with some success.
Pursue and plan for appropriate grade changes in City area plans (e.g. City Centre Area Plan update) (PPD).	Ongoing	This is ongoing with success in the West Cambie area plan and at the development level with developments including ASPAC.
Consult at timely intervals with experts (e.g., MoE, Canadian Hydrographic Service, FBC) and monitor the latest long-range ocean/climate change forecasts and science for their implications (Engineering)	Ongoing	Canada participates in the Intergovernemental Panel on Climate Change (IPCC). This group gathers climate change information and forecasts future climate change. These results are recognized by senior levels of Canadian Government and are monitored by City staff.
Rescind Floodplain Management Implementation Strategy Policy 7000 (PPD)	Complete 2008	
Prepare a Floodplain Bylaw including the new FCLs and the requirement for covenants/ indemnity (Engineering; PPD; Law)	Complete 2008	Bylaw 8204 – Flood Plain Designation and Protection
Adopt other mechanisms and techniques [All].	Ongoing	Staff is currently reviewing wave attenuation measures as an alternate to raising dikes.
Establish protocol for obtaining dike rights of way for Mitchell Island (Engineering, PPD, Law).	Ongoing	The City has obtained dike rights on one recent development and had another build much higher than the flood control level, relieving the need for a dike in that location.
Work with the BC MoT and others on a program to study, plan and cost share in the	Ongoing	Perimeter dike upgrading was identified as a higher priority than the mid island dike in the

Key Actions	Status	Comments
building of the Highway 99/Knight Street mid-island barrier.		2009 Mid Island Dike Scoping Study. Staff is working with MoT staff to include middle arm dike improvements as part of the George Massey Tunnel replacement project.
Medium Term (2009)		
Improve the City's ability to obtain data and undertake direct measurements (e.g., monitoring local sea level changes through City operated gauging stations (Engineering; Public Works)	Ongoing	The City has installed a salt content measuring device slightly upstream of the No. 6 Road Pump Station that will gather data on the salt wedge protrusion. This will give staff insight into the impact of climate change on the salt wedge and the City's ability to reliably provide irrigation water from the Fraser River for farming purposes.
Direct staff to update the City's Flood Response Plan as part of the overall Emergency Response Plan (updated on basis of new modeling and technical information) (Engineering; Emergency Programs)	Ongoing	The City has developed an evacuation plan (January 26, 2009) which outlines the strategies and considerations for evacuation. Evacuation routes are determined at the time of an emergency to ensure the safety of the public.
Work with VIAA to clarify jurisdiction, maintenance standards and improvement programs for the Sea Island dikes (Engineering)	Complete	Jurisdiction has been clarified and some areas of sub standard dike have been identified and scheduled for improvement by VIAA.
Encourage the City of New Westminster to harmonize its flood protection levels with Richmond's strategy (Engineering)	Complete	Staff are currently in discussion with New Westminster staff regarding dike master planning.
Work with Department of Fisheries and Oceans [DFO] on a plan for widening the perimeter dikes - inside and outside existing dikes, addressing related mitigation and compensation requirements (Engineering)	Ongoing	Staff is currently in discussion with DFO regarding environmental issues associated with replacement of the No. 1 Road and the Williams Road drainage pump stations.
Work with external agencies (such as the Agricultural Land Commission) to develop a protocol that will allow for these changes in use through rezoning, development permits, etc. (PPD)	Ongoing	
Seek direction from Province on new acceptable probability criteria that will address sea level rise and climate related extremes for the next 100 years	Ongoing	On January 27, 2011, the BC Ministry of Environment issued the Climate Change Adaptation Guidelines for Sea Dikes and Coastal Flood Hazard Land Use Sea Dike Guidelines. Staff is working with the Provincial Diking Authority to interpret the guidelines and determine their implications for the City of Richmond.
Prepare and implement a comprehensive perimeter dike improvement program	Ongoing	Phase 1 of the Dike Master Plan was completed at the concept level. Staff is

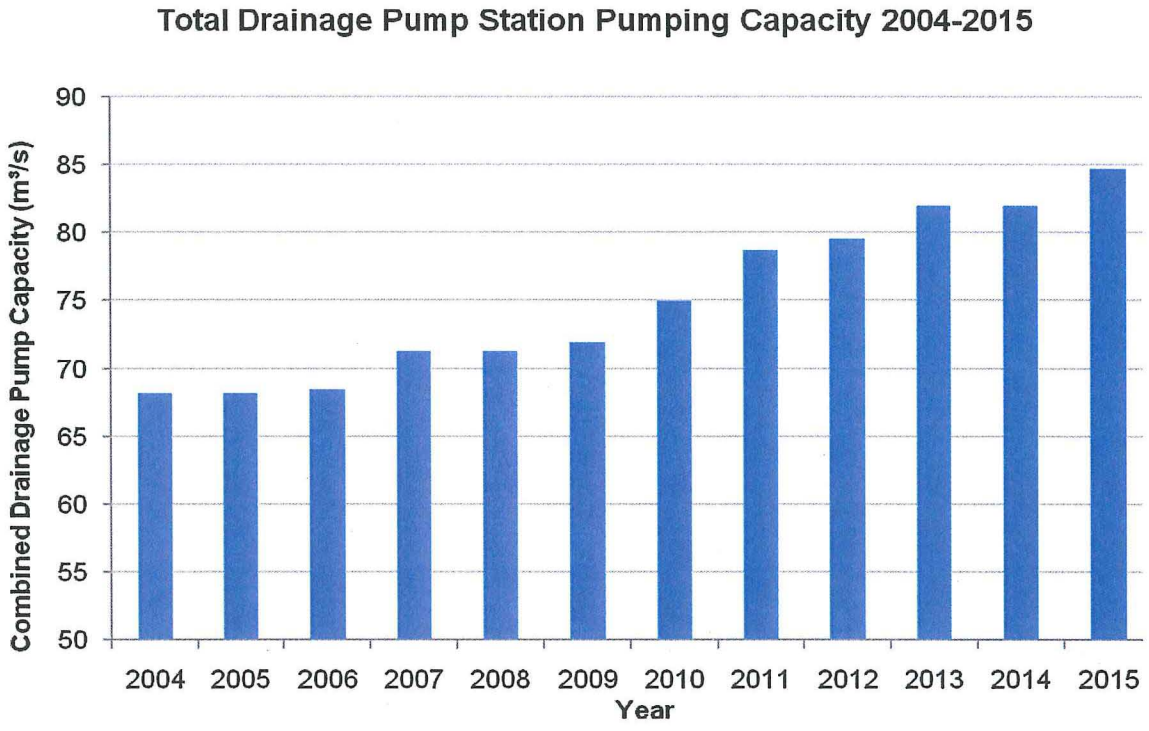
Key Actions	Status	Comments
(researching, strengthening and widening dikes to reduce the level of risk)		working on feasibility level work recommended by the Phase 1 plan result. Staff are currently working on the Dike Master Plan, Phase 2, which is concerned with the North West Dike and the North Dike.
Establish a program for phasing/prioritizing perimeter dike improvement (e.g., seismically weak areas first, the mid island barrier, overall perimeter dike improvements) (Engineering)	Complete 2009	Technical report outlining the program for phasing/prioritizing perimeter dikes is titled "Prioritization Framework for City of Richmond Perimeter Ring Dike Improvement Projects".
Once Mid Island Barrier technical details are finalized: established a phased implementation program seek senior government cost sharing.	Ongoing	Perimeter dike upgrading was identified as a higher priority than the mid island dike in the 2009 Mid Island Dike Scoping Study.
Longer Term (2010 – 2031)		
Prepare plans and policies [e.g., OCP, area plans, to support increased density adjacent to dikes but require grade increases and contributions to dike improvements. Retain dike rights of ways and access (PPD, real Estate)	Ongoing	Dikes are being raised in conjunction with adjacent development applications. This has been achieved in the planning phase of a number of developments including ASPAC and Kawaki.
Remove and relocate or replace toe ditches adjacent to dikes (Engineering)	Ongoing	Engineering is looking for opportunities to remove toe ditches as part of development.
Ensure that emergency facilities and refuge areas are located in areas not subject to flooding) (Engineering; Emergency Programs; PPD, Dev Applications)	Ongoing	This is implemented through ongoing coordination between Engineering, Project Development, and Emergency Programs
Review implementation plans for refuge areas, emergency routes, and create public awareness (Engineering; Emergency Programs)	Plans Complete Public awareness work is ongoing	The City has developed an evacuation plan (January 26, 2009) which outlines the strategies and considerations for evacuation. Evacuation routes are determined at the time of an emergency to ensure the safety of the public.
Review this Strategy approximately every 5 years to ensure that new information is reflected. (All)	Ongoing	The first update to the strategy is scheduled for 2013.
Develop on-going public evacuation and communication programs (Engineering; Emergency Programs).	Ongoing	The City has created a public awareness program and uses a variety of mediums to communicate. There is a significant volume of information on the City's web site concerning flooding and the programs in place to prevent flooding.

