METRO VANCOUVER REGIONAL DISTRICT (MVRD)
BOARD OF DIRECTORS

REGULAR BOARD MEETING
Friday, October 27, 2017
9:00 A.M.
2nd Floor Boardroom, 4330 Kingsway, Burnaby, British Columbia

Membership and Votes

A G E N D A[1]

A. ADOPTION OF THE AGENDA

1. October 27, 2017 Regular Meeting Agenda
That the MVRD Board adopt the agenda for its regular meeting scheduled for October 27, 2017 as circulated.

B. ADOPTION OF THE MINUTES

1. September 22, 2017 Regular Meeting Minutes
That the MVRD Board adopt the minutes for its regular meeting held September 22, 2017 as circulated.

2. October 20, 2017 Metro Vancouver Joint Board Budget Workshop Minutes
(*Minutes to be provided at a later date)*

C. DELEGATIONS

D. INVITED PRESENTATIONS

E. CONSENT AGENDA
Note: Directors may adopt in one motion all recommendations appearing on the Consent Agenda or, prior to the vote, request an item be removed from the Consent Agenda for debate or discussion, voting in opposition to a recommendation, or declaring a conflict of interest with an item.

[1] *Note: Recommendation is shown under each item, where applicable.*

1. CLIMATE ACTION COMMITTEE REPORTS

1.1 Electric Mobility Canada's 8th Annual EV/VÉ Conference and Trade Show

That the MVRD Board receive for information the report dated June 13, 2017, titled "Electric Mobility Canada's 8th Annual EV/VÉ Conference and Trade Show".

1.2 Strata Energy Advisor Program – Additional Information Regarding Air Quality Reserve Request

That the MVRD Board:

a) direct staff to proceed with the Strata Energy Advisor Program under a revised scope, as outlined in the report dated August 28, 2017, titled "Strata Energy Advisor Program – Additional Information Regarding Air Quality Reserve Request"; and

b) authorize a contribution from the Air Quality Reserve, in the amount of $192,500, to support delivery of the revised Strata Energy Advisor Program in 2017-2019.

1.3 Consultation on Potential Amendments to the Metro Vancouver Automotive Refinishing Emission Regulation Bylaw

That the MVRD Board:

a) receive for information the report titled "Consultation on Potential Amendments to the Metro Vancouver Automotive Refinishing Emission Regulation Bylaw" dated August 29, 2017; and

b) direct staff to initiate consultation on potential amendments to *Greater Vancouver Regional District Automotive Refinishing Emission Regulation Bylaw No. 1086, 2008,* based on the Discussion Paper attached to the report titled "Consultation on Potential Amendments to the Metro Vancouver Automotive Refinishing Emission Regulation Bylaw" dated August 29, 2017.

1.4 Staff Appointments as Board-designated Officers

That the MVRD Board, pursuant to the *Greater Vancouver Regional District Air Quality Management Bylaw* and the *Environmental Management Act*:

a) appoint as an officer Metro Vancouver employee Brendon Smith; and

b) rescind the appointments as officer of:

   i. Metro Vancouver employees Jeffrey Gogol, Grace Cockle and Alexander Clifford; and

   ii. former Metro Vancouver employees Terry Sunar, Johanna Hercun and Francis Yuen.

1.5 Air Quality Advisories During the Summer of 2017

That the MVRD Board receive for information the report dated September 11, 2017, titled "Air Quality Advisories During the Summer of 2017".

1.6 Response to Delegations about Metro Vancouver's Air Quality Permitting Process

That the MVRD Board receive for information the report dated September 1, 2017, titled "Response to Delegations about Metro Vancouver's Air Quality Permitting Process".

1.7 Consultation on a Residential Wood Smoke Regulation for Metro Vancouver

That the MVRD Board:

a) Receive for information the report titled "Consultation on a Residential Wood Smoke Regulation for Metro Vancouver", dated September 6, 2017; and

b) Direct staff to proceed with consultation on the proposed approach to regulating indoor residential wood burning, based on the bylaw development consultation paper attached to the report titled "Consultation on a Residential Wood Smoke Regulation for Metro Vancouver", dated September 6, 2017.

2. ABORIGINAL RELATIONS COMMITTEE REPORTS

2.1 2017 Community to Community Forum

That the MVRD Board receive for information the report, dated September 6, 2017, titled "2017 Community to Community Forum."

2.2 Quarterly Report on Reconciliation Activities

That the MVRD Board receive for information the report, dated September 25, 2017, titled "Quarterly Report on Reconciliation Activities."

3. FINANCE AND INTERGOVERNMENT COMMITTEE REPORTS

3.1 TransLink Application for Federal Gas Tax Funding from the Greater Vancouver Regional Fund for 2019 Fleet Expansion and Modernization

That the MVRD Board approve $121.150 million in funding from the Greater Vancouver Regional Fund for the following transit projects proposed by TransLink in its *Application for Federal Gas Tax funding from the Greater Vancouver Regional Fund for 2019 Fleet Expansion and Modernization* as attached to the report dated September 26, 2017, titled "TransLink Application for Federal Gas Tax Funding from the Greater Vancouver Regional Fund for 2019 Fleet Expansion and Modernization":

a) Project 1 – Year 2019 Double Decker Diesel Bus Purchases for Fleet Expansion
b) Project 2 – Year 2019 Conventional 40' Hybrid Bus Purchases for Fleet Expansion
c) Project 3 – Year 2019 Conventional 60' Hybrid Bus Purchases for Fleet Expansion
d) Project 4 – Year 2019 HandyDART Purchases for Fleet Expansion
e) Project 5 – Year 2019 Double Decker Diesel Bus Purchases for Fleet Replacement
f) Project 6 – Year 2019 HandyDART Gasoline Vehicles for Fleet Replacement
g) Project 7 – Year 2019 Community Shuttle Gasoline Vehicles for Fleet Replacement.

3.2 2016 Greater Vancouver Regional Fund Semi-Annual Report

That the MVRD Board receive for information the report prepared by TransLink titled "Report on Federal Gas Tax Funding received from the Greater Vancouver Regional Fund (GVRF)" as attached to the report dated September 22, 2017, titled "2016 Greater Vancouver Regional Fund Semi-Annual Report."

4. HOUSING COMMITTEE REPORTS

4.1 Homelessness Partnering Strategy Community Entity Updates on the 2017 Homeless Count

That the MVRD Board receive for information the report dated September 29, 2017, titled "Homelessness Partnering Strategy Community Entity Updates on the 2017 Homeless Count".

5. CHIEF ADMINISTRATIVE OFFICER REPORTS

5.1 Changes in Voting Strength and Director Representation on the Board

That the MVRD Board receive for information the report dated October 20, 2017, titled "Changes in Voting Strength and Director Representation on the Board".

5.2 Delegations Received at Committee October 2017

That the MVRD Board receive for information the report, dated October 5, 2017, titled "Delegations Received at Committee October 2017" containing submissions received from the following delegates:

a) Dale Littlejohn, Executive Director, Community Energy Association (CEA).

F. ITEMS REMOVED FROM THE CONSENT AGENDA

G. REPORTS NOT INCLUDED IN CONSENT AGENDA

1. REGIONAL PLANNING COMMITTEE REPORTS

1.1 Metro Vancouver 2040: Shaping our Future Amendment to Reflect Accepted Regional Context Statements

That the MVRD Board:

a) give third reading to "Greater Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1246, 2017";
b) pass and finally adopt "Greater Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1246, 2017".

2. BUDGET REPORTS

2.1 2018 MVRD Budget

(Report to be provided at a later date)

2.2 MVRD 2018-2022 Financial Plan and Five Year Bylaw

(Report to be provided at a later date)

H. MOTIONS FOR WHICH NOTICE HAS BEEN GIVEN

I. OTHER BUSINESS

J. BUSINESS ARISING FROM DELEGATIONS

K. RESOLUTION TO CLOSE MEETING

Note: The Board must state by resolution the basis under section 90 of the Community Charter on which the meeting is being closed. If a member wishes to add an item, the basis must be included below.

That the MVRD Board close its regular meeting scheduled for October 27, 2017 pursuant to the *Community Charter* provisions, Section 90 (1) (c) as follows:

"90 (1) A part of a board meeting may be closed to the public if the subject matter being considered relates to or is one or more of the following:
(c) labour relations or other employee relations."

L. RISE AND REPORT (Items Released from Closed Meeting)

M. ADJOURNMENT/CONCLUSION

That the MVRD Board adjourn/conclude its regular meeting of October 27, 2017.

METRO VANCOUVER REGIONAL DISTRICT
BOARD OF DIRECTORS

Minutes of the Regular Meeting of the Metro Vancouver Regional District (MVRD) Board of Directors held at 9:23 a.m. on Friday, September 22, 2017 in the 2nd Floor Boardroom, 4330 Kingsway, Burnaby, British Columbia.

MEMBERS PRESENT:

Port Coquitlam, Chair, Director Greg Moore
Vancouver, Vice Chair, Director Raymond Louie
Anmore, Director John McEwen
Belcarra, Director Ralph Drew
Bowen Island, Director Maureen Nicholson
Burnaby, Director Sav Dhaliwal
Burnaby, Alternate Director Dan Johnston for Derek Corrigan
Burnaby, Director Colleen Jordan
Coquitlam, Director Craig Hodge
Coquitlam, Director Richard Stewart
Delta, Director Lois Jackson
Electoral Area A, Alternate Director Bill Holmes for Maria Harris
Langley City, Director Rudy Storteboom
Langley Township, Director Charlie Fox
Langley Township, Director Bob Long
Lions Bay, Director Karl Buhr
New Westminster, Director Jonathan Coté
North Vancouver City, Director Darrell Mussatto
North Vancouver District, Director Richard Walton
Pitt Meadows, Alternate Director Janis Elkerton for John Becker
Port Moody, Director Mike Clay
Richmond, Director Malcolm Brodie
Richmond, Director Harold Steves
Surrey, Director Tom Gill
Surrey, Director Bruce Hayne
Surrey, Director Judy Villeneuve
Surrey, Alternate Director Dave Woods for Linda Hepner
Tsawwassen, Director Bryce Williams (arrived at 9:38 a.m.)
Vancouver, Director Adriane Carr
Vancouver, Director Heather Deal
Vancouver, Director Kerry Jang
Vancouver, Director Andrea Reimer
Vancouver, Director Gregor Robertson
Vancouver, Director Tim Stevenson
West Vancouver, Director Michael Smith
White Rock, Director Wayne Baldwin

MEMBERS ABSENT:

Maple Ridge, Director Nicole Read
Surrey, Director Barbara Steele

STAFF PRESENT:

Carol Mason, Chief Administrative Officer
Genevieve Lanz, Assistant to Regional Committees, Board and Information Services
Chris Plagnol, Corporate Officer

A. ADOPTION OF THE AGENDA

1. September 22, 2017 Regular Meeting Agenda

It was MOVED and SECONDED
That the MVRD Board adopt the agenda for its regular meeting scheduled for September 22, 2017 as circulated.

CARRIED

B. ADOPTION OF THE MINUTES

1. July 28, 2017 Regular Meeting Minutes

It was MOVED and SECONDED
That the MVRD Board adopt the minutes for its regular meeting held July 28, 2017 as circulated.

CARRIED

C. DELEGATIONS

No items presented.

D. INVITED PRESENTATIONS

No items presented.

E. CONSENT AGENDA

The following items were removed from the Consent Agenda, in the following order, for consideration under Section F. Items Removed from the Consent Agenda:

1.4 *Metro Vancouver 2040: Shaping our Future* – 2016 Annual Performance Monitoring Report
1.2 2016 Census of Agriculture Results
1.1 Memorandum of Understanding between Metro Vancouver and the Agricultural Land Commission Regarding Implementation of *Metro 2040*

It was MOVED and SECONDED
That the MVRD Board adopt the recommendations contained in the following items presented in the September 22, 2017 MVRD Board Consent Agenda:

1.3 A Food Policy for Canada - Metro Vancouver Recommendations
1.5 Metro Vancouver 2040: Shaping our Future 2016 Procedural Report
1.6 Consideration of the City of New Westminster's Amended Regional Context Statement
1.7 City of Maple Ridge – Proposed Amendment to the GVS&DD Fraser Sewerage Area Boundary at 12248 244 Street
1.8 City of Maple Ridge – Proposed Amendment to the GVS&DD Fraser Sewerage Area Boundary at 12224 240 Street
2.1 Request for Metro Vancouver Participation in UrbanSIM Prototype Project
2.2 2017 and 2018 Homeless Count Reports and Events

2.3 Homelessness Partnering Strategy 2018 - 2019 Social Infrastructure Fund
2.4 Homelessness Partnering Strategy Housing First Training

CARRIED

The items and recommendations referred to above are as follows:

1.3 A Food Policy for Canada - Metro Vancouver Recommendations

Report dated August 11, 2017 from Theresa Duynstee, Regional Planner, Parks, Planning and Environment, seeking MVRD Board direction to send a letter to the Federal Agriculture and Agri-Food Minister Lawrence MacAuley providing recommendations for a national food policy and issues related to food production, processing, distribution and consumption.

Recommendation:
That the MVRD Board send a letter to the Federal Agriculture and Agri-Food Minister Lawrence MacAuley, with a copy to the BC Minister of Agriculture, providing Metro Vancouver Recommendations for a food policy for Canada, as described in the report dated August 11, 2017, titled "A Food Policy for Canada – Metro Vancouver Recommendations".

Adopted on Consent

1.5 Metro Vancouver 2040: Shaping our Future 2016 Procedural Report

Report dated August 17, 2017 from Terry Hoff, Acting Division Manager, Growth Management and Transportation, providing the MVRD Board with the *Metro Vancouver 2040: Shaping our Future* 2016 procedural report as required under the *Regional Growth Strategy Procedures Bylaw No. 1148, 2011*.

Recommendation:
That the MVRD Board receive for information the report dated August 17, 2017, titled "Metro Vancouver 2040: Shaping our Future 2016 Procedural Report".

Adopted on Consent

1.6 Consideration of the City of New Westminster's Amended Regional Context Statement

Report dated August 31, 2017 from Jaspal Marwah, Regional Planner, Parks, Planning and Environment, seeking MVRD Board acceptance of the City of New Westminster's amended Regional Context Statement.

Recommendation:
That the MVRD Board accept the City of New Westminster's Regional Context Statement as received by Metro Vancouver on August 29, 2017.

