City of Richmond

Agenda

Public Works and Transportation Committee

Anderson Room, City Hall
6911 No. 3 Road

Wednesday, November 22, 2017
4:00 p.m.

Pg. # ITEM

MINUTES

PWT-6 ***Motion to adopt the minutes of the meeting of the Public Works and Transportation Committee held on October 18, 2017.***

NEXT COMMITTEE MEETING DATE

December 20, 2017, (tentative date) at 4:00 p.m. in the Anderson Room

PLANNING AND DEVELOPMENT DIVISION

1. **CITY OF RICHMOND-TRANSLINK TRAVELSMART PARTNERSHIP – COMPLETION OF PILOT PROGRAM**
(File Ref. No. 01-0154-04) (REDMS No. 5595141)

PWT-11 See Page **PWT-11** for full report

Designated Speaker: Victor Wei

STAFF RECOMMENDATION

(1) That the staff report titled "City of Richmond-TransLink TravelSmart Partnership – Completion of Pilot Program", dated October 20, 2017, from the Director, Transportation be received for information; and

(2) That a copy of the above report be forwarded to the Richmond Council-School Board Liaison Committee for information.

2. **TRANSLINK SOUTHWEST AREA TRANSPORT PLAN – RESULTS OF PHASE 2 CONSULTATION AND PREPARATION OF DRAFT FINAL PLAN**
(File Ref. No. 01-0154-04) (REDMS No. 5491921 v.10)

PWT-22 See Page **PWT-22** for full report

Designated Speaker: Victor Wei

STAFF RECOMMENDATION

(1) That as described in the report titled "TransLink Southwest Area Transport Plan – Results of Phase 2 Consultation and Preparation of Draft Final Plan" dated November 1, 2017 from the Director, Transportation:

(a) The comments from the Senior Advisory Committee and staff be forwarded to TransLink staff for incorporation into the draft final Plan; and

(b) TransLink's draft recommendations for transit service and regionally significant cycling corridors for the Southwest Area Transport Plan be endorsed for the purpose of public consultation on the draft final TransLink Southwest Area Transport Plan.

(2) That staff be directed to report back with the draft final TransLink Southwest Area Transport Plan in January 2018.

ENGINEERING AND PUBLIC WORKS DIVISION

3. **UPDATE ON 2017/2018 SNOW AND ICE RESPONSE PREPARATIONS**
(File Ref. No.)(REDMS No. 5593501 v.3)

PWT-37 See Page **PWT-37** for full report

Designated Speaker: Larry Ford

STAFF RECOMMENDATION

That the staff report titled "Update on 2017/2018 Snow and Ice Response Preparations", dated October 20, 2017, from the Director, Public Works Operations, be received for information.

4. **BURKEVILLE DRAINAGE**
(File Ref. No. 10-6060-04-01) (REDMS No. 5617890 v.2)

PWT-44

See Page **PWT-44** for full report

Designated Speaker: Lloyd Bie

STAFF RECOMMENDATION

That a moratorium on ditch infills in the Burkeville neighbourhood, until a piped drainage network is implemented as outlined in the report titled "Burkeville Drainage" dated October 27, 2017, from the Director, Engineering, be endorsed.

5. **2017 UNION OF BC MUNICIPALITIES COMMUNITY EMERGENCY PREPAREDNESS FUND**
(File Ref. No. 10-6060-05-01) (REDMS No. 5649642 v.3)

PWT-47

See Page **PWT-47** for full report

Designated Speaker: Lloyd Bie

STAFF RECOMMENDATION

(1) That the Dike Master Plan Phase 5 submission to the 2017 Union of BC Municipalities (UBCM) Community Emergency Preparedness Fund be endorsed; and

(2) That should the Dike Master Plan Phase 5 submission be successful, the Chief Administrative Officer and General Manager, Engineering and Public Works be authorized to negotiate and execute the funding agreements with UBCM.

6. **ELECTRIC VEHICLE CHARGING INFRASTRUCTURE - REQUIREMENTS FOR NEW DEVELOPMENTS**
(File Ref. No. 10-6125-07-02) (REDMS No. 5496295 v.10)

PWT-51 See Page **PWT-51** for full report

Designated Speakers: Brendan McEwen & Peter Russell

STAFF RECOMMENDATION

(1) That Richmond Zoning Bylaw 8500, Amendment Bylaw No. 9756, which adds Section 7.15 Electric Vehicle Charging Infrastructure, identified in the report titled "Electric Vehicle Charging Infrastructure – Requirements for New Developments" dated October 15, 2017, from the Director, Engineering, be introduced and given first reading;

(2) That Richmond Official Community Plan Bylaw 9000, Amendment Bylaw No. 9520, which amends Section 8.5 Transportation Capacity and Demand Management and Section 14.2.7.E Electric Vehicle Charging both regarding electric vehicles, identified in the report titled "Electric Vehicle Charging Infrastructure – Requirements for New Developments" dated October 15, 2017, from the Director, Engineering, be introduced and given first reading;

(3) That Richmond Official Community Plan Bylaw 9000, Amendment Bylaw No. 9520, having been considered in conjunction with:

(a) The City's Financial Plan and Capital Program; and

(b) The Greater Vancouver Regional District Solid Waste and Liquid Waste Management Plans;

is hereby found to be consistent with said programs and plans, in accordance with Section 477(3)(a) of the Local Government Act;and

(4) That Richmond Official Community Plan Bylaw 9000, Amendment Bylaw No. 9520, having been considered in accordance with Official Community Plan Bylaw Preparation Consultation Policy 5043, is hereby found not to require further consultation.

7. **OVAL VILLAGE DISTRICT ENERGY UTILITY BYLAW NO. 9134, AMENDMENT BYLAW NO. 9778**
(File Ref. No. 10-6600-10-02) (REDMS No. 5563539 v.7)

PWT-70 See Page **PWT-70** for full report

Designated Speaker: Peter Russell

STAFF RECOMMENDATION

(1) That the staff recommendation to amend the Oval Village District Energy Utility rate for services as presented in Option 2 of the report titled "Oval Village District Energy Utility Bylaw No. 9134, Amendment Bylaw No. 9778" be endorsed; and

(2) That the Oval Village District Energy Utility Bylaw No. 9134, Amendment Bylaw No. 9778 be introduced and given first, second and third readings.

8. **ALEXANDRA DISTRICT ENERGY UTILITY BYLAW NO. 8641, AMENDMENT BYLAW NO. 9777**
(File Ref. No. 10-6600-10-02) (REDMS No. 5563441 v.9)

PWT-79 See Page **PWT-79** for full report

Designated Speaker: Peter Russell

STAFF RECOMMENDATION

(1) That the staff recommendation to amend the Alexandra District Energy Utility rate for services as presented in Option 2 of the report titled "Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 9777" be endorsed; and

(2) That the Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 9777 be introduced and given first, second and third readings.

9. **MANAGER'S REPORT**

ADJOURNMENT

City of Richmond

Minutes

Public Works and Transportation Committee

Date:	Wednesday, October 18, 2017
Place:	Anderson Room Richmond City Hall
Present:	Councillor Chak Au, Chair Councillor Harold Steves Councillor Derek Dang Councillor Carol Day Councillor Alexa Loo
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 September 20, 2017, be adopted as circulated.

CARRIED

NEXT COMMITTEE MEETING DATE

November 22, 2017, (tentative date) at 4:00 p.m. in the Anderson Room

AGENDA ADDITION

It was moved and seconded
That Traffic Recording Capabilities at Intersections in Richmond be added to the Agenda as Item No. 4A.

CARRIED

PLANNING AND DEVELOPMENT DIVISION

1. **TRANSLINK 2018 CAPITAL PROGRAM COST-SHARE SUBMISSIONS**
(File Ref. No. 01-0154-04/2017-Vol 01) (REDMS No. 5493788 v. 3)

In reply to queries from Committee, Victor Wei, Director, Transportation, provided the following information:

- the River Parkway Project is eligible for various funding sources within TransLink as this project in particular utilizes different modes of transportation;
- staff are reviewing the city's cycling network and a staff report is forthcoming in 2018;
- staff will examine the possibility of installing bike routes in all major school catchments and provide results in the aforementioned staff report;
- projects submitted for consideration as part of the 2018 TransLink Cost-Share Program are done so with equal priority and TransLink determines which projects receive funding; and
- TransLink's cost-share budget has increased substantially from last year.

It was moved and seconded

(1) That the submission of pedestrian, bicycle and transit facility improvement projects for cost-sharing as part of the TransLink 2018 capital cost-share programs as described in the report titled, "TransLink 2018 Capital Program Cost-Share Submissions" dated September 27, 2017 from the Director, Transportation, be endorsed; and

(2) That, should the above submissions be successful, the Chief Administrative Officer and General Manager, Planning and Development be authorized to execute the funding agreements and the 2018 Capital Plan and the 5-Year Financial Plan (2018-2022) be updated accordingly.

CARRIED

ENGINEERING AND PUBLIC WORKS DIVISION

2. **RICHMOND'S COMMITMENT TO PESTICIDE USE REDUCTION AND INVASIVE SPECIES MANAGEMENT**
(File Ref. No. 10-6125-04-01) (REDMS No. 5559065)

In reply to queries from Committee, Chad Paulin, Manager, Environment, provided the following information:

2.

- it is not possible to limit the sale of invasive species;
- Community outreach education on invasive species and the effects of pesticide application has proven successful on the prevention of their use; and
- there a number of different less severe pesticides and environmentally friendly preventative options that can be used to eliminate chafer beetles.

In reply to a query from Committee, Peter Russell, Senior Manager, Sustainability and District Energy, highlighted that staff are developing multimedia tools regarding the use of pesticides to engage property owners.

Also, Mr. Paulin commented on the growth of Chervil along the West Dike, noting that it is classified as a noxious weed as its germination is uncontrollable.

It was moved and seconded
That the staff report titled "Richmond's Commitment to Pesticide Use Reduction and Invasive Species Management" dated September 22, 2017, from the Director, Engineering, be received for information.

CARRIED

3. **2018 PAVING PROGRAM**
(File Ref. No. 10-6050-01) (REDMS No. 5550568)

In reply to queries from Committee Lloyd Bie, Manager, Engineering Planning, advised that (i) low paving contract prices are a result of early tendering of the annual paving contract and low oil prices, and (ii) proposed funding for the Paving Program was similar last year.

John Irving, Director, Engineering, noted that a funding shortfall has been identified in the Paving Program, however, more work has been accomplished this year as a result of low contract . Mr. Irving added that once prices increase, additional funding may be requested to maintain service levels established by Council.

It was moved and seconded
That the staff report titled, "2018 Paving Program," dated September 18, 2017, from the Director, Engineering be received for information.

CARRIED

4. **GREASE INSPECTOR UPDATE 2017**
(File Ref. No. 10-6060-03-01) (REDMS No. 5521844 v. 4)

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

- the cost of the full-time Grease Inspector may be offset by fines; however compliance is often achieved with adequate public education;

- the Grease Inspector's primary responsibility will be to educate the public on proper grease disposal protocols; and
- improper disposal of grease is attributed to lack of knowledge of proper disposal.

In reply to queries from Committee, Mr. Irving that businesses such sas restaurants are required to install grease traps, however the grease clogging arises when kitchen equipment is used incorrectly.

In response to discussion regarding the installation of grease traps for particular businesses, Robert Gonzalez, General Manager, Engineering and Public Works, advised that educating business owners to understand the impact of grease is paramount in implementing proper disposal protocol. He further advised that improper disposal of grease is often done so by home cooks.

It was moved and seconded

That a full-time grease inspector be submitted as part of the 2018 Utility Budgets for Council consideration.

CARRIED

4A. TRAFFIC RECORDING CAPABILITIES AT INTERSECTIONS IN RICHMOND

(File Ref. No.)

Discussion took place on the potential to install traffic recording cameras at intersections in Richmond. It was noted that this technology is being used in other municipalities and is a valuable tool for crime prevention and traffic incidents

In response to the discussion, Mr. Wei advised that staff did initially review the merit of a traffic monitoring system with recording function and it was determined that traffic recordings would not be of value to the City at the time as its primary purpose was for real time monitoring from the Traffic Management Centre. He noted that, in order to implement such recording technology to the live stream system currently in place, another layer of software and hardware would be required. Mr. Wei then stated that staff have been working with the Richmond RCMP to determine the appropriate scope and costs of providing the necessary equipment displaying the live video feed for RCMP, and a potential joint capital project submission with the Richmond RCMP could be considered as part of the 2018 Capital budget process. Moreover, he spoke to challenges related to retrofitting the current live stream system with recording capabilities and commented on privacy matters which may require some time to resolve.

Discussion took place and Committee requested that staff provide a memorandum regarding the submission of such equipment in the budget process.

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

That Traffic Recording Capabilities at Intersections be submitted in the 2018 budget process for Council consideration.

The question on the motion was not called as discussion took place and Committee requested that staff provide detailed information alongside the aforementioned staff memo regarding the type of recording equipment being considered in order to provide Council with a range of scope options for budget submission.

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

5. MANAGER'S REPORT

Update on Flood Management

Tom Stewart, Director, Public Works Operations, commented on the recent surge of precipitation, noting that the City is well equipped to handle such influxes in weather as a result of Council's support for such equipment.

ADJOURNMENT

It was moved and seconded
That the meeting adjourn (4:49 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 Wednesday, October 18, 2017.

Councillor Chak Au
Chair

Sarah Kurian
Legislative Services Coordinator

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	October 20, 2017
From:	Victor Wei, P. Eng. Director, Transportation	**File:**	01-0154-04/2017-Vol 01
Re:	**City of Richmond-TransLink TravelSmart Partnership – Completion of Pilot Program**		

Staff Recommendation

1. That the staff report titled "City of Richmond-TransLink TravelSmart Partnership – Completion of Pilot Program", dated October 20, 2017, from the Director, Transportation be received for information.

2. That a copy of the above report be forwarded to the Richmond Council-School Board Liaison Committee for information.

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

Att. 3

REPORT CONCURRENCE		
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**
Economic Development Community Social Development	☑ ☑	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	**INITIALS:** CJ	**APPROVED BY CAO**

Staff Report

Origin

At its February 22, 2016 meeting, Council received an update report on joint activities undertaken through the City's partnership with TravelSmart, TransLink's branded transportation demand management (TDM) program, and resolved:

> *That staff continue to monitor the TransLink TravelSmart pilot program and relevant activities, as described in the staff report titled "City of Richmond-TransLink TravelSmart Partnership – Update", dated January 25, 2016, from the Director, Transportation and report back on the results following their completion.*

As the pilot program has now concluded, this report provides a summary of the results.

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.*

Analysis

The TravelSmart pilot program focused on implementing TDM strategies that foster behaviour changes that lead to increased use of transit, carpooling, car-sharing, cycling, and walking as viable alternatives to a single occupant vehicle. The following sections highlight the key initiatives completed and their results.

School Travel Planning: Pilot Project at Three Elementary Schools

The ultimate goal of a School Travel Plan (STP) is to create an environment that encourages healthy and active transportation to and from school, improves the journey for those who use vehicles or take school busses, and improves transportation safety for everyone. TravelSmart contracted HASTe (Hub for Active School Travel) to develop customized STPs in collaboration with the Richmond School District, TravelSmart and the City at three elementary schools: Garden City, AB Dixon and Walter Lee.[1]

The process was initiated in Fall 2015 and typically takes 18 months to progress through the five phases of set-up, baseline data collection, action plan development, action plan implementation, and evaluation. Completion of the pilot program was delayed from Spring 2017 to Fall 2017 due to the uncertainty arising from the potential for elementary school closures in Richmond, which included two of the three participating schools (i.e., AB Dixon and Walter Lee).

A customized STP for each school is the final outcome of the planning process and is intended to be a living document that belongs to the school and should be revisited regularly in order to update the status of the action plan items and incorporate future evaluation findings. Each STP has the following components:

[1] The three schools were identified by Richmond School District based on demonstrated interest from principals.

- *School Profile*: describes the school's history, special programs offered (e.g., French immersion), enrolment, and location.

- *Baseline Data*: summarizes the results of classroom and family take-home surveys regarding travel mode to/from school, factors that influence transportation decisions and local transportation concerns. Attachment 1 provides excerpts of the survey results for each school.

- *Travel Challenges*: summarizes the perceived barriers to active travel faced by students, families and staff based on input from parents and other members of the school community through meetings, surveys and observations during a school walkabout that included the participation of School District and City staff. This section also identifies potential measures to address the perceived issues. Attachment 2 summarizes the concerns identified for each school and staff's preliminary comments on each item.

- *Implementation*: describes the key initiatives undertaken to foster active transportation to and from school and improve traffic safety. Common elements across all schools include:

    - Best Routes to School Map: based on the baseline family take-home surveys, walkabout information and Parent Advisory Committee (PAC) consultation, the map outlines the safest and most accessible routes that students and families can take to walk or bike, and includes an overview of the local neighbourhood and tips for commuting safely. Attachment 3 provides excerpts of the map for each school.

    - Bike to School Week: this annual province-wide event that typically occurs during the last week of May was a key action item for promoting and encouraging active transportation to and from school.

    - Cool Routes to School: implementation of a comprehensive student leadership and engagement program to generate student-designed projects that are uniquely suited to the travel needs and cultures of individual schools. The approach works to engender a strong sense of ownership and accomplishment among participating students. Examples of creative activities and events that showcased students' understanding of sustainable and active school travel include:

        - PA announcements and publicity materials related to active travel (Figure 1);
        - Writing, rehearsing and performing an original play about active travel at a school assembly;

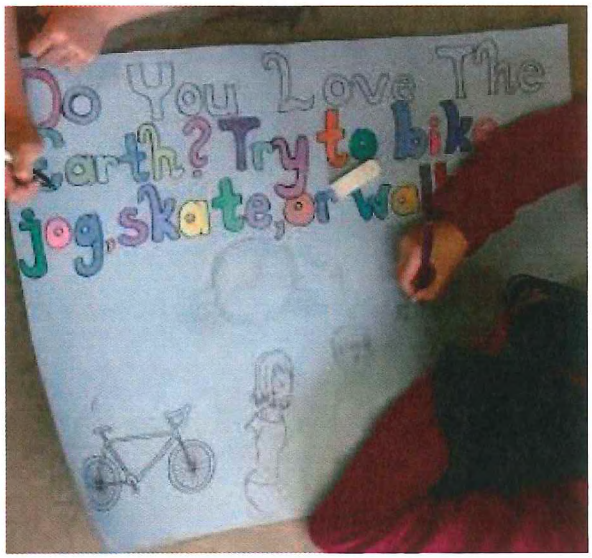


Figure 1: Publicity material created by Garden City Elementary School students

- Creation of launch material for a school assembly including a video, a collection of active travel interviews, active travel posters, outdoor signage, and announcements;
- Promotion of Bike to School Week including sharing information at a school assembly; and
- Participation at the Richmond Earth Day Youth Summit in April 2016 to speak about the STP process.

- Action Plan: informed by the school walkabout, the Plan categorizes potential measures to address the perceived barriers to active travel by stakeholder group including HASTe, Richmond School District, the City, Richmond RCMP, HUB Cycling, ICBC, school principal, and the PAC.

  Suggested measures within the City's responsibility typically involve pedestrian infrastructure improvements (e.g., repair of existing and/or new walkways, new crosswalks, curb bulges to reduce crossing distances), additional parking restrictions near school zones and studies to determine the need for traffic calming measures in school zones. Further to the preliminary staff comments provided in Attachment 2, staff will undertake a detailed review of the proposed measures and, if deemed feasible and/or warranted, implement them over the forthcoming several years as resources and other City priorities allow via the City's annual capital budget (i.e., projects such as pedestrian walkways and new crosswalks would be funded from Council-approved annual capital programs including the Neighbourhood Walkway Program and the Traffic Calming Program).

Business Retention Initiative: Employee Transportation at Riverside Business Park

A high priority action item in the Richmond Resilient Economy Strategy is to retain and support businesses already in Richmond. Data collected through the City's Business Development Program has shown that employee transportation is the number one barrier to workforce attraction and business retention. This issue is most pronounced in the City's business parks, such as the Riverside Business Park (500+ businesses with 6,000+ employees) located off No. 5 Road to the south of Steveston Highway. The City's partnership with TravelSmart provided an additional resource to help staff explore alternative transportation solutions for industrial park tenants and their employees as a business and workforce retention initiative.

Staff undertook considerable communication, research and facilitation work to introduce Riverside businesses to a variety of alternative transportation solutions for their employees, including public transit, biking and walking, ride-sharing, car-sharing and a private shuttle. The private shuttle option emerged as the most feasible near term solution to improved employee access.

A pricing/cost share model for a shuttle pilot was developed by a private operator with input from a champion group of four major Riverside businesses. Despite initial enthusiasm to engage, the four business champions ultimately opted out of the shuttle pilot, citing cost. To conclude staff's facilitation work, the opportunity of a private shuttle pilot was communicated to all participating businesses (23 in total) and interested businesses were invited to contact the shuttle operator directly to register their interest in a private shuttle solution. As well, a summary of all available solutions was distributed to the greater Riverside business group for their future consideration.

A major outcome of this initiative was increased awareness of Richmond businesses' transportation challenges by TransLink, the Province of B.C., and other regional stakeholders. Medium and longer term solutions continue to be developed by the City and TransLink and include potential transit enhancements via the current work of the Southwest Area Transport Plan, as well as improvements to pathways, lighting, transit shelters, and landing pads at bus stops via the City's capital improvement programs (e.g., as part of the 2018 capital budget process and pending Council approval, staff are proposing the construction of pedestrian pathways to and landing pads at all bus stops within the Riverside Industrial Park).