Key Actions	Status	Comments
Ensure issues of flood protection, grade levels, as well as refuge areas are considered in the development of local area plans (PPD; Engineering; Emergency Programs)	Ongoing	Policy Planning, with other City departments (e.g., Engineering) ensures that appropriate policies and regulations are included in the OCP (current 1999 and proposed 2041 OCP) and all Area Plans.
Review dike maintenance programs at ongoing 3 to 5 year intervals (Engineering; Public Works)	Ongoing	These reviews are ongoing on an annual basis.
Support sustainable funding for a federal [VFPA] river dredging program to maintain river profile (Engineering)	Ongoing	Discussions are ongoing with Port Metro Vancouver
Establish in City budget annual amount for land for access rights to waterfront and dike areas (All)	Complete	Funding is available in the Diking Utility.
Establish and maintain inventory of rights of way and access agreements to diking system (Engineering)	Complete	There is an inventory of dike rights of way in the City's GIS. A catalogue of access agreements has also been completed. Both of these are updated on an ongoing basis.
Update existing procedural policy of comprehensive dike maintenance (Engineering, Public Works).	Ongoing	
Pursue development of the mid island barrier along the Highway 99 / Knight Street Corridor (Construction cost estimate - $16 million) (Engineering)	Ongoing	Perimeter dike upgrading was identified as a higher priority than the mid island dike in the 2009 Mid Island Dike Scoping Study.

Attachment 3



Attachment 4



City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	May 25, 2015
From:	John Irving, P.Eng, MPA Director, Engineering	**File:**	10-6125-05-01/2015-Vol 01
Re:	**2015 Corporate Energy Management Program Update**		

Staff Recommendation

That the staff report titled "2015 Corporate Energy Management Program Update" from the Director, Engineering, dated May 25, 2015, be received for information.

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

Att. 2

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

Staff Report

Origin

The City's Energy Management Program (EMP) and energy initiatives described in this report support the following Council 2014-2018 Term Goals:

#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.*

#5 Partnerships and Collaboration:

> *Continue development and utilization of collaborative approaches and partnerships with intergovernmental and other agencies to help meet the needs of the Richmond community.*
>
> *5.1. Advancement of City priorities through strong intergovernmental relationships.*

#6 Quality Infrastructure Networks:

> *Continue diligence towards the development of infrastructure networks that are safe, sustainable, and address the challenges associated with aging systems, population growth, and environmental impact.*
>
> *6.1. Safe and sustainable infrastructure.*

Attachment 1, "Energy Summary Report 2015," includes a summary of key highlights of the Energy Management Update Report and recent City energy initiatives.

Background

The City's EMP contributes to the increased energy efficiency of the corporation, and is a significant component of the City's Corporate Carbon Neutrality achievement. Long term, the continuing support of the EMP is integral to the maintaining of the City's Climate Change Action Charter commitments and overall corporate sustainability related initiatives.

The City's EMP has continued to be successful in increasing the resource use efficiency of the corporation by focusing on three main action areas:

1. Energy conservation – reduce the overall demand for energy (e.g., increased energy use awareness and improved operational control to reduce waste)
2. Energy efficiency – reduce the energy required for operations (e.g., lighting retrofits to more efficient technologies)

3. Renewable and clean energy – increase the use of renewable energy and reduce the carbon intensity of emissions (e.g., installation of solar thermal energy systems)

Due to strong and consistent Council support of the City's EMP, the City continues to develop and implement corporate and community energy efficiency projects, and embed energy efficiency within the City's corporate culture.

Based on the City's continuing efforts and success with its energy efficiency and conservation work, the City was again recognized by BC Hydro in October 2014 with the Leadership Excellence Award (the highest level of recognition BC Hydro presents). The City of Richmond remains the only municipality in BC to achieve this high level of recognition from BC Hydro.

In collaboration with BC Hydro and as part of a current EMP funding agreement, the City has committed to reduce corporate electricity use by 1.3% or 550,000 kWh by April 2016 (from 2014 levels), which is equal to the energy used by approximately 14 single-family homes in Richmond per year. This target and the continued collaboration with BC Hydro helps to maximize the overall incentive funding the City receives and allows for the continued delivery of energy management projects.

Findings of Fact

EMP Achievements – 2008-2013 EMP Highlights

Energy conservation work at the City and energy related projects have cumulatively saved over 38.0 GWh of energy since 2008 (equal to the energy consumption in 950 Richmond single-family homes per year). In this same period, the City has avoided approximately $1,800,000 in total operational costs and over 6,000 tonnes of greenhouse gas emissions (CO_2e) (equal to emissions from 1,850 Richmond cars). Since 2008, the City has received over $1,200,000 in external funding that has supported expanded EMP projects and accelerated the repayment of capital funding to the corporate Enterprise Fund. The Enterprise Fund is an internal corporate fund that many EMP projects are funded through, with energy utility savings used to repay the Fund.