Adopted on Consent

1.7 City of Maple Ridge – Proposed Amendment to the GVS&DD Fraser Sewerage Area Boundary at 12248 244 Street

Report dated July 20, 2017 from Jaspal Marwah, Regional Planner, Parks, Planning and Environment, providing an opportunity for the MVRD Board to consider whether an application to amend the Fraser Sewerage Area boundary at the residential property at 12248 244 Street in the City of Maple Ridge is consistent with the provisions of *Metro Vancouver 2040: Shaping our Future.*

Recommendation:

That the MVRD Board:

a) resolve that adjustment of the GVS&DD Fraser Sewerage Area boundary within the residential property at 12248 244 Street in the City of Maple Ridge is consistent with the provisions of *Metro Vancouver 2040: Shaping Our Future*; and

b) forward the Fraser Sewerage Area boundary amendment application to the GVS&DD Board for consideration.

Adopted on Consent

1.8 City of Maple Ridge – Proposed Amendment to the GVS&DD Fraser Sewerage Area Boundary at 12224 240 Street

Report dated July 20, 2017 from Jaspal Marwah, Regional Planner, Parks, Planning and Environment, providing an opportunity for the MVRD Board to consider whether an application to amend the Fraser Sewerage Area boundary at 12224 240 Street in the City of Maple Ridge is consistent with the provisions of *Metro Vancouver 2040: Shaping our Future.*

Recommendation:

That the MVRD Board:

a) resolve that adjustment of the GVS&DD Fraser Sewerage Area Boundary within the Meadowridge School property at 12224 240 Street in the City of Maple Ridge is consistent with the provisions of *Metro Vancouver 2040: Shaping Our Future*; and

b) forward the Fraser Sewerage Area expansion application to the GVS&DD Board for consideration.

Adopted on Consent

2.1 Request for Metro Vancouver Participation in UrbanSIM Prototype Project

Report dated August 24, 2017 from Elisa Campbell, Director, Housing Policy and Planning, Parks, Planning and Environment, seeking MVRD Board approval to send a letter to the Canada Mortgage and Housing Corporation confirming Metro Vancouver's participation in the UrbanSIM project.

Recommendation:
That the MVRD Board direct staff to write a letter to Canada Mortgage and Housing Corporation confirming Metro Vancouver's interest in participating as a partner in the UrbanSIM Prototype project.

Adopted on Consent

2.2 2017 and 2018 Homeless Count Reports and Events

Report dated August 23, 2017 from Theresa Harding, Manager, Homelessness Partnering Strategy, providing the MVRD Board with a summary of upcoming reports and associated activities related to the 2017 and 2018 Homeless Counts.

Recommendation:
That the MVRD Board receive for information the report dated August 23, 2017, titled "2017 and 2018 Homeless Count Reports and Events".

Adopted on Consent

2.3 Homelessness Partnering Strategy 2018 - 2019 Social Infrastructure Fund

Report dated August 23, 2017 from Theresa Harding, Manager, Homelessness Partnering Strategy, providing the MVRD Board with information on the Federal Social Infrastructure Funds allocated to the Metro Vancouver Community Entity for the final year of the current funding program April 2014-March 2019.

Recommendation:
That the MVRD Board receive for information the report dated August 23, 2017, titled "Homelessness Partnering Strategy 2018 - 2019 Social Infrastructure Fund".

Adopted on Consent

2.4 Homelessness Partnering Strategy Housing First Training

Report dated August 23, 2017 from Theresa Harding, Manager, Homelessness Partnering Strategy, providing thee MVRD Board with information on the Housing First Training program offered to the Metro Vancouver Community Entity by the Homelessness Partnering Strategy.

Recommendation:
That the MVRD Board receive for information the report dated August 23, 2017, titled "Homelessness Partnering Strategy Housing First Training".

Adopted on Consent

F. ITEMS REMOVED FROM THE CONSENT AGENDA

The items removed from the Consent Agenda were considered in numerical order.

1.1 Memorandum of Understanding between Metro Vancouver and the Agricultural Land Commission Regarding Implementation of *Metro 2040*

Report dated August 16, 2017 from Theresa Duynstee, Regional Planner, Parks, Planning and Environment, seeking MVRD Board endorsement of the Memorandum of Understanding (MOU) between the MVRD and the Agricultural

Land Commission regarding the implementation of the regional growth strategy, *Metro Vancouver 2040: Shaping our Future (Metro 2040)*.

It was MOVED and SECONDED
That the MVRD Board endorse the Memorandum of Understanding as contained in the report dated August 16, 2017, titled "Memorandum of Understanding between Metro Vancouver and the Agricultural Land Commission Regarding Implementation of *Metro 2040"*.

CARRIED

1.2 2016 Census of Agriculture Results

Report dated August 11, 2017 from Theresa Duynstee, Regional Planner, Parks, Planning and Environment, providing the MVRD Board with the results of the 2016 Census of Agriculture.

It was MOVED and SECONDED
That the MVRD Board receive for information the report dated August 11, 2017, titled "2016 Census of Agriculture Results".

CARRIED

1.3 *Metro Vancouver 2040: Shaping our Future – 2016 Annual Performance Monitoring Report*

Report dated August 23, 2017 from Terry Hoff, Acting Division Manager, Growth Management and Transportation, providing the MVRD Board with information on the performance of Metro Vancouver's regional growth strategy, with focus on Goal 1 measures from adoption in 2011 to mid-2016, and the cumulative policy and land designation amendments to date, and requesting that the MVR Board forward the report to the Province of BC in accordance with Section 452(1)(b) of the *Local Government Act.*

9:38 a.m. Director Williams arrived at the meeting.

Members were provided with a demonstration of the *Metro 2040: Shaping our Future* dashboard which showcases the performance data of member municipalities for each *Metro 2040: Shaping our Future* goal.

It was MOVED and SECONDED
That the MVRD Board:

a) receive for information the report dated August 23, 2017 titled, "Metro Vancouver 2040: Shaping our Future – 2016 Annual Performance Monitoring Report"; and

b) forward the report dated August 23, 2017 titled, "Metro Vancouver 2040: Shaping our Future – 2016 Annual Performance Monitoring Report" to the Province of BC's Ministry of Municipal Affairs and Housing, Local Government Division in fulfillment of Local Government Act Section

452(1)(b), which requires the preparation of an annual report on a regional growth strategy's progress.

CARRIED

G. REPORTS NOT INCLUDED IN CONSENT AGENDA

1.1 Electoral Area A Official Community Plan

Report dated July 5, 2017 from the Electoral Area Committee, together with report dated June 21, 2017 from Marcin Pachcinski, Division Manager, Parks, Planning, and Environment, seeking MVRD Board first reading of the *Metro Vancouver Regional District Electoral Area A Official Community Plan Bylaw 1250, 2017*.

It was MOVED and SECONDED

That the MVRD Board give first reading to the *Metro Vancouver Regional District Electoral Area A Official Community Plan Bylaw 1250, 2017*, and refer the Bylaw to adjacent regional districts and municipalities, First Nations, school district boards, greater boards and improvement district boards, and appropriate provincial and federal government ministries, without limiting ongoing consultation opportunities.

CARRIED

H. MOTIONS FOR WHICH NOTICE HAS BEEN GIVEN

No items presented.

I. OTHER BUSINESS

No items presented.

J. BUSINESS ARISING FROM DELEGATIONS

No items presented.

K. RESOLUTION TO CLOSE MEETING

It was MOVED and SECONDED

That the MVRD Board close its regular meeting scheduled for September 22, 2017 pursuant to the *Community Charter* provisions, Section 90 (1) (e) as follows:

"90 (1) A part of a board meeting may be closed to the public if the subject matter being considered relates to or is one or more of the following:

(e) the acquisition, disposition or expropriation of land or improvements, if the board or committee considers that disclosure could reasonably be expected to harm the interests of the regional district."

CARRIED

L. RISE AND REPORT (Items Released from Closed Meeting)

No items presented.

M. ADJOURNMENT/CONCLUSION

It was MOVED and SECONDED
That the MVRD Board adjourn its regular meeting of September 22, 2017.

CARRIED
(Time: 9:43 a.m.)

CERTIFIED CORRECT

Chris Plagnol, Corporate Officer

Greg Moore, Chair

23390719 FINAL

To: Climate Action Committee

From: Rudy Storteboom, Director, Climate Action Committee
Eve Hou, Air Quality Planner, Parks, Planning and Environment Department

Date: June 13, 2017 Meeting Date: September 20, 2017

Subject: **Electric Mobility Canada's 8th Annual EV/VÉ Conference and Trade Show**

RECOMMENDATION
That the MVRD Board receive for information the report dated June 13, 2017, titled "Electric Mobility Canada's 8th Annual EV/VÉ Conference and Trade Show".

PURPOSE
To report on the Electric Mobility Canada's 8th Annual EV/VÉ Conference and Trade Show, which was attended by a Metro Vancouver Director and a staff member from the Parks, Planning and Environment Department.

BACKGROUND
Founded in 2005, Electric Mobility Canada is a national membership-based not-for-profit organization dedicated exclusively to the promotion of electric mobility as an available and important solution to Canada's emerging energy and environmental issues. Metro Vancouver has been a member of Electric Mobility Canada since 2014.

In January 2017 the Climate Action Committee were advised that funds were allocated in the 2017 budget for one elected official to attend Electric Mobility Canada's 8th Annual EV/VÉ Conference and Trade Show. Director Rudy Storteboom and Eve Hou (Air Quality Planner, Parks, Planning and Environment Department), represented Metro Vancouver at the conference. The conference program included presentations, discussion panels, and technical tours of direct relevance to the Climate Action Committee's mandate and work plan. The event was attended by over 350 delegates from government, industry, academia and non-profit organizations. The program included 80 speakers, 30 exhibitors, 4 panels and 2 tours.

CONFERENCE THEME: SMART E-MOBILITY
The theme of this year's annual conference was "Smart e-mobility". The term "Smart e-mobility" refers to the whole electric vehicle ecosystem, including optimal utilization of fleets, connected cars, autonomous electric vehicles, smart homes, smart grids, microgrids, smart charging, battery technology and many more revolutionary breakthroughs in mobility. Some of the most well-attended sessions included Tomorrow's e-Mobility panel, the Government-Industry Summit and the Smart evolution of public infrastructure.

The opening plenary was presented by a panel which included Frank Scarpitti, Mayor of Markham, and Paul Evans, Deputy Minister, Ministry of the Environment and Climate Change for Ontario. These speakers highlighted the innovative measures happening in Ontario to support electric mobility at both local and provincial levels. Other panelists, James Scongack and Jeff Lyash, executives from utilities companies Bruce Power and Ontario Power Generation, talked about the decarbonization of the Ontario power grid. The speakers cited a recent study by KPMG of auto manufacturing executives,

which found that 90% of executives surveyed expect battery electric vehicles (EVs) to dominate by 2025 and that 74% believe the majority of today's car owners will not want to own a car. This set an optimistic tone to the conference, and emphasized that electrification of the transportation system is not a matter of *if*, but *when*.

Some of the key learnings of the conference included:

- **Automakers are envisioning the future of mobility under three pillars: Autonomous, Connected and Electric**. This is leading to consideration of new business models, particularly with regard to vehicle ownership.
- **Charging remains a key barrier to vehicle uptake**, particularly in multi-unit residential buildings and workplaces. Some early steps are being taken to address these infrastructure challenges (such as Ford's workplace charging program and BC's Multi-Unit Residential Building Program). We also learned about "infrastructure as a service" business model from Canadian EV charging company, Flo. Under this model, charging infrastructure is built through private investment and paid for through user subscription services. As EV populations grow, this model becomes increasingly viable.
- **Public awareness of EVs in Canada is still quite low.** Institutions such as McMaster University and SFU START have longitudinal and spatial survey data on consumer awareness and attitudes towards EVs. Speakers also shared innovations in public outreach such as the Kia sponsorship-referral program and the EV Discovery Centre.
- **Electrification of public transit buses varies considerably across Canada**. Some jurisdictions have extensive experience demonstrating electric buses and are ready to move into implementation, others are at early stages of trial (including Translink), while others have no consideration for electrifying the transit fleet. A gap in knowledge-sharing may contribute to this disparity.
- **Many charging options are available in Canada.** Delegates at the trade show learned about the differences in EV chargers in terms of power output (Level 1, Level 2 and DC Fast Charge), networked and non-networked, and load share. Delegates were also able to talk to 30 exhibitors to learn about their products and services.
- **"User experience" will become increasingly important**, both on the vehicle side and the charging side. Station owners will be pressured to reduce downtime and simplify access, if EVs are to successfully move into the "early majority" market segment.
- **EVs are entering more market segments**: During the show, Havelaar Canada launched the first fully electric pick-up truck – the Bison E-Pickup™. This is an important announcement in that it signals the intent of auto makers to enter this important market segment.

Figure 1: First fully-electric pick-up truck designed and tested in Canada.

The conference also included a test drive component, where members of the public and delegates could test drive 11 different models of plug-in hybrid electrics or pure battery electric vehicles.

Finally, delegates were invited to a guided tour of the EV Discovery Centre (EVDC). This Centre is the world's first one-stop shop to help consumers learn about EVs, charging infrastructure and the supporting electricity system. Visitors can also test drive a wide variety of makes and models of EVs. This facility, located in North York, recently opened and may be a model for the Emotive campaign to explore in this region.

ALTERNATIVES
This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS
Attendance at relevant information events, including technical conferences, is an important means by which Metro Vancouver's staff and committee representatives build expertise and keep themselves informed of key developments. The Remuneration Bylaw authorizes Committees to recommend to the Board Chair the attendance by members at relevant events. Operating budgets include funds for staff attendance, within the Corporate Training and Development Policy. Costs associated with attendance at this event by elected officials and staff were approved as part of the 2017 budget.

SUMMARY / CONCLUSION
The Electric Mobility Canada's 8th Annual EV/VÉ Conference and Trade Show was an opportunity for attendees to learn about electric mobility in Canada, now and in the future. With a conference theme of "Smart e-mobility" delegates attended sessions such as Tomorrow's e-Mobility panel, the Government-Industry Summit and the Smart evolution of public infrastructure. Although there was disagreement on how quickly electric, connected and autonomous vehicles will replace our existing transportation system, the consensus among nearly all attendees is that it is an inevitability.