Community Outreach

As outlined in Table 1, TravelSmart staff participated in City events to promote and raise awareness of sustainable travel modes and provided presentations on transit to a number of local community groups during 2017 and will continue to do so in the future.

Table 1: TravelSmart Outreach Activities in Richmond in 2017

Activity	Details
City Event	• Attended with TransLink's community engagement bus (Figure 2) to answer any transit-related questions • Participated in Ships to Shore (May 6) and Public Works Open House (May 13)
TravelSmart for Business	• Provide organizations with a strategic approach to employee commuting and transportation issues (e.g., manage demand for parking) • Provided 2 sessions in 2017
TravelSmart for Newcomers	• Work with individual newcomers, settlement service agencies, and community groups to provide newcomers with tools, resources, and tips on how to effectively use public transit and other modes of sustainable transportation • Provided 6 presentations in 2017
TravelSmart for Seniors	• Work with Senior Centres and advocacy groups to provide seniors with information on the wide array of transportation options available • Provided 9 presentations in 2017
TravelSmart	• Presentation to the Board of the Richmond Centre for Disability (May 16)

Potential Future Initiatives

Staff will continue work with TravelSmart and Richmond School District to identify on-going and potential future initiatives such as:

- City events that TravelSmart may attend to provide information and awareness,
- further school- and business-focussed outreach efforts, and
- public education sessions such as transit training sessions for seniors and recent immigrants.

Figure 2: TransLink Community Engagement Bus

Staff will work with TravelSmart to develop evaluation and monitoring tools to measure

the effectiveness of such initiatives (e.g., installation of bike counters on cycling routes, the change over time of the travel mode share of walking, cycling, transit, and carpooling).

Financial Impact

None. The STP process was funded by TravelSmart. Any City capital projects arising from the action plans for each school would be funded from Council-approved capital budgets.

Conclusion

Following the launch of the City-TravelSmart partnership in December 2014, staff from different departments worked with TravelSmart to collectively improve the community's awareness and understanding of transportation options and build positive attitudes about sustainable transportation choices. Two key initiatives, a pilot project to undertake school travel planning with three elementary schools and business engagement at Riverside Industrial Park, have been completed. Both have identified constructive suggestions that all stakeholders can pursue to help encourage sustainable travel modes.

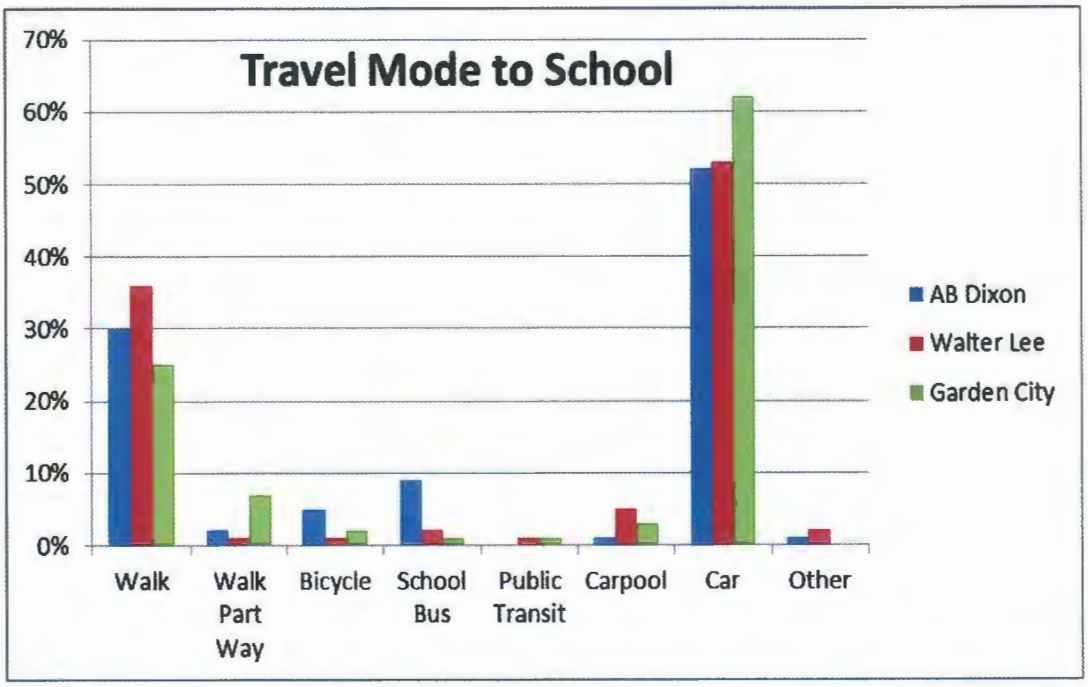
Staff will continue to work with TravelSmart to advance the City's progress towards its targets to reduce greenhouse gas emissions and increase the mode share of active transportation as well as improve personal health and enhance community safety.

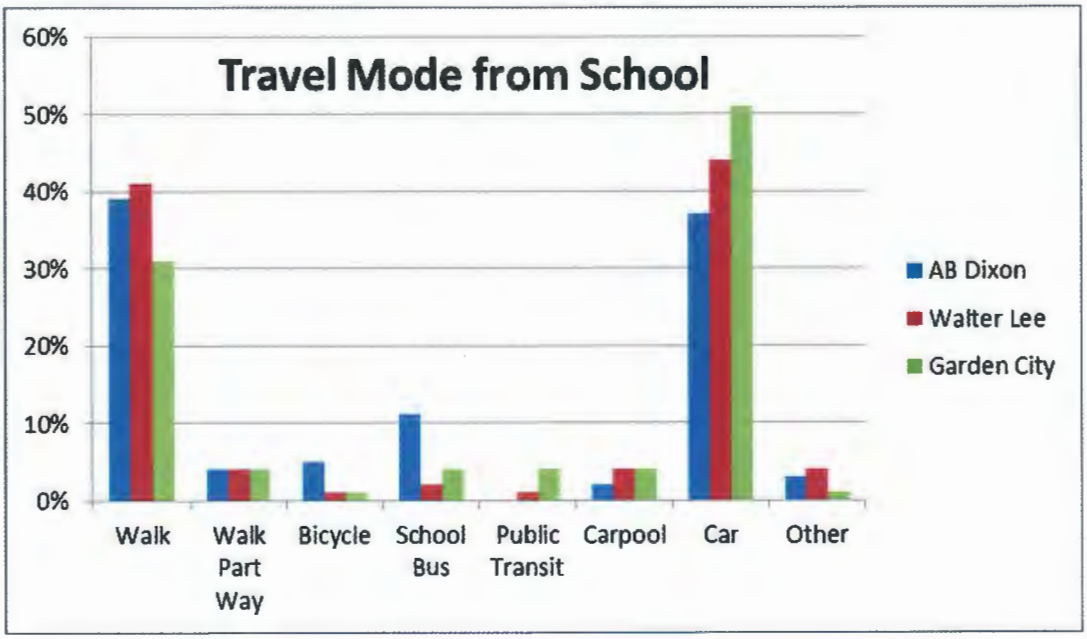
Joan Caravan
Transportation Planner
(604-276-4035)

JC:jc

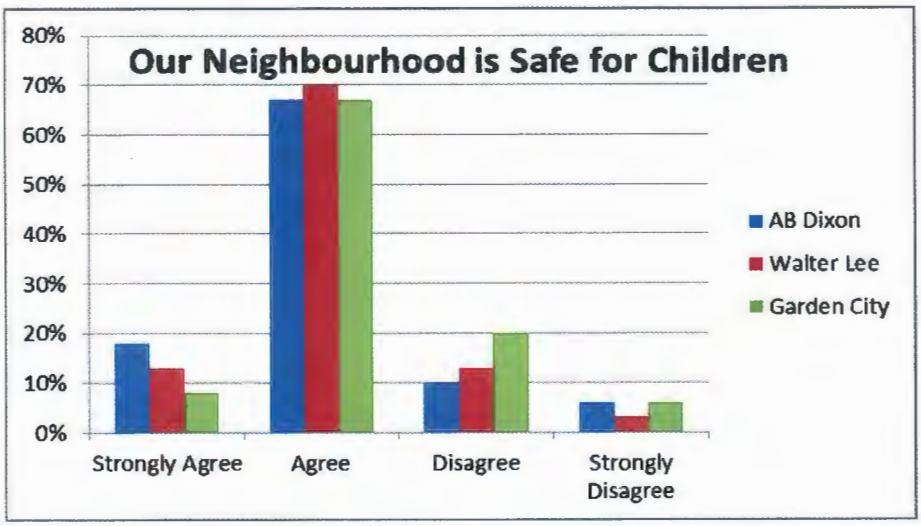
Att. 1: Summary of School Travel Planning Survey Results
Att. 2: Summary of Travel Challenges identified in School Travel Planning Process
Att. 3: Draft Best Routes to School Maps

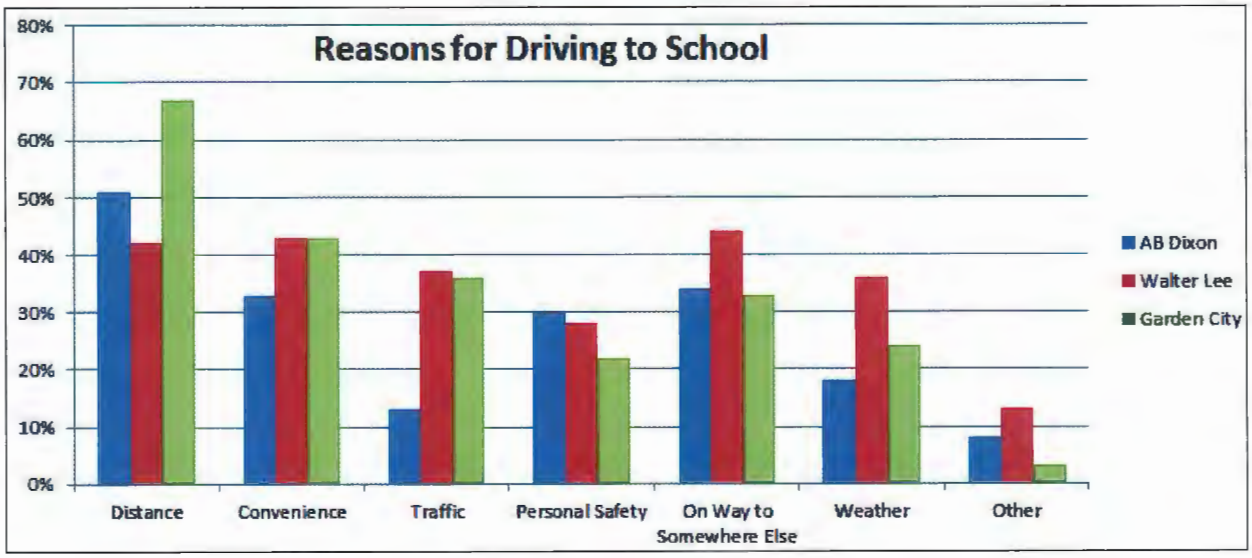
Summary of School Travel Planning Survey Results

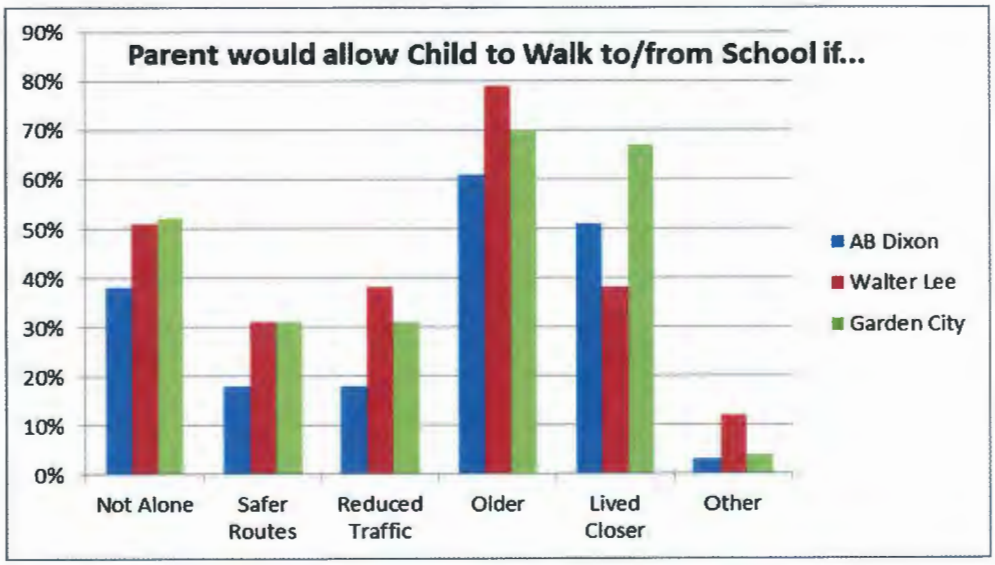




Summary of School Travel Planning School Survey Results



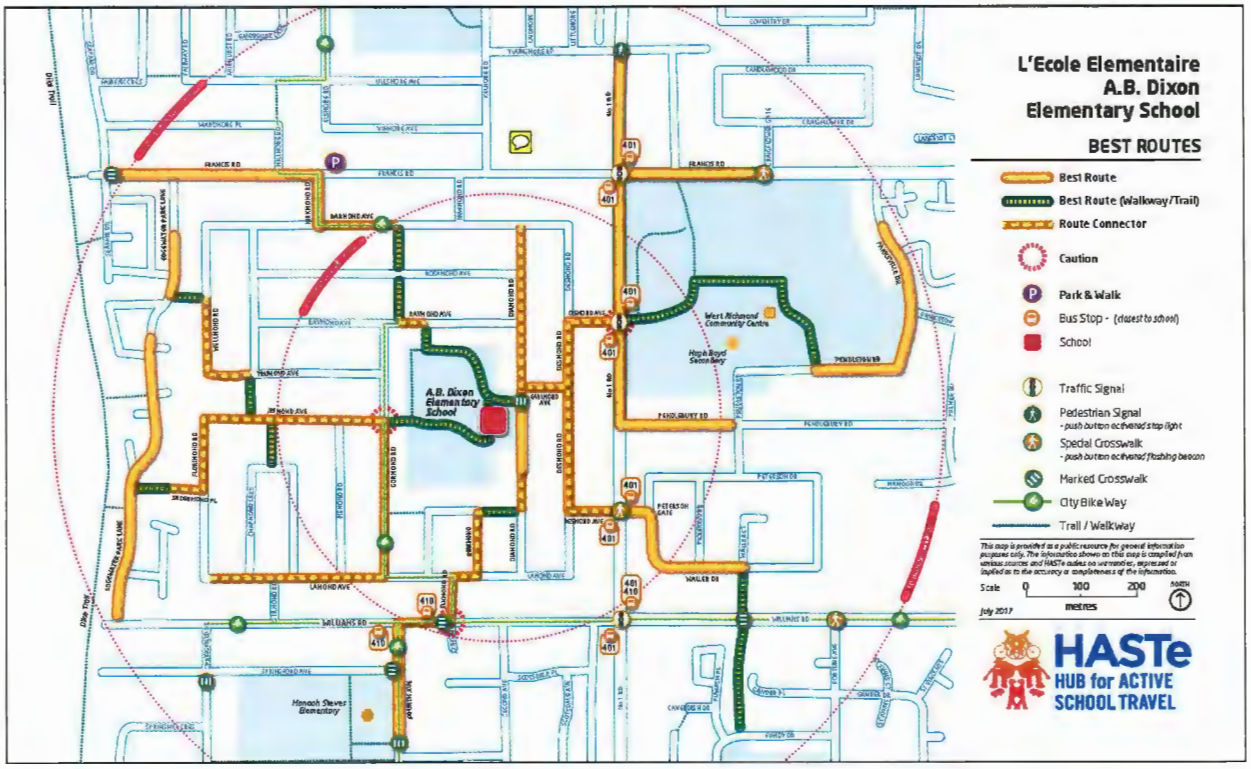


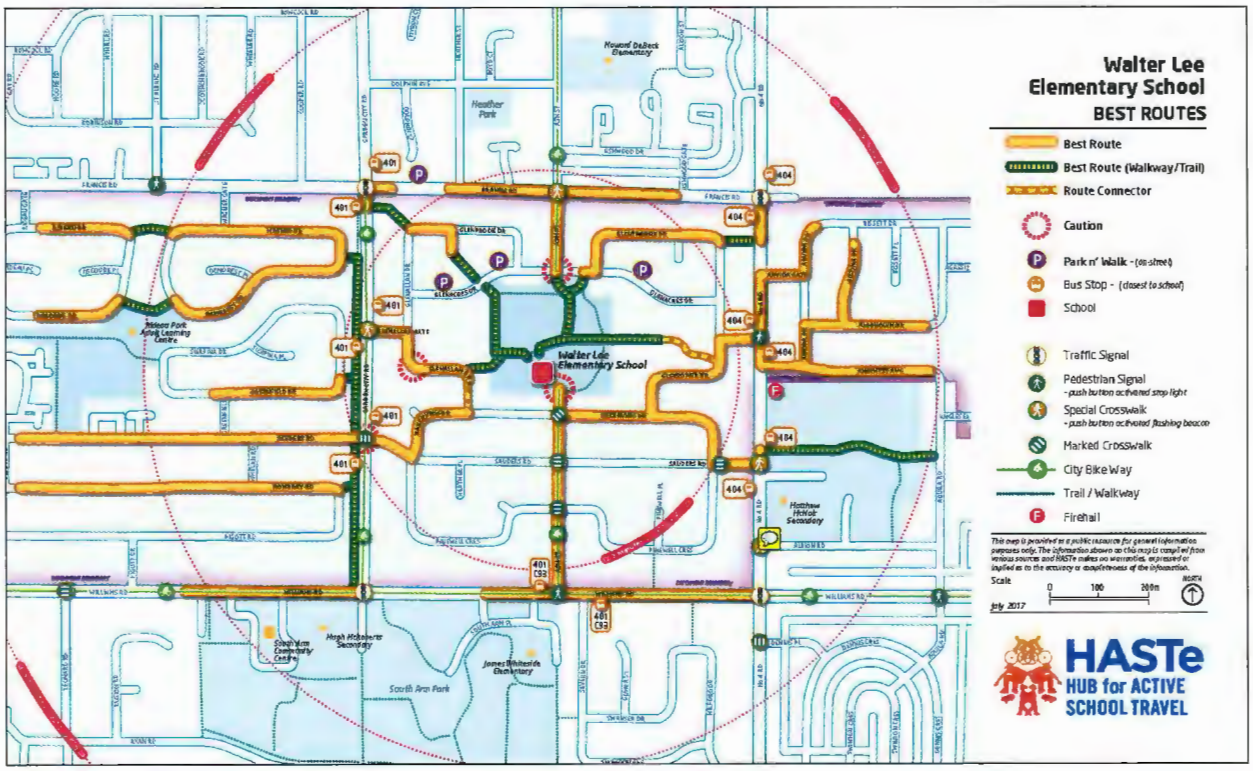


Summary of Perceived Travel Challenges identified in School Travel Planning Process