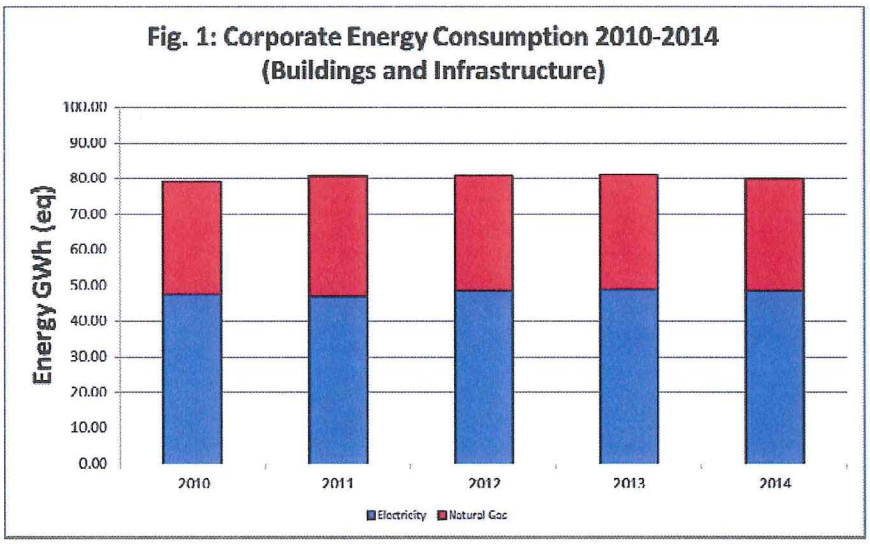
Corporate Energy Use Overview - 2014

In 2014, City assets, including the Richmond Oval, consumed approximately $6.1 million dollars of conventional energy[1] (electricity and natural gas), which equals 80.4 GWh (equivalent to the amount of energy used on average each year by approximately 2,050 homes in Richmond). This energy use resulted in corporate emissions of approximately 5,889 tonnes of CO_2e.

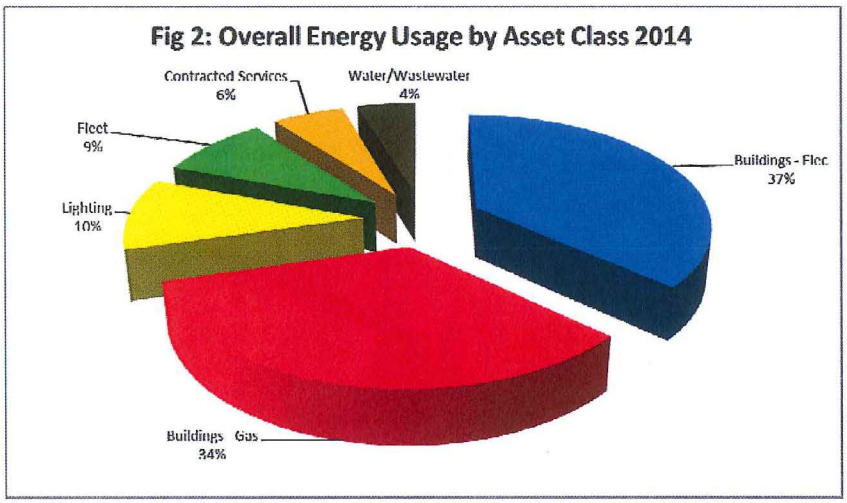
As shown in Figure 1 below, the total energy use for City infrastructure has remained fairly stable since 2010, even though the City has continued to add infrastructure to its asset list to meet increasing community needs (e.g. Community Safety Building, new street lighting in City development areas, and increased capacity at City drainage pumps). This increase in infrastructure will continue with the completion of the new City Centre Community Centre, the replacement of Fire Hall No.1 and No.3, and the replacement of the Minoru Aquatic and Older Adult's Centres. The continued support and success of the EMP has been a crucial component of the City's recent energy stability.

[1] There are civic buildings that have renewable energy systems (e.g. solar thermal hot water heating at Steveston Community Centre), which obtain "free" solar energy that is not accounted for in our total corporate energy use/cost amount.

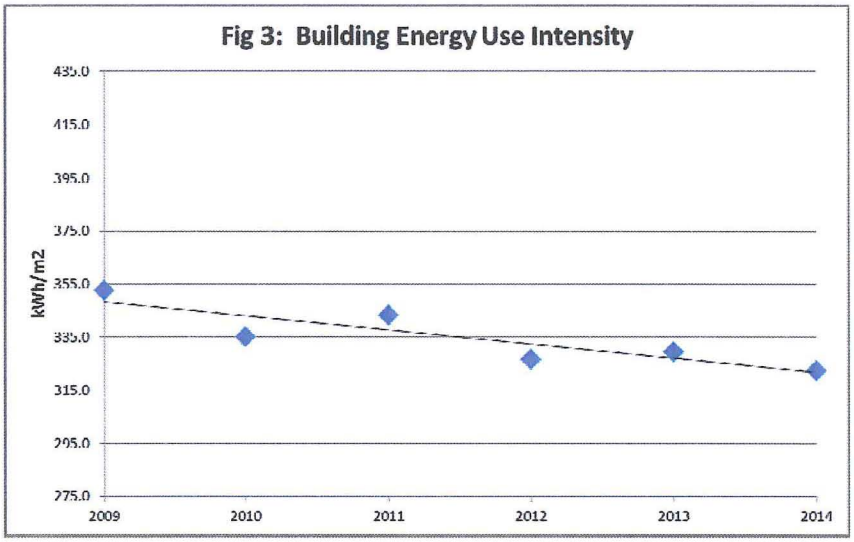
Without the continued investment and improvement in resource use efficiency in existing buildings and equipment (i.e. given business as usual replacements and development), it is estimated that the City's energy use would have increased by 10% since 2010.



Since energy use at civic buildings accounts for a majority (approximately 71%) of total reported corporate energy use in 2014, a continued focus of the City's EMP has remained on increasing the energy efficiency at City facilities (see Figure 2 – Overall Energy Usage by Asset Class).



As shown in the following Figure 3, civic building energy use intensity has decreased from approximately 353 kWh/m^2 in 2009 to 322 kWh/m2 in 2014. This reduction in energy use intensity is a good indication that the City's EMP remains an effective tool to reduce energy use and operational costs. Further reduction in building energy use intensity will occur once the replacement of Fire Hall No.1 and No.3, and the replacement of the Minoru Aquatic Centre and Older Adults Centre have been completed.



Although increased energy efficiency is the main component when energy projects are developed and implemented at City facilities, other corporate and community benefits are also pursued (e.g. improved lighting/safety, increased client comfort, and improved operator control). Energy projects are typically conducted in conjunction with other building improvements or infrastructure replacements to maximize project benefits.

The success of the City's EMP relies on stakeholder involvement. During all phases of energy efficiency projects at City facilities, stakeholders are consulted and engaged to ensure that the project will work with the operational realities of the facility and staff. Through the City's workplace conservation awareness program, staff are further encouraged to participate in increasing corporate energy efficiency through behavioural-based ways (e.g. turn energy using infrastructure off or down when not needed). Energy management best practices are the responsibility of all staff, and staff are encouraged to play an active role in identifying energy efficiency and reduction opportunities whenever possible.