References
1. Electric Mobility Canada's 8th Annual EV/VÉ Conference and Trade Show, "Smart e-mobility", *http://emc-mec.ca/ev2017ve/*
2. Electric Mobility Canada Monthly e-Newsletter, May/June 2017, *http://campaign.r20.constantcontact.com/render?m=1112056540314&ca=8e23df94-2e9a-4f37-8190-9e218757a925*

23210875

To: Climate Action Committee

From: Jason Emmert, Air Quality Planner
Parks, Planning and Environment Department

Date: August 28, 2017 Meeting Date: September 20, 2017

Subject: **Strata Energy Advisor Program – Additional Information Regarding Air Quality Reserve Request**

RECOMMENDATION

That the MVRD Board:

a) direct staff to proceed with the Strata Energy Advisor Program under a revised scope, as outlined in the report dated August 28, 2017, titled "Strata Energy Advisor Program – Additional Information Regarding Air Quality Reserve Request"; and
b) authorize a contribution from the Air Quality Reserve, in the amount of $192,500, to support delivery of the revised Strata Energy Advisor Program in 2017-2019.

PURPOSE

The purpose of this report and the attachments is to provide additional information to support the request for a contribution from the Air Quality Reserve to fund the delivery of a revised Strata Energy Advisor pilot program.

BACKGROUND

At the July 5, 2017 meeting, the Committee received the report titled "Strata Energy Program – Air Quality Reserve Application Request," which provided an update on the development of the Strata Advisor Program and sought authorization from the MVRD Board to use Air Quality Reserve funding to deliver the next steps of the program under a revised scope (Attachment 1). The Committee requested additional information on the rationale and business case for a revised project scope and budget, the municipal contributions to the program, as well as the expected benefits and outcomes of the program. This report summarizes the work completed to date as part of the program development and design phase, and responds to the Committee request for additional information on the proposed revisions to the pilot project.

STRATA ENERGY ADVISOR PROGRAM

The Metro Vancouver Board approved funding from the Sustainability Innovation Fund (SIF) in July 2015 for the Strata Energy Advisor (SEA) pilot program. The objective of this pilot program was to test the effectiveness of "energy and emissions coaching" services for strata buildings in Metro Vancouver. The SIF project proposal described the Strata Energy Advisor project in three phases: Program Development and Design; Program Delivery; and, Program Evaluation.

Metro Vancouver's role in the project is to facilitate the research and development of a Strata Energy Advisor program, and to undertake a pilot program with partners to assess its feasibility. Should the project prove to be feasible, a key outcome of the research is to provide recommendations on broader implementation, including roles and responsibilities for Metro Vancouver, member jurisdictions, other orders of government, utilities, strata owners and associations, and other partners.

The Program Development and Design phase was completed with a budget of $100,000, of which $32,500 was SIF budget and the balance was partner contributions. A summary of the results of the background study is provided (Attachment 2). The Program Development and Design phase included an in-depth background study and stakeholder engagement process.

The background study and consultation yielded important new information that was not available to staff or the project Steering Committee when the SIF project was originally conceived.

A key finding of the background study was that strata council members, industry professionals, and property managers highlighted decision-making and cultural factors (rather than technical knowledge) as the most common barriers preventing more widespread acceptance and adoption of energy efficiency and GHG emission reduction solutions. Issues raised include: the complexity of strata corporation decision making; the challenge of raising the knowledge level of strata councils and owners; and the expertise to develop straightforward business cases in early stages of decision-making. It was also clear from the study that while there is good technical and cost information on energy efficiency and emissions reductions measures that can be implemented in multi-unit buildings, the information is often difficult for non-experts to evaluate and apply in their own context.

These findings, as well as other information from the study, informed the design of a program that would effectively target the barriers that were identified by stakeholders while building on the knowledge and expertise already in the market.

PROPOSAL FOR A REVISED PILOT PROGRAM

In the SIF application, it was envisioned that the pilot phase would provide customized, technical coaching to two to five strata buildings, with the purpose of informing a full program design. Under this original scope the Strata Energy Advisor would work intensely with a few case study stratas on specific projects to understand the technical/financial opportunities and barriers to reducing emissions and improving energy efficiency. However, it was found that much of the information that staff expected to learn from the case studies was gathered through the stakeholder consultation, review of similar programs for rental buildings, and analysis of the strata depreciation reports. As a result, staff and the project Steering Committee concluded that undertaking this step as originally conceived would yield minimal additional value. Therefore, staff have focused efforts on the design of a revised program scope that would make the best use of remaining SIF funding ($167,500). Furthermore, the project's municipal partners made commitments to provide substantial amounts of additional funding for a revised SEA program.

Alignment with Sustainability Innovation Fund Proposal

The revised scope is aligned with the core elements of the original SIF proposal, while targeting the identified need for an innovative approach to the unique barriers faced by stratas. The program will provide resources and tools to assist strata corporations (through their strata council and/or building managers) with the *process* of identifying and evaluating the costs, benefits, risks, and opportunities in achieving higher levels of energy efficiency and lower GHG emissions in their projects, rather than simply providing customized technical information. Understanding the challenges in strata decision-making, staff and the Steering Committee are proposing a pilot program design that would engage more stratas (approximately 300), to ensure coverage of a sufficiently broad variety of projects and contexts. This approach will increase the likelihood that the program will reach stratas that are ready to take action and can successfully get approval from the owners for projects, which would result in the pilot program being able to evaluate more completed projects with more emissions reductions.

Services Available Through the Revised Program

Energy Advising Services: The SEA Program will provide a full suite of energy advising related services to strata council members, owner "champions", property managers and strata management companies that will help them identify opportunities, evaluate costs and benefits, communicate opportunities and risks to owners, connect with the appropriate professionals, access available incentives, and support completion of projects.

Grants: In addition to the core advisory services, grants (from municipal partner funding rather than SIF) will be available to stratas that undertake building energy audits or building tune-ups. Strata Corporations would hire their own consultants to conduct the energy audits and tune-ups and the grants would be available to offset a portion of the cost. An energy audit is an in-depth analysis of a building's energy use. A building tune-up (sometimes referred to as retro-commissioning) is similar to car tune-up, in that an expert consultant is engaged to check that all the building systems are running properly, and may recommend changes or upgrades to improve efficiency. For both of these services, the strata energy advisor would provide scope of work templates to assist strata councils to hire consultants to conduct the work and be available to answer questions.

Learning Forums: The Strata Energy Advisor will also educate strata owners at events and forums in partnership with the Condominium Homeowners Association (CHOA) and local governments in the Metro Vancouver region.

Website Information and Tools: Metro Vancouver is proposing to host a program website that will be a one-stop-shop for information on: energy conservation measures; retrofit approaches; best practice technologies; templates and advice on procuring services from contractors; and, guidance on navigating the strata governance approval process.

Expected Outcomes of the Pilot Program with the Revised Scope

Under the revised scope, we expect the following minimum program outcomes:

- Registration of 300 strata buildings in the program via the SEA Program website;
- Providing screening level walk-through assessments to 50-70 strata councils and owner groups;
- Recruitment of 30-50 strata corporations to implement a "building tune-up";
- Support for 5-10 strata corporations to undertake an energy audit (Level 1 or higher);
- Support for 5-10 strata buildings to plan or complete a mechanical replacement project (e.g., high efficiency boilers, heat pump make air units, etc.);
- Support for 3-5 strata buildings to plan or complete a building envelope project (e.g.; high efficiency windows, increased exterior insulation/cladding, etc.);
- Presentations at 3-5 educational events related to strata energy efficiency (total of up to 200 attendees).

Potential Climate Benefits

It is estimated that the projects supported through the pilot could generate 1,000-2,000 tonnes of GHG reductions over 15 years (approximately 65-130 tonnes CO_2e per year). If the pilot program is successful in engaging strata councils and increasing the adoption of energy efficiency technologies, it is estimated that a full SEA program paired with utility incentives could result in up to 9,000 to 36,000 tonnes of GHG reductions by 2020 (1-4% of all emissions from strata buildings) and as much as 33,000 to 127,000 tonnes of GHG reductions by 2030 (4-15% of all emissions from strata buildings). In addition, Metro Vancouver will continue to engage the Provincial and the Federal Governments on

updates to the building code that focus on retrofits for energy efficiency, which would further accelerate emissions reductions from existing strata buildings.

Leveraged Investment from Strata Participants
Preliminary estimates are that the pilot could stimulate between $300,000-$500,000 in incremental strata investment for energy conservation/GHG reduction measures as part of building mechanical and/or envelope projects. The total strata investment in these projects would be estimated at $5-10 million. In addition, it is estimated that strata investment for building tune-ups and energy audits would be $200,000- $250,000.

Pilot Project Evaluation and Deliverables
The pilot program outcomes will be evaluated to assess the efficacy of a Strata Energy Advisor program, including its climate benefits and cost-effectiveness. Should the pilot program results prove to be favourable, the program evaluation phase will include discussions about roles and responsibilities for a range of participants, including Metro Vancouver, member jurisdictions, other orders of government, utilities, strata owners and associations, and other partners. Staff anticipate that full scale implementation may be undertaken by current partners, including interested member jurisdictions, and therefore the research project should provide information about the associated resource implications of full-scale program delivery.

A program report will be prepared and provided to the Committee, which will include recommendations on next steps. The potential implementation of a full-scale Strata Energy Advisor program will be evaluated with respect to Metro Vancouver's mandate and authority, and the overall umbrella of a regional climate action strategy. Should a role emerge for Metro Vancouver, beyond facilitating the pilot program research, the budget implications will be provided for the Committee and Board's consideration.

BUSINESS CASE FOR ADDITIONAL FUNDING REQUEST
In order to deliver the program described above and achieve the expected impacts, staff are requesting additional funding of $192,500. The program budget includes a number of fixed costs for the development of program content and materials specifically for stratas (including: communication materials, online guides, information and tools, templates, and participant management system). The budget estimate for program set-up and program administration is $200,000.

The balance of the budget would be allocated for the direct engagement with stratas by the Strata Energy Advisors (e.g., walkthroughs, presentations, phone consultations, learning events, implementation support). Under the original project budget, $32,500 is available for direct engagement, which would limit the engagement to a smaller number of stratas. If additional funding is approved there would be $255,000 allocated to direct engagement with stratas by the Advisors. The cost effectiveness of the pilot program will depend on the level of direct engagement with stratas. By engaging a sufficiently large number of stratas, it is more likely that the pilot program will result in a variety of successfully completed GHG reduction projects. Due to economies of scale the average program delivery cost would be approximately $3,300 per strata under the original budget and $1500 per strata under the revised scope of work. If the pilot program is successful and continued into the future, there would likely be further cost efficiencies by building on the initial investment in program set-up. Table 1 summarizes the proposed changes in budget and contributions.

Table 1. Comparison of Budget and Contributions for Original SIF Project to Revised Program

	Original Contributions	**Proposed Contributions for Revised SEA Program**
Program Design and Development *(Complete)*	SIF: $32,500 Partners: $67,500 **Subtotal: $100,000** *(Complete)*	SIF: $32,500 Partners: $67,500 **Subtotal: $100,000** *(Complete)*
Program Delivery: Strata Energy Advisor Services (2017-2019)	SIF: $167,500 Partners: $70,000 **Subtotal: $237,500**	SIF: $167,500 Partners: $95,000 *AQ Reserve: $192,500* **Subtotal: $455,000**
Grants for Enhanced Actions by Stratas	(Not in original scope)	**Partners: $176,000**
TOTALS:	**$337,500**	**$731,000**

Potential Additional Partner Contributions

Based on the revised scope of the program pilot, the Steering Committee recommended making small grants available for building energy audits and tune-ups to stimulate early action and improve energy and emissions information available to stratas. Municipal partners have committed $176,000 to the grant funding and an additional $25,000 for the core advisory services, subject to the project proceeding according to the revised program design. The total municipal partner contribution would therefore be $338,500, including $67,500 already spent on the completed background study (Table 2), which is equivalent to 46% of the total project budget under the revised scope.

Table 2. Metro Vancouver Funding and Partner Contributions under Revised Scope

Funding Contributors	**2016**	**2017-2019**		**Total**
	Background Study	**Strata Energy Advisor Services**	**Grants**	
New Westminster	$5,000	$15,000	$20,000	$40,000
Richmond	$5,000	$5,000	$40,000	$50,000
Vancouver	$50,000	$60,000	$100,000	$210,000
Surrey	-	$5,000		$5,000
City of North Vancouver	$5,000	$10,000	$11,000	$26,000
UBC	$2,500	-	$5,000	$7,500
Municipal Subtotal	**$67,500**	**$95,000**	**$176,000**	**$338,500**
MVRD SIF	$32,500	$167,500	-	$200,000
MVRD Request from Reserves	-	*$192,500*	-	*$192,500*
Metro Vancouver Subtotal	**$32,500**	**$360,000**	**-**	**$392,500**
TOTAL	**$100,000**	**$455,000**	**$176,000**	**$731,000**

ALTERNATIVES

1. That the MVRD Board:
   a) direct staff to proceed with the Strata Energy Advisor Program under a revised scope, as outlined in the report dated August 28, 2017, titled "Strata Energy Advisor Program – Additional Information Regarding Air Quality Reserve Request"; and
   b) authorize a contribution from the Air Quality Reserve, in the amount of $192,500, to support delivery of the revised Strata Energy Advisor Program in 2017-2019.
2. That the MVRD Board direct staff to prepare the collateral and materials for the Strata Energy Advisor Program, and deliver the pilot program to a limited number of strata buildings with the remaining SIF budget and the committed partner contributions.
3. That the MVRD Board receive for information the report dated August 28, 2017, titled "Strata Energy Advisor Program – Additional Information Regarding Air Quality Reserve Request", and provide alternate direction to staff.

FINANCIAL IMPLICATIONS

The current Air Quality Reserve fund balance is $2.37 million. Under Alternative 1, there are sufficient resources in the reserve to accommodate the request for additional funding of $192,500 for the duration of the pilot project (2017-2019) with minimal impact on the Reserve. Approving the additional funding from reserves at this time would leverage substantial financial and in-kind commitments from municipal partners, UBC, CHOA, and utilities. Under the revised program scope municipal partners and UBC have committed $176,000 for grants and an additional $25,000 for core service delivery. The annual project expenditures by year are estimated to be: $200,000 in 2017 for program set-up, $250,000 in 2018 for delivery of SEA services and grants, and $180,000 in 2019 for delivery of SEA services and grants. Staff is confident that the program will be able to meet the outcomes within the revised budget.