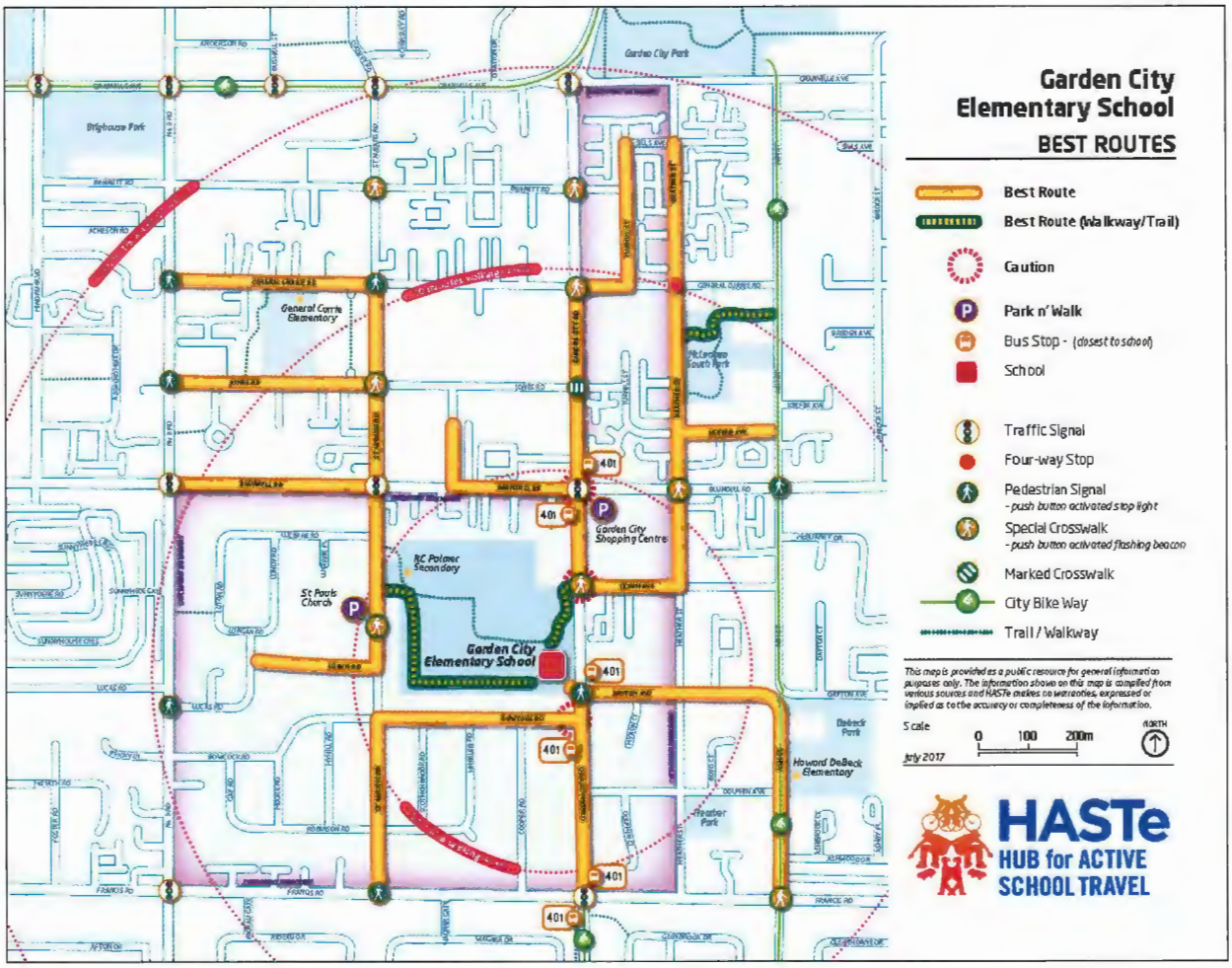
School	Perceived Travel Challenge	Preliminary Comments from Staff
AB Dixon	Driveway to school from Gormond Ave lacks pedestrian facilities	• Review feasible options for pedestrian facilities subject to limited right-of-way
	Lack of pedestrian facilities within school zone on Diamond Ave	• Identify as future City capital project subject to resources and other priorities
	Crossings of major arterial road (No. 1 Road) can be uncomfortable	• Review sightlines, signage and markings of crossings • Undertake warrant analysis to determine if upgrade of a crossing is required • Request RCMP enforcement of driver compliance at crosswalks
Garden City	Traffic volumes and speeds along Garden City Road detract from pedestrian comfort	• Review sightlines, signage and markings of crossings • Undertake warrant analysis to determine if upgrade of a crossing is required • Request RCMP enforcement of driver compliance at crosswalks
	Crossing of major arterial road (Garden City Road) can be uncomfortable	• Review sightlines, signage and markings of crossings • Undertake warrant analysis to determine if upgrade of a crossing is required • Request RCMP enforcement of driver compliance at crosswalks
	Pedestrian access through school site	• Responsibility of Richmond School District • Richmond School District staff will review and liaise with City staff on any planned actions that may involve City right-of-way
Walter Lee	Crossing of major arterial road (Garden City Road) can be uncomfortable	• Review sightlines, signage and markings of crossings • Undertake warrant analysis to determine if upgrade of a crossing is required • Request RCMP enforcement of driver compliance at crosswalks
	Lack of driver compliance at crosswalks	• Request RCMP enforcement of driver compliance at crosswalks
	Lack of crosswalk at Ash St-Glenacres Dr	• Undertake warrant analysis to determine need for crosswalk
	Pedestrian access through school site	• Responsibility of Richmond School District • Richmond School District staff will review and liaise with City staff on any planned actions that may involve City right-of-way

Draft Safe Routes to School Maps





Draft Safe Routes to School Maps



City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	November 1, 2017
From:	Victor Wei, P. Eng. Director, Transportation	**File:**	01-0154-04/2017-Vol 01
Re:	**TransLink Southwest Area Transport Plan – Results of Phase 2 Consultation and Preparation of Draft Final Plan**		

Staff Recommendation

1. That as described in the report titled "TransLink Southwest Area Transport Plan – Results of Phase 2 Consultation and Preparation of Draft Final Plan" dated November 1, 2017 from the Director, Transportation:

   (a) The comments from the Senior Advisory Committee and staff be forwarded to TransLink staff for incorporation into the draft final Plan; and

   (b) TransLink's draft recommendations for transit service and regionally significant cycling corridors for the Southwest Area Transport Plan be endorsed for the purpose of public consultation on the draft final TransLink Southwest Area Transport Plan.

2. That staff be directed to report back with the draft final TransLink Southwest Area Transport Plan in January 2018.

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

Att. 4

REPORT CONCURRENCE		
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**
Policy Planning Economic Development	☑ ☑	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	**INITIALS:** CS	**APPROVED BY CAO**

Staff Report

Origin

The development of TransLink's Southwest Area Transport Plan was initiated in February 2015. Staff have provided regular updates on the progress of the Plan with the last report in May 2017 highlighting the Phase 2 public consultation material on proposed strategies and action to address the issues and opportunities identified in Phase 1. This report provides a summary of the Phase 2 consultation results and the next steps to prepare the draft final Plan.

This report supports Council's 2014-2018 Term Goal #3 A Well-Planned Community:

3.3. Effective transportation and mobility networks.

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.

Analysis

Southwest Area Transport Plan

The Southwest Area Transport Plan includes Richmond, South Delta (Ladner and Tsawwassen) and Tsawwassen First Nation and will encompass the entire multi-modal transportation network (as opposed to just transit) within the identified sub-area of the region. Based on the structure of TransLink's Regional Transportation Strategy and the Mayors' Council 10-Year Plan, the Plan will identify priority strategies and actions related to the themes of invest, manage and partner. Figure 1 illustrates the Plan process; the Plan is anticipated to be finalized by the end of 2017.

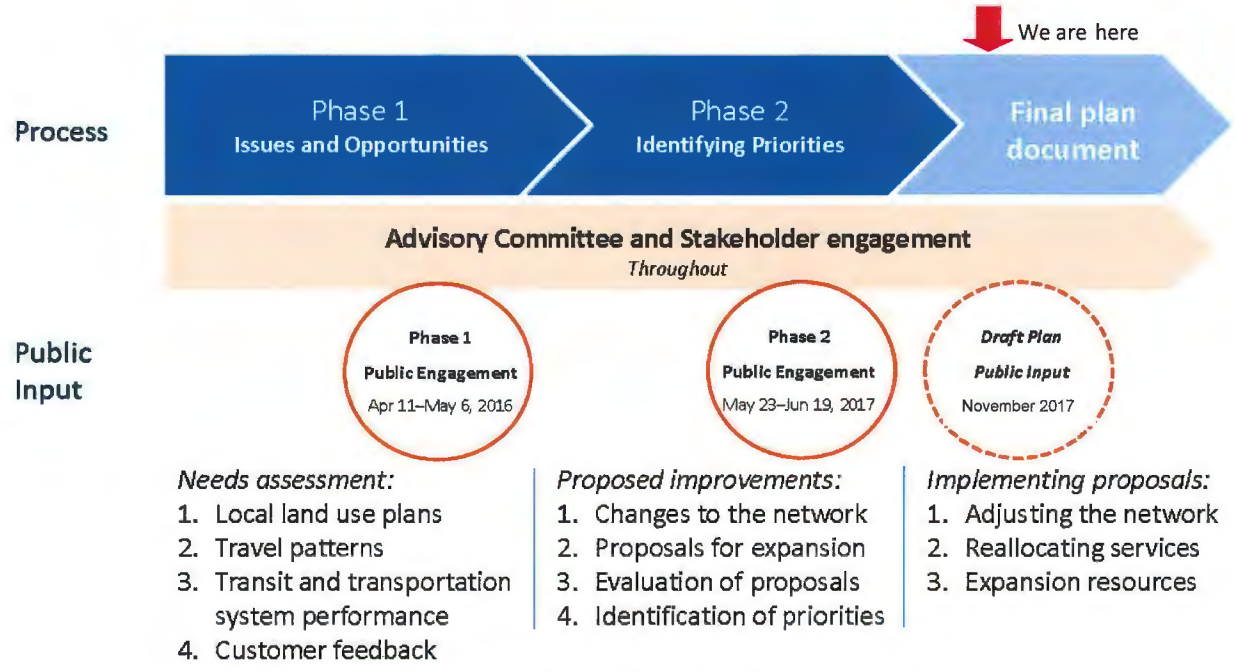


Figure 1: Southwest Area Plan Process

Phase 2 Consultation Engagement

From May 23 to June 19, 2017, TransLink sought input from the public, stakeholders and municipal partners in the engagement for Phase 2: Identifying Priorities. Outreach activities undertaken by TransLink to raise awareness of the consultation included:

- Local newspaper advertisements including the Richmond News, Ming Pao and Sing Tao;
- Online and social media including targeted digital advertising buys, Buzzer blog, TransLink website and social media, local government websites and social media (including the City of Richmond); and
- Email to 300+ community and business groups, distribution of 9,000 posters and postcards to community centres, libraries, non-profits, and transit hubs.

As transportation and employee access continue to be a key concern for Richmond businesses and a challenge for workforce attraction and retention, the City's Economic Development Office also shared information about the Phase 2 consultation process and proposed transit improvements with the business community through the following means:

- E-mails to businesses that had previously registered concerns about employee access (~100 businesses representing 10,000+ employees);
- Notice in Richmond in Business e-newsletter (~700 recipients); and
- Posts on economic development Twitter and Facebook social media channels (~2,500 followers).

Feedback was gathered via an online survey on the TransLink website with paper surveys (in English and Chinese) available at key community locations including Richmond Centre for Disability, Richmond Chinese Community Society, Minoru Place Activity Place, and all libraries in Richmond. In addition, in-person events held in Richmond included two pop-up open houses at the Steveston Farmers and Artisans Market (June 4) and Bridgeport Station (June 7) as well as a presentation to the Richmond Active Transportation Committee (June 14), and a transportation stakeholder workshop (June 15).

A total of 3,288 surveys were completed (3,192 online and 96 paper), which is comparable to the Phase 1 response rates. Table 1 provides a breakdown of the survey participants by location of residence for the online responses. Overall, one-half of the participants identified themselves as residents of the southwest area of Richmond, South Delta (Ladner and Tsawwassen) and Tsawwassen First Nation and of those, the majority (75%) are from Richmond.

Table 1: Survey Responses by Residence

Resident of	#	%
Richmond	1,204	37%
South Delta	384	12%
Tsawwassen First Nation	72	2%
Other/Did Not Answer	1,628	49%
Total	3,288	100%

Phase 2 Consultation Results: Transit

In Phase 2, TransLink proposed three new and changes to 33 existing transit routes throughout the sub-region and survey participants were asked for input to help understand customer impacts and identify new ideas or suggestions. Attachment 1 summarizes and ranks, for each proposed route change, respondents' perception of the proposed change versus the existing service (i.e.,

much better, better, about the same, worse, or much worse). Overall, 25 of 36 proposed changes (69%) were rated as providing about the same or better service. Of these, 18 proposals were rated twice as better or even higher. Highlights of the public feedback for Richmond routes include:

- Support that the proposed changes would be the same or better than current service for:
    - "New A" bus service along Blundell Road (82% of respondents); and
    - Increased frequencies to the existing 301 Richmond-Brighouse Station/Newton Exchange (87%), 311 Bridgeport Station/Scottsdale (84%) and 430 Richmond-Brighouse Station/Metrotown (85%).
- Concern that the proposed cancellation of the following services as part of the network redesign (typically due to the resulting duplication of service with another route) would be worse than today:
    - C92 Sea Island South/Bridgeport Station (88% of respondents);
    - C96 East Cambie/Richmond-Brighouse Station (53%); and
    - 480 UBC/Bridgeport Station (94%).
- Concern that the following existing services proposed to be re-aligned to provide more direct north-south service and connect to Bridgeport Station rather than Richmond-Brighouse Station would be worse than today:
    - 404 Four Road/Richmond-Brighouse Station (39% of respondents); and
    - 405 Cambie/Five Road (40%).
- Mixed responses on longer routes that would be split (i.e., 401 One Road/Garden City, 407 Bridgeport/Gilbert, 410 22nd St Station/Railway, and 405 Cambie/Five Road), typically based on the trade-off between improved reliability and the ability to tailor service frequencies to route segments versus some passengers being required to transfer depending on their destination.

Respondents also indicated broad support for the proposed regionally significant cycling corridors that were identified for new or improved cycling facilities.

Consideration of Consultation Results

Based on the Phase 2 survey responses and comments, TransLink staff determined that some Richmond route proposals could proceed unchanged (i.e., responses were generally positive with no significant issues identified) while others would be further analyzed to explore refinements and new options to address respondents' concerns as summarized in Table 2.

Table 2: Richmond Route Proposals

Proceed with Proposal	Consider Revisions
• 401 One Road/Garden City • 402/New A (Blundell Rd) • N10/N15 NightBus (Vancouver-Richmond) • 430 Richmond-Brighouse/Metrotown • 301 Richmond-Brighouse/Newton • C94 Richmond Oval	• 403 Three Road/Bridgeport Stn • 404/405/C96 East Cambie • 410/C98 22nd St Stn-Fraserport-Railway • 480 UBC/Bridgeport Stn • C92/407 (Sea Island)

Route Changes to Proceed as Proposed

Staff support the following six proposals identified to proceed unchanged:

- *401 One Road/Garden City*: Split into two routes (east (401e) and west (401w) segments) and increase service level on the 401w to FTN[1] level to improve service reliability and match service level with growing demand.

- *402 Richmond-Brighouse/No. 2 Road-New A (Blundell Road)*: Extend service along No. 2 Road north of Blundell Road, increase service to FTN level and provide service along future River Parkway and Capstan Station. Introduce "New A" service along Blundell Road connecting to Richmond-Brighouse Station.

- *N10/N15 NightBus (Vancouver-Richmond)*: Extend the N15 service from Marine Drive Station to YVR with a timed transfer point at Airport Station (Russ Baker Way-Miller Road) on Sea Island thereby increasing service to YVR for passengers originating from both Richmond and Vancouver. Service hours would also be extended to ensure full coverage of the time when the Canada Line is not operating.

- *430 Richmond-Brighouse/Metrotown*: The approved Phase One of the 10-Year Vision identifies the completion of planning and design work in 2018-2019 for a new express B-Line service between Metrotown (Burnaby) and Richmond-Brighouse Station that would be implemented through the Phase Two investment plan (i.e., service implementation anticipated in 2020).

- *301 Richmond-Brighouse/Newton*: Increase service frequency on weekends to meet growing demand and add a new stop at Alderbridge Way-No. 4 Road to provide a better transfer point for customers with other proposed services along No. 4 Road.

- *C94 Richmond Oval*: Extend weekday AM peak period service to meet demand.

Revision of Proposed Route Changes

Staff were involved in TransLink's consideration of revisions to the remaining route proposals. For each of the Richmond route proposals considered for revision, the final revised proposal and rationale are summarized below, which are supported by staff. Alignment of the route proposals with the City's Transit Network Map as identified in the *Official Community Plan* was a key consideration in the assessment of options.

- *403 Three Road/Bridgeport Station*: Redesign the 403 to become two routes; the 403e per the current route from Bridgeport Station east to Riverport and a "New B" bus route west to Steveston. Increase the frequency of the 403e east of No. 3 Road to FTN level and bring the New B service to Richmond-Brighouse Station instead of Bridgeport Station, where passengers can transfer for local destinations further north on No. 3 Road.

- *404 Four Road/Richmond-Brighouse Station-405 Cambie/Five Road-C96 East Cambie*: Realign the 404 to serve Riverside Industrial Park but keep the existing routing along No. 4

[1] TransLink's Frequent Transit Network comprises transit service that runs at least every 15 minutes in both directions throughout the day and into the evening, every day of the week.

Road and Granville Avenue to Richmond-Brighouse Station (i.e., do not realign to continue north on No. 4 Road to Bridgeport Road and Bridgeport Station). Given that the 404 is not realigned north of Granville Avenue and thus would not serve the North Bridgeport area, modify the proposed realignment of the 405 to extend the service along Shell Road, River Drive and Van Horne Way before terminating at Bridgeport Station. The C96 would be retained but realigned to provide new service on Westminster Highway between Garden City Road and No. 4 Road (which would otherwise lose service due to the realigned 405) and would not extend to Crestwood on No. 6 Road due to redundancy with the 410.

- *410 22nd St Station/Railway-C98 22nd St Station/Kingswood*: Split the 410 into two routes (east (410e) and west (410w) segments) and operate the 410e on Westminster Highway (rather than Highway 91) for all trips in order to maintain peak period service to Fraserwood and provide increased service to the Crestwood area on No. 6 Road given the realignment of the C96. Realign the C98 to serve the Fraserwood area and extend service further west on Blundell Road. As the full build-out of the Ecowaste site is anticipated within the next 15 years, the future extension of the C98 to Riverport will be shown in the final Plan.

- *480 UBC/Bridgeport Station*: Retain the 480 but operate during peak periods only when crowding is more prevalent on the Canada Line. Reinvest the off-peak 480 service hours into other Plan priorities (e.g., FTN service on No. 1 Road, improvements to the 410).

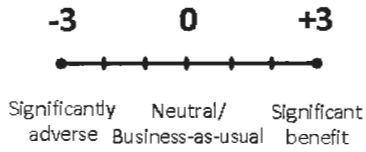
- *C92 Sea Island South/Bridgeport Station-407 Bridgeport/Gilbert*: Retain the C92 with consideration of increased span of service (i.e., weekday evenings as well as weekend day/evenings). Split the 407 into two routes (east (407e) and west (407w) segments) and, given that the C92 will still operate on Russ Baker Way-Cessna Drive, revise the realignment of the 407w to operate via Gilbert Road, Lansdowne Road and Garden City Road to Bridgeport Station, which provides new and improved service on Lansdowne Road.

Attachment 2 provides a staff assessment of how transit route proposals address key Richmond issues. Attachment 3 presents a map of the draft recommended transit service changes. Overall, the combined transit route proposals would significantly improve transit service in Richmond and support the goals and objectives of the Official Community Plan to reduce car dependency and greenhouse gas emissions.

Identification of Transit Service Recommendations for Implementation

The finalized routing proposals then underwent a multiple account evaluation (MAE) in consultation with staff to ensure that the proposed changes are aligned with regional and local goals and to help prioritize the investments and inform decision-making. The accounts and criteria are shown in Figure 2. Each account was scored on a 7-point scale ranging from -3 (significantly adverse) to 0 (neutral) to +3 (significant benefit).

- Multiple Account Evaluation tool
- Each criteria scored using a 7-point scale



- Deliverability weighted at 25%

ACCOUNT	CRITERIA
ECONOMY	☐ Access to jobs ☐ Access to industrial employment areas
ENVIRONMENT	☐ Emissions reduction
FINANCIAL	☐ Capital costs ☐ Operating costs
SOCIAL AND COMMUNITY	☐ Customer experience ☐ Access to transit
HEALTH	☐ Access to transit for seniors, youth, low income ☐ Neighbourhood impacts
LAND USE	☐ Policy alignment (regional, local) ☐ Demand areas
DELIVERABILITY	☐ Ease of implementation ☐ Acceptability

Figure 2: Multiple Account Evaluation Criteria for Proposed Routing Changes

The recommended service proposals were then categorized as High, Medium and Low priorities according to the following definitions:

- High Priority: Considered for implementation as funding allows and alongside other regional priorities.
- Medium Priority: Considered for implementation based on future funding conditions and may require demand for services to grow or conditions to change (e.g., new development occurs, changes to road network).
- Low Priority: Considered for implementation based on future funding conditions and likely requires demand for services to grow or conditions to change (e.g., new development occurs, changes to road network).

The key objectives for the transit service recommendations are aimed at:

- improving Frequent Transit Network (FTN) service along key corridors;
- expanding bus service for growing communities and large areas of employment, including industrial areas;
- providing more reliable and convenient bus service; and
- making NightBus more direct for service to Richmond City Centre and YVR.

Transit Facilities and Infrastructure

Additional transit service, facilities and infrastructure initiatives within the sub-area that have been identified in the Mayors' Council 10-Year Vision include:

- Years 1-5: Phase One (2017-2019) includes Canada Line upgrades (i.e., increased Canada Line service during high-demand times starting January 2017 and purchase of 22 new cars) and the Richmond-Metrotown and Scott Road B-Line studies; and

- Years 6-10: a new bus exchange and layover facility in Steveston and new and improved transfer opportunities at Highway 99-Steveston Highway and Highway 99-Highway 17A.

Additional transit facility and infrastructure initiatives identified through technical work and engagement specific to the Plan include:

- improve park and ride by expanding current facilities or creating new facilities;
- identify opportunities to improve customer amenities at stations and exchanges;
- consider options for potential future applications of on-demand transit services; and
- identify opportunities for transit priority to make services faster and more reliable, including approaches to the Queensborough Bridge.

Phase 2 Consultation Results: Cycling

A number of regionally-significant corridors were proposed (Attachment 3) as priorities for new, or improved, cycling facilities to provide high-quality connections to transit, urban centres and regional transportation gateways that are comfortable and accessible for most cyclists. The survey results indicated:

- seven in ten (69%) said the regionally-significant cycling corridors identified for prioritization are the right ones;
- one-quarter (25%) of those who choose to share comments said that cycling corridors should be protected and/or separated from vehicle traffic, especially on roadways with high traffic and high speeds (e.g., Steveston Highway and Westminster Highway in Richmond; Ladner Trunk Road and River Road in Delta); and
- important regional cycling connections that need to be improved are between Richmond and Delta, and to the Tsawwassen Ferry Terminal.