EMP Achievements - 2014 EMP Highlights

In conjunction with the City's Capital Buildings Project Development, Facilities Services, and Engineering Planning sections, energy efficiency projects that have been recently completed are anticipated to save the City approximately 1,700,000 kWh in electricity and natural gas use (equal the power used in 44 homes in Richmond in a year) and avoid over $100,000 in operational costs. This total energy savings represents a reduction of approximately 2.1% in overall City energy use, and will result in reduced emissions of over 170 tonnes of CO_2e (equal to removing approximately 53 Richmond cars from our roads each year). Based on the net capital cost to the City of approximate $650,000 to complete these 2014 EMP projects, it is anticipated that these projects overall will have a 6.2 year payback.

As part of the most recent BC Hydo EMP funding agreement, the City surpassed its 2013/2014 target for electricity reduction (660,000 kWh), with approximately 730,000 kWh in electricity savings from completed projects over that time period.

A detailed overview of EMP projects highlights in 2014 is provided in Attachment 2; general highlights include:

- External Funding: $280,000 of external funding was leveraged to support the City and the Corporate Energy Management Program in 2014.
- Showcase projects: The most recent upgrades at the Richmond Ice Centre accounted for the majority of the anticipated energy savings from 2014 projects, and included the upgrade of the refrigeration plant to more efficient plate and frame chillers, and the installation of a heat recovery system and new high efficiency boilers. This aging mechanical equipment was scheduled for replacement as it was at or very near end of life. Additionally, related mechanical equipment failures resulted in partial facility closures over the past year.

  Currently Richmond Ice Centre projects are on track to achieve approximately 400,000 kWh of electricity savings and approximately 800,000 kWh of natural gas savings over a full year. These savings represent an overall reduction of 20% in energy use and approximately $60,000 annually in cost avoidance savings at the facility.
- Policy Implementation: With the adoption by Council of the updated City's High Performance Building Policy in 2014 (with more ambitious energy efficiency targets for new buildings) and staff implementation of the Policy, it is projected that the new Minoru Complex facility will achieve LEED Gold designation with a strong focus on energy efficiency.

  The positive benefits that can be attributed to this high level of designation include; doubling the size of the facility without increasing energy use, decreasing the facility's GHG emissions by approximately 70%, and integrating renewable power generation at the facility.
- Building Control Upgrades: To ensure that the City's higher consuming buildings are managed and operated as effectively as possible, the City has begun implementing Phase 1 of the Direct Digital Control Upgrade and Management Plan. As part of Phase 1, three facilities (City Hall, Works Yard, and Thompson Community Centre) are currently undergoing modernization of their building automation systems, which will enable a greater capacity to improve building operation and energy use monitoring.

In addition to corporate energy management activities, the City is active in the development of community energy and emissions reduction actions through the advancement of district energy. The City has two renewable district energy systems in operation, the Alexandra District Energy Utility, and the Oval Village District Energy Utility. These investments will help the City transition from conventional energy sources to more sustainable and stable energy systems, reducing long term costs to customers and greenhouse gas (GHG) emissions.

EMP Goals for 2015 and Upcoming Projects

The following main focus areas remain in place for the EMP for 2015:

- Increase energy use awareness within the organization and show leadership in the community
- Pursue external funding and partnerships with outside agencies
- Maintain a leadership role in municipal energy systems and policy
- Improve the usability of energy use data at key facilities, to allow for more detailed analysis and the increased optimization of energy use
- Incorporate a more systematic approach to building energy use performance analysis in civic facilities, to allow for the continued improvement of facilities, and the extension of their usefulness
- Continue to ensure that energy use and GHG emission accounting (in relation to reduction goals) is a high priority during the designing of new facilities and developments

The following key energy initiatives are in various stages of implementation, and are scheduled to be completed in 2015:

- Heating plant and mechanical improvements at Watermania Aquatic Centre
- Completion of building automation system upgrades and improved energy monitoring capabilities at City Hall, Works Yard, and Thompson Community Centre
- Lighting retrofits and improvements at various facilities, including City Hall and Britannia Shipyards
- Heating system and lighting optimization at various civic recreational facilities

Financial Impact

None.

Conclusion

The City's Energy Management Program continues to work towards and help facilitate maximizing the energy use efficiency of City facilities and infrastructure. Through Council support, the Program has been very successful in developing and implementing projects at City facilities that increase energy efficiency, and provide other corporate and community benefits. Cumulatively since 2008, energy conservation projects at the City have saved over 38.0 GWh of energy (equal to the energy consumption in 950 Richmond single-family homes per year), which amounts to approximately $1,800,000 in cost avoidance savings and over 6,000 tonnes of

greenhouse gas emissions reduced (equal to emissions from 1,850 Richmond cars). Without the continued investment and improvement in resource use efficiency in existing buildings and equipment, it is estimated that the City's energy use would have increased by 10% since 2010.

With the revision of the City's High Performance Building Policy, and its higher energy efficiency targets for new buildings, and continuing to focus on reducing the City's existing corporate footprint through energy conservation, energy reduction, and increased integration or renewable energy sources, the corporation is well positioned to limit its future operating cost and conventional energy use increases.

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

Att. 1	Corporate Energy Report Summary – 2014	REDMS# 4592072
Att. 2	City Energy Management Program 2014 Key Initiatives	REDMS# 4584628

4580306

Energy Update Report

Summary 2014

Richmond

- Cost of energy in 2014 for the City of Richmond buildings, lighting, water and wastewater services = **$6.1 million dollars or 80.4 GWh** (this is equal to the average power consumed in ~2,000 homes in Richmond in 1 year).
- This energy use resulted in approximately 5,889 tonnes of greenhouse gas (GHG) emissions.
- The total energy use for City infrastructure has remained fairly stable since 2010.
- Cumulatively since 2008, energy conservation projects at the City have saved approximately **38.0 GWh** of energy (equal to the energy consumption in ~950 Richmond homes per year), and over **6,000 tonnes** of greenhouse gas emissions (equal to emissions from ~1,750 Richmond cars).
- Without the continued investment and improvement in resource use efficiency in existing buildings and equipment, it is estimated that the City's energy use would have increased by **10%** since 2010.