Under Alternative 2, the majority (approximately $200,000) of the remaining SIF budget and committed partner contributions would be required for program set-up (e.g., communication materials, online tools, project templates, participant management). The balance of the budget (approximately $32,500) would be available for direct delivery activities (e.g., phone consultations, in person meetings, walk through assessments) with a significantly smaller number strata councils.

If the pilot is successful, staff would work with partners to define next steps, delineate roles and responsibilities, and develop a long term funding model to deliver the program for additional years. Staff envision that Metro Vancouver's role is to facilitate the pilot program research, and that full scale implementation may rest with interested member jurisdictions, utilities, strata organizations and others. Information on resource implications of broader implementation will be provided. However, should a role emerge for Metro Vancouver within its climate program, staff will report back with proposed expenditures from the Air Quality and Climate Change annual operating budget in future years. It is expected that there would be cost efficiencies in future program delivery by building on the initial investments in program set-up made as part of this pilot.

SUMMARY / CONCLUSION

The Strata Energy Advisor Program is an innovative new program for Metro Vancouver and the first strata-targeted energy advisor program in Canada. Through a consultation process with the project Steering Committee and key stakeholders, a comprehensive scope of work was developed for a revised Strata Energy Advisor program, which is aligned with but different from the original SIF proposal. The Program will pilot the effectiveness of an "energy coaching and training" approach to

overcoming the behavioural and cultural barriers that have been identified to inhibit energy efficiency and GHG emissions reduction in stratas.

An additional funding contribution of $192,500 from Metro Vancouver's Air Quality Reserves will enable the delivery of the pilot program under the revised scope. The revised pilot program has attracted strong partner funding and in-kind support, and has the prospect to result in significant GHG emissions reductions from strata buildings. It is estimated that the revised Strata Energy Advisor program could result in approximately 5 times the impact of the original scope (based on metrics such as: number of stratas registered, walk through assessments completed, projects planned, and energy projects completed). Leveraged municipal partner funding for grants and core delivery would increase if the revised program is approved. Staff recommend Alternative 1.

Metro Vancouver's role in the project is to facilitate the research and development of a Strata Energy Advisor program, and to undertake a pilot program with partners to assess its feasibility. Should the project prove to be feasible, a key outcome of the research is to provide recommendations on broader implementation, including roles and responsibilities for Metro Vancouver, member jurisdictions, other orders of government, utilities, strata owners and associations, and other partners. A project report will be provided at the conclusion of the pilot, to summarize the findings of the study, evaluate its climate impacts, and make recommendations for next steps, along with supporting information on costs and benefits.

Attachments

1. Climate Action Committee report dated June 20, 2017, titled "Strata Energy Advisor Program – Air Quality Reserve Application Request" *(orbit # 23336523)*
2. Summary of the Background Study, Program Design Recommendations, and Project Case Study Examples *(orbit # 23283071)*

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

ATTACHMENT 1

To: Climate Action Committee

From: Jason Emmert, Air Quality Planner
Parks, Planning and Environment Department

Date: June 20, 2017 Meeting Date: July 5, 2017

Subject: **Strata Energy Advisor Program – Air Quality Reserve Application Request**

RECOMMENDATION

That the MVRD Board:

a) direct staff to proceed with the Strata Energy Advisor Program under an expanded scope and budget, as outlined in the report dated June 20, 2017, titled "Strata Energy Advisor Program – Air Quality Reserve Application Request"; and
b) authorize a contribution from the Air Quality Reserve, in the amount of $192,500, to support detailed design and delivery of the Strata Energy Advisor Program in 2017-2018.

PURPOSE

To provide an update on the development of the Strata Energy Advisor Program and seek authorization from the MVRD Board to use Air Quality reserve funding to fund the next steps of program delivery under an enhanced scope.

BACKGROUND

In July 2015, the Metro Vancouver Board approved funding from the Sustainability Innovation Fund (SIF) for several projects, including the Strata Energy Advisor (SEA) Program:

> *That the GVRD Board approve the allocation of funding from the GVRD Sustainability Innovation Fund to the following projects:*
> *d) Strata Energy Advisor: $50,000 in 2015; $50,000 in 2016 and $100,000 in 2017;*

The purpose of the program is to provide energy advisor services to strata councils and property managers to reduce energy consumption and greenhouse gas emissions. A summary of the Program, as considered by the Climate Action Committee and Board in 2015, is provided as Attachment 1.

Since project inception, interest in the program has been high and strong partnerships have been formed with the City of Vancouver, City of Richmond, City of New Westminster, City of North Vancouver, City of Surrey, and UBC. Participation in a project steering committee has comprised municipal staff, representatives of the Condominium Homeowners Association, BC Hydro, Fortis BC, and BC Housing. A consultant has also been engaged to provide recommendations on scoping and design of the Strata Energy Advisor Program, using the input from key stakeholders. The Program is now ready to move to the implementation phase. Specific roles and funding have been delineated for Metro Vancouver and its partners.

This report seeks authorization from the Board for a contribution from air quality reserves to support the next steps in the detailed design and delivery of the Strata Energy Advisor Program.

DESIGN OF THE STRATA ENERGY ADVISOR PROGRAM

As the first program of its kind in Canada, the Project Steering Committee engaged experts in the scoping and design of the Strata Energy Advisor Program in order to ensure the program's effectiveness. A consultant was commissioned to conduct a background study to provide recommendations for engagement approaches, implementation tools, and a suite of retrofit measures that could be incorporated into a multi-year energy advisor program. These recommendations were based on input from key stakeholders into the decision-making and technical opportunities and considered barriers facing strata buildings.

Strata Building Opportunities and Barriers. As part of the background research, a series of workshops and interviews were conducted with strata owners, managers, and contractors which provide services to strata corporations. While the research confirmed the energy and GHG improvement opportunities for strata buildings, it also identified that barriers exist with respect to: the complexity of decision-making in strata corporations; the role of contractors and consultants; and financial constraints (see Attachment 2).

Steering Committee Recommendations. Based on the consultant's findings and recommendations (see Attachment 3), the Strata Energy Advisor Steering Committee developed a scope of work for the program, which proposed initiatives to address barriers to energy efficiency and GHG emissions reductions. Metro Vancouver and the partners agreed that the Strata Energy Advisor Program should provide third party resources to strata councils and owners that achieve the following:

(a) Identify opportunities to reduce energy use and GHG emissions through changes in their building systems;
(b) Access and evaluate information about technologies and best practices that enable multi-unit buildings to reduce energy and GHG emissions;
(c) Develop scopes of work that strata corporations may use to hire appropriate, third party contractors to carry out building maintenance, renewal and renovations that should reduce energy consumption and GHGs;
(d) Identify and access financial and other incentives to reduce energy use and GHGs that may be available from third parties such as Fortis BC and BC Hydro;
(e) Administer grants for energy audits and building tune-ups; and
(f) Educate strata owners and managers at events and forums in partnership with the Condominium Homeowners Association (CHOA) and local governments.

DETAILED PROGRAM DESIGN, DELIVERY, OUTREACH & ADMINISTRATION

Based upon the recommendations of the Steering Committee, the next stage of the project is to engage a consultant to complete the detailed program design, deliver education and outreach services and administer the program in accordance with achieving a defined set of targets. The five phases of work are anticipated as follows:

1. **Complete the Detailed Program Design and Development**
   The consultant would design and prepare the web-based, written, and/or multimedia content and tools necessary to deliver the SEA program. The deliverables include presentations, building energy evaluation tools, business case tools, business case documents and marketing material.

2. Education and Outreach
These services would be available to strata councils, property managers and strata corporations at no cost, including website information and tools, phone consultation services, informational meetings, screening-level building walk-throughs, and project implementation support.

3. Learning Events
The consultant would prepare and present educational material at 2-5 learning events for strata owners and managers organized through the Condominium Homeowners Association (CHOA). Depending on demand, the consultant may organize 1-2 additional learning events per year.

4. Program Administration, Monitoring and Reporting
The consultant would be responsible for the day to day management of the program and adjusting the program offerings based on progress towards the expected outcomes and feedback from the participants and the Steering Committee.

5. Grants for Enhanced Action
Under a partnership agreement between Metro Vancouver and municipalities, the consultant would administer grants available to strata corporations which complete an energy audit and/or building tune-up using the scope of work provided through the program. The grants would be available only to buildings located in the partner municipalities that have provided grant funding.

It is envisioned that the Strata Energy Advisor Program will be implemented with two service areas:

1. *Program delivery and administration* – encompassing the completion of detailed program design, education and outreach, events, and program monitoring and reporting described above. These elements will be funded by Metro Vancouver and its partners.
2. *Grants for enhanced action* – these will be available to strata corporations to offset the cost of undertaking building tune-ups or a more detailed energy audit. These grants will be funded by municipal partners and available to stratas in the respective municipalities.

PROGRAM SCOPE AND COSTS
It was originally estimated that the program development would cost $50,000 and delivery of the program would occur over 5 years. The Board approved an initial $200,000 in SIF funding to take the project up to the mid-point of the first three years from 2015 through 2017.

During the program development phase, financial contributions from partners and member jurisdictions exceeded expectations, indicating a strong level of interest in the Strata Energy Advisor Program and the value of the Program in helping to meet member jurisdiction GHG reductions goals. Currently, there are six funding partners for the Strata Energy Advisor Program: City of Vancouver, City of Richmond, City of New Westminster, City of North Vancouver, City of Surrey, and UBC.

As summarized in the table below, the funding partners contributed a total of $67,500 to the background study and program recommendations to date, and have committed to contribute an additional $271,000 to the implementation phase as follows:

- $95,000 for program delivery and administration; and
- $176,000 towards funding for grants for the first year of the program.

The overall partner contribution is $338,500, compared to the original contribution anticipated in the SIF application of $75,000 for the first three years of program delivery.

In addition to direct funding from partners, the Condominium Homeowners Association (CHOA) has agreed to organize a number of learning events for strata owners, managers, and industry to increase awareness of the Program and educate on the benefits and pathways to more energy efficient and lower emission buildings.

PROGRAM COSTS	Metro Vancouver	Partners	Total
Program Research and Development (completed)	**$32,500**	**$67,500**	**$100,000**
Program Implementation (2017 – 2018)			
Program delivery and administration	$360,000	$95,000	$455,000
Grants for enhanced action	-	$176,000	$176,000
Subtotal, implementation	**$360,000**	**$271,000**	**$631,000**
Total Costs	**$392,500**	**$338,500**	**$731,000**
PROGRAM FUNDING			
Approved Funding in SIF application	$200,000	$75,000	$275,000
Additional Partner Commitment	-	$263,000	$263,500
Additional Metro Contribution*	$192,500	-	$192,500
Total Funding	**$392,500**	**$338,500**	**$731,000**

*Additional request through this report

Through the research and scoping process with the Steering Committee and stakeholder consultation, the scope and budget of the program has been refined to reflect the activities and resources necessary to achieve the program targets. In order to proceed with the next phase of program delivery, staff are seeking funding from the Air Quality Reserves of $192,500 which will combine with additional funding support of $95,000 from member jurisdictions for program implementation, along with a commitment of $176,000 in grants from municipalities to support program implementation in 2017-2018. Alternatives to the request for additional funding are described below.

ALTERNATIVES

1. That the MVRD Board:
   a) direct staff to proceed with the Strata Energy Advisor Program under an expanded scope and budget, as outlined in the report dated June 20, 2017, titled "Strata Energy Advisor Program – Air Quality Reserve Application Request"; and
   b) authorize a contribution from the Air Quality Reserve, in the amount of $192,500, to support detailed design and delivery of the Strata Energy Advisor Program in 2017-2018.

2. That the Climate Action Committee receive the report dated June 20, 2017, titled, "Strata Energy Advisor Program – Air Quality Reserve Application Request" for information and provide alternate direction to staff.

FINANCIAL IMPLICATIONS

The current AQ Reserve fund balance is $2.37 million, and under Alternative 1, there are sufficient resources in the reserve to accommodate the request for additional funding of $192,500 with minimal impact on future budgets. Approving the additional funding at this time builds on the momentum developed and the excellent partnerships built with member jurisdictions, academia, and utilities. Staff is confident the program will be able to meet the targets within the revised budget.

In the absence of additional funding, scaling back of the Strata Energy Advisor program to match available budgets will likely impact on the program effectiveness, as well as on partnerships built with others, which have resulted in significant leveraging of funds.

SUMMARY / CONCLUSION

The Strata Energy Advisor Program is an innovative new program for Metro Vancouver and a first in Canada. Through a consultation process with a multi-stakeholder Steering Committee and key stakeholders, a comprehensive scope of work was developed for an effective strata energy advisor program. The Program has strong partner funding support and the prospect to have significant impact on GHG emissions from strata buildings. However, with the level of interest from partners, the scope of work has expanded. While partner contributions to the Program have also increased with the evolving scope, additional resources are needed to fund Metro Vancouver's portion of the proposed Program. An additional funding contribution from Metro Vancouver will enable the delivery of the program under an enhanced scope. Staff recommend Alternative 1, that the MVRD Board authorize additional funding for the Strata Energy Advisor Program from AQ reserves.

Attachments *(#22037074)*

1. Strata Energy Advisor Program, GVRD Sustainability Innovation Fund Application, July 2015
2. Opportunities and Barriers to Energy Efficiency and Greenhouse Gas Emissions Reductions in Strata Buildings
3. Program Recommendations Report – Metro Vancouver Strata Energy Advisor Program, Executive Summary

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Strata Energy Advisor Program

Recommendation

The Steering Committee recommends funding for this project in the amounts of $50,000 for 2015, $50,000 for 2016, and $100,000 for 2017.

This proposal aligns well with the objectives of the Fund. There is a strong triple bottom line analysis of the contributions to regional sustainability, and good support from key municipalities. The development of stronger relationships with strata corporations – a key anticipated outcome of the initiative – would serve local governments well across a range of functions.

The proposal asked for six years of funding. The Steering Committee does not recommend support for this full period, but does recommend funding up to the proposed mid-point evaluation in year three. Funding for subsequent years could be pursued through a separate Sustainability Innovation Fund application in 2017.

Project Overview

Many of the 5,500 strata buildings in Metro Vancouver are 20 years or older. Provincially-mandated depreciation reports indicate that major renewals and upgrades are necessary to maintain the function and value of many of these older buildings. The project is designed to share information on and provide guidance to renewals and upgrades in order to achieve energy savings and greenhouse gas reductions.