Additional specific cycling-related initiatives identified through technical work and engagement specific to the Plan include exploring opportunities to:

- improve the ability for more customers to take bicycles on buses through the George Massey Tunnel and to the Tsawwassen Ferry Terminal;
- expand secure bike parking at transit stations and exchanges, including Bridgeport Station and Richmond-Brighouse Station; and
- improve cycling conditions and infrastructure for bridge crossings, including the Knight Street Bridge and Westham Island Bridge, both of which are owned by TransLink.

Senior Advisory Committee Meeting

A meeting of the Senior Advisory Committee (the Committee) was held September 15, 2017 and attended by Councillor Au, the City's elected official appointed to the Committee, and staff. TransLink staff provided a review of the public engagement results with respect to transit proposals and how the public and stakeholder feedback is being addressed (as discussed above), the draft priorities for the Plan, and the process to finalize the Plan. Overall, the Committee is supportive of the proposed transit service changes.

Specific feedback from the Committee and staff on TransLink's materials regarding the draft transit service priorities (Attachment 3) as well as other comments include:

- revise the current depiction of the draft transit service recommendations to better clarify the anticipated implementation of the proposed changes (i.e., avoid the use of the word "priority," which implies that a "low priority" service change may never be implemented, and instead use, for example, "Tier 1" to "Tier 3");
- include reference in the Plan to the independent technical review of the George Massey Tunnel corridor and potential transit improvements arising from the ultimate preferred crossing solution; and
- the Plan should acknowledge a need for future light rapid transit (LRT) across the South Arm of the Fraser River.

Staff recommend that the above feedback be forwarded to TransLink for incorporation into the draft final Plan prior to its posting on TransLink's website for public comment.

Development of Draft Final Plan

TransLink is consolidating the technical analysis, public consultation and stakeholder feedback from Phase 1 (Issues and Opportunities) and Phase 2 (Identifying Priorities) to develop a draft final Plan that identifies transit, cycling and walking networks as well as transit facilities and infrastructure priorities.

The draft Plan and priorities would be posted on TransLink's website in mid-November 2017 and comments accepted from stakeholders and the public via email, mail or phone. Based on feedback from Committee and Council meetings and any additional public input through email, mail or phone, TransLink would revise the draft Plan and priorities and move to finalize the document. Staff will continue to provide input during this process and anticipate presenting a complete draft final Plan for endorsement in January 2018.

Financial Impact

None.

Conclusion

The Phase 2 public consultation results for the Southwest Area Transport Plan regarding proposals for three new and changes to 33 existing transit routes throughout the sub-region indicate support for most proposed route changes (26 of 36 proposed changes were perceived to be better). TransLink has developed revised route proposals for those changes that generated concerns from respondents (i.e., typically proposals that involved cancellation of a route). The Southwest Area Transport Plan is expected to be completed by TransLink by the end of 2017. Staff anticipate presentation of the complete draft final Plan for endorsement in January 2018.

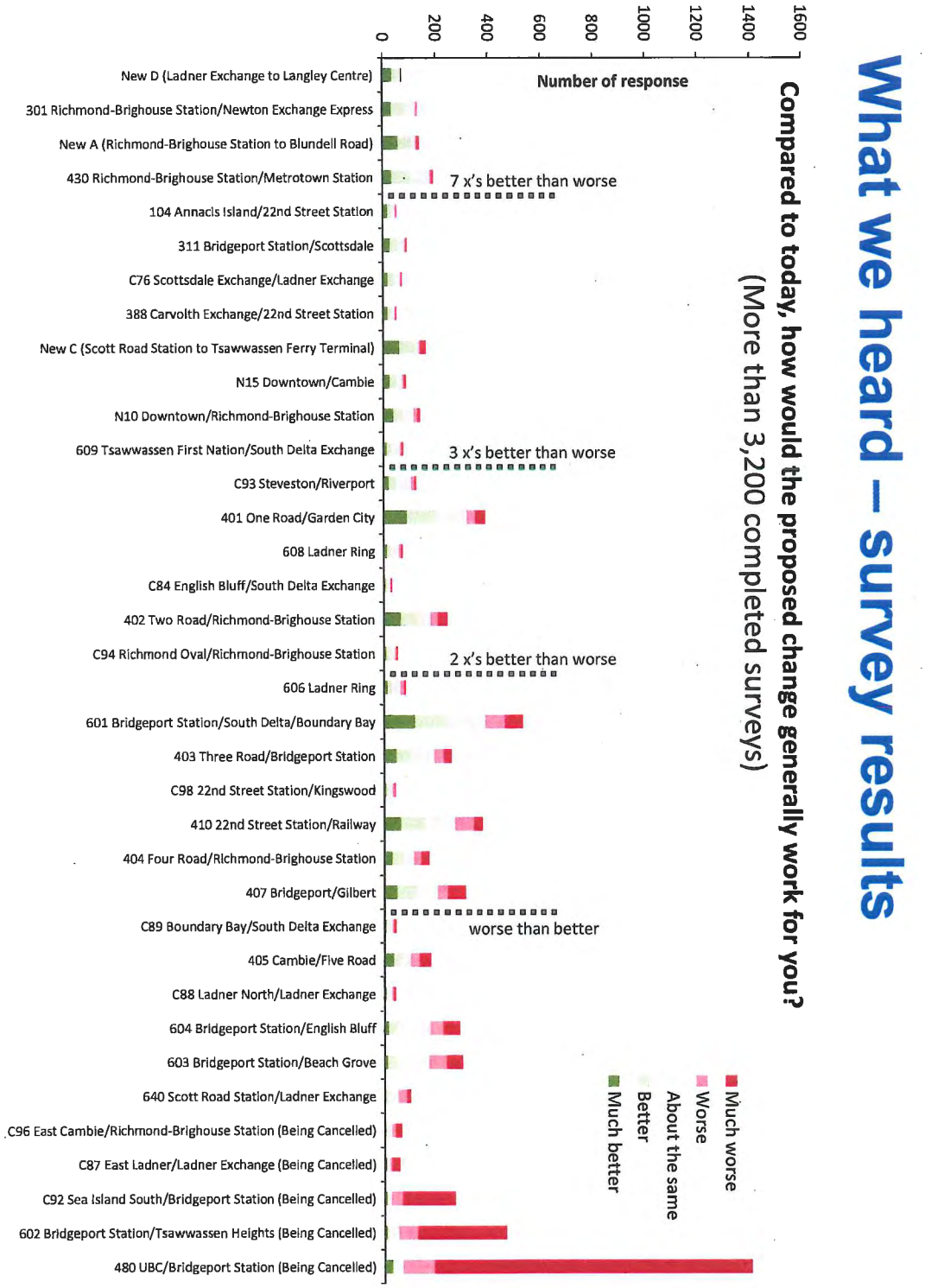
Joan Caravan
Transportation Planner
(604-276-4035)

Donna Chan, P.Eng., PTOE
Manager, Transportation Planning
(604-276-4126)

JC:jc

Att. 1: Phase 2 Consultation - Respondents' Perception of Proposed Change versus Existing Service
Att. 2: Summary of Key Issues Addressed by Richmond Transit Proposals
Att. 3: Map of Draft Prioritized Transit Service Proposals for Richmond
Att. 4: Proposed Regionally Significant Cycling Corridors

Phase 2 Consultation: Respondents' Perception of Proposed Change versus Existing Service



Summary of Key Issues Addressed by Richmond Transit Proposals

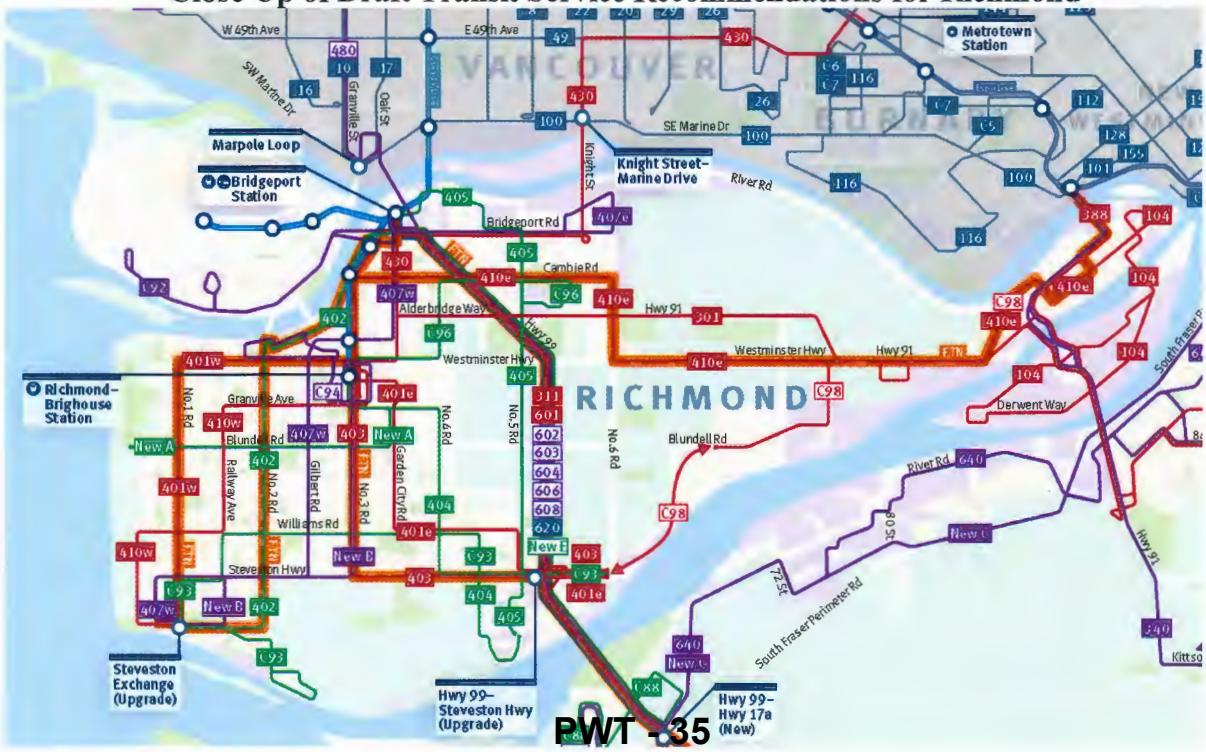
Key Issues Addressed	Route	Current Service	Proposal and Benefits
Improved Service Level Improved Service Reliability	401	Garden City Rd-Brighouse Stn-No. 1 Rd	• Split into two routes (east and west segments) and increase frequency on west segment to FTN level • Improves reliability and provides FTN level service on No. 1 Road
Improved Service Level Improved Service Reliability	402	No. 2 Rd-Blundell Rd-Brighouse Stn	• Increase frequency to FTN level and realign to extend service on No. 2 Rd north of Blundell Rd and future River Parkway • Provides FTN service level on No. 2 Road and new service on No. 2 Road as well as future River Parkway
Improved Service Level Improved Service Reliability	403	Bridgeport Stn-No. 3 Rd-Steveston Hwy-Riverport	• Split into two routes (east and west segments) splitting as more reliable, increase frequency of east segment to FTN and bring west segment (New B) to Brighouse Stn • Provides FTN service level on No. 3 Road and new service on Steveston Hwy between No. 3 Rd and Gilbert Rd
Improved Service to Industrial/Business Parks	404	Brighouse Stn-Granville Ave-No. 4 Rd-Riverport	• Realign eastern segment to extend service into Riverside Industrial Park via Shell Road and interline with 405
Improved Service to Industrial/Business Parks New Service between Neighbourhood Centres New Service to Neighbourhoods	405	Riverside-No. 5 Rd-Westminster Hwy-Brighouse Stn-Cambie-Viking Way-Knight St	• Realign to extend service along No. 5 Road north of Westminster Hwy and, at northern end, travel Shell Road-River Dr-Van Horne Way-Bridgeport Stn • Improved service for Riverside Industrial Park, direct connection between East Cambie and Ironwood, new service to River Dr (Parc Riviera) and Van Horne Way
Improved Service Reliability Improved Service to Neighbourhoods	407	Steveston-Gilbert Rd-Brighouse Station-Garden City Rd-Bridgeport Rd	• Split into two routes (east and west segments) and realign west segment to Lansdowne Rd-Garden City Rd to Bridgeport Stn • Improved service along Lansdowne Rd (KPU, Lansdowne Mall and Lansdowne Stn) and West Cambie area (Walmart)
Improved Service Level Improved Service Reliability Improved Service to Industrial/Business Parks	410	Steveston Village through City Centre to east Richmond via Hwy 91 with limited service on Westminster Hwy	• Split into two routes (east and west segments) and retain all trips on Westminster Hwy to/from east Richmond including service to Fraserwood • Splitting service improves reliability, keeping service on Westminster Hwy better serves Crestwood (due to realigned C96), more reliable/legible service for Kartner area and Fraserwood
Improved Efficiency	480	Bridgeport Stn-UBC	• Retain with peak period service only (bi-directional) • Service retained and will only be reduced when future improvements in place that will have combined faster travel time and more reliability
Improved Service to Neighbourhoods	C92	YVR South Terminal-Bridgeport Station, serving Burkeville and BCIT	• Retain with increased span of service • Improved service for Burkeville and businesses/agencies on Cessna Dr to include weekday evenings and weekend days/evenings
New Service to Neighbourhoods	C93	Steveston-Riverport via Williams Rd	• Extend service to London Landing at south end of No. 2 Rd • New transit service to London Landing area

Summary of Key Issues Addressed by Richmond Transit Proposals

Key Issues Addressed	Route	Current Service	Proposal and Benefits
New Service to Neighbourhoods	C96	Brighouse Stn to Crestwood via Garden City Rd-Cambie Rd-Jack Bell Dr-Jacombs Rd-Cambie Rd-No. 6 Rd	• Realign to Brighouse Stn-Westminster Hwy-No. 4 Road-Cambie Road-Jacombs Rd-one-way loop into residential neighbourhood-No. 5 Rd-Cambie Rd then back • Retains service on Westminster Hwy between Garden City Rd and No. 4 Rd (otherwise lost due to realignment of 405) and provides new service along No. 4 Rd north of Westminster Hwy
Improved Service to Industrial/Business Parks	C98	22nd St Stn-Westminster Hwy-Fraserport	• Extend further west on Blundell Rd but do not realign into Fraserwood • Improved frequency and service area with potential future service to Ecowaste acknowledged
New Service to Neighbourhoods and Neighbourhood Centres	New A	N/A	• Blundell Rd-Brighouse Stn • East-west route with new service along Blundell Rd west of No. 2 Rd and east of No. 3 Rd

Map of Draft Transit Service Recommendations for Sub-Area

Close-Up of Draft Transit Service Recommendations for Richmond



5491921

Proposed Regionally Significant Cycling Corridors

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	October 20, 2017
From:	Tom Stewart, AScT. Director, Public Works Operations	**File:**	
Re:	**Update on 2017/2018 Snow and Ice Response Preparations**		

Staff Recommendation

That the staff report titled "Update on 2017/2018 Snow and Ice Response Preparations", dated October 20, 2017, from the Director, Public Works Operations, be received for information.

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

Att. 2

REPORT CONCURRENCE		
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**
Communications	☑	
Parks Services	☑	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	**INITIALS:** CJ	**APPROVED BY CAO**

Staff Report

Origin

This report provides information about the City's 2017/2018 snow and ice preparations.

Analysis

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

Policy Amendments

Traffic Control and Regulation Bylaw 5870 was amended by Council on April 10, 2017, to require commercial, industrial, multi-family or single family property owners or occupiers to clear snow and ice from sidewalks adjacent to their property. Through a coordinated communications campaign (e.g. social media, news release, website content), staff will educate the public of Bylaw 5870. The Bylaw was amended to improve safety and convenience for pedestrians. Section 6.1 of the amended Bylaw reads:

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

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

Equipment

The City has six road temperature sensors that are monitored 24 hours a day by the City's Public Works Dispatcher and provide early indications of potential road frost or freezing conditions. Each sensor is strategically located under roadway asphalt throughout the City to provide real time information concerning road conditions. Public viewing of these road temperature sensors is now available through the City's website at www.richmond.ca/services/rdws/weather/roadtemps.htm. Sensor locations are illustrated in Attachment 1.

The global positioning system (GPS) was installed on the City's dump trucks as part of the 2016 pilot program. GPS was used for snow and ice response last year and was an important tool for operations management and planning. Truck locations were available in real time which allowed sanding/salting and plowing activities to be reallocated to the closest vehicle in response to areas

of concern brought forward. The system also provided valuable information in relation to claims made against the City relative to the City's operational response.

Two small insert salters have been purchased for one tonne dump trucks which will allow salting of the designated collector roads and roads of local significance in residential subdivisions (third priority routes) and will allow the tandem salters and plows to attend to first and second priority routes. A complete list of equipment dedicated for snow response is provided in Attachment 2.

Public Outreach

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

- Snow Angels Program: This program was introduced in 2010 and connects local volunteer organizations with elderly citizens and residents with mobility/health challenges during a snowfall event. Assistance involves shovelling snow from sidewalks and/or walkways. A Snow Angels registry is accessible on the City's website and can also be obtained by calling Parks Programs, Public Works Dispatch, City Hall, or any of the community centres. The program is activated in the event of a significant snow fall (defined as an accumulation of 5+ centimetres of snow) and is dependent on the severity of the storm and volunteer resources. The City plays a role in coordinating and promoting the Snow Angels program, but the volunteers are recruited, screened and managed by each association participating in the registry.

- Good Neighbour Program: This program encourages everyone to clear the walkways around their property and help others who may face challenges. This neighbour-helping-neighbour campaign simply encourages residents to watch for people in their neighbourhood that could use help removing snow from their sidewalks and driveways and offer them a helping hand.

Communications Strategy

A comprehensive communication strategy has proven to be valuable in delivering accurate, timely and relevant information to the public. The City's various departments with the guidance of Corporate Communications have established communications protocols and key messaging which will reinforce the snow response communications program. Participating departments include Public Works, Parks, Corporate Communications and Marketing, Customer Service, Bylaws, Emergency Programs and Richmond Fire-Rescue.

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

- Social media (the City's Twitter, Facebook, YouTube; tweeting, retweeting, sharing information from credible sources, i.e., weather warnings)
- Media relations (news releases, media interviews, local newspaper ads)
- City's website (dedicated web pages, news pages)
- City's intranet for employees

- Social Media: Social media is a large part of the overall communication strategy. Staff utilize the City's primary Facebook (@CityofRichmondBC) and Twitter (@Richmond_BC) accounts to provide ongoing tips and timely updates during snow and ice events. This includes use of the @RichmondBCAlert Twitter account which is used only to provide emergency-related messages to residents (which include snow or other weather events). These updates include weather forecasts, what preparations are underway for current and upcoming events, current conditions and the status of any road closures due to debris, etc. This 2017/2018 season staff will again incorporate the use of photos and videos through its social media channels.

- News Releases: News releases have been prepared to address common extreme weather/snow and ice topics and will be released to the media as events occur. Some examples include clearing leaves from storm drains, personal winter preparedness, and how the City is preparing for extreme weather events.

- Website: The City's website provides considerable information about snow response including news releases, snow response route map and frequently asked questions. This information can be found at www.richmond.ca/services/rdws/weather/cityprepares.htm.

2017/2018 Weather Forecast

Richmond's geography often results in specific and variable weather patterns that differ considerably from other Metro Vancouver cities. Richmond-specific weather information and long range forecasts are received and monitored daily. According to NorthWest Weathernet, the 2017/2018 winter forecast is as follows:

> *October 13, 2017 - The late development of a weak La Niña in the equatorial Pacific means temperatures should average below normal this winter with higher than normal rainfall and snowfall. Two or three arctic outbreaks should be expected. If one such outbreak occurs in early December, the chance of more outbreaks increases. Expect winter weather possibly right until the end of March.*

Operational Preparations

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

The City of Richmond's salt supplies have been secured for the upcoming winter season. There are currently 1,050 metric tonnes available under contract and an additional 2,200 metric tonnes on reserve. In addition to the Public Works Yard, a second location (Sidaway site) will be stocked

with salt for the reloading of trucks during snow events. This secondary location will reduce travel times and increase efficiencies for equipment working on the east side of Richmond.

Through a centralized control centre, staff closely monitor and record equipment locations, route start and completion times, and salt distribution. The addition of GPS monitoring to City vehicles involved in response operations will enable improved tracking and operations management. Overall, this will allow staff to respond accurately to enquiries and to better track expenditures that can be used to forecast costs for future events.

2016/2017 Winter Season Summary

During the past winter season we experienced nine snow events and 41 ice/frost events of varying duration and severity that accumulated 69 cm of snow at YVR. The City plowed and salted 14,069 lane kilometers and pre-treated and/or de-iced 38,105 lane kilometres of first, second and third priority roads.

Financial Impact

Funds are available through Council-approved operating budgets.