Fig. 1: Corporate Energy Consumption 2010-2014 (excluding Fleet)

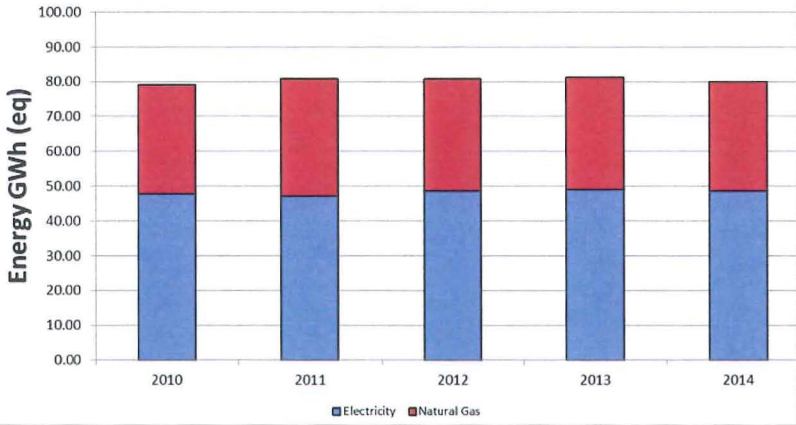
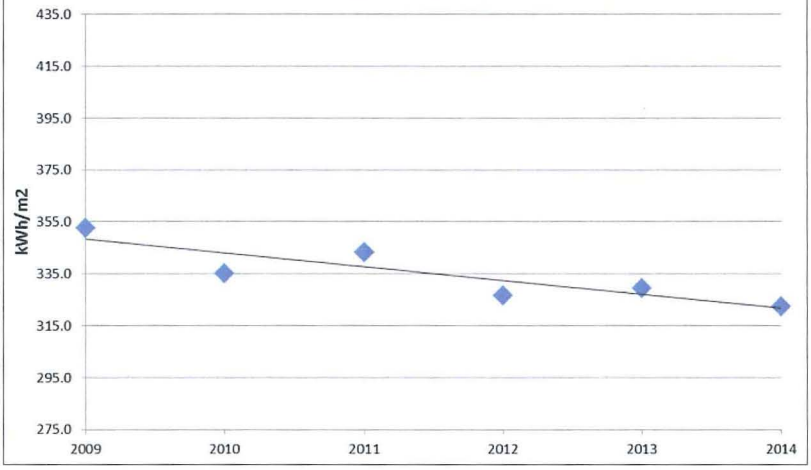


Fig 2: Building Energy Use Intensity



- In 2014, the majority of corporate energy use was by **buildings-71%**, followed by **lighting-10%** and **Fleet services-9%.**
- For corporate GHG emissions, gas usage at buildings is responsible for a majority of the City's annual emissions – accounting for approximately 58%.
- Continued focus and work is on-going in City facilities to reduce and/or displace natural gas use, which will reduce corporate GHG emissions and costs.

Fig 3: Overall Energy Usage by Asset Class 2014

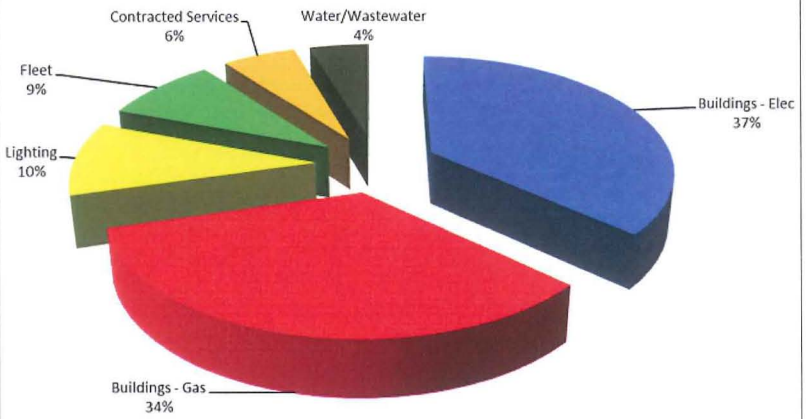
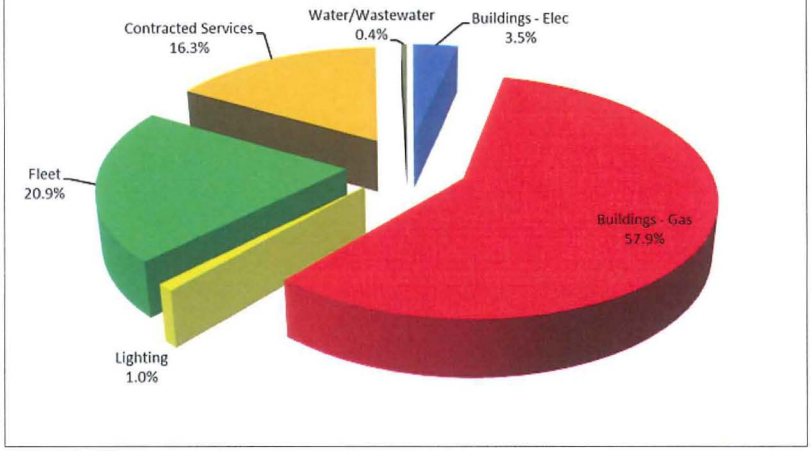
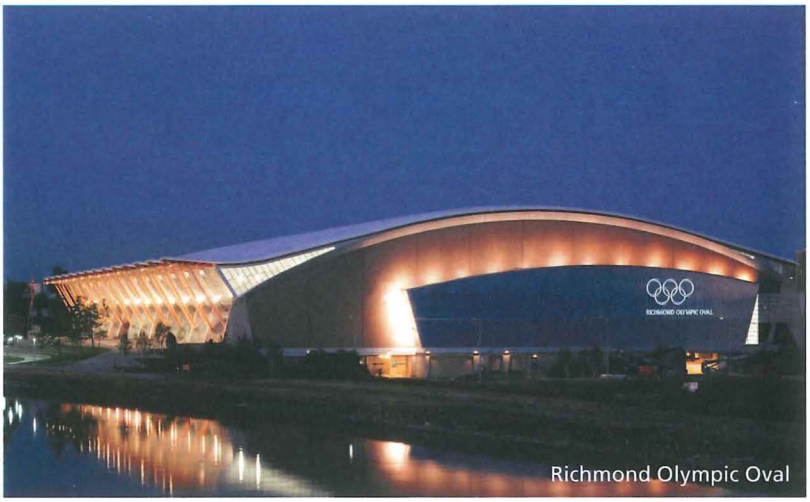


Fig 4: Overall GHG Emissions by Asset Class 2014




Richmond Ice Centre


Richmond Olympic Oval

2014 Highlights:

- Maintained the City's **Carbon Neutral** status for corporate operations.
- Secured over **$280,000** of external funding to support the Energy Management Program.
- Received the BC Hydro PowerSmart Leadership Excellence Award for its energy efficiency and conservation work – the only municipality in BC to receive this high level of recognition.
- Achieved an estimated reduction of **1.7 GWh** in electrical and natural gas use and approximately **170 tonnes** of greenhouse gas emissions from a variety of projects in 2014.
- This energy reduction represents approximately **2.1%** of the City's current corporate annual energy use and the GHG emissions reduction are equal to removing approximately **55** vehicles from Richmond roads each year.
- The energy reduction will result in over **$100,000** in operational cost avoidance savings.