A Strata Energy Advisor would provide interested strata corporations appropriate information services, assistance in constructing a baseline energy assessment, energy and emission saving options, developing business cases, connections to qualified professionals, and information on utility energy rebates and incentives. Experience from other energy advisor programs indicates that a third party advisor, offered by government or utilities, can succeed in gaining the trust of target audiences. During the pilot, the services of a Strata Energy Advisor would be provided at no cost.

The initial phase would involve working with a small number of strata corporations in order to understand the specific advisory services that would be most valuable. In subsequent phases, larger number of stratas would be engaged. The services of an Advisor would be supplemented by outreach to strata members through public meetings, printed materials and on-line resources.

Tangible Benefits and Outcomes

- Reduction in greenhouse gas emissions from buildings. Preliminary research suggests that 100 to 230 strata buildings in the region undertake major retrofits annually, and a 4 to 25% reduction in greenhouse gas emissions is possible through building renewal efforts. (A precise estimate of the potential energy conservation and greenhouse gas emissions reductions would be determined during the program design stage.)
- Development of regional expertise in energy efficient building design and delivery.

Municipal Members and Other Partners

- New Westminster, Richmond, Vancouver, Surrey, City of North Vancouver, Port Moody and UBC – Campus and Community Planning (letters of support)
- The program would be jointly delivered by the Condominium Homeowners Association (CHOA), Metro Vancouver and its member municipalities, with the strong involvement of BC Hydro and Fortis

Projected Expenses

- In 2015: $245,000, including $20,000 in-kind, and $175,000 in partner contributions
- In 2016: $250,000, including $25,000 in-kind and $175,000 in partner contributions
- In 2017: $300,000, including $25,000 in-kind and $175,000 in partner contributions
- In 2018: $350,000, including $25,000 in-kind and $225,000 in partner contributions
- In 2019: $300,000, including $25,000 in-kind and $175,000 in partner contributions
- In 2020: $300,000, including $25,000 in-kind and $175,000 in partner contributions

Amount Requested from GVRD Sustainability Innovation Fund

- In 2015: $50,000
- In 2016: $50,000
- In 2017: $100,000
- In 2018: $100,000
- In 2019: $100,000
- In 2020: $100,000

Innovation Element

The engagement of strata corporations to achieve energy efficiencies from rebuilds and renovations would be an innovation. Building a working relationship with CHOA is considered particularly important. Learning how to effectively engage strata councils would also be important for future policy and program design across local government functions.

Contributions to Regional Sustainability

The program is expected to contribute to reductions in regional greenhouse gas emissions through the adoption of energy efficiency options in renewal projects initiated by strata councils. The project could also make an important contribution to housing affordability in the region. As energy costs rise (BC Hydro plans a 28% rate increase between 2014 and 2019), there will be increased pressure on strata corporations to find ways to increase energy efficiency. Energy efficiency programs also generate local jobs and support local businesses. According to Natural Resources Canada, every dollar spent on energy efficiency programs generates between $4 and $8 of GDP; every $1 million invested in energy efficiency programs creates between 30 and 57 job years (one job for one year.)

OPPORTUNITIES AND BARRIERS TO ENERGY EFFICIENCY AND GREENHOUSE GAS EMISSIONS REDUCTIONS IN STRATA BUILDINGS

OPPORTUNITIES

There are 7200 strata buildings in Metro Vancouver containing more than 300,000 residential units, collectively responsible for more than 800,000 tonnes of GHG emissions per year (5% of regional emissions). GHG emissions are predominantly from energy use for space and water heating.

Every year 4-11% of strata corporations are identified for major building renewal, and the resulting projects affecting heating, mechanical and electrical systems, or building envelope renewal, present important opportunities to increase energy efficiency and reduce GHG emissions. For an individual building, choosing the more energy efficient option when undertaking major upgrades is often a small additional cost relative to the project budget, but can lead to long term energy cost savings and GHG reductions (13-68%) and other benefits (e.g. more comfort, less noise, better indoor air quality, etc.).

Buildings also have lower cost opportunities to reduce energy use during regular maintenance activities, such as adjusting temperature set points of the heating and cooling systems, installing more sophisticated temperature control systems, and regularly checking mechanical systems to ensure they are operating as designed. These simpler measures can reduce energy use by 10-15%.

Actions during major renewals and regular maintenance could result in GHG reductions of more than 25,000 tonnes/year by 2020 and more than 280,000 tonnes/year by 2045. Improved energy requirements in renovation building codes, increased incentives for strata buildings from the energy utilities, and building energy benchmarking would all be complementary tools to a SEA Program.

BARRIERS

Over the past few years, strata corporations have been eligible for a number of incentives offered by the energy utilities, but these programs have seen limited uptake. Similarly consulting engineers are reporting that strata councils and owners are often not choosing higher energy efficiency options for major renewal projects even when the business case appears positive.

As part of the background research that informed the program design, a series of workshops and interviews were conducted with strata owners, managers, and contractors which provide services to strata corporations. This research sought to obtain information on the opportunities and barriers that are preventing strata councils from choosing more energy efficient/low emission options when undertaking regular maintenance and major building renewals.

Through the interviews and focus groups, several barriers unique to strata corporations emerged:

- **Complex decision-making in strata corporations.** Strata councils, property managers, and individual owners all play a decision-making role in major building renewal projects. This makes education, communication, and trust important factors in choosing options that are different from the status quo. As non-experts, the evaluation of options in an often complex topic can be difficult for strata councils and owners. These factors mean that the decision-making process typically takes 6-18 months for major projects. The time

needed to navigate decision-making and bring the level of knowledge necessary to make an informed decision can often negate the incentive for the private sector to actively work with strata buildings.

- **Skeptical View of Contractors and Consultants**. Unless trust has been built over some time, strata councils and owners often take a skeptical view of advice from consultants and contractors that deviates from the status quo. Furthermore, as non-experts, they often have difficulty evaluating the validity of purported costs and benefits of one technical option over another.

- **Financial Constraints.** Strata owners like many property owners in Metro Vancouver are often on tight budgets in today's real estate market. Increasing strata fees or special levies can put additional burdens on strata owners. Thus, strata councils are under pressure to minimize costs in the short-term, sometimes at the expense of long-term savings. Also, for some projects (e.g. upgrade to higher efficiency heating system for common areas), the cost is paid directly by owners (e.g. special levy), but savings accrue to the strata corporation (e.g. lower common area energy bills) and not to individual owners. The "hidden" benefit can sometimes inhibit upfront capital investment.

saving you energy

Program Recommendations Report | Project 7814.043

Metro Vancouver: Strata Energy Advisor Program

To
Mr. Micah Lang, City of Vancouver
Mr. Jason Emmert, Metro Vancouver
Condo Energy Advisor Program
Steering Committee

Submitted August 9, 2016 by
RDH Building Science Inc.
Prism Engineering
FRESCo Building Efficiency

Executive Summary

Background

Metro Vancouver (Metro) and its strategic partners have received funding from the GVRD Sustainability Innovation Fund to create a Strata Energy Advisor (SEA) Program to directly support, or catalyze, energy retrofits for strata housing (condominiums), leading to greenhouse gas (GHG) emissions reductions through the implementation of energy conservation measures (ECMs). Strata properties (or 'stratas'), as defined for participation in this Program, include high-rise (5 stories and above), low-rise (under 5 stories), and townhouse multi-family buildings that are governed by a Strata Corporation. Bare land stratas are not included in this scope. There are over 7,200 existing strata buildings throughout Metro Vancouver, as identified by BC Hydro, the City of New Westminster, and UBC.

The desired outcomes from this research includes:

- → Analyzing greenhouse gas emission reductions over and above current practices in the marketplace;
- → Estimating economic benefits to condo owners and Strata Corporations (stratas) through reduced energy bills achieved by cost-effective building upgrades;
- → Identifying non-energy benefits such as improved comfort, acoustics and building durability;
- → Determining stakeholder priorities; and
- → Prioritizing roles for the SEA that address stakeholder input.

Discussion – Stakeholder Views

As part of this project, a stakeholder engagement process was conducted to:

1. Test assumptions on market context, strata decision making and emission reduction measures;
2. Gather input on design, roles, barriers, communication and engagement tools, and targets; and,
3. Generate interest in the Program to build momentum for a launch.

A total of 101 individuals provided input, including 20 strata unit owners, 15 strata property managers, 11 contractors, 10 energy utility staff persons, 7 non-profit representatives, 14 government representatives (including steering committee members) and 23 consultants.

Input was provided on multiple themes and key considerations were drawn from the responses. The following summary includes the themes, common responses, and selected considerations:

- → Theme: The most common energy related retrofits under current market conditions
  - → Responses: Most commonly mentioned retrofits were lighting and boilers.
  - → Consideration: A trajectory for energy conserving retrofits could include moving from lighting and other visible projects to less visible projects like mechanical equipment.
- → Theme: Typical triggers for energy retrofits

- → Responses: Most commonly suggested triggers were equipment failure, proactive end of life replacement, and energy cost savings.
- → Consideration: Respondents confirmed that equipment and building components are rarely replaced before end of life, and therefore the SEA should have fact sheets and tools available for influencing decisions within the short planning timeframe that equipment replacement typically occurs.

→ Theme: Barriers to implementing energy retrofits

- → Responses: Most commonly suggested barriers were challenging economics (i.e., inadequate returns on investment and long payback periods from energy savings versus capital costs) and short-term thinking (due to the anecdotal estimate of the strata ownership period being seven to ten years).
- → Consideration: Strata owners articulated that energy retrofits should demonstrate a 5 year payback or less. For property managers, they are faced with a disincentive against more complex renewals given the additional time needed to evaluate complex proposals and the additional risk with minimal perceived additional benefit.

→ Theme: Timing issues for retrofits

- → Responses: Most commonly mentioned issue was the long decision making and implementation timeframe for energy retrofit projects (note: stakeholders also provided contradictory information to an earlier question that most retrofits occur at end-of-life, which is sometimes on a short-timeframe).
- → Consideration: At least 3-5 years to gather information, raise capital and achieve acceptance.

→ Theme: Best ways to share information with stratas

- → Responses: Most commonly suggested method to share information was through property managers and the Condominium Home Owners' Association (CHOA).
- → Consideration: The ultimate SEA Program would benefit from positioning property managers as the conduit to strata 'champions', an owner and/or council member who invests time to promote and oversee retrofits.

→ Theme: Roles of the Strata Energy Advisor (SEA)

- → Responses: Many respondents suggested that the SEA should not be a consulting firm or contractor who provides other services and would benefit from the individual projects going forward.
- → Consideration: Given that the most important factor for strata owners is finances and cost-effectiveness, then incentives are needed to reduce the payback period of the desired GHG saving upgrades to targeted levels (i.e., 5 years). Alternatively, decision-making can be informed by the non-energy and financial benefits associated with some ECMs such as improved comfort and building durability.

→ Theme: Roles of other players such as local governments and utilities

- → Responses: Many respondents suggested the role of the local governments should be to provide education to the strata owners and property managers.

- → Consideration: The strata owner sub-group also emphasized the role of incentives to improve financial payback, while the other groups emphasized provision of information.

Program Recommendations

Key considerations for program design options are provided to prepare Metro Vancouver for the development of program strategies and tactics. This will require the development of specific objectives, measurable goals and targets, and more detailed investigation into program tactics. It will also require prioritizing the services the program will provide, ECMs to be pursued, and which type of stratas to offer services to.

The following points summarize the key findings from stakeholder consultations and analysis:

- → The most significant retrofit triggers are building components failing or reaching end of life, cost savings, and the initiative of a strata council member champion. It will be important for the SEA to understand the strata's motivations and priorities.
- → Key barriers include economic concerns, short-term thinking, and lack of knowledge and time on the part of stratas/property managers. Key solutions for addressing barriers include a focus on strategies with the best cost/benefit performance, the SEA providing support for the retrofit process, and educational initiatives that raise awareness and understanding of ways retrofits can address strata's needs.
- → The SEA could focus on two primary strategic objectives to address strata's needs and facilitate the achievement of GHG reductions: (1) awareness building/education and (2) supporting stratas with planning and implementing retrofits.
    - → Awareness and education efforts should focus on stratas and property managers. The Program should help these groups understand the benefits of retrofit projects, the process for undertaking them, and can provide support.
    - → In order to support stratas with planning and implementing retrofits the SEA could help stratas assess their opportunities, procure solutions, develop business cases, and make decisions. Once stratas contract qualified parties to deliver retrofits, the SEA will have a limited role but can provide ongoing advice during and after implementation.
- → The SEA could provide independent advice to stratas to assist them with planning and implementation of retrofits that reduce GHGs. Figure 1 below illustrates the potential core SEA Program elements. Not all stratas will require all program elements. Education and awareness efforts will help engage some new stratas, at which point the SEA will qualify and enrol interested stratas for more additional program services. The triangle depicts an increasing level of specialization of services from top to bottom; and in turn, more focused efforts with fewer stratas.

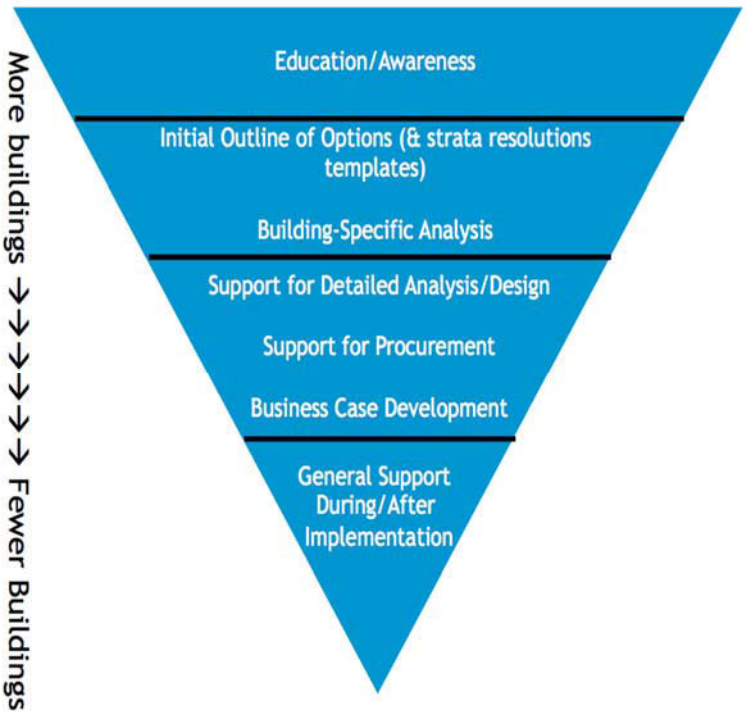

Figure 1: Potential Core Program Elements

- A strategic decision is needed to determine which services are provided by the SEA (fully subsidized, or with strata co-payment), versus those provided by other market players (professionals, consultants, contractors), potentially subsidized by the sponsors (and utilities) via stratas, versus those that are not-subsidized. There are merits in all three approaches; in fact, engaging the broader marketplace of professionals, consultants, suppliers and contractors will provide new leads for strata energy improvement and emission reduction opportunities.
- The triggers for energy retrofits can be divided into four streams, illustrated in Figure 2 below, depending on the strata's interest and the nature of the opportunity:
  - **Simple Cost-Saving Measures:** low-cost opportunities for immediate cost/energy savings. These can include operational measures (e.g. retro-commissioning) or low-cost capital measures (e.g. fireplace timers, low-flow shower heads, and pipe insulation). Some opportunities will not require a vote of the strata membership and will be easier and quicker to implement.
  - **End of Life Retrofits**: energy efficiency upgrades occurring at the time of building renewals (e.g. boilers, make-up air units, windows).
  - **Planning Future Upgrades**: incorporating energy efficiency considerations into capital planning for stratas that already have depreciation reports or are seeking 3-year renewals. This can include providing templates for strata resolutions (developed in collaboration with CHOA) to incorporate energy considerations into future renewal decision-making.
  - **Developing Depreciation Reports**: supporting the development of new depreciation reports that incorporate energy considerations.