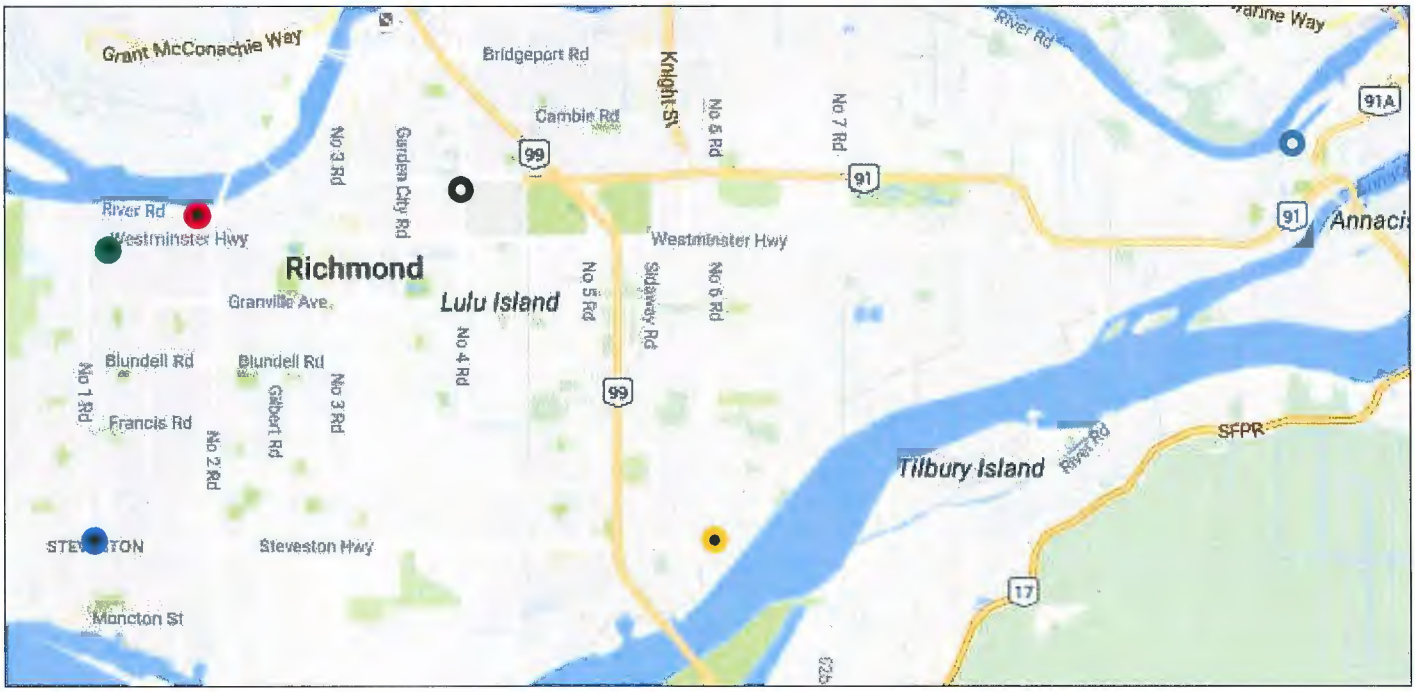
Conclusion

Preparations for the 2017/2018 snow and ice season by all required departments are well underway and will be completed in time for the upcoming winter.

Larry Ford
Manager, Roads & Construction Services
(604-244-1209)

Att. 1: City of Richmond – Road Temperature Sensor Locations
Att. 2: City of Richmond – Snow Response Equipment

City of Richmond – Road Temperature Sensor Locations



Road Temperature Sensors:

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

City of Richmond – Snow Response Equipment

Number of Units	Description
4	Single-axle dump trucks with flinks and belly plows
1	1-tonne flat deck truck with insert/brine tank
7	Tandem dump trucks with insert and plough attachments
2	1-tonne dump trucks with insert
1	Crane truck with insert
6	F550S with snow plows
1	Flusher truck (brine)
4	Mobile snow blowers
4	Backhoes
2	Front-end wheel loader
2	Bobcat skid steers
3	Hydro excavators
2	John Deere Ride-ons with plows
1	Grader
1	Kabota with plow
1	Brine production and handling system
2	Brine applicator inserts
1050 tonnes	Salt

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	October 27, 2017
From:	John Irving, P.Eng. MPA Director, Engineering	**File:**	10-6060-04-01/2017- Vol 01
Re:	**Burkeville Drainage**		

Staff Recommendation

That a moratorium on ditch infills in the Burkeville neighbourhood until a piped drainage network is implemented as outlined in the report titled "Burkeville Drainage" dated October 27, 2017, from the Director, Engineering be endorsed.

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

REPORT CONCURRENCE		
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**
Finance Department	☑	
Sewerage & Drainage	☑	
Policy Planning	☑	
Transportation	☑	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	**INITIALS:** CJ	**APPROVED BY CAO**

Staff Report

Origin

Significant numbers of non-permitted ditch infills have been identified in Burkeville. The current drainage system configuration does not support standard City ditch infills and Engineering staff have not issued a ditch infill permit in Burkeville since 2011. This report describes drainage issues in Burkeville and a proposed solution to those issues.

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.*
>
> *6.1. Safe and sustainable infrastructure.*
>
> *6.2. Infrastructure is reflective of and keeping pace with community need.*

Findings of Fact

Drainage

Burkeville was originally constructed in 1941 as housing for war time Boeing aircraft manufacturing. The drainage system has not been significantly updated for decades, but has served the community well. The soils in Burkeville are permeable and significant drainage flows are percolated through the soil, resulting in lower flows in the ditch network.

Over time, and primarily driven by new home construction and renovations, there has been a corresponding increase in ditch infill requests in Burkeville. In 2011, the number of completed ditch infills combined with the increasing number of requested ditch infills were identified as problematic from a drainage capacity perspective. Piping the drainage network increases the storm water flows in the drainage network significantly, due to the reduced opportunity for percolation into the soil, and will be beyond the capacity of the existing system at build out.

Burkeville ditches are not deep enough to accommodate City standard piping and cannot be improved in a manner that will increase capacity to the required levels. On this basis, staff pursued comprehensive drainage upgrade planning for the area. The planning effort identified an overall cost of $13 million for drainage improvements, which includes upgrading the Miller Road pump station to accommodate the higher anticipated flows that will be generated by the piped system. A $2 million capital project to begin implementation of a piped drainage network in Burkeville has been included in the 2018 Capital Plan for Council's consideration. $1 million per year for Burkeville drainage has been included in the subsequent four years of the five year capital plan for Council's consideration.

Of the 287 single family homes in Burkeville, 60 have permitted ditch infills and there are an additional 20 ditch infills that were completed without permits. The majority of the infills constructed without permits were completed after 2011. Engineering has been addressing the

non-permitted infills as staff have become aware of them, however, the impacted residents are often unaware of the Bylaw requirements for ditch infills and are distressed by the requirements to address the non-permitted ditch infills.

Staff will implement a public information program on the drainage issue including mail outs to residents and a public open house.

Future Development Considerations in Burkeville

Staff anticipate bringing a report to the Planning Committee in early 2018, to consult with Burkeville residents regarding coach houses, granny flats, retaining the existing pre 1945 houses including the front, side and rear yards, incentives, design guidelines, and parking policies.

In addition, the Vancouver Airport Authority (VAA) advises that they anticipate meeting with representatives of Burkeville later this year, as part of their ongoing information sharing sessions regarding activities at the airport.

Analysis

Given the current drainage capacity limitations in Burkeville, staff recommend a moratorium on ditch infills in this neighbourhood until a piped drainage system can be implemented. It is anticipated that the moratorium will be lifted on a block by block basis as the piped drainage system is installed. A program for implementation of a piped drainage system that will include capacity for granny flat and coach house development has been included in the 2018 capital budget and 2018 to 2022 five year financial plan for Council's consideration.

Financial Impact

None.

Conclusion

The drainage system in Burkeville relies on percolation to minimize flows in the ditched drainage network. Ditch infills reduce the drainage system's capacity for percolation, increasing drainage system flows which will ultimately cause flooding in the neighbourhood. Staff have discontinued approval of ditch infills in Burkeville on this basis and recommend that Council issue a moratorium on ditch infills until such time as a piped drainage system can be implemented. Staff has included the Burkeville Drainage Improvement program in the proposed 2018 capital plan and the 2018 to 2022 Five Year Financial Plan for Council's consideration.

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

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	November 8, 2017
From:	John Irving, P.Eng. MPA Director, Engineering	**File:**	10-6060-05-01/2017-Vol 01
Re:	**2017 Union of BC Municipalities Community Emergency Preparedness Fund**		

Staff Recommendation

1. That the Dike Master Plan Phase 5 submission to the 2017 Union of BC Municipalities (UBCM) Community Emergency Preparedness Fund be endorsed.
2. That should the Dike Master Plan Phase 5 submission be successful, the Chief Administrative Officer and General Manager, Engineering and Public Works be authorized to negotiate and execute the funding agreements with UBCM.

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

Att. 1

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

Staff Report

Origin

On March 15, 2017 the Province announced $80 million in funding for partners to perform emergency preparedness activities in flood protection and prevention. UBCM manages $20 million to plan and implement structural flood protection projects in British Columbia. The application deadline for funding was on October 27, 2017; staff have submitted an application for funding for the Dike Master Plan Phase 5 project. The application guidelines state that projects must be endorsed by Council to be considered for funding. Staff are requesting Council's endorsement for the Dike Master Plan Phase 5 submission to the UBCM Community Emergency Preparedness Fund.

Completion of the Dike Master Plan is identified in the City of Richmond 2008 – 2031 Flood Protection Strategy as a key action in the effort to prevent flooding and minimize the effects of flood damage. Phase 5 of the Dike Master Plan has been included in the 2018 capital program that will be presented to Council for consideration in a subsequent report.

Analysis

The City of Richmond is made up of 3 main islands; Lulu Island is the focus of the first 4 phases of the Dike Master Plan (Attachment 1) and phase 5 will focus on dike improvements for Sea Island and Mitchell Island.

The scope of work for the Dike Master Plan Phase 5 project includes:

1. Develop 3D terrain model of existing dikes
2. Geotechnical review of dikes
3. Develop options for upgrading dikes to 4.7m geodetic expandable to 5.5m geodetic
4. Identification of environmental impacts of diking options
5. Stakeholder consultation
6. Recommendation of preferred diking options
7. Finalization of Dike Master Plan Phase 5

The UBCM Community Emergency Preparedness Fund can contribute up to 100% of the project costs to a maximum of $150,000. The estimated cost to complete the Dike Master Plan Phase 5 is $200,000. Should the City be successful in winning the UBCM grant, staff recommend that costs beyond the grant allocation be funded from the Drainage and Diking Utility. Staff have included the Dike Master Plan Phase 5 in the 2018 capital program for Council's consideration.

Staff also recommend that authority be given to the Chief Administrative Officer and General Manager, Engineering and Public Works to negotiate and execute funding agreements for this project if approved for funding by UBCM as part of the 2017 Community Emergency Preparedness Fund.

Financial Impact

None.

Conclusion

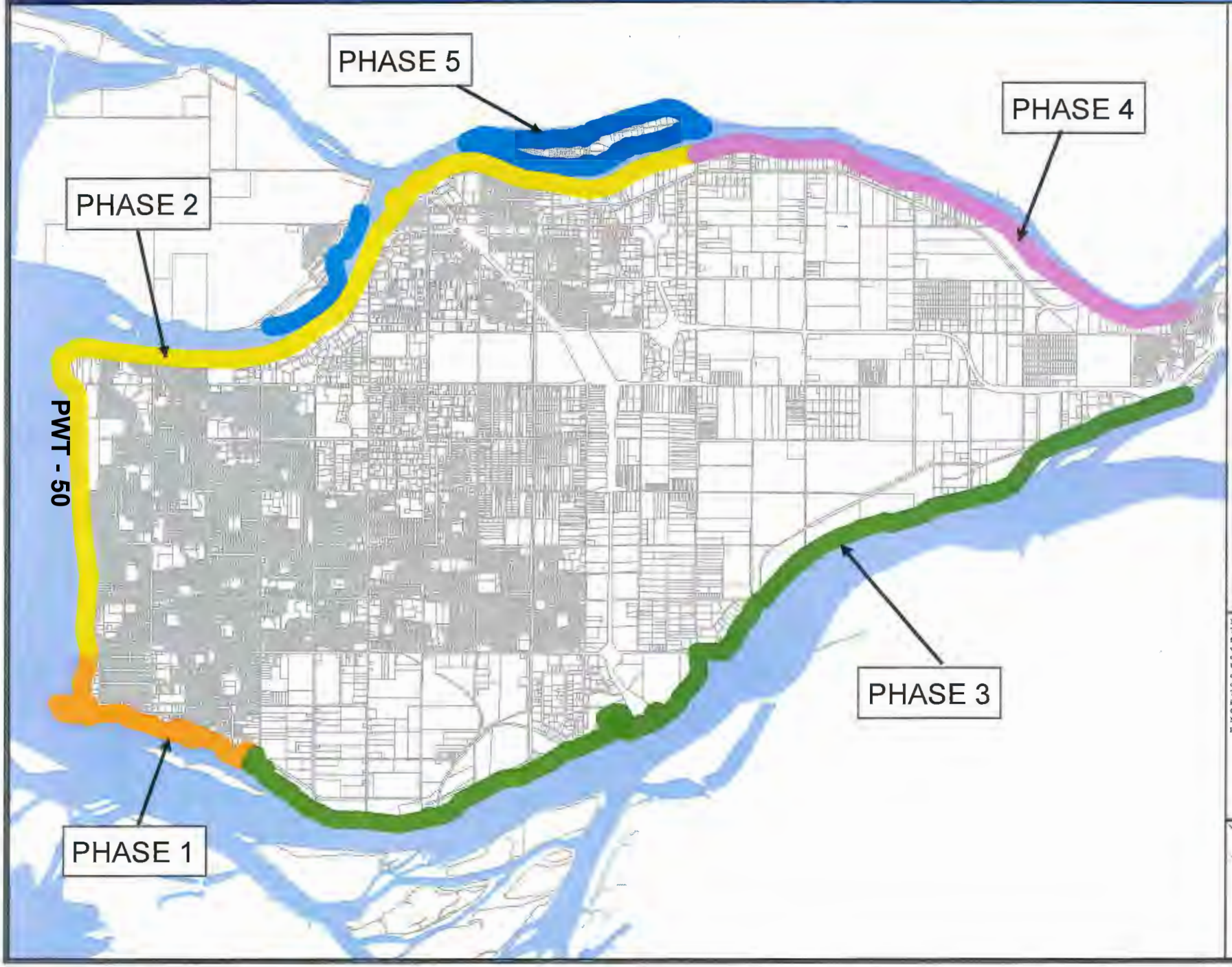
The Union of BC Municipalities has requested funding applications from local governments for emergency preparedness activities in flood protection and prevention. Staff have submitted an application for funding and recommend that Council endorse the project in accordance with the grant program guidelines. Staff are seeking Council authority for the negotiation and execution of funding agreements should the City's application be successful.

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

LB:cc

Att. 1: Dike Master Plan Phases Map

Dike Master Plan Phases Map



Legend

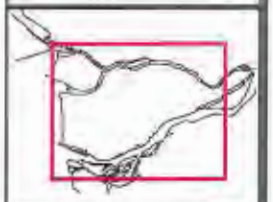
- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4
- PHASE 5

Note:
The information shown on this map is compiled from various sources and the City makes no warranties, expressed or implied, as to the accuracy or completeness of the information.
Users are reminded that lot sizes and legal description must be confirmed at the Land Title office in New Westminster.
This IS NOT a legal document, and is published for information and convenience purposes only.

0 250 500 1,000 Meters

NORTH

Printed Date: November 9, 2017



City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	October 15, 2017
From:	John Irving, P.Eng. MPA Director, Engineering	**File:**	10-6125-07-02/2017-Vol 01
Re:	**Electric Vehicle Charging Infrastructure - Requirements for New Developments**		

Staff Recommendation

1. That Richmond Zoning Bylaw 8500, Amendment Bylaw No. 9756, which adds Section 7.15 Electric Vehicle Charging Infrastructure, identified in the report titled "Electric Vehicle Charging Infrastructure – Requirements for New Developments" dated October 15, 2017, from the Director, Engineering, be introduced and given first reading;

2. That Richmond Official Community Plan Bylaw 9000, Amendment Bylaw No. 9520, which amends Section 8.5 Transportation Capacity and Demand Management and Section 14.2.7.E Electric Vehicle Charging both regarding electric vehicles, identified in the report titled "Electric Vehicle Charging Infrastructure – Requirements for New Developments" dated October 15, 2017, from the Director, Engineering, be introduced and given first reading;

3. That Richmond Official Community Plan Bylaw 9000, Amendment Bylaw No. 9520, having been considered in conjunction with:

   a. The City's Financial Plan and Capital Program; and

   b. The Greater Vancouver Regional District Solid Waste and Liquid Waste Management Plans;

   is hereby found to be consistent with said programs and plans, in accordance with Section 477(3)(a) of the Local Government Act;

4. That Richmond Official Community Plan Bylaw 9000, Amendment Bylaw No. 9520, having been considered in accordance with Official Community Plan Bylaw Preparation Consultation Policy 5043, is hereby found not to require further consultation.

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

Att. 4

REPORT CONCURRENCE		
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**
Law	☑	
Building Approvals	☑	
Development Applications	☑	
Policy Planning	☑	
Transportation	☑	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	**INITIALS:** CJ	**APPROVED BY CAO**

Staff Report

Origin

In January 2017, Council endorsed a stakeholder consultation program to develop electric vehicle charging infrastructure requirements for new private developments. This consultation also included opportunities for input on the City-owned network of public electric vehicle charging stations, and implementing electric vehicle charging infrastructure in existing buildings. A future report to the Public Works and Transportation Committee will address the City-owned network of public electric vehicle charging stations.

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.*

Analysis

Background

In 2010, Council adopted targets in Richmond's Official Community Plan to reduce community greenhouse gas (GHG) emissions 33% below 2007 levels by 2020, and 80% below 2007 levels by 2050. Transportation accounts for more than half of the greenhouse gas (GHG) emissions in Richmond's Community Energy and Emissions Inventory, with personal transportation accounting for more than 40% of emissions.

Richmond's 2014 Community Energy and Emissions Plan (CEEP) outlines strategies and actions for the City to take to reduce community energy use and GHG emissions, including:

- **Strategy 7:** Promote Low Carbon Personal Vehicles
    - **Action 18:** Set minimum requirements for electric vehicle infrastructure in new developments.

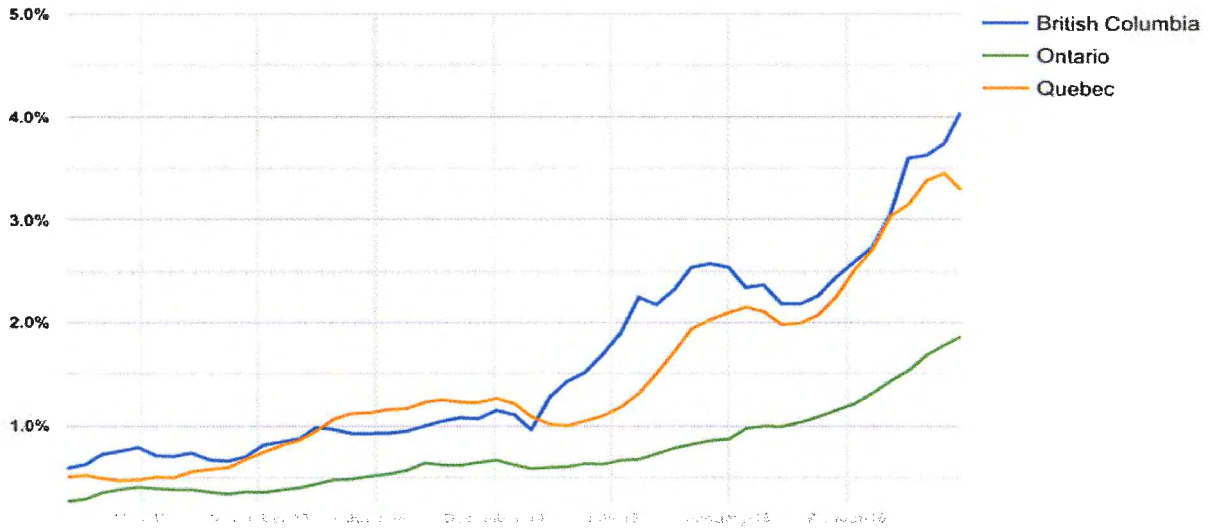
Modeling undertaken as part of the CEEP indicates Richmond's 2050 emissions reduction targets can only be achieved with the near-universal adoption of zero emissions personal vehicles by the 2040s, in addition to increasing transit ridership, walking, bicycling and rolling. The CEEP states that the City will pursue the widespread adoption of low carbon vehicles, in coordination with senior levels of government and industry.

Electric Vehicles (EVs)

Plug-in Electric Vehicles (EVs) include vehicles equipped with a plug and battery that can use electricity for propulsion. EVs realize near-zero GHG and air contaminant emissions when using power from BC's electric grid.

As of June 2017, EVs comprised over 4% of passenger cars sold in BC, and nearly 1.5% of all motor vehicles sold in the province (Figure 1 below). Most EV ownership is currently concentrated in single family and townhome housing with individual garages, as these household currently have more easy access to EV charging. Conversely, EV ownership in multi-family buildings is less common, due to difficulties to date in renovating buildings for access to charging infrastructure.

Figure 1: EVs as percent of passenger car sales in Canadian provinces (excludes SUVs and light duty trucks). Source: FleetCarma.



EVs' market share is growing rapidly as battery and subsequent vehicle costs decline and the number of available EV models increases. A number of analyses, including those by Morgan Stanley, BNP Paribas, Bloomberg New Energy Finance, and others, project that EVs could comprise 50% or more of the new vehicles sold worldwide by 2040, even in the absence of further government action. Many recent analyses note that increasing access to home charging, particularly in multi-family buildings, is key to enabling even greater adoption.