Fortis BC and City of Richmond Partnership – Project Completion Recognition

CARBON NEUTRAL

BC CLIMATE ACTION COMMUNITY

BC hydro powersmart 2014 POWER SMART LEADER

Showcase Projects:

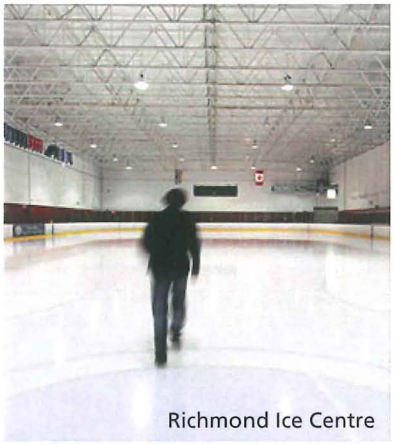
- Upgraded the refrigeration plant and installed a heat recovery system at Richmond Ice Centre.
- Projected energy savings for Richmond Ice Centre projects = **1.2 GWh or a 20% reduction in energy use at the facility**.
- Major civic facilities are currently undergoing modernization of their building automation systems – with target energy use reductions of between 5 and 10%.

Policy Implementation:

- It is projected that the new Minoru Complex facility and Fire Hall No. 1 will achieve LEED Gold designation with a strong focus on energy efficiency.
- For the new Minoru Complex, the positive benefits that can be attributed to this high level of designation include; doubling the size of the facility with **no increase in energy use, reduction of GHG emissions by 70%**, and integrating **renewable power generation** at the facility.


Steveston Community Centre


New Fire Hall No.1 - Concept


Richmond Ice Centre


New Minoru Complex Facility - Concept

2015 Vision and Goals

- Improve the energy use monitoring at City facilities, to optimize facility operation and reduce energy use and costs.
- Ensure that energy use and GHG emission accounting (in relation to reduction goals) is a high priority during the designing of new facilities and equipment replacement.
- Continue to pursue external funding and partnerships with outside agencies.
- Continue to increase energy use awareness within the organization and community.

2015 Action items:

- Significant heating plant and mechanical improvements at Watermania Aquatic Centre.
- Completion of building automation system upgrades and improved energy monitoring capabilities at City Hall, Works Yard, and Thompson Community Centre.
- Lighting retrofits and improvements at various facilities, including City Hall and Britannia Shipyards.
- Heating system and lighting optimization at various civic recreational facilities.


Watermania Aquasize


Britannia


Britannia Interior

Watermania

ATTACHMENT 2

City Energy Management Program – 2014 Key Initiatives

	2014 Key Initiatives

Plan	***Energy Strategic Planning:***
	• Secured over $280,000 in external funding for a variety of projects completed in 2014
	• In the process of securing over $100,000 in external funding in to support the infrastructure upgrades and replacements in 2015 including;
	  ○ Complete heating plant and mechanical improvements at Watermania Aquatic Centre
	  ○ Complete lighting retrofits and improvements at various facilities, including City Hall and Britannia Shipyards
	  ○ Complete heating system and lighting optimization at various civic recreational facilities
	• Helped develop City of Richmond Corporate Building Equipment, Monitoring and Integration performance guidelines, aimed at enhancing the resource use and building operational capacity in the following areas;
	  ○ Optimize maintenance and energy performance
	  ○ Optimize water efficiency
	  ○ Enhance indoor environmental quality
	  ○ Integrate building automation systems
	  ○ Optimize building lighting systems
	• In collaboration with the Project Development Unit, identified 2015 building/infrastructure improvement projects that could qualify for incentives, to maximize the City's external funding opportunities

Do	***Building Capacity*** • Workplace conservation Awareness program Year 4 completed in 2014(initiatives included lighting reduction initiative at the Works Yard, and a waste information workshop). • Greater alignment of capital submissions for yearly building improvement and energy management related requests, to ensure that projects are delivered seamlessly (e.g. coordinating the building and energy improvements at Sea Island Hall). ***Reducing Energy Use or Displacing conventional energy sources*** • Upgraded major chiller and equipment at Richmond Ice Centre to more energy efficient technology • Completed lighting retrofits and re-lamps at City Hall Annex and Minoru Tennis Courts • Optimized solar thermal heating systems at Steveston and South Arm Pools ***Increasing Financial Security & Stability*** • Over $100,000 in energy and maintenance cost avoidance savings

	2014 Key Initiatives
Monitor & Report	*Improving Energy Monitoring System* • Building automation system upgrades are underway at City Hall and Works Yard, as part of an Upgrade Management Plan – Phase 1 • The corporate energy use database is undergoing upgrades to allow of increased functionality (e.g. greater energy use reporting capabilities to stakeholders, and increased efficient reporting function for BC reporting requirements) *Reporting Performance* • Annual Corporate-wide Energy update report to Council • Semi-Annual reporting to Senior Management, on Energy Management Program status and work plan • Quarterly reporting to BC Hydro
Innovate & Improve	*Exploring New Approaches and Technologies* • The following projects and feasibility of further evaluation will be assessed in the coming months for potential inclusion in the 2016 capital submission process o Community Safety Building lighting and control upgrades o Fire Halls 4, 5, and 6 energy efficiency upgrades o Further implementation of building automation system upgrades and energy monitoring improvements at select facilities o Street lighting LED and replacement plan development *Energy Management System Evaluation* • Completed BC Hydro energy management system assessment in June 2014 five action items/areas were identified that will enhance the City's Energy Management Program and help facilitate continual corporate energy efficiency improvement *Improved Building Equipment Guidelines* • In collaboration with the Facilities Department, currently developing Sustainable Operation and Maintenance Guidelines for buildings that aim to include City Lighting standards and Building Automation System Integration Guidelines

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	May 20, 2015
From:	John Irving, P.Eng. MPA Director, Engineering	**File:**	10-6125-07-02/2015- Vol 01
Re:	**BC Climate Leadership Plan**		

Staff Recommendation

That a letter under the Mayor's signature be sent to the Premier's office, with copies to the Minister of Environment, the Chair of the BC Climate Leadership Team, the provincial Climate Action Secretariat, and Richmond MLAs, requesting that the comment period for the draft "Framework for the Climate Leadership Plan" be extended to September 30, 2015, to provide sufficient time for local government review.

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

REPORT CONCURRENCE		
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**
Intergovernmental Relations & Protocol Unit	☑	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	**INITIALS:**	**APPROVED BY CAO**

Staff Report

Origin

In 2010, Council adopted targets in Richmond's Official Community Plan to reduce greenhouse gas emissions 33 percent below 2007 levels by 2020 and 80 percent by 2050, noting Council's understanding that actions by the province to effect emissions reductions within provincial jurisdiction are necessary to achieve these targets. This report provides information on the process to develop the BC Climate Leadership Plan, and recommends steps for the City to inform the content of the plan.