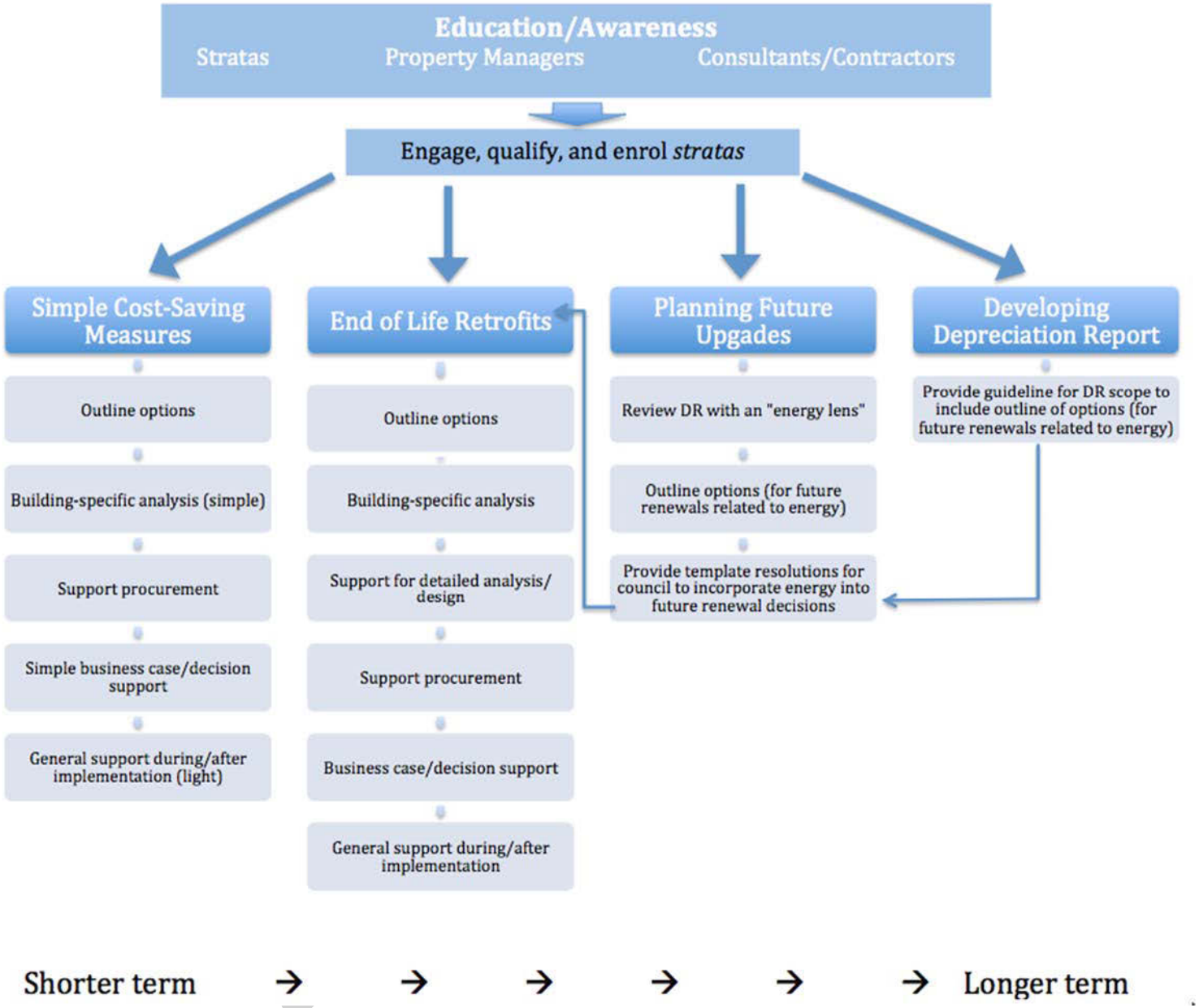

Figure 2: Program Process Diagram

- → The SEA will need to have a broad knowledge base and skillset including communications, financial, and technical skills, as well as industry knowledge and experience working with stratas on energy retrofits. This will likely require a team that has the required diversity of skills.
- → There are numerous options for the organizational framework for the SEA Program, including a local government staffperson, partner organization or contracted team, among others. Key factors in developing this framework are ensuring the SEA is an objective and trusted advisor, ensuring consistent Program quality, and ensuring adequate flexibility and capacity. The SEA should have no potential to financially gain from retrofits by selling products or services to participating stratas.
- → Selecting the right participants for the Program will be key to its success. Participant characteristics involve two major considerations: (1) building attributes and (2) strata attributes.
    - → Building attributes include physical characteristics like heating source, size, and age. Natural gas-heated buildings will tend to have the highest GHG reduction potential, albeit electricity savings yield larger financial benefits to the participating stratas. The Program It should focus on larger buildings, which have greater opportunities for reductions and allow for more cost effective Program delivery. Age is a less important criterion than the timing of the renewal of building components. Optimization can realize savings across buildings of all ages.
    - → Strata attributes are more qualitative and subjective and involve factors that influence a strata's willingness and ability to carry out retrofit projects. Important attributes include stratas that have an internal champion, take a longer-term view of their building, have plans to carry out renewals, have depreciation reports and have the financial capacity and willingness to invest. Property managers can provide support to the SEA in evaluating strata attributes.
- → Collaboration with key stakeholders will be important for supporting a successful SEA Program. These include property managers, strata champions, provincial/local governments, condo associations, and utilities. Professionals, technology providers and contractors currently service virtually all stratas with equipment replacement and building renewals, and therefore could be important promoters of the Program. Post-secondary institutions can also play enabling roles.
- → Strata decision making process: the Program should take into consideration the need for general membership approval of capital upgrade projects and the associated timeframe and level of promotion to achieve this.
- → There are numerous tools and resources that can support the Program. These include educational/informational resources and pre-qualified contractors/ consultants. Policy levers can also be used to further support the breadth and depth of retrofits that are undertaken. Financial levers (e.g. incentives, GHG monetization, financing mechanisms) will be needed to achieve a large number of deep retrofits.
- → To be successful, the Program will need a sufficient timeline. The length of time required will depend on Program goals and the depth of retrofit's being pursued.

Even moderate retrofit objectives will require a three-year term. If the Program's timelines are too short it will not only fail to achieve its objectives, it could negatively impact future retrofit efforts in the sector. Long-term Program operation will enable trust to be built and will increase the opportunities for more and deeper retrofits over time.

→ An effective Program will help meet local governments' aggressive GHG reduction goals and have numerous co-benefits such as increased affordability and economic development and job creation.

Market Analysis and Emission Reduction Options

The distribution of stratas in each municipality of Metro Vancouver was determined from a number of sources. Furthermore, analysis was conducted on typical strata building renewals over a 30-year timeframe from a database of 500 properties, considered representative of the stratas across the region. These renewals affected one or more of the following six systems within the buildings:

1. Wall assembly
2. Windows and glazing
3. Roof
4. Heating systems, including common area spaces and in-suite
5. Ventilation systems, including fresh air, exhaust and associated tempering
6. Domestic hot water

In-depth analysis was completed of energy conservation measures (ECMs) that provide the basis for reductions in energy consumption and greenhouse gas emissions. A total of 28 technologies, high performance building components, systems and associated operating procedures were analyzed to determine their relative impact, as compared to current energy consumption and emissions, for six typical strata building types and primary space heating fuels.

Three tiers of ECM upgrades for each of the six building systems were established, differing from baseline conditions:

→ Tier 1: "Normal Renewals" that reflect the ECMs that are typically specified in the current marketplace during major building asset renewals. This tier is assumed to occur without any intervention of a Strata Energy Advisor or other program. It is acknowledged that normal renewals provide energy and emission reduction benefits and include a substantial capital investment.

→ Tier 2: "Energy Retrofits" that are incremental to common practice and reflect responses to utility incentive programs such as the FortisBC Efficient Boiler Program or Commercial Custom Program – Retrofit Projects. These require an additional capital investment, but also provide energy saving benefits that often exceed incremental costs.

→ Tier 3: "Comprehensive Energy Retrofits" that optimize the energy savings and emission reductions over the 30-year timeframe.

When multiple ECMs are implemented, the energy saving and emission reduction benefits of some of the ECMs would be degraded by others due to "cross-effects". For example, a combination of airtightness improvements, more insulation, better windows and new space heating appliances would have lower savings compared to the sum of those ECMs

on their own. This is due to the fact that a building with lower heat loss would have a lower space heat demand from a boiler or make-up air unit.

Under the analysis, multiple ECMs were "bundled" to estimate the total potential impact of implementing retrofits under the SEA Program. The bundling can be done in a single building renewal project; or it can be installed over several years in a sequencing fashion to reflect planned building asset renewals. Either way, at the end of the installation period, the ECMs working in unison will have different impacts than by themselves.

The following conclusions were drawn from the analysis of emission reduction options.

Building stock affected

- An estimated 21,700 residential units are expected to be affected by major building renewals to mechanical systems (space heating, ventilation and hot water) every year, based on the review of 500 depreciation reports and extrapolated to the building stock in the whole region. 19,700 residential units will be affected by roof replacement, 16,000 window replacement and 11,900 wall/cladding renewals.
- These figures represent between 4% and 11% of Metro Vancouver's residential units each year, depending on system type and building type.

Greenhouse Gas Emission reduction potential from ECMs:

- Preliminary technical and economic analysis illustrates that the largest emission reduction ECMs are (and tonnes/unit/year for low-rise, natural gas-heated MURBs):
  - Replace gas fireplaces with 80% efficient ones, 10.8 tonnes per unit
  - Triple-glazed, low conductivity windows, 8.7 t/unit
  - Install heat recovery, 4.8 to 7.8 t/unit, depending on HRV efficiency
  - Replace boiler with condensing equipment, 6.3 t/unit
  - Double-glazed, low conductivity windows, 6.3 t/unit
  - Gas fireplace timers, 6 t/unit
  - Add R10 to walls, 5.4 t/unit
  - Improved airtightness, 5.2 t/unit
- With ECMs bundled together over a period of time, GHG emission reductions of between 16% and 27% are possible through "normal renewals" (tier 1 bundle of ECMs) for natural gas heated buildings and 0-13% for buildings with electric heating in suites.
- Reductions of 30-63% are possible for the "energy retrofit" tier 2 bundled ECMs for gas heated buildings and 13-23% for electrically heated buildings.
- Reductions of 45-68% are possible for the "comprehensive energy retrofit" tier 3 bundled ECMs for gas heated buildings and 19-42% for electrically heated buildings.
- Region-wide emission reductions in 2020 are estimated to be 9,500 tonnes, 25,200 tonnes, or 36,400 tonnes for tier 1, 2 and 3 bundles respectively. It is anticipated that the SEA Program could support an increased level of emission reductions from Tier 1 (current practices, occurring in the base of the SEA Program) to Tier 2 (energy retrofits) levels. Tier 3 emission reductions will require substantial market

transformation efforts, many beyond the scope of the SEA Program, involving actions of utilities and all levels of government.

- → Region-wide emission reductions in the year 2030 are estimated to be 33,100 tonnes, 88,100 tonnes, or 127,500 tonnes for tiers 1, 2 and 3 respectively.
- → Region-wide emission reductions in the year 2045 are estimated to be 68,600 tonnes, 182,500 tonnes, or 264,100 tonnes for tiers 1, 2 and 3 respectively – near the end of the 30 year timeframe for the analysis conducted through this project.
- → In addition, the "retro-commissioning" ECM (or re-commissioning), along with in-suite measures (such as timers) could target buildings not undertaking major system renewals.
- → Retro-commissioning measures that tune-up the building systems to reflect current operating conditions could reduce GHG emissions by 6,400 tonnes to 32,000 tonnes, if applied to 10% and 50% of the entire multi-unit residential building stock (excluding townhouses), respectively. The "measure life" for these reductions is assumed to be five years, requiring re-investment of efforts in subsequent periods. Furthermore, if major system renewals are completed (as per the other tiers), some of the retro-commissioning savings would be hard-wired with new controls and systems.

Estimated economic benefits to condo owners and Strata Corporations through reduced energy bills and cost-effective building upgrades:

- → Incremental capital costs of the individual ECMs vary from $2 per residential unit (for make-up air unit warm weather shut down control) to $5,600 (for an 85% efficient, in-suite heat recovery ventilation system).
- → 75% of the ECMs reviewed are "cost-effective" for at least some of the building types, meaning they have an internal rate of return that is greater than 7%, the nominal discount rate used for this analysis. These ECMs deliver net financial benefits to stratas through energy bill savings, over and above capital costs. The top ECMs for cost-effectiveness are:
  - → Activate warm weather MUA shutdown – IRR range of 177% and 219% among the four applicable building types (excluding townhouses).
  - → Programmable controller for MUA – IRR range of 196% and 209% among two applicable building types (high-rise).
  - → Improved airtightness – IRR range of 7% to 206% among all six building types.
  - → Reduce MUA heating supply setpoint – IRR range of 51% to 199% for four building types.
  - → Drainwater heat recovery – IRR range of 37% to 89%.
  - → Retro-commissioning – IRR range of 45% and 79% among four applicable building types.
- → The IRRs for building enclosure measures were better for electrically heated buildings, due to higher rates.
- → Energy bill savings for the ECMs in the year 2030 were as high as $309 per residential unit per year (for retro-commissioning, due to the extensive electricity savings).