Other factors influencing EV uptake include: EV and battery cost trajectories; the adoption of shared and/or autonomous vehicle services, whose operations favours electrification; oil prices; consumer preferences; the availability of public charging infrastructure; and government policy. Notably, a growing number of countries have announced they will phase out sales of gasoline-only vehicles, including China, England (by 2040), France (by 2040), and Norway (by 2025), and other countries.

Likewise, many vehicle manufacturers made announcements in 2017 regarding their transition away from internal combustion vehicles and towards plug-in EVs: Volvo has committed to all its vehicles being electric or hybrid by 2019; General Motors announced plans to sell 20 models of electric vehicles by 2023 and states the company "believes the future is all electric"; Ford has committed to selling 13 new EV models by 2022; BMW will offer 25 EV models by 2025; Lincoln, Mazda and Volkswagen will offer EV versions for all their vehicle models by 2022, 2030, and 2030, respectively.

Advances in EV Charging Technologies for Residential Applications

The large majority (over 80%) of EV charging occurs at home, which is typically most convenient as well as lowest cost. As outlined in Attachment 3, there are two levels of charging that are used in home applications: Level 1 (120V – so called "trickle charging") and Level 2 (208V-240V). It is increasingly believed that Level 1 charging is insufficient for the next generation of EVs that feature greater battery capacity, and that Level 2 will be preferable for at home charging applications.

"EV Energy Management Systems" (also known as "smart charging", "power sharing" or "load sharing") refers to a variety of technologies and services that control the rate and timing of EV charging. These technologies allow multiple EVs to charge simultaneously while not exceeding the capacity of an electric circuit, and for charging to occur when power costs less.

EV Energy Management Systems are anticipated to be especially useful for enabling EV charging infrastructure in multi-family buildings. Implementing such technologies in multi-family buildings can significantly reduce the first cost of providing EV charging infrastructure, by reducing the size of building electrical systems that must be installed. These technologies can also ultimately reduce energy costs for users by optimizing the timing of vehicle charging to minimize consumer electrical costs, while still ensuring users receive sufficient charge. Use of EV Energy Management Systems has recently been enabled in the Canadian and BC Electric Codes, and EV charging service providers are active locally providing such systems. Figure 3 below illustrates the estimated average cost per parking stall for new multi-family developments to provide an outlet at each parking stall using two EV Energy Management configurations, versus dedicated circuits.

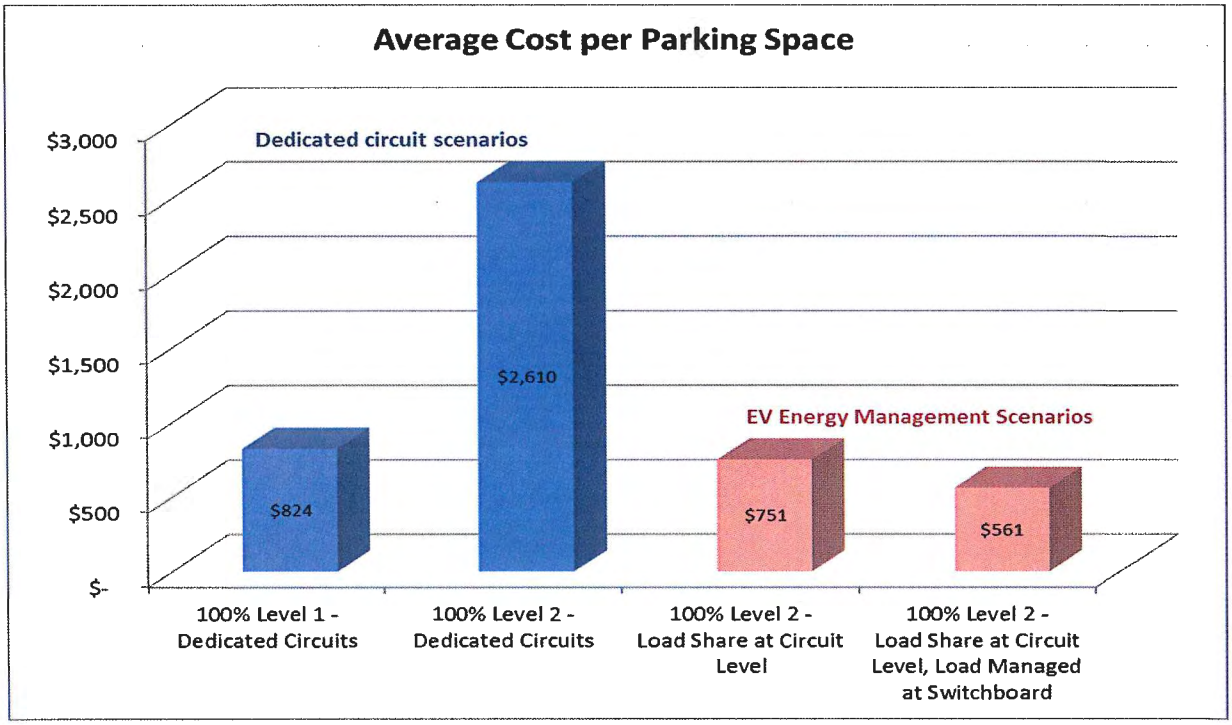


Figure 3: Average cost per parking space for EV charging infrastructure scenarios.

Figure 3 suggests that costs for new developments can be significantly reduced when using EV energy management systems. Indeed, the costs of energizing all residential parking spaces using energy management systems are comparable to energizing just 20% of stalls to Level 2 using dedicated circuits (as has been required in the City of Vancouver since 2011, and the City of North Vancouver as of 2017). Additionally, EV energy management systems with Level 2 charging can provide better quality of charging service than Level 1, at lower cost.

Lastly, EV energy management systems can lower the incremental increase in electrical capacity that new buildings constructed with EV charging infrastructure will feature. This will reduce the likelihood that larger electrical transformers will be required, and the potential for issues with BC Hydro electrical infrastructure impacting the streetscape fronting new developments.

Local Governments' Electric Vehicle Charging Infrastructure Requirements

The City has demonstrated leadership by being one of the first municipalities in the region to establish policy providing for home access to EV charging. Section 8.5.2 d of the 2041 Official Community Plan currently includes this policy for new private multi-family developments to include EV charging infrastructure. This policy specifies that "a minimum of 20% of parking stalls be provided with a 120 volt receptacle [e.g. "Level 1"] to accommodate EV charging equipment [and] ... an additional 25% of parking stalls be constructed to accommodate the future installation of EV charging equipment (e.g. pre-ducted for future wiring)". This policy is applied to developments requiring a rezoning and/or development permit applications.

Table 2 below summarizes current requirements amongst other local governments for electric vehicle charging in new developments. It is important to note that multiple local governments in the Metro Vancouver region report that they are in the process of considering updates to their EV charging requirements to strengthen their requirements. In addition to the municipalities noted in this table, other local governments are securing EV charging infrastructure in new developments as part of development processes, but do not yet have Council policies specifying requirements.

Table 2: Minimum EV charging requirements in municipalities in Metro Vancouver

	Multi-family	Single family, duplex, coach house[1]	Commercial	Policy Method[2]
City of Richmond (current)	20% Level 1 outlet; electric conduit additional 25%	None	None	Council policy
City of Vancouver	20% Level 2 outlet (dedicated circuits); electric room sized for 100%	100% Level 2 outlet	10% Level 2 outlet	Building Bylaw
District of West Vancouver	Aim for 100% outlet (Level not specified)	None	None	Council resolution
City of North Vancouver	20% Level 2 outlet (dedicated circuits); electric room sized for 100%	None	None	Sustainable development guideline
District of North Van.	20% Level 1 outlet; electric conduit for remainder	None	10% Level 2 outlet	Council policy

[1] As noted previously in this report, renovating access to EV charging is typically simpler for these building types.
[2] Requirements applied as "council policy" and "council resolution" are typically applied at rezoning or development permit

The City of San Francisco has adopted an Electric Vehicle Ready Ordinance that will provide sufficient electrical capacity for 100% of parking spaces to provide EV charging, and electrical conduit to all parking spaces; this is essentially equal in cost to a requirement for all stalls to feature an energized outlet. Other North American cities are considering requirements with similar levels of ambition. Likewise, the European Union is considering a Directive that would mandate that its member states adopt a requirement to future-proof all residential parking stalls in new developments with EV charging infrastructure.

Local Government Authority to Regulate EV Charging Infrastructure Requirements

Currently, the City uses a policy in the OCP to define EV charging infrastructure requirements in new developments. This report recommends integrating EV charging infrastructure requirements in the Richmond Zoning Bylaw, rather than policy. The Local Government Act (RSBC 2015), Chapter 1, 525(1)(b) states that a bylaw may "establish design standards for [parking] spaces", enabling design standards for EV charging. Integrating requirements into the Richmond Zoning Bylaw provides greater clarity for development applicants; allows for developments that are not undergoing rezoning or development permitting processes to be regulated; and is more administratively streamlined. The BC Building Act Guide notes that the BC Building Act does not restrict local governments from making requirements for EV charging infrastructure.

Local governments do not have authority to regulate how strata councils or building owners will ultimately manage EV charging infrastructure. In some instances, strata councils have chosen to disconnect electrical supply to parkades out of concern about paying for drivers use of electricity. However, other strata councils have implemented strata rules or bylaws to manage this issue, providing mechanisms for residents who drive EVs to pay for the cost of the electricity they use. Model strata bylaws have been developed by the Fraser Basin Council to address this issue, and can be provided to developers to assist in drafting the initial strata bylaws for the proposed development. Moreover, the province could enact so-called "Right to Charge" legislation, which would require that EV drivers be able to charge their vehicles with appropriate means of reconciling building owners or strata council common expenses. Right to Charge legislation was the subject of two successful resolutions at the 2017 Union of BC Municipalities convention, both forwarded by Metro Vancouver: B116 Resale of Electricity for Electric Vehicle Charging; and B132 Electric Vehicle Charging in Strata Buildings. The City will continue to work with developers and strata councils to encourage adoption of strata rules and bylaws that allow for appropriate management of EV charging infrastructure. Likewise, the City will continue to work with other local governments and stakeholders to encourage the province to adopt "Right to Charge" legislation.

EV Charging Consultation

In January 2017, Council endorsed a consultation program to inform the City's requirements for electric vehicle charging infrastructure in new private developments and action in existing buildings. This consultation also included opportunities for input on the City-owned network of public electric vehicle charging stations, per a second report titled "Electric Vehicle Fleet and Charging Infrastructure" adopted by Council in November 2016. A separate report relating to the City-owned network of public electric vehicle charging stations will be delivered to the Public Works and Transportation Committee in the future.

The City's EV consultation program consisted of:

- **Digital engagement:** An online Let's Talk Richmond webpage and survey. The survey was open to the public from May 14th to June 26th, 2017. It was distributed via press release, social media, and notifications by the Richmond Chamber of Commerce and other organizations. 484 visits to the webpage occurred, with 168 visitors completing the survey. Of survey respondents, 34% currently drove an EV and 78% were considering an EV for their next vehicle purchase.

- **A Public Open House:** The Open House included introductory information about EVs, their role in mitigating climate change, and the City's action to support EVs to date. 33 people signed-in to the Open House.

- **Stakeholder meetings:** Multiple meetings and conversations with representatives of different stakeholder groups including the Urban Development Institute, the Richmond Home Builders Group, the Richmond Chamber of Commerce, Plug-In Richmond, BC Hydro, the Condominium Home Owners Association, EV charging service providers, other local government staff and other organizations.

Both the survey and the Open House solicited participants' feedback on requirements for new construction, where in the city public EV charging infrastructure is desired, and how upgrades to existing buildings to facilitate access to EV charging can occur.

Attachment 4 summarizes the feedback received during stakeholder consultations relating to charging at home. Feedback regarding the public charging network will be included in a future Report to Committee.

Proposed EV Charging Requirements in New Developments

In light of feedback received during public consultations, it is recommended to amend the Richmond Zoning Bylaw to require that all residential parking spaces, excluding visitor parking, feature an electrical outlet capable of providing Level 2 charging; and update the Official Community Plan to amend current policy regarding EV charging in multi-family buildings; and introduce policy in the Official Community Plan that broadly supports EV charging "at home", "at work" and "on the go".

Bylaw 9756 proposes Richmond Zoning Bylaw amendments to require that all residential parking spaces, excluding visitor parking, in new buildings feature an adjacent electrical outlet capable of providing Level 2 EV charging. This approach is recommended because it:

- **Provides for Level 2 charging**. Level 2 home charging access is widely considered to be most appropriate for EV charging. Requiring Level 2 charging, as opposed to allowing Level 1, was supported by 97% of respondents to the City's survey and open house.

- **Accommodates more widespread access to EV charging.** This option provides all residential parking spaces with access to a source of electricity for Level 2 electric vehicle charging. This will make it less costly to install a charging station in any residential parking space, avoiding later electrical system renovations that are estimated to be 2-5 times more costly than integrating the infrastructure into new developments.

Furthermore, a requirement that all parking spaces have access to electricity avoids the problem associated with partial electrification of parking stalls in multi-family buildings, whereby some potential EV buyers would need to trade parking spaces; this is often a difficult process involving reassignment of property and/or breaking of long-term leases that has proven unworkable in practice. Lastly, it supports near universal adoption of zero carbon vehicles, which is necessary to achieve the City's emissions goals.

- **Allows for EV Energy Management Systems to reduce costs.** As noted above, EV Energy Management Systems can reduce the first costs of implementing EV charging infrastructure, as well as reduce end users' costs by coordinating charging to occur when power costs less and to minimize capacity charges. For multifamily buildings, it is estimated that designing for EV Energy Management Systems will cost approximately $560-$750 per parking space (Figure 3). Costs in single family homes and duplexes will typically be significantly less per parking space ($50-$200). The approach recommended in this report allows for developers and builders to implement such EV Energy Management systems. Variances in EV parking requirements may be considered in rare cases when a development implements EV Energy Management Systems, and yet can document significantly greater costs due to infrastructure upgrades or BC Hydro extension fees.

- **Supports charging in all new residential buildings.** The requirement pertains to all new residential construction, including single family homes, duplexes, townhomes, and multi-family buildings. Currently, the City's policy applies only to multi-family buildings. While renovating access to electricity for EV charging in a single family or townhome is typically less expensive in a multi-family apartment, it is still more expensive than providing it during new construction. Providing this source of electricity is typically low cost during construction of a new home ($50-$200). Requiring a source of electricity for EV charging in all types of new construction was supported by 97% of respondents to the City's survey and open house.

- **Demonstrates City leadership in sustainability.** The proposed amendments exceed the EV charging infrastructure requirements currently in place in other Metro Vancouver municipalities. Staff understand that Richmond's leadership may encourage other municipalities to increase their ambition. Providing for all residential parking spaces to be energized in the future best enables households to adopt EVs, which is required to achieve climate and sustainability goals.

These requirements would be effective for new construction that has not yet been issued a building permit as of April 1, 2018 (the "effective date"). In order to accommodate in-stream applications that may face greater difficulty adjusting the design of parking areas to provide for EV charging:

- Multifamily developments that have been issued Development Permits prior to the effective date, may apply for a Building Permit to construct in compliance with the previous requirements for duration of the time that their Development Permit is valid;

- Multifamily developments that have submitted acceptable Development Permit applications before the date of Council's adoption of Bylaw 9756, and are endorsed by the Development Permit Panel within 6 months of the date of Council's adoption of Bylaw 9756, will have until December 15, 2019, to receive their Building Permit in order to build under previous requirements.

Bylaw 9520 proposes Official Community Plan amendments that would remove reference to the previous policy requirements for multi-family buildings. These requirements are now proposed to be included in the Richmond Zoning Bylaw, as per Bylaw 9756. A new objective would be added to the OCP to support adoption of EVs and other zero carbon vehicles. Policies supporting this objective would also be adopted, supporting:

- The provision of electric vehicle charging infrastructure in new residential, commercial and mixed use developments;
- Renovations of existing buildings to implement EV charging infrastructure;
- The ongoing development of publicly accessible EV charging networks, including expanding the City-owned network of public electric vehicle charging stations; and

Staff will continue to secure commitments for new developments to implement "at work" and "on the go" charging infrastructure as part of rezoning and development approvals processes. Recommendations to establish requirements for "at work" and "on the go" charging infrastructure in the Richmond Zoning Bylaw may be brought forward in the future as more standardized strategies for these applications are identified.

Implementation Resources

Staff are preparing an information an information bulletin to explain the new requirements and implementation processes. The bulletin will be distributed to applicants. Staff are also developing technical bulletins to help designers, developers and builders cost-effectively comply with these requirements. Staff are engaging a group of stakeholders to inform a scope of work for materials that will be included in the bulletin, and review drafts of these materials. Invitees will include staff from other local governments, the Urban Development Institute, the Condominium Home Owners Association, the Province of BC, BC Hydro, and the EV interest group Plug-in Richmond. Materials being developed for inclusion the bulletin include:

- Descriptions of potential EV charging strategies applicable to multifamily buildings, including configurations for EV energy management systems.
- Electrical diagrams of cost-effective strategies to meet the proposed requirements.
- Model strata rule or bylaw content, to guide stratas in governing EV charging infrastructure.

OCP Consultation Summary

Staff have reviewed the proposed 2041 OCP amendment bylaw with respect to the *Local Government* Act and the City's OCP Bylaw Preparation Consultation Policy No. 5043 requirements. Table 4 clarifies this recommendation. Public notification for the public hearing will be provided as per the *Local Government Act*.

Table 4: OCP Consultation Summary

OCP Consultation Summary	
Stakeholder	**Referral Comment (No Referral necessary)**
BC Land Reserve Commission	No referral necessary, as they are not affected.
Richmond School Board	No referral necessary, as they are not affected.
The Board of the Greater Vancouver Regional District (GVRD)	No referral necessary, as they are not affected.
The Councils of adjacent Municipalities	No referral necessary, as they are not affected.
First Nations (e.g., Sto:lo, Tsawwassen, Musqueam)	No referral necessary, as they are not affected.
TransLink	No referral necessary, as they are not affected.
Port Authorities (Vancouver Port Authority and Steveston Harbour Authority)	No referral necessary, as they are not affected.
Vancouver International Airport Authority (VIAA) (Federal Government Agency)	No referral necessary, as they are not affected.
Richmond Coastal Health Authority	No referral necessary, as they are not affected.
Stakeholder	**Referral Comment**
Community Groups and Neighbours	No referral necessary, as they are not affected.
Utilities	The proposed amendments were referred to BC Hydro.
All relevant Federal and Provincial Government Agencies	No referral necessary, as they are not affected.
Urban Development Institute	The proposed amendments were referred to the Urban Development Institute.
Richmond Home Builders Group	The proposed amendments were referred to the Richmond Home Builders Group.
Richmond Chamber of Commerce	The proposed amendments were referred to the Richmond Chamber of Commerce.
Plug-in Richmond	The proposed amendments were referred to Plug-in Richmond.

Feedback was received from several of these groups and considered during refinement of the proposed amendments.

Richmond Official Community Plan Bylaw 9000, Amendment Bylaw No. 9520 having been considered in accordance with OCP Bylaw Preparation Consultation Policy 5043, does not require further consultation.

The public will have an opportunity to comment further on all of the proposed amendments at the Public Hearing.

Financial Impact

None.

Conclusion

This report recommends updating the City's electric vehicle charging infrastructure requirements, including new requirements in the Zoning Bylaw and updated policies and development permit guidelines in the Official Community Plan.

Brendan McEwen
Sustainability Manager
(604-247-4676)

Peter Russell
Sr. Manager, Sustainability & District Energy
(604-276-4130)

BM:bm

Att 1: Proposed Zoning Bylaw 8500 Amendment Bylaw 9756 (Electric Vehicle Charging Infrastructure)
Att 2: Proposed Richmond Official Community Plan Bylaw 9000 Amendment Bylaw 9520 (Electric Vehicle Charging Infrastructure)
Att 3: About EV Charging
Att 4: Consultation Feedback on At Home Charging

City of Richmond

Bylaw 9520

Richmond Official Community Plan Bylaw 9000 Amendment Bylaw 9520 (Electric Vehicle Charging Infrastructure)

The Council of the City of Richmond, in open meeting assembled, enacts as follows:

1. Richmond Official Community Plan Bylaw 9000 is amended at section 8.5 [Transportation Capacity and Demand Management], Objective 2, by deleting Policy d) in its entirety and renumbering the remaining sections accordingly.

2. Richmond Official Community Plan Bylaw 9000 is amended at section 8.5 [Transportation Capacity and Demand Management] by adding a new section as follows:

   "OBJECTIVE 4: Support the adoption of plug-in electric vehicles and other vehicle technologies that can emit zero greenhouse gas and air contaminant emissions.

   POLICIES:

   a) Support the use of plug-in electric vehicles, including bicycles and mobility scooters, through the provision of electric vehicle charging infrastructure in new residential, commercial and mixed use developments;

   b) Support renovations of existing buildings to facilitate the integration of electric vehicle charging infrastructure;

   c) Support the ongoing development of publicly accessible electric vehicle charging infrastructure networks, including expanding the City-owned network of public electric vehicle charging stations;

3. Richmond Official Community Plan Bylaw 9000 is amended at section 14.2.7. B [Parking Structures] by deleting section 14.2.7.B i) in its entirety and renumbering the remaining section accordingly.