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.*

This report supports Council's 2014-2018 Term Goal #5 Partnerships and Collaboration:

> *Continue development and utilization of collaborative approaches and partnerships with intergovernmental and other agencies to help meet the needs of the Richmond community.*
>
> *5.1. Advancement of City priorities through strong intergovernmental relationships.*

Analysis

Background

In 2008, the province of British Columbia released a Climate Action Plan, which outlined an array of climate action commitments. Key pillars of the 2008 Climate Action Plan include:

- Legislated targets to reduce greenhouse gas emissions (GHG) 33 percent below 2007 levels by 2020, and 80 percent by 2050;
- The revenue-neutral carbon tax, and commitments to work as part of the Western Climate Initiative to develop a cap-and-trade system for industrial sector emissions;
- A commitment to a carbon-neutral provincial public sector, and encouragement of local governments' carbon neutral commitments as part of the Climate Action Charter.
- A variety of strategies, policies and programs serving a range of different sectors, including transportation, residential and commercial buildings, industry, waste management, agriculture, forestry, and the energy sector. This includes amendments to the Local Government Act (Bill 27, 2008), requiring local governments to include greenhouse gas emission targets, policies and actions in their Official Community Plans and Regional Growth Strategies.

Correspondingly, in 2010, Council adopted targets in Richmond's OCP to reduce community GHG emissions 33 percent below 2007 levels by 2020, and 80 percent below 2007 levels by 2050. Council specified that these targets are "subject to the understanding that senior levels of government undertake necessary GHG reduction improvements within their jurisdictions with the necessary assistance being provided to the City."

Richmond's subsequent 2014 Community Energy and Emissions Plan (CEEP) outlines an array of strategies that the City is taking to pursue its energy and emissions goals. Importantly, the CEEP recognizes that City emissions reduction targets will only be achieved with "Big Breakthroughs," including widespread uptake of zero GHG transportation systems and new buildings, and deep energy retrofits of existing buildings. 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. Moreover, the CEEP includes the following strategy:

Strategy 12: Encourage Sustained Action by Senior Levels of Government.

Provincial Climate Leadership Plan

On May 12, 2015, the province announced the formation of a Climate Leadership Team, which is tasked with providing recommendations to inform the province's development of its second Climate Action Plan. As described in the government's news release announcing the initiative, the mandate of the Climate Leadership Team is to provide advice and recommendations on:

- How to maintain B.C.'s climate leadership;
- Updates to the current Climate Action Plan as well as new programs and policies required to meet B.C.'s greenhouse gas reduction targets while maintaining strong economic growth and successfully implementing the BC Jobs Plan, including the liquefied natural gas strategy;
- Actions to achieve GHG reductions required across the industrial sector, transportation sector and built environment;
- How to further the Province's government-to-government relationships with First Nations while constructively finding climate solutions; and
- How to further the Province's collaboration with local governments within the context of mutually-beneficial climate actions.

The Climate Leadership Team is scheduled to release a draft "Framework for the Climate Leadership Plan" in July, and to complete their work on a revised plan by October 2015. This document will provide input for a new provincial government Climate Leadership Plan. A draft version of the Climate Leadership Plan is scheduled for release in December 2015, and the final Plan is scheduled for release in March 2016.

City Input into the Climate Leadership Plan

The development of the Climate Leadership Plan is a key opportunity for the City to provide input and comments on how the province might best support climate action by local government. There are a variety of changes in provincial regulations or policy that could facilitate action to reduce emissions at the local scale. There is an opportunity to communicate to the Province the City's perspectives on key opportunities for climate leadership, both during the initial development of the Climate Leadership Plan, as well as during comment periods for both the "Framework for the Climate Leadership Plan" and the Province's draft Plan. However, the proposed 30-day consultation period for the Draft Framework for the Climate Leadership Plan makes it difficult for stakeholders to respond meaningfully. In order to provide comment, staff recommend that:

- A request be made to extend the comment period for the Draft Framework for the Climate Leadership Plan. Currently, the Province plans for a 30 day comment period sometime in July and August. This limited comment period may preclude Council from reviewing the Draft Framework at a scheduled Council meeting. Therefore, staff recommend that a letter be sent to the Premier's office, copying the Minister of Environment, the Chair of the BC Climate Leadership Team, the provincial Climate Action Secretariat, and Richmond MLAs, requesting that the comment period for the draft "Framework for the Climate Leadership Plan" be extended to September 30, 2015, to provide sufficient time for review.

  Staff will continue to monitor the process and provide updates as developments occur.

Financial Impact

None.

Conclusion

The Province has announced a process to develop a Climate Leadership Plan. This report recommends how the City can provide comment on the Plan, to ensure that local government perspectives on climate action opportunities are best accounted for.

Brendan McEwen
Manager, Sustainability
(604-247-4676)

Nicholas Heap
Project Manager, Sustainability
(604 276-4267)

BM:bm

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	May 27, 2015
From:	John Irving, P.Eng. MPA Director, Engineering	**File:**	10-6125-07-02/2015- Vol 01
Re:	**Water and Energy Conservation Programs for Businesses and Residential Properties**		

Staff Recommendation

That, as presented in the staff report titled Water and Energy Conservation Programs for Businesses and Residential Properties dated May 27, 2015, from the Director, Engineering:

1. The implementation of a program to install efficient, low-flow water fixtures in businesses and institutions be endorsed;

2. The Chief Administrative Officer and General Manager, Engineering and Public Works be authorized to execute a funding agreement with FortisBC and other potential partners to implement the program; and

3. The City's existing water conservation kit offered to properties with a water meter be expanded to include all residential customers.

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

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

Staff Report

Origin

This report proposes programs that will install efficient water fixtures in businesses and residences, as part of City efforts to reduce energy, emissions, and water consumption in Richmond.

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

This report supports Council's 2014-2018 Term Goal #6 Quality Infrastructure Networks:

> *Continue diligence towards the development of infrastructure networks that are safe, sustainable, and address the challenges associated with aging systems, population growth, and environmental impact.*

Analysis

Background

Richmond's Climate & Energy Action

Richmond's 2041 OCP includes aggressive targets to reduce community GHG emissions 33 per cent by 2020 and 80 per cent by 2050, below 2007 levels. Additionally, the City has a target to reduce energy use 10 per cent by 2020. The 2014 Community Energy and Emissions Plan (CEEP) identifies that significant energy improvements to most existing buildings are necessary for Richmond to meet the City's targets. Accordingly, Strategy #3 in the CEEP is to "Improve the Performance of the Existing Building Stock," and includes the following actions:

- Action 7: Promote building efficiency through outreach and education
- Action 8: Provide incentives for building retrofit action
- Action 9: Develop a residential energy conservation program to support housing affordability

Additionally, as a signatory to the Climate Action Charter, the City has committed to being "carbon neutral" in its corporate operations. Carbon neutrality is achieved by reducing emissions, and balancing remaining emissions with carbon credits. The Joint Provincial-UBCM Green Communities Committee has established protocols for how local governments can generate carbon balancing credits by supporting energy projects in their communities.

Richmond's Action on Water Conservation

The City is committed to water conservation in our community. Water conservation helps protect the environment, while deferring or eliminating the costs of water system upgrades to serve a growing community. To this end, the City has established a number of customer based water conservation programs, including:

- The Single-Family and Multi-Family Water Meter Programs. The City is on track to have single-family dwellings universally metered by 2018. Multi-family dwelling residents have the opportunity to volunteer for a water meter and pay for water based on what they use. Through these programs, participants can receive water saving devices at no cost to the participant.
- The Toilet Rebate Program.
- The Clothes Washer Rebate Program.
- The Rain Barrel Program.