Potential non-energy benefits such as improved comfort, acoustics and building durability

- The preliminary balanced scorecard analysis included review of financial/energy related criteria, along with non-energy benefits such as improved comfort, acoustics, indoor air quality and building durability.
- The top ECMs identified through the scorecard were:
  - Improved airtightness. Score of 66/120.
  - Installation of HRVs. Score of 45.
  - Programmable controller for MUA fan and schedule. Score of 37.
  - R10 continuous wall insulation. Score of 36.
  - Activate warm weather shutdown. Score of 35.
  - Triple glazed windows. Score of 34.
  - Retro-commissioning. Score of 34.
- These conclusions are similar to the cost-effectiveness ones above, with more building enclosure measures that provide non-energy benefits.

Contents

Summary of the Background Study, Program Design Recommendations, and Project Case Study Examples

BACKGROUND STUDY

In 2015, a Project Steering Committee was established including Metro Vancouver, member municipalities (New Westminster, Surrey, Vancouver, City of North Vancouver, Richmond, and Coquitlam), Condominium Home Owners Association (CHOA), BC Hydro, Fortis BC, and BC Housing (joined in 2017). The Project Steering Committee confirmed the following broad program objectives:

- Reduce greenhouse gas emissions from strata buildings when they are undertaking regular maintenance (e.g., light re-commissioning), replacing major equipment, and planning and executing renewal projects;
- Build knowledge and capacity among strata communities to undertake energy upgrade projects in their buildings.

As part of the program design phase, the Steering Committee recommended to commission a background study and program recommendation to inform the program design. This research would support the development of a detailed scope of services for the Strata Energy Advisor Program and help calibrate the expected outcomes from the pilot program.

The background study included the following:

- **Literature and data review** – Reviewed data sources from utilities, BC Assessment, and consulting team projects, along with studies on energy and emission reduction opportunities for strata buildings.
- **Market context analysis** – Analysis of market indicators such as number of strata buildings and residential units by municipality, building type and space heating fuel; also included was an in-depth review of approximately 500 depreciation reports to determine typical building asset renewal cycles by building type.
- **Energy Conservation Measures (ECM) analysis** – Technical and economic analysis of ECMs to estimate reductions in greenhouse gas emissions, including "bundling" of measures to determine energy savings and emission reductions as well as the prioritization of ECMs on the basis of cost efficiency. Market statistics were used to extrapolate Metro Vancouver-wide benefits and costs of three tiers of ECMs for various building systems.
- **Strata decision-making** – Summary of typical decision-making processes of Strata Corporations regarding building retrofits and energy management, along with the influence of other stakeholders such as Property Managers and utilities.
- **Stakeholder engagement** – Stakeholder consultations (interviews, workshops, and a survey) that focused on receiving input on strategic research questions to inform program design.
- **Research on other programs** – Review of the materials and experience of other energy and emissions programs for rental buildings (BC, Ontario) and strata buildings (Australia) to inform program design.
- **Program design recommendations** – Workshop with Steering Committee to define the appropriate scope of the SEA Program and compile strategic level recommendations for program design.

Some of the main findings that emerged from the background study and the stakeholder engagement were:

1) **Strata buildings have many opportunities to reduce energy use and GHG emissions**
   There are more than 7,200 strata corporations in Metro Vancouver and every year, dozens of strata buildings in the region undertake major renewal projects that present opportunities to significantly reduce energy use and GHG emissions. According to the background analysis and discussions with stakeholders in the industry, most of those opportunities are missed. Some of examples of energy conservation measures (ECM) that can be quite cost effective when included as part of larger renewal projects include:

   - Upgrading to better performing, energy efficient windows;
   - Adding additional insulation to roofs or walls;
   - Upgrading to highly efficient boilers and ventilation systems;
   - Installing fireplace timers (or in unit gas metering).

   Other ECMs could be implemented as part of regular maintenance and regular renewal projects such as:

   - Adding piping insulation;
   - Installing new control systems for hot water and space heating;
   - Installing water saving fixtures.

   Many of these opportunities have good business cases (a payback of less than 5 years and/or an internal rate of return higher than 7%) and will significantly reduce GHG emissions. By bundling these measures together during a major project, it is possible for buildings to reduce their GHG emissions by 15-70%. Some of the measures have low upfront cost (e.g., $2 per strata unit for upgrading the electronic controls on the building ventilation system) while others require more upfront capital investment for longer term savings on energy bills (e.g. high efficiency boilers or new windows). Certain measures can save up to $300 per unit per year in energy costs (e.g., building energy tune-ups).

2) **Complexity of decision-making in strata corporations**
   The nature and complexity of strata corporation decision-making was cited as the most common barrier to strata corporations choosing more energy efficient and lower GHG emission options when undertaking regular maintenance and building renewal projects. Strata councils, property managers, and individual owners each play key roles in decision-making for building retrofit projects, requiring that each clearly understand the cost and benefits of a proposed approach. Strata Councils draft budgets, identify projects, and approve expenditures within the annual budgets. Property managers often serve as gatekeepers ensuring that the relevant information is presented and explained to strata councils. A majority of individual owners must approve annual strata budgets and major projects which necessitate a special levy or an increase in strata fees require approval from 75% of individual owners.

   The time needed to navigate the decision-making process and the effort required to bring council and owners' understanding to a level necessary to make an informed decision often

negates the financial incentive for the private sector contractors to proactively pitch energy efficient solutions that differ too much from the status quo, even if there is a good business case. In the interviews, a number of consultants recounted projects in which they had gone through the effort to put together quotes for strata councils for the higher efficiency products that had a good business case. In the end, strata councils or owners instead chose the standard equipment due to its lower upfront cost.

3) **Skeptical View of Contractors and Consultants**
Strata councils and strata owners are often skeptical of advice from consultants and contractors especially when they present options that they are unfamiliar with, and/or that require higher upfront capital costs. Unless trust has been built with consultants over some time and through successful delivery of projects, strata councils often choose contractors based on lowest immediate cost.

4) **Importance of a Trusted, Independent Advisor**
As non-experts, it can be difficult for strata councils and owners to evaluate the validity of purported costs and benefits options of one technical option over another. A trusted third party Energy Advisor can provide information, tools and advice that give strata councils and owners enough confidence and knowledge to request and evaluate energy efficiency and emissions reduction options from their consultants.

5) **Financial Constraints**
Strata owners, like many property owners in Metro Vancouver, are often on tight budgets. In undertaking their fiduciary responsibility on behalf of owners, strata councils are sensitive to the additional burden that increased strata fees or special levies can put on strata owners. If strata councils are asking owners to spend more capital upfront on energy efficiency for longer-term energy savings, they need to present a strong case that is communicated in a way that owners can clearly understand the cost and benefits. Otherwise, the pressure is to minimize costs in the short-term at the expense of long-term savings. In fact, the consultation revealed a number of examples of energy efficiency projects with good business cases that were rejected by owners. At the same time, a number of strata council members indicated that even small financial incentives or new information can motivate strata councils to consider actions or options they otherwise might have dismissed.

PROGRAM DESIGN RECOMMENDATIONS

Based on the findings of background study and the stakeholder consultation and input from the Steering Committee, the consultant team presented the following recommendations for Program Design:

- The SEA program should focus on **two primary strategic objectives** to address strata needs and facilitate the achievement of GHG reductions: (1) awareness building/education, and (2) supporting stratas with planning and implementing retrofits.

    - Awareness and education efforts should **focus on strata councils and property managers**. The Program should help these groups understand the benefits of retrofit projects, the process for undertaking them, and the types of support available.

- The SEA could provide **independent advice to stratas to assist them with planning and implementation of retrofits** that reduce GHGs. In order to support stratas with planning and implementing retrofits the SEA could help stratas assess their opportunities, procure solutions, develop business cases, and make decisions. Once stratas contract qualified parties to deliver retrofits, the SEA will have a limited role but can provide ongoing advice during and after implementation.
- **Not all stratas will require all program elements.** Education and awareness efforts will help engage some new stratas, at which point the SEA would qualify and enroll interested stratas for more additional program services.

- Key barriers for stratas include **economic concerns, short-term thinking, and lack of knowledge and time** on the part of stratas/property managers. Solutions for addressing barriers include a focusing on strategies with the **best cost/benefit performance**, the SEA providing **support for the retrofit process**, and educational initiatives that **raise awareness and understanding** of ways retrofits can address strata's needs.

- The **most significant retrofit triggers** are the failure of building components or end of life replacement/renewal, cost savings, and the initiative of a strata council member champion. It will be important for the SEA to understand the strata's motivations and priorities for each of these scenarios.

- The energy retrofits can be divided into four streams:
  - **Simple Cost-Saving Measures**: low-cost opportunities for immediate cost/energy savings. These can include operational measures (e.g., retro-commissioning) or low-cost capital measures (e.g., fireplace timers, low-flow shower heads, and pipe insulation). Some opportunities will not require a vote of the strata membership and will be easier and quicker to implement.
  - **End of Life Retrofits:** energy efficiency upgrades occurring at the time of building renewals (e.g., boilers, make-up air units, windows).
  - **Planning Future Upgrades**: incorporating energy efficiency considerations into capital planning for stratas that already have depreciation reports or are seeking 3-year renewals. This can include providing templates for strata resolutions (developed in collaboration with CHOA) to incorporate energy considerations into future renewal decision-making.
  - **Developing Depreciation Reports:** supporting the development of new depreciation reports that incorporate energy considerations.

- The SEA will need to have a broad knowledge base and skillset including **communications, financial, and technical skills**, as well as industry knowledge and experience working with stratas on energy retrofits. This will likely require a team that has the required diversity of skills.

- There are numerous options for the organizational framework for the SEA Program, including a local government staffperson, partner organization or contracted team, among others. Key factors in developing this framework are ensuring the SEA is an **objective and trusted advisor**, ensuring consistent Program quality, and ensuring adequate flexibility and capacity. The SEA should have **no potential to financially gain from retrofits** by selling products or services to participating stratas.

- **Selecting the right participants** for the Program will be key to its success. Participant characteristics involve two major considerations: (1) building attributes and (2) strata attributes.
  - Building attributes include physical characteristics like heating source, size, and age. Natural gas-heated buildings will tend to have the highest GHG reduction potential, albeit electricity savings yield larger financial benefits to the participating stratas. The Program should focus on larger buildings, which have greater opportunities for reductions and allow for more cost effective Program delivery. **Age is a less important criterion than the timing of the renewal of building components.** Optimization can realize savings across buildings of all ages.
  - Strata attributes are more qualitative and subjective and involve factors that influence a strata's willingness and ability to carry out retrofit projects. Important attributes **include stratas that have an internal champion**, take a longer-term view of their building, have plans to carry out renewals, have depreciation reports and have the financial capacity and willingness to invest. Property managers can provide support to the SEA in evaluating strata attributes.

- **Collaboration with key stakeholders will be important** for supporting a successful SEA Program. These include property managers, strata champions, provincial/local governments, condo associations, and utilities. Professionals, technology providers and contractors currently service virtually all stratas with equipment replacement and building renewals, and therefore could be important promoters of the Program. Postsecondary institutions can also play enabling roles.

- **Strata** decision making process: the Program should **take into consideration the need for general membership approval of capital upgrade projects** and the associated timeframe and level of promotion to achieve this.

- There are numerous **tools and resources that can support the Program**. These include educational/informational resources and pre-qualified contractors/ consultants. Policy levers can also be used to further support the breadth and depth of retrofits that are undertaken. Financial levers (e.g., incentives, GHG monetization, financing mechanisms) will be needed to achieve a large number of deep retrofits.

- To be successful, the Program will need a **sufficient timeline**. The length of time required will depend on Program goals and the depth of retrofits being pursued. Even moderate retrofit objectives will require a three-year term. If the Program's timelines are too short it will not only fail to achieve its objectives, it could negatively impact future retrofit efforts in the sector. **Long-term Program operation will enable trust to be built and will increase the opportunities for more and deeper retrofits over time**.

- An effective Program will help meet local governments' aggressive GHG reduction goals and have **numerous co-benefits such as increased affordability and economic development and job creation**.

References:

1. *Deep Condo Retrofit - Context and Analysis Report* – RDH Building Science
2. *Program Recommendations Report – Metro Vancouver Strata Energy Advisor Program* – RDH Building Science

Strata Energy Advisor (SEA) Program
Project Case Study Examples

Example 1: Building Envelope Refurbishment Project

Business as Usual

Strata hires engineering consultant who discusses options for window and wall repair

Strata chooses least cost option that meets the requirements and considerations of owners**. Energy efficiency not considered**

Strata hires contractors to install standard windows and conduct basic concrete repair

Strata's Building Envelope Assessment Report indicates that windows need to be replaced and concrete walls repaired

Example Business Case

- 37 unit high-rise strata building with gas heated common areas and electrically heated suites
- Requires replacement of windows and repairs to building's concrete walls

Energy Efficiency and GHG Reduction Options

- **BAU option** – replace with conventional windows, no air sealing or additional wall insulation and cladding ($3.5 million)
- **Higher energy efficient option** – new triple glaze windows, whole building air tightness improvements and additional wall insulation and cladding, 1.7% higher costs (additional $60,000).
  - *Annual Cost Savings* (e.g. energy, carbon tax, etc.): $25,000/yr and 2 year payback
  - *GHG reductions:* 5.3 tonnes per year (212 tonnes over 40 years)
  - *Other benefits*: quieter and more comfortable units (more consistent temperature), improved indoor air quality, reducing energy loads can enable future renewable energy supply options

SEA Support

Strata Council member reads CHOA newsletter article about contacting SEA before undertaking major building project

Strata council member registers on the SEA website and conducts phone consultation with SEA about options when replacing

SEA give presentation to strata council on energy efficiency for building envelope

SEA supports strata council to develop business case

Strata hires engineering consultant for project

Business as Usual

Property manager gets quotes for new boiler

Strata chooses least cost quote that meets the necessary requirements from reputable company. **Energy efficiency not considered**

Strata hires company to replace boiler with standard mid-efficiency boiler

Building's boiler is reaching the end of its life and needs to be replaced

Example Business Case

- 66-unit low rise strata building (gas heated common area and suites) is planning the replacement of its boiler

Energy Efficiency and GHG Reduction Options

- **BAU** – Replace with standard mid-efficiency boiler ($50,000)
- **Higher energy efficient option** – Replace with high efficiency condensing boiler, 60% higher cost (an additional $30,000)
  - *Annual Cost Savings* - $4,300/yr and 7 year payback)
  - *GHG reductions* - 30 tonnes/yr (750 tonnes over 25 years)
  - *Other benefits* – longer operational life of the boiler (25 years instead of 10 years)

SEA Support

Property manager receives bill insert about SEA program in strata's utility bill

Property manager registers on the SEA website and conducts phone consultation with SEA about options and incentives for high efficiency boilers

Property manager presents info to strata council. Council decides to develop business case

SEA supports property manager and council to develop business case

Property manager gets quotes for new *high efficiency* boiler

SEA supports property manager to apply for incentives from utilities

To: Climate Action Committee

From: John Lindner, Air Quality Planner
Parks, Planning and Environment Department

Date: August 29, 2017 Meeting Date: September 20, 2017

Subject: **Consultation on Potential Amendments to the Metro Vancouver Automotive Refinishing Emission Regulation Bylaw**

RECOMMENDATION

That the MVRD Board:

a) receive for information the report titled "Consultation on Potential Amendments to the Metro Vancouver Automotive Refinishing Emission Regulation Bylaw" dated August 29, 2017; and
b) direct staff to initiate consultation on potential amendments to *Greater Vancouver Regional District Automotive Refinishing Emission Regulation Bylaw No. 1086, 2008,* based on the Discussion Paper attached to the report titled "Consultation on Potential Amendments to the Metro Vancouver Automotive Refinishing Emission Regulation Bylaw" dated August 29, 2017.