4. This Bylaw may be cited as **"Richmond Official Community Plan Bylaw 9000, Amendment Bylaw 9520".**

FIRST READING	
PUBLIC HEARING	
SECOND READING	
THIRD READING	
ADOPTED	

CITY OF RICHMOND
APPROVED by
APPROVED by Manager or Solicitor

MAYOR

CORPORATE OFFICER

City of Richmond

Bylaw 9756

Richmond Zoning Bylaw 8500 Amendment Bylaw 9756 (Electric Vehicle Charging Infrastructure)

The Council of the City of Richmond, in open meeting assembled, enacts as follows:

1. Richmond Zoning Bylaw 8500, as amended, is further amended at Section 3.4 [Use and Terms Definitions] by adding the following definitions in alphabetical order:

"Electric vehicle	means a **vehicle** that uses electricity for propulsion, and that can use an external source of electricity to charge the **vehicle**'s batteries.
Electric vehicle supply equipment	means a complete assembly consisting of conductors, connectors, devices, apparatus, and fittings installed specifically for the purpose of power transfer and information exchange between a branch electric circuit and an **electric vehicle**.
Electric vehicle energy management system	means a system to control **electric vehicle supply equipment** electrical loads comprised of monitor(s), communications equipment, controller(s), timer(s) and other applicable devices.
Energized outlet	means a connected point in an electrical wiring installation at which current is taken to supply utilization equipment.
Level 2 charging	means a Level 2 **electric vehicle** charging level as defined by SAE International's J1772 standard."

2. Richmond Zoning Bylaw 8500, as amended, is further amended by adding a new Section 7.15 [Provision of Electric Vehicle Charging Infrastructure] as follows:

7.15 "Provision of Electric Vehicle Charging Infrastructure

7.15.1 For new **buildings**, **structures** and **uses,** all residential **parking spaces,** excluding visitor **parking spaces**, shall feature an **energized outlet** capable of providing **Level 2 charging** or higher to the **parking space.**

7.15.2 **Energized outlets,** provided pursuant to section 7.15.1 above, shall be labeled for their intended use for **electric vehicle** charging.

7.15.3 Where an **electric vehicle energy management system** is implemented, the Director of Engineering may specify a minimum performance standard to ensure a sufficient rate of **electric vehicle** charging."

3. This Bylaw may be cited as **"Richmond Zoning Bylaw 8500, Amendment Bylaw 9756"**, and is effective April 1, 2018.

FIRST READING	
PUBLIC HEARING	
SECOND READING	
THIRD READING	
ADOPTED	

CITY OF RICHMOND
APPROVED by
APPROVED by Manager or Solicitor

MAYOR

CORPORATE OFFICER

Attachment 3: About EV Charging

SAE International (the Society for Automotive Engineers) defines different levels of EV charging, summarized in the Table below. It is increasingly believed that Level 1 charging is insufficient for the next generation of EVs that feature greater battery capacity, and that Level 2 will be preferable for at home charging applications.

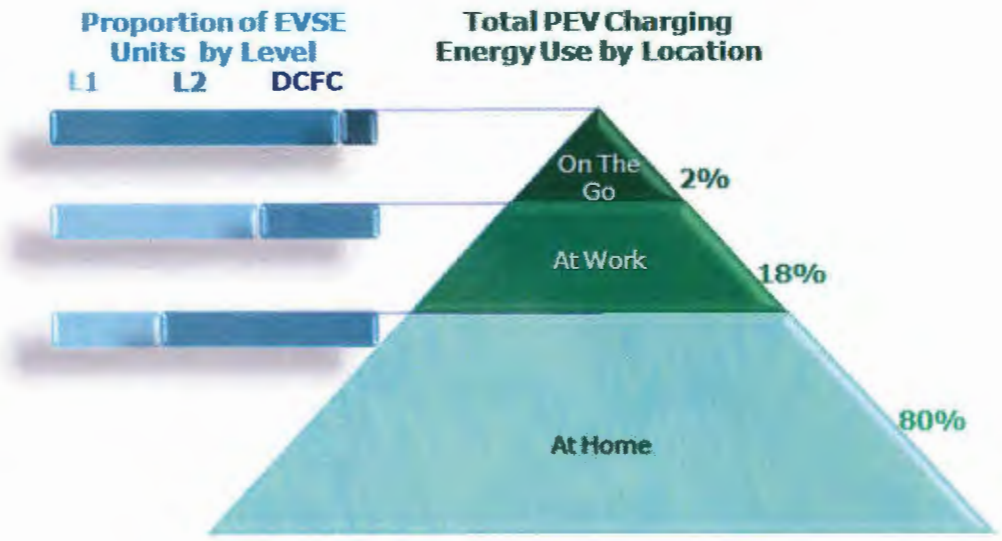
Table: Common EV service equipment charging levels.

Charging Level	Voltage	Amperage	Apprx km of range per hour	Time to fully Recharge	Applications
AC Level 1	120 VAC	12-16 A	~ 7 km/hr	5 to 60 hours	At home, at work
AC Level 2	208 / 240 VAC	<=80A (30 A most common)	15 – 45 km/hr	2 to 8 hours	At home, at work, public charging
DC Fast Charge	200–400 VAC	80–400 A	200+ km/hr	<10 min to 1 hour	Major public rapid-recharge locations

The "EV charging hierarchy" shown in the Figure below summarizes research on the amount of charging that occurs in different locations, as well as the charging levels used in those circumstances. The large majority (80%) of charging occurs at home, which is typically most convenient as well as lowest cost. For this reason, improving access to home charging is one of the most meaningful opportunities to grow the share of electric vehicles.

It is expected that workplace charging will comprise a significant portion of charging in the future as well, though it is currently limited in BC. "On the go" charging is important to provide confidence to EV drivers that they will not be stranded without access to charge, and to facilitate longer trips. However, "on the go" charging generally is a small percentage of total charging for drivers with access to charging at home or at work.

EV charging hierarchy. Source: Community Energy Association.



Attachment 4: Consultation Feedback on At Home Charging

What we heard...	Staff response
Support for EV charging infrastructure requirements in new construction - 97% of survey and Open House respondents support expanding requirements for access to an outlet for EV charging to all residential building types, including single family, duplexes and townhomes. - 97% of survey and Open House respondents support requiring an outlet capable of providing Level 2 charging, and disallowing Level 1. - 59% of respondents support requiring that 100% of parking spaces in multi-family apartments feature an adjacent outlet for EV charging. The remainder supported a partial provision of infrastructure. - Richmond Home Builders Group representatives supported the proposed requirements. - Members of the UDI Liaison Committee and broader development community noted that many buyers are beginning to request that their parking spaces feature EV charging infrastructure.	Proposed Richmond Zoning Bylaw amendments require a 100% of residential parking spaces (excluding visitor parking) in new developments to feature a Level 2 energized outlet for the purposes of EV charging.
Some support for subsidies for EV charger installation Some participants commented that they felt the City should provide subsidies for EV charging station installations at residences.	Staff are exploring its role with the Province, BC Hydro, Metro Vancouver, and other stakeholders in providing support for EV charger installations.

Some concern from development community about cost of implementing EV charging infrastructure - Some representatives of the multi-family development community expressed concern regarding the additional cost of providing energized outlets to all parking stalls in multi-family buildings. - Providing energized outlets to a smaller percentage of parking spaces was suggested. - Providing electrical conduit (as opposed to energized wires) to remaining stalls was suggested. - Some development community representatives noted that changing technologies (such as autonomous vehicle services, public charging) may make home parking and at home charging obsolete. - BC Hydro fee structure can, on rare occasions, result in disproportionately high incremental costs for developments featuring additional load from EV charging.	- Partial provision of EV charging infrastructure (e.g. conduit) can significantly increase costs to implement EV charging in the future. It is estimated to be 2-5 times more expensive to conduct electrical renovations than implement EV charging infrastructure during new construction. - EV Energy Management Systems can reduce costs, compared to application of dedicated circuits which has predominated until recent Electrical Code changes. - Staff are monitoring advances in shared and autonomous mobility services, and their impacts on the rationale for mandatory residential parking. - Reliance on public charging is typically more expensive and less convenient than at home charging. - A variance could grant exemptions from requirements, in the rare event that EV charging infrastructure results in a development being charged much higher fees for electrical connection by BC Hydro.
EV Charging in Existing Buildings Some stakeholders proposed that the City: - Require electrical renovations for multi-family buildings for EV charging; - Ensure "Right to Charge" in multi-family buildings. "Right to charge" legislation in some American states ensures that residents in multi-family buildings can upgrade electrical service in common parking areas; - Implement a voluntary program to assist stratas in voluntarily upgrading their parking areas to facilitate EV charging.	- The City does not have legislative authority to compel EV charging infrastructure improvements in existing buildings. - The City does not have legislative authority to ensure "Right to Charge". Efforts to update the Strata Property Act and/or Regulation are active at the provincial level. - City staff are exploring its role with the Province, BC Hydro, Metro Vancouver, and other stakeholders in implementing programs that would assist stratas in voluntarily upgrading parking areas for EV charging.
Representatives of the development and homebuilder industries expressed appreciation for the City's thorough consultation process	Staff appreciate the productive engagement of the development and homebuilder industry representatives.

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	September 25, 2017
From:	John Irving, P.Eng. MPA Director, Engineering	**File:**	10-6600-10-02/2017-Vol 01
Re:	**Oval Village District Energy Utility Bylaw No. 9134, Amendment Bylaw No. 9778**		

Staff Recommendation

1. That the staff recommendation to amend the Oval Village District Energy Utility rate for services as presented in Option 2 of the report titled "Oval Village District Energy Utility Bylaw No. 9134, Amendment Bylaw No. 9778" be endorsed; and

2. That the Oval Village District Energy Utility Bylaw No. 9134, Amendment Bylaw No. 9778 be introduced and given first, second and third readings.

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

Att. 3

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

Staff Report

Origin

In 2014, Council adopted the Oval Village District Energy Utility Bylaw No. 9134 (Bylaw) establishing governing regulations and the rate for the delivery of energy for space and domestic hot water heating within the Oval Village District Energy Utility (OVDEU) service area.

The purpose of this report is to recommend 2018 OVDEU service rates.

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.*

Background

In 2013, under Council direction, the Lulu Island Energy Company (LIEC) was established as a wholly-owned corporation of the City for the purposes of managing district energy utilities on the City's behalf. The District Energy Utilities Agreement between the City and LIEC was executed in 2014, assigning LIEC the function of providing district energy services on behalf of the City.

The OVDEU service area and the associated operations, assets and liabilities are administered by LIEC. All capital and operating costs are recovered through revenues from user fees, ensuring that the business is financially sustainable over time for the City of Richmond's residents. In 2014, in order to accomplish these goals, LIEC and Corix Utilities (Corix) entered into a design-build-finance-operate-maintain concession agreement. The City is the sole shareholder of LIEC and Council sets the rates to customers.

At the present time, there are eight buildings (Carrera, Onni Riva 1,2,3 River Park Place-Phase 1, Cressey Cadence, Amacon Tempo and ASPAC Lot 9) connected to the OVDEU (see Attachment 1) with over 1,675 residential units receiving energy from the OVDEU. Energy is currently being supplied from two interim energy centres which use natural gas boilers providing a combined 11 MW of heating capacity. When enough buildings are connected to the system, a permanent energy centre will be built which will produce low carbon energy, expected to be harnessed from the Gilbert Trunk sanitary force main sewer. Over the project's lifetime, the OVDEU system is anticipated to reduce the GHG emissions by more than 52,000 tonnes of CO_2 as compared to business as usual.

Analysis

Proposed 2018 OVDEU Rates

The 2017 OVDEU rate is comprised of:

1. A Capacity Charge (Fixed) - monthly charge of $0.0495 per square foot of the building gross floor area; and

2. A Volumetric Charge (Variable) - charge of $30.501 per megawatt hour of energy returned from the Heat Exchanger and Meter Set at the Designated Property.

3. Excess demand fee of $0.14 for each watt per square foot of the aggregate of the estimated peak heat energy demand that exceeds 6 watts per square foot.

Factors that were considered when developing the 2018 OVDEU rate options are:

- **Competitive Rate:** The rate should provide end users with annual energy costs that are competitive with conventional system energy costs, based on the same level of service. It is estimated that customers using energy from a conventional utility system in a Business as Usual (BAU) scenario would see a blended rate increase of around 1.4% in 2018[1].

- **Financial Sustainability:** The OVDEU was established on the basis that all capital and operating costs would ultimately be recovered through revenues from user fees. The financial model includes recovery of the capital investment over time and built in a rate increase of 4% year over year for fuel cost increases, inflation, etc., in order to ensure the financial viability of the system.

- **Financial Obligations from LIEC to Corix:** LIEC executed a concession agreement with Corix Utilities to design, construct, finance, operate and maintain the OVDEU. Under the agreement, Corix is entitled to recover from LIEC all capital and operating costs, as well as Corix's overall return on investment. All Corix's expenses are approved in accordance with prudent utility practice.

- **Forecasted Utility Costs:** BC Hydro's rates will have a 0% increase in 2018. Natural gas costs are increasing from January 1, 2018 by approximately 0.1% for a typical residential customer in Lower Mainland according to Fortis BC's filing with the British Columbia Utilities Commission for their 2018 rates (Order Number G-138-14). However, the recently announced increase in carbon tax to $35/tonne in April 2018 will be an additional increase of 1.8% to the annual bill for a typical Fortis BC customer, resulting in a total estimated increase for the 2018 calendar year of 1.9%.

[1] 1.4% blended increase for 2018 is based on an estimated 0% increase of electricity cost and a 1.9% increase in natural gas cost assuming that all energy was provided for heating. Also, the business-as-usual (BAU) scenario assumption is that 40% of the building heating load would be provided from electricity and the remaining 60% would be from gas make-up air units. Non-fuel BAU costs are assumed to be 25% of total costs and that they increase by the CPI (2.1%).

- **Consumer and Municipal Price Indexes:** Other factors to consider include various price indexes. For example, the 2018 Consumer Price Index (CPI) is estimated to be 2.1%, while the 2018 Municipal Price Index (MPI) is estimated at 3.2%, both as estimated by the City's Finance Department.\

Taking into consideration the above factors, two options are presented here for consideration:

Option 1 – 2.1% increase to OVDEU rate for services (Not recommended)

Under this option, the rate would increase modestly to match the Consumer Price Index (CPI – projected at 2.1%), but it would be below 4% increase as built in the financial model. The OVDEU is still a young utility that is early in its operational life. The development of the Oval Village neighbourhood is still in progress and the OVDEU is continuously expanding. As a result, the OVDEU's utility (electricity and natural gas), operational, and maintenance costs are still largely based on the projections of the financial model. Additionally, the initial capital investments (by Corix) required to start up the OVDEU are significant which requires stable, long term repayment as per the Concession Agreement. Variation from the model may affect the long term performance of the OVDEU.

The OVDEU Concession Agreement with Corix and financial model have taken into consideration modest rate increases similar to the projected rate increases for the conventional utility providers' energy. A CPI based rate increase at this point in the utility life would have a negative impact on the financial performance of OVDEU and LIEC by increasing of the capital repayment deferral account balance[2], by causing the under-recovery of LIEC's operating expenses or by causing the OVDEU to lose financial self-dependency as a utility. As a result, this option is not recommended.

Option 2 – 4% increase to OVDEU rate for services (Recommended)

The proposed 4% rate increase under this option follows the OVDEU financial model. The OVDEU financial model follows the principle of full cost recovery where all capital and operating costs need to be recovered through revenues from user fees, making the OVDEU a financially self-sustaining utility. The recommended rate increase ensures the revenue necessary to recover LIEC's cost of service which includes Corix's fees for services and LIEC's operating expenses. Not following these calculated rate increases could result in the increase of the capital repayment deferral account balance[2] and/or under-recovery of LIEC's operating expenses impacting the OVDEU's financial self-dependency.

Even with no projected increase in 2018 rates for BC Hydro, the 4% rate increase is below the three year average rate increase of the conventional utilities (see Table 1 below). This is due to the fact that the OVDEU customer rates have been increasing less than those of conventional utilities. A 4% rate increase keeps the OVDEU rate competitive when compared to conventional system energy costs, based on the same level of service.

[2] Capital repayment deferral account is used to stabilize rates over time.

Table 1: Annual Percent Increase Comparison

	2016	2017	2018	3 Year Avg.
OVDEU Rate	4.0%	4.0%	4.0%	**4.0%**
Blended BAU Rate	4.5%	6.9%	1.4%	**4.3%**

A table summarizing the above proposed Rate for Service options is displayed in Attachment 2.

LIEC is a service provider appointed by Council to provide energy services to OVDEU customers on behalf of the City. City Council is the regulator and the rate setting body for the OVDEU service area. In accordance with this structure, LIEC staff have prepared the above rate analysis, and LIEC's Board of Directors has reviewed and approved the recommended 2018 OVDEU rate for services.

The recommended rate outlined in the proposed Oval Village District Energy Utility Bylaw No. 9134, Amendment Bylaw No. 9778 (Attachment 3), represents full cost recovery for the delivery of energy within the OVDEU service area.

Financial Impact

None. The 4% rate increase will help offset the operating and capital costs following the principle of full cost recovery as modeled in the OVDEU financial model and ensures that the OVDEU rate increase is below the three year average rate increase of the BAU scenario.

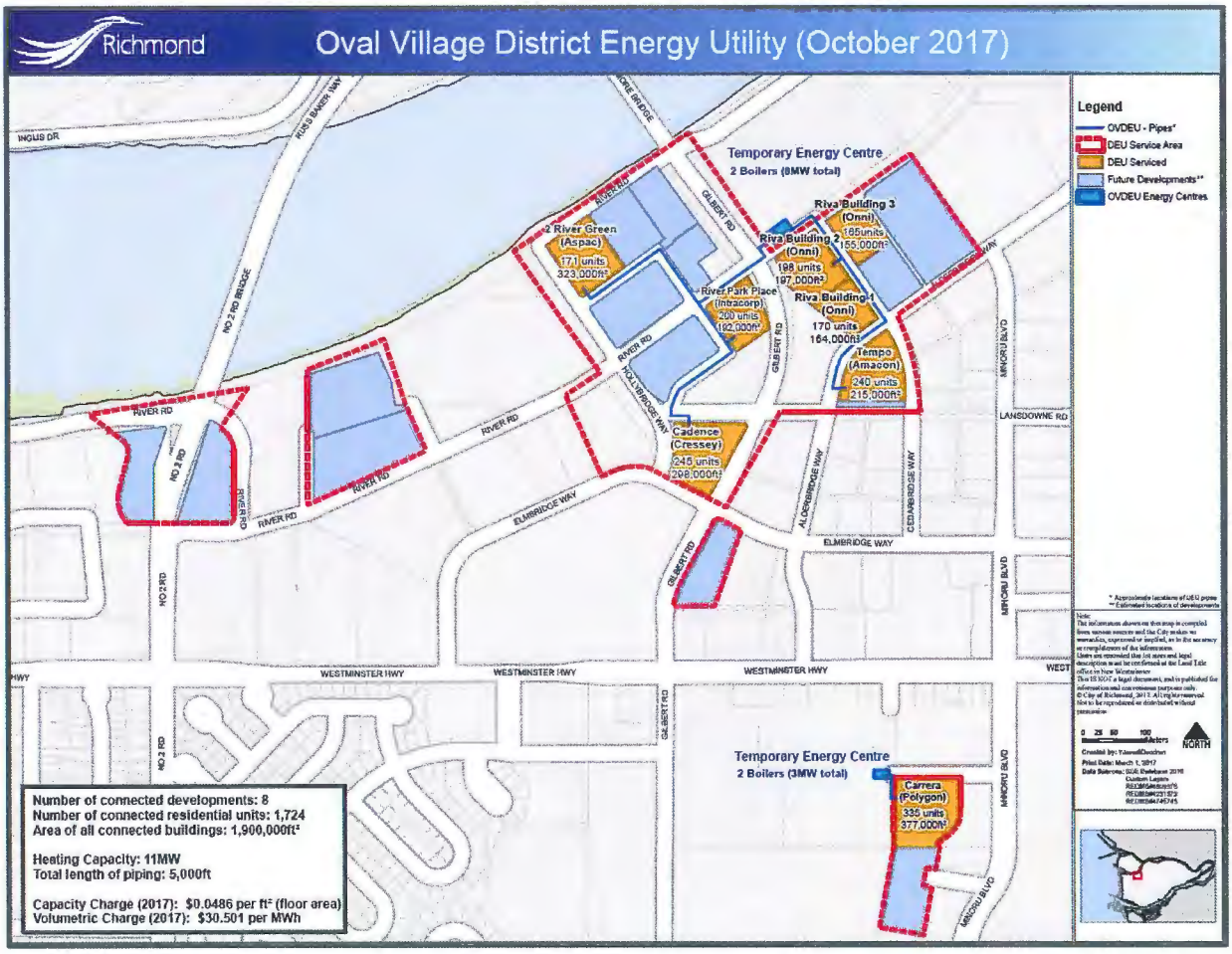
Conclusion

The recommended 4% increase (Option 2) for the 2018 OVDEU service rate supports Council's objective to keep the annual energy costs for OVDEU customers competitive with conventional energy costs, based on the same level of service. This rate increase also ensures sufficient revenues will offset Corix's fees for services and LIEC's operating expenses. Staff will continuously monitor energy costs and review the rate to ensure rate fairness for consumers and financial sustainability for the City.