Efforts that reduce hot water consumption (such as the Clothes Washer Rebate and the provision of low-flow showerheads and faucet aerators under the Water Meter Programs) have the added benefit of additional reductions of energy use and emissions.

Proposed New Water and Energy Programs

A new program is proposed to provide water conserving fixtures free of charge to businesses and institutions. Additionally, it is proposed that the provision of water savings kits be expanded to serve any residential customer, instead of only those customers that have a water meter. The goals of these initiatives are to:

- Save businesses and households on energy and water costs.
- Evaluate businesses and institutions for deeper energy and water conservation opportunities, and connect them with additional programs that can further reduce energy and water consumption.
- Determine if "carbon balancing" credits can be generated via the programs, to count towards the City's carbon neutral commitments, and subsequently develop these credits.

Further detail on the programs is provided below.

Business Water and Energy Saving Program
This program will initially target businesses and institutions with commercial kitchen facilities. The program will provide direct installation of efficient pre-rinse spray-valves (used to clean dishes) as well as low-flow faucet aerators. Additionally, participants will be provided with an energy, water and waste Opportunities Assessment, to identify additional conservation opportunities. The program will subsequently communicate with participants, to connect them with further sustainability opportunities, such as FortisBC's "Efficiency A la Carte" service for restaurants, BC Hydro incentive programs, and others. Communications of retrofit options will be uniquely tailored based on each business or institution's Opportunities Assessment. The program will initially target 100 participants.

Experience from past implementations of such programs suggest that the efficient pre-rinse spray-valves and faucet aerators:

- Reduce average water consumption per participant by over 500,000 liters per year.
- Save a restaurant $200 to $600 in annual water and energy costs.
- Reduce annual GHG emissions 1 to 4 tonnes per participant.

Providing a spray-valve, faucet aerator, and Opportunities Assessment to a business will cost $290. Staff are currently working with FortisBC, who may co-fund the program. Should partnership with FortisBC be confirmed, it is anticipated that the terms of the agreement will include:

- The City will be responsible for administering the program.
- The City will share data on participants with FortisBC, for the purposes of FortisBC providing further promotions to customers of their energy programs.
- FortisBC will provide 50 per cent of the program's cost for purchase of spray valves, installer contracting, marketing materials, program evaluation and administration, to be applied only to customers that use natural gas for hot water heating (likely the majority of participating businesses).

Expanded Water and Energy Savings Kit Program
Water savings kits are currently available at no charge to households and multifamily properties participating in the City's Water Meter Programs. It is proposed that the offer of water savings kits be expanded to all households in Richmond. Reducing water consumption in properties not currently water metered will benefit the City by reducing overall demand for water, while reducing energy use and greenhouse gas emissions.

Financial Impact

The business and institution program is budgeted for $40,000. City funding for the program will be split between the Toilet Rebate Account, and the existing neighbourhood energy retrofits programs initiative within the Sustainability operating budget. The expansion of the water savings kits to all residential customers will be accommodated as part of the existing water savings kit program, funded through the Toilet Rebate Account. FortisBC may provide funding covering approximately 50 per cent of the business and institution program's cost, reducing City spending.

Conclusion

This report proposes a business water and energy saving program, and an expansion to the City's pre-existing water savings kits program to all residential customers. These programs will help the City pursue its climate, energy, and water conservation goals.

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BM:bm

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	May 25, 2015
From:	Tom Stewart, AScT. Director, Public Works	**File:**	10-6000-01/2015-Vol 01
Re:	**National Public Works Week - Update**		

Staff Recommendation

That the Staff report titled "National Public Works Week - Update", dated May 25, 2015 from the Director, Public Works, be received for information.

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

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

Staff Report

Origin

The Canadian Public Works Association's annual National Public Works Week was from May 17-23, 2015, and to celebrate the City hosted several events that were well attended by the community. This report summarizes results of the events held during that time.

Analysis

Municipalities celebrate National Public Works Week with open houses, tours, school and educational events and displays of public works equipment. The City recognized National Public Works Week through a proclamation outlining the following areas:

- Public Works services provided in our community are an integral part of our citizens everyday lives.
- The support of an understanding and informed citizenry is vital to the efficient operation of Public Works systems and programs such as water, sewers, streets and highways, public buildings and solid waste collection.
- The health, safety and comfort of this community greatly depends on these facilities and services.
- The quality and effectiveness of these facilities, as well as their planning, design and construction, is vitally dependent upon the efforts and skill of Public Works officials.
- The efficiency of the qualified and dedicated personnel who staff Public Works Departments is materially influenced by the people's attitude and understanding of the importance of the work they perform.

The City recognized National Public Works Week by hosting three significant events:

On Wednesday, May 13, staff hosted a kick-off event for Operations employees, and in partnership with CUPE 394, two grade 12 ACE IT (apprenticeship) program students were awarded scholarships valued at $500 each.

Project WET, an interactive program aimed at educating Richmond elementary students about the importance of water, was held from May 19-21 at the Works Yard. Staff worked with the Richmond School Board to promote the event within the district, and hosted over 450 students from 16 elementary schools. The interactive and fun displays taught students about water distribution, water metering, storm and sanitary services, Closed Circuit Television (CCTV), leak detection, pump stations and environmental programs.

The final event was the annual Open House held on Saturday, May 23 at the Works Yard, which included interactive displays from many City departments. Approximately 5000 people attended the Open House. Some highlights at this year's event included donated ride-on excavators, various pieces of fleet equipment, a water spray station, play construction zone, Lafarge cement

display, face-painting and seed planting, woodworking areas, a children's play area, a hay ride touring the operations yard, CUPE 394 sponsored car show, gardening and lawn care information, interactive emergency, police, fire and ambulance displays, live entertainment including singers and dance performances, and food vendors.

Educational areas included the interactive "Taste it, don't waste it!" booth on water conservation, Supervisory Control and Data Acquisition (SCADA) and Pumps displays, CCTV camera truck, Community Bylaws, Emergency Services, Capital programs and YourMinoru.ca display, recycling and pesticide awareness, and Neptune water meters.

Once again this year residents had an opportunity to register for the Works on Wheels (WOW) infrastructure bus tour. The one hour tour included stops at the Alexandra District Energy, Fire Hall No. 4 and the Williams Road Drainage Pump Station. Residents participated in a scientific experiment to understand the concept of heat transfer, got an up-close look of a fire truck and training tower, and acquired new knowledge about the City's drainage system.

The success of the Engineering and Public Works Open House is due to the hard work of the organizing committee which is made up of staff from a number of departments as well as the volunteers. This year's volunteers included over 190 staff, 100 community volunteers and 74 McMath students.

Financial Impact

None

Conclusion

City of Richmond's Engineering and Public Works Division together with Community Services and Community Safety plays an active role in celebrating the annual National Public Works Week. This week recognizes the men and women who provide and maintain the infrastructure services known as public works. Cities across the nation participate by raising awareness of public works issues, and encourage community support for these dedicated employees who consistently improve the quality of life for residents.

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