Peter Russell, BASc MSc MCIP RPP
Senior Manager, Sustainability & District Energy
(604-276-4130)

Att. 1: Oval Village District Energy Utility Map
Att. 2: Oval Village District Energy Utility Bylaw No. 9134, Amendment Bylaw No.977

Attachment 1 – Oval Village District Energy Utility Map



Attachment 2 – Summary of Options: Proposed Rates for Services

Table 1: Proposed Rates for Services

	2017	2018	2018
	Current	**Option 1 2.1% Increase**	**Option 2 4% Increase (Recommended)**
Capacity Charge monthly charge per square foot of the building gross floor area	$0.0495	$0.0505	$0.0515
Volumetric Charge charge per megawatt hour of energy consumed by the building	$30.501	$31.142	$31.721
Excess Demand Fee charge for each watt per square foot of the aggregate of the estimated peak heat energy demand that exceeds 6 watts per square foot	$0.14	$0.14	$0.15

City of Richmond

Bylaw 9778

Oval Village District Energy Utility Bylaw No. 9134 Amendment Bylaw No. 9778

The Council of the City of Richmond enacts as follows:

1. The **Oval Village District Energy Utility Bylaw No. 9134** is amended by deleting **Schedule D (Rates and Charges)** of the Bylaw in its entirety and replacing it with a new Schedule D as attached as Schedule A to this Amendment Bylaw.

2. This Bylaw is cited as **"Oval Village District Energy Utility Bylaw No. 9134".**

FIRST READING	
SECOND READING	
THIRD READING	
ADOPTED	

CITY OF RICHMOND
APPROVED for content by originating dept.
APPROVED for legality by Solicitor

MAYOR

CORPORATE OFFICER

Schedule A to Amendment Bylaw No. 9778

SCHEDULE D

Rates and Charges

PART 1 - RATES FOR SERVICES

The following charges, as amended from time to time, will constitute the Rates for Services:

(a) capacity charge - a monthly charge of $0.0515 per square foot of gross floor area; and

(b) volumetric charge – a monthly charge of $31.721 per megawatt hour of Energy returned from the Heat Exchanger and Meter Set at the Designated Property.

PART 2 - EXCESS DEMAND FEE

Excess demand fee of $0.15 for each watt per square foot of the aggregate of the estimated peak heat energy demand referred to in section 19.1(e) (i), (ii), and (iii) that exceeds 6 watts per square foot.

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	September 25, 2017
From:	John Irving, P.Eng. MPA Director, Engineering	**File:**	10-6600-10-02/2017-Vol 01
Re:	**Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 9777**		

Staff Recommendation

1. That the staff recommendation to amend the Alexandra District Energy Utility rate for services as presented in Option 2 of the report titled "Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 9777" be endorsed; and

2. That the Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 9777 be introduced and given first, second and third readings.

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

Att. 4

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

Staff Report

Origin

In 2010, Council adopted the Alexandra District Energy Utility Bylaw No. 8641 establishing the rate for the delivery of energy for space heating, cooling and domestic hot water heating within the Alexandra District Energy Utility (ADEU) service area.

The purpose of this report is to recommend 2018 ADEU service rates.

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.*

Background

ADEU has been operating since 2012 as a sustainable energy system which provides a centralized energy source for heating, cooling and domestic hot water heating for residential and commercial customers located in the Alexandra/West Cambie neighbourhood. ADEU assists in meeting the community-wide greenhouse gas emission reduction targets adopted as part of Richmond's Sustainability Framework by providing buildings with renewable low carbon energy through geo-exchange technology.

Since 2012, the West Cambie neighbourhood has seen rapid redevelopment. ADEU has also been growing to meet this increased energy demand, most recently cumulating in the completion of the construction and commissioning of the Phase 4 expansion at the end of 2016. This expansion included the construction of a new satellite energy plant designed primarily to meet the energy demands of the ADEU's first commercial customers. Using efficient air source heat pump technology as an energy source, this new energy plant is also interconnected with the main ADEU system providing customers with another low carbon energy source in addition to the existing geo-exchange fields when there is an excess of energy produced. This expansion, coupled with 2015's Phase 3 expansion, has ensured the ADEU system will meet the energy demands of the neighbourhood as it continues its rapid growth.

The system currently provides energy to six residential buildings, the "Central at Garden City" commercial development, the Richmond Jamatkhana temple and Fire Hall #3, in total connecting over 1450 residential units and over 1.6 million square feet of floor area. See Attachment 1 for a map of the service area.

As of September 2017 (the end of the third billing quarter), the ADEU system has delivered 13,425 MWh of energy to customers for space heating, cooling and domestic hot water heating.

While some electricity is consumed for pumping and equipment operations, almost all of this energy was produced locally from the geo-exchange fields located in the greenway corridor and West Cambie Park. The backup and peaking natural gas boilers and cooling towers in the energy centre have operated only for a few days throughout the system's operation to date. Staff estimate that ADEU has eliminated 2336 tonnes of GHG emissions[1] to the community (see Attachment 2).

Analysis

The ADEU service area is comprised of two different use areas: the main service area which is mostly residential and Area A which contains large format retail buildings. The rate for each of the areas was established to ensure that ADEU costs reflect Council's objective to implement low carbon solutions and maintain annual energy costs that are competitive with conventional system energy costs, based on the same level of service. At the same time, the rates ensure cost recovery to offset the City's capital investment and ongoing operating costs.

The 2017 rate for customers in the ADEU service area, excluding Area A, is comprised of:

1. Capacity Charge (Fixed) - monthly charge of $0.09 per square foot of the building gross floor area, and a monthly charge of $1.217 per kilowatt of the annual peak heating load supplied by DEU, as shown in the energy modeling report required under Section 21.1.(c); and

2. Volumetric Charge (Variable) - charge of $3.893 per megawatt hour of energy consumed by the building.

The 2017 rate in effect for Area A is comprised of:

1. Volumetric charge – a charge of $69.60 per megawatt hour of Energy returned from the Heat Exchanger and Meter Set at the Designated Property calculated on each of (i) an energy use of 2644 MWh per annum ("Basic Supply Amount"), and (ii) any energy use in excess of the Basic Supply Amount.

Factors that were considered when developing the 2018 ADEU rate options include:

- **Competitive Rate:** The rate should provide end users with annual energy costs that are less than or equal to conventional system energy costs, based on the same level of service. It is estimated that customers using energy from a conventional utility system in a Business as Usual (BAU) scenario would see a blended rate increase of around 1.4% in 2018[2].

[1] Assume that all energy was provided for heating. The business-as-usual (BAU) assumed that 40% of the building heating load would be provided from electricity and the remaining 60% would be from gas make-up air units.
[2] 1.4% blended increase for 2018 is based on an estimated 0% increase of electricity cost and a 1.9% increase in natural gas cost assuming that all energy was provided for heating. Also, the business-as-usual (BAU) scenario assumption is that 40% of the building heating load would be provided from electricity and the remaining 60% would be from gas make-up air units. Non-fuel BAU costs are assumed to be 25% of total costs and that they increase by the CPI (2.1%).

- **Financial Sustainability:** ADEU was established on the basis that all capital and operating costs would ultimately be recovered through revenues from user fees. The financial model has built in a rate increase of 4% year over year to recover the capital investment as well as the fuel cost increases, inflation, etc. to ensure the financial viability of the system.

- **Forecasted Utility Costs:** BC Hydro's rates will have a 0% increase in 2018. Natural gas costs are increasing from January 1, 2018 by approximately 0.1% for a typical residential customer in Lower Mainland according to Fortis BC's filing with the British Columbia Utilities Commission for their 2018 rates (Order Number G-138-14). However, the recently announced increase in carbon tax to $35/tonne in April 2018 will be an additional increase of 1.8% to the annual bill for a typical Fortis BC customer, resulting in a total estimated increase for the 2018 calendar year of 1.9%.

- **Consumer and Municipal Price Indexes:** Other factors considered include various price indexes. For example, the 2018 Consumer Price Index (CPI) is estimated to be 2.1%, while the 2018 Municipal Price Index (MPI) is estimated at 3.2%, both as estimated by the City's Finance Department.

Taking into consideration the above factors, two options are presented here for consideration.

Option 1 – 2.1% increase to ADEU rate for services (Not recommended)

Under this option, the rate would increase modestly to match the Consumer Price Index (CPI – projected at 2.1%), but it would be below 4% increase as built in the financial model. The ADEU remains a young utility that is early in its operational life. The development of the West Cambie neighbourhood is still in progress and the ADEU is continuously expanding. As a result, the ADEU's utility (electricity and natural gas), operational, and maintenance costs are still largely based on the projections of the financial model. Additionally, the initial capital investments required to start up the ADEU were significant and future equity and investments must be made in order to ensure future repayments and long term viability.

The ADEU financial model has taken into consideration modest rate increases similar to the projected rate increases for the conventional utility providers' energy. A CPI based rate increase at this point in the utility life would have a negative impact on the financial performance of the ADEU and returns on investment may be impacted. As a result, this option is not recommended.

Option 2 – 4% increase to ADEU rate for services (Recommended)

The proposed 4% rate increase under this option follows the ADEU financial model. The ADEU financial model follows the principle of full cost recovery; all capital and operating costs need to be recovered through revenues from user fees, making the ADEU a financially self-sustaining utility. The recommended rate increase ensures the revenue necessary to recover all the capital and operating costs. Not following these calculated rate increases could result in deferring payback or delaying capital cost recovery.

Even with no projected increase in 2018 rates for BC Hydro, the 4% rate increase is below the five year average rate increase of the conventional utilities (see Table 1 below). This is due to the fact that the ADEU customer rates have been increasing less than those of conventional utilities. A 4% rate increase keeps the ADEU rate competitive when compared to conventional system energy costs, based on the same level of service.

Table 1: Annual Percent Increase Comparison

	2014	2015	2016	2017	2018	5 Year Avg.
ADEU Rate	4.0%	4.0%	4.0%	4.0%	4.0%	**4.0%**
Blended BAU Rate	6.5%	3.3%	4.5%	6.9%	1.4%	**4.5%**

A table summarizing the above proposed rate for service options is displayed in Attachment 3.

LIEC is a service provider appointed by Council to provide energy services to ADEU customers on behalf of the City. City Council is the regulator and the rate setting body for the ADEU service area. In accordance with this structure, LIEC staff have prepared the above rate analysis, and LIEC's Board of Directors has reviewed and approved the recommended 2018 ADEU rates for services.

The recommended rate outlined in the proposed Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 9777 (Attachment 4), represents full cost recovery for the delivery of energy within the ADEU service area.

Financial Impact

None. The 4% rate increase will help offset the operating and capital costs following the principle of full cost recovery as modeled in the ADEU financial model and ensures the ADEU rate increase is below the five year average rate increase of the BAU scenario.

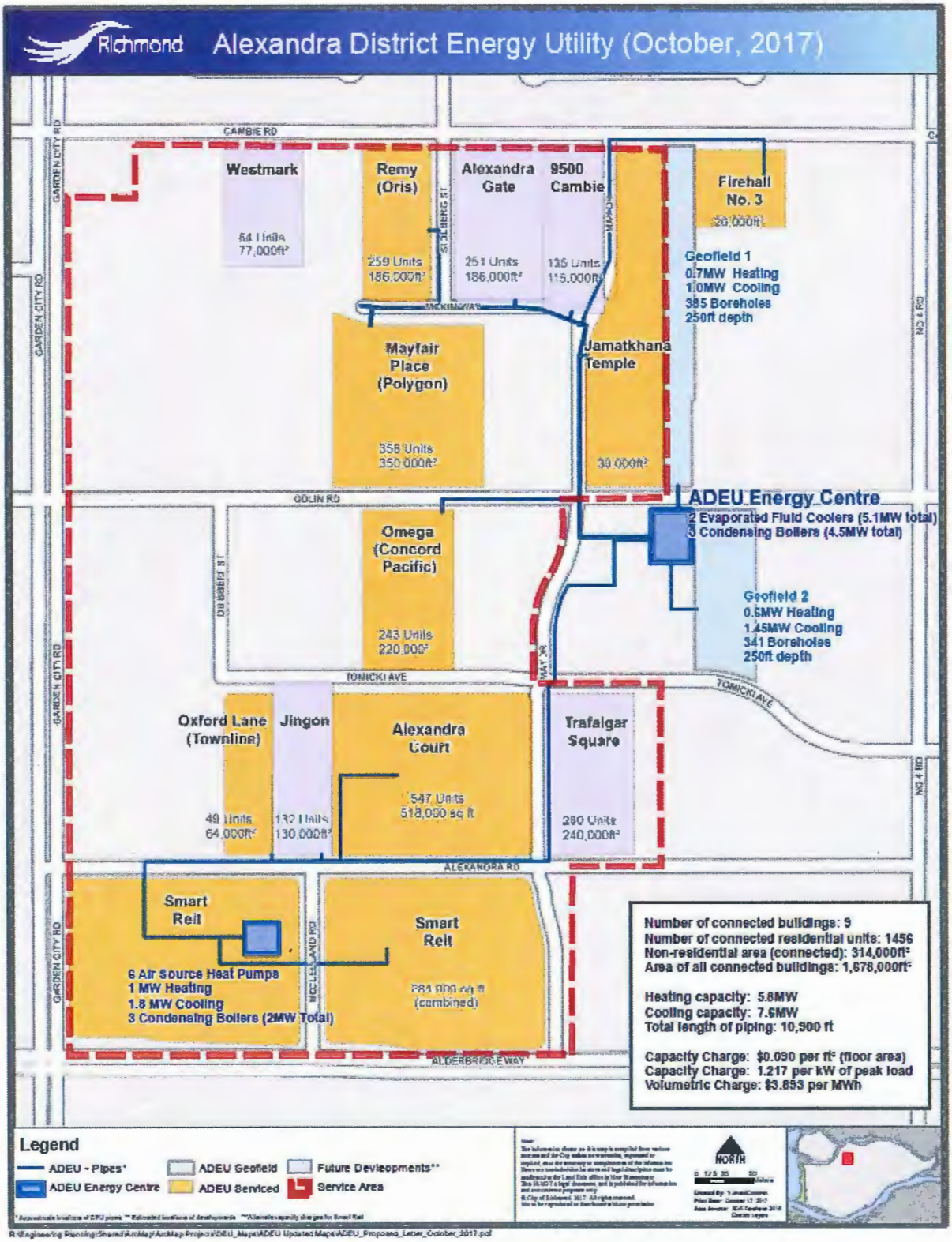
Conclusion

The recommended 4% increase (Option 2) for the 2018 ADEU service rate supports Council's objective to keep the annual energy costs for ADEU customers competitive with conventional energy costs, based on the same level of service. This rate increase also ensures sufficient revenues to offset the capital investment and operating costs. Staff will continuously monitor energy costs and review the rate to ensure fairness for consumers and cost recovery for the City.

Peter Russell, BASc MSc MCIP RPP
Senior Manager, Sustainability & District Energy
(604-276-4130)

Att.1: Alexandra Neighbourhood and ADEU Service Area Informational Map
Att.2: Green House Gas Emissions Reduction Graph
Att.3: Summary of Options: Proposed Rates for Services
Att.4: Alexandra District Energy Utility Bylaw No. 8641 Amendment Bylaw No.9777

Attachment 1 – Alexandra Neighbourhood and ADEU Service Area Informational Map



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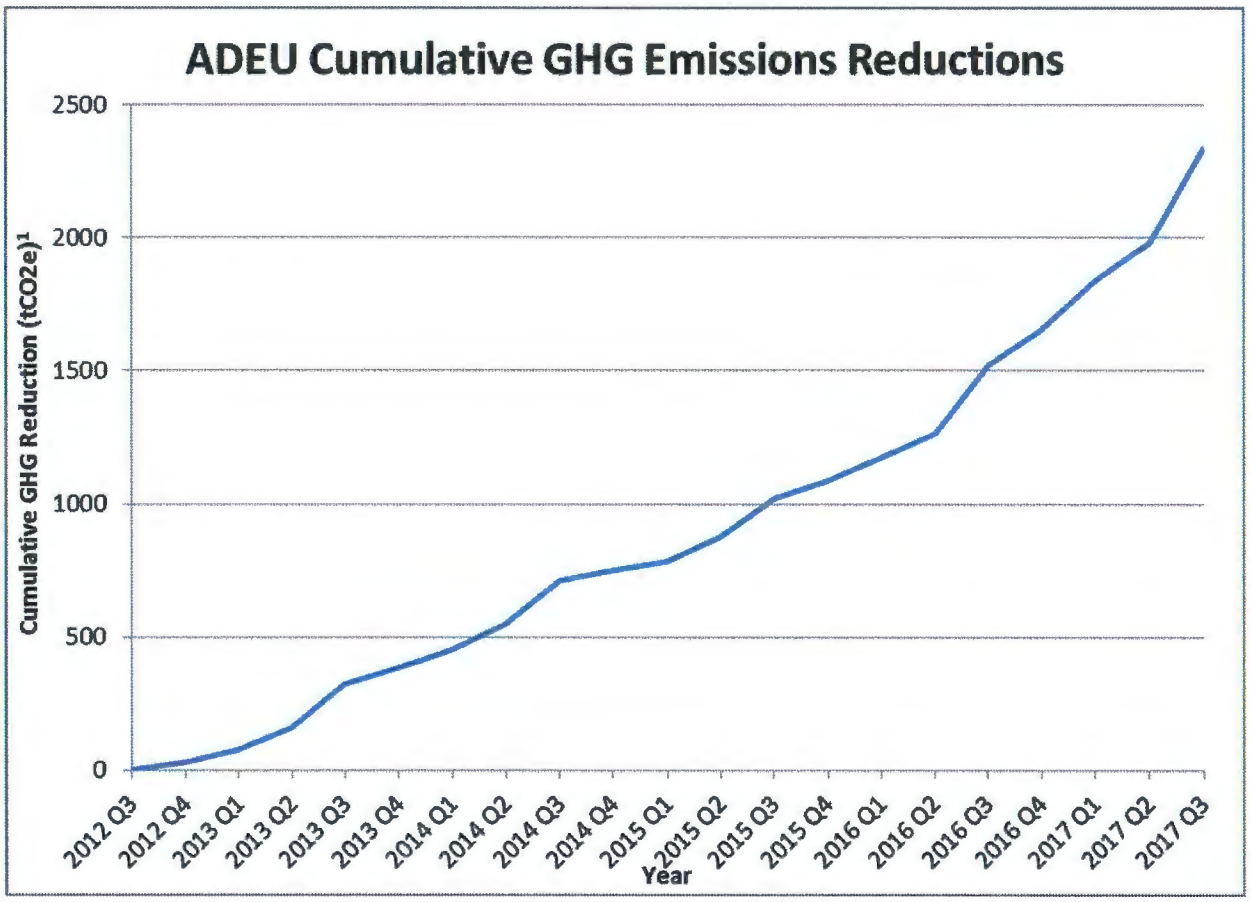
Attachment 2 – ADEU Green House Gas (GHG) Emission Informational Graph



[1] Assumed that all energy was provided for heating. The business-as-usual (BAU) assumed that 40% of the building heating load would be provided from electricity and the remaining 60% would be from gas make-up air units.

Attachment 3 – Summary of Options: Proposed Rates for Services

Table 1: Proposed Rates for Services, excluding Area A

	2017	2018 Option 1 2.1% Increase	2018 Option 2 4% Increase (Recommended)
Capacity Charge One: Monthly charge per square foot of the building gross floor area	$0.090	$0.092	$0.094
Capacity Charge Two: Monthly charge per kilowatt of the annual peak heating load supplied by DEU	$1.217	$1.243	$1.266
Volumetric Charge: Charge per megawatt hour of energy consumed by the building	$3.893	$3.975	$4.049

Table 2: Proposed Rates for Services, Area A

	2017	2018 Option 1 2.1% Increase	2018 Option 2 4% Increase
Volumetric Charge: Charge per megawatt hour of energy consumed	$69.60	$71.06	$72.38

City of Richmond

Bylaw 9777

Alexandra District Energy Utility Bylaw No. 8641 Amendment Bylaw No. 9777

The Council of the City of Richmond enacts as follows:

1. The **Alexandra District Energy Utility Bylaw No. 8641**, as amended, is further amended:

   a) by deleting Schedule C (Rates and Charges) in its entirety and replacing with a new Schedule C attached as Schedule A to this Amendment Bylaw.

2. This Bylaw is cited as **"Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 9777".**

FIRST READING	
SECOND READING	
THIRD READING	
ADOPTED	

CITY OF RICHMOND
APPROVED for content by originating dept.
APPROVED for legality by Solicitor

MAYOR

CORPORATE OFFICER

Schedule A to Amendment Bylaw No. 9777

SCHEDULE C to BYLAW NO. 8641

Rates and Charges

PART 1 - RATES FOR SERVICES

The following charges will constitute the Rates for Services for the Service Area excluding shaded Area A as shown in Schedule A to this Bylaw:

(a) Capacity charge – a monthly charge of $0.094 per square foot of Gross Floor Area, and a monthly charge of $1.266 per kilowatt of the annual peak heating load supplied by DEU as shown in the energy modeling report required under Section 21.1(c); and

(b) Volumetric charge – a charge of $4.049 per megawatt hour of Energy returned from the Heat Exchanger and Meter Set at the Designated Property.

PART 2 - RATES FOR SERVICES APPLICABLE TO AREA A

The following charges will constitute the Rates for Services applicable only to the Designated Properties identified within the shaded area (Area A) shown in Schedule A to this bylaw:

(a) Volumetric charge – a charge of $72.38 per megawatt hour of Energy returned from the Heat Exchanger and Meter Set at the Designated Property calculated on each of (i) an energy use of 2644 MWh per annum ("Basic Supply Amount"), and (ii) any energy use in excess of the Basic Supply Amount.