PURPOSE

This report seeks MVRD Board approval to initiate consultation on potential amendments, including updates to regulatory scope, standards and requirements, to the *Greater Vancouver Regional District Automotive Refinishing Emission Regulation Bylaw No. 1086, 2008* (*Bylaw 1086*).

BACKGROUND

The Metro Vancouver *Board Strategic Plan* directs staff to "identify the key threats to the region's air quality and their sources, and pursue appropriate means for reducing or eliminating identified threats." Air contaminants emitted from motor vehicle and mobile equipment refinishing (vehicle/equipment refinishing) include volatile organic compounds (VOCs), hazardous air pollutants (HAPs) and particulate matter (PM), all of which are associated with adverse health and environmental effects.

The provisions in *Bylaw 1086* were first established in 2001 to regulate emissions from automotive refinishing facilities, the most common type of vehicle/equipment refinishing facility. On January 18, 2017, the Climate Action Committee endorsed its Work Plan that directed staff to initiate consultation on proposed amendments to *Bylaw 1086*.

EMISSIONS FROM VEHICLE/EQUIPMENT REFINISHING

VOCs are a class of compounds found in the cleaners and coatings used in vehicle/equipment refinishing. VOCs react with nitrogen oxides in the presence of sunlight to form ground-level ozone, a principal constituent of smog and associated air quality and health impacts in the region. In 2014, Metro Vancouver collaborated with federal, provincial and local government agencies to develop a *Regional Ground-Level Ozone Strategy* to build on efforts to reduce ozone levels in Metro Vancouver and the Fraser Valley Regional District. Work conducted in support of this strategy found that vehicle/equipment refinishing is one of the sources of VOC emissions (900 tonnes or 2% of the regional total amount annually) that may contribute to the formation of ground-level ozone in the

region. Ozone is implicated in adverse health effects, including the aggravation of heart and lung disease, and negative environmental impacts, such as crop and vegetation damage.

In addition, some VOCs and other components in vehicle/equipment refinishing products are known or suspected to be hazardous air pollutants (HAPs). HAPs are associated with a variety of adverse health effects, including cancer and neurological, reproductive and developmental issues. Metro Vancouver manages discharges of HAPs at large industrial facilities and has also commissioned studies on HAPs of concern in the region, as a basis for policy development.

The other major air contaminant discharged by these activities is particulate matter (PM). Emissions of PM can occur due to paint overspray, which is controlled by exhaust filters in spray booths, and from abrasive removal of paint. These emissions have historically led to complaints from neighbouring businesses and residents. A component of PM, fine particulate matter or $PM_{2.5}$, is of particular concern because of its association with chronic and acute respiratory and cardiac issues.

POTENTIAL BYLAW AMENDMENTS

Some of the requirements of *Bylaw 1086* no longer represent best management practices for the industry. Furthermore, some provisions create uncertainty and some comparable activities are not covered by the existing regulation. Potential amendments have been scoped to address the identified limitations of the current regulation, and are intended to meet the following objectives:

1. Reflect best management practices in the industry and other leading jurisdictions in North America;
2. Reduce health risk by reducing the quantity of ozone pre-cursors, PM, and known or suspected HAPs discharged into the air by vehicle/equipment refinishing activities;
3. Standardize requirements so regulation of emissions is applicable to operations conducting similar activities; and
4. Update regulatory requirements to improve clarity, simplify enforcement and reduce uncertainty for the regulated community.

Staff propose to consult on potential amendments to the scope of the regulation, filter requirements, product formulation standards, training, and administrative requirements as described in detail in the attached Discussion Paper and summarized below.

Expanding the Regulatory Scope of Coating and Cleaning Activities

Staff propose to consult on a proposed expansion of the scope of the regulation. Proposed potential changes would bring the following under the regulation:

- Vehicle/equipment refinishing activities conducted on motorcycles and any mobile equipment that can be pulled or driven on roads or rails (e.g. trains, railcars, mobile cranes, bulldozers, etc.);
- Paint mixing and surface preparation activities conducted prior to coating application (e.g., wax degreasing, paint removal, sanding, sand/abrasive blasting, and chemical stripping);
- Vehicle/equipment refinishing activities conducted in exterior locations at stationary vehicle/equipment refinishing facilities; and
- Vehicle/equipment refinishing activities conducted by mobile vehicle/equipment refinishing operations.

Widening the regulation's scope would ensure that regulatory requirements apply equally to operations conducting activities similar to the automotive refinishing facilities currently covered by *Bylaw 1086* and would align with best practices elsewhere. The expanded scope would not include detailing, mechanical or windshield repair facilities unless they also conduct coating activities.

Formalization of regulatory requirements for non-coating activities is also proposed for consideration, whereby non-coating activities (primarily surface preparation) may be conducted without PM emission controls as long as the emitted PM does not migrate beyond property boundaries. However, the district director would have the authority to require controls.

Updating Filter Requirements

Filters that are incorrectly installed or maintained, or otherwise insufficiently capture paint overspray can result in excess $PM_{2.5}$ emissions. *Bylaw 1086* requires "effective 2-stage" filtration but "effective" has been challenging to confirm. Potential changes to the regulation would require that spray booth exhaust filters:

- Are installed in accordance with manufacturer's instructions, and are either 2-stage, rated to capture 98% of paint overspray, or are as approved by the district director; and
- Be changed when saturated or pulling away from frame edges, or as directed by an Environmental Regulation & Enforcement (ER&E) officer or the district director.

Modernizing Product Formulation Standards

Federal requirements for vehicle/equipment refinishing product formulation standards were established in 2009. Bylaw amendments need to at least reflect these requirements, however cleaners and coatings are available that contain lower VOC and HAP levels than the federal requirements. Staff propose to consult on potential requirements in Metro Vancouver to match the most stringent industry standards for cleaners and coatings. This would align with the strictest requirements in North America, which are currently in force in Los Angeles and San Francisco.

Preliminary research by staff suggests that the cost differences associated with meeting the Los Angeles/San Francisco standards would be expected to be low (less than 1% increase in coating costs), with no concerns about durability and availability. However, it has also been indicated by an industry association that there may be larger cost implications. Proposed consultation would allow further input to be sought on this matter from industry associations and businesses.

It is anticipated that any new product formulation standards included in bylaw amendments would be phased in over time to reflect the typical shelf life of products used.

Expanding Training Requirements

Bylaw 1086 requires that operators (owners and managers) ensure that their technicians complete a recognized environmental training program within one year of hire; however, technician re-certification and operator training are not currently required. Potential changes include requirements that:

- Operators ensure their technicians re-certify in environmental training every 2 years; and
- Environmental training is completed by operators.

These provisions would help to maintain current knowledge of regulatory requirements.

Updating Bylaw Administration and Clarifying Requirements

Proposed potential changes to administrative requirements include changes to the annual fee, which has remained $200 since *Bylaw 1086* was adopted in 2008, to ensure recovery of the costs associated with administering the regulation. Potential changes would also incorporate increases in the annual fee on either an annual basis or on a fixed schedule such as every 5 or 10 years.

Additional potential changes would require all operators and technicians to provide identification if requested by ER&E officers during an inspection and specify the calculation method for VOC concentrations of cleaners and coatings. Other minor clarifications include:

- Adding language about how facilities can cancel or suspend their registration;
- Updating record keeping requirements;
- Updating housekeeping rules to reflect best practices elsewhere;
- Updating the written style of the regulation to improve ease of use;
- Updating definitions and, where applicable, harmonizing definitions with other legislation, such as Metro Vancouver bylaws and federal regulations; and
- Removing clauses that are no longer relevant.

CONSULTATION PROCESS AND TIMELINES

Staff propose to conduct targeted consultation in November and December 2017 to obtain feedback on the potential amendments described in the attached Discussion Paper. The Discussion Paper will be made available online and highlighted on the Metro Vancouver registration website for vehicle/equipment refinishing facilities. It would also be sent by mail to registered vehicle/equipment refinishing facilities. It is proposed that a brochure summarizing the potential changes will also be made available in several languages to registered vehicle/equipment refinishing facilities.

Planned consultation activities include two facilitated webinars and meetings with industry associations, product manufacturers, distributors, vehicle/equipment refinishing facilities, health authorities, and other interested parties. Where possible, Metro Vancouver would also seek to participate in any relevant industry conferences or symposia occurring in the region.

Staff intend to present a summary of feedback from the consultation in early 2018. If the consultation feedback indicates stakeholder support on the amendments presented in the Discussion Paper, staff anticipate presenting an amending bylaw for consideration in the first half of 2018.

ALTERNATIVES

1. That the MVRD Board:
   a) receive for information the report titled “Consultation on Potential Amendments to the Metro Vancouver Automotive Refinishing Emission Regulation Bylaw” dated August 29, 2017; and
   b) direct staff to initiate consultation on potential amendments to *Greater Vancouver Regional District Automotive Refinishing Emission Regulation Bylaw No. 1086, 2008,* based on the Discussion Paper attached to the report titled “Consultation on Potential Amendments to the Metro Vancouver Automotive Refinishing Emission Regulation Bylaw” dated August 29, 2017.
2. That the MVRD Board receive for information the report titled “Consultation on Potential Amendments to the Metro Vancouver Automotive Refinishing Emission Regulation Bylaw” dated August 29, 2017 and provide alternate direction to staff.

FINANCIAL IMPLICATIONS

Under Alternative 1, the resources needed for the proposed consultation program have been approved within the program budget for 2017. Regulation development costs have been put forward as part of the 2018 and longer term budget planning.

The proposed changes to *Bylaw 1086* include measures intended to improve the effectiveness of regulating vehicle/equipment refinishing activities. In addition, incorporating periodic adjustments to annual fees will improve recovery of the costs associated with administering the regulation.

SUMMARY / CONCLUSION

Vehicle/equipment refinishing facilities in Metro Vancouver release air contaminants associated with adverse health effects. Metro Vancouver adopted *Bylaw 1086* to regulate emissions from these facilities under our air quality management mandate. Some of the provisions in *Bylaw 1086* no longer follow best management practices for the industry; furthermore, some related activities are unregulated and some provisions create uncertainty.

Staff recommend Alternative 1, to initiate consultation with stakeholders on potential amendments to *Bylaw 1086*. The potential amendments would help to reduce adverse environmental and health effects, demonstrate continuous improvement and ensure that the regulation of emissions is applicable equally to operations conducting like activities with the same types of materials.

Attachment:

Discussion Paper on Potential Amendments to the Metro Vancouver Automotive Refinishing Emission Regulation Bylaw *(orbit # 23239019)*

23239117

Discussion Paper

Potential Amendments to the Metro Vancouver Automotive Refinishing Emission Regulation Bylaw

Introduction

Metro Vancouver Regional District (MVRD, operating as Metro Vancouver) is responsible for managing air quality and regulating the discharge of air contaminants in the region under authority delegated from the provincial government in the *Environmental Management Act*. Under this authority the Metro Vancouver Board of Directors adopted the *Automotive Refinishing Emission Regulation Bylaw No. 1086, 2008* (*Bylaw 1086*) to regulate the discharge of air contaminants from automotive refinishing facilities. Automotive refinishing is the most common form of motor vehicle and mobile equipment refinishing (vehicle/equipment refinishing).

Vehicle/equipment refinishing involves the application or removal of cleaners or coatings as part of maintaining, repairing, restoring or modifying motor vehicles and mobile equipment, and their parts or components. The air contaminants emitted by these activities include volatile organic compounds (VOCs), hazardous air pollutants (HAPs) and particulate matter (PM), all of which are associated with adverse health effects.

Purpose

This discussion paper describes the impacts of air contaminants discharged from vehicle/equipment refinishing in the Metro Vancouver region, outlines the regulatory measures in place in the region and elsewhere to address these discharges, and summarizes the potential amendments under consideration to reduce emissions in the region from this sector.

Metro Vancouver prepared this discussion paper for groups with an interest in the vehicle/equipment refinishing industry and regional air quality, as well as members of the general public. People interested in these matters may include representatives of:

- Mobile and stationary vehicle/equipment refinishing facilities;
- Motor vehicle and mobile equipment dealerships and rental agencies;
- Vehicle/equipment refinishing product distributors, manufacturers and associated retail outlets;
- Industry associations and related consultants;
- Other government agencies, including public health and workplace safety agencies; and
- Educational institutions with vehicle/equipment refinishing programs.

Representatives of the above groups will be invited to comment on the potential amendments presented in this discussion paper. Opportunities to provide feedback will be provided through in-person meetings, facilitated online webinars as well as online feedback forms.

Defining the problem

VOCs are a class of compounds found in the cleaners and coatings used in vehicle/equipment refinishing that can be released to the air through evaporation. VOCs can react with nitrogen oxides in the presence of sunlight to produce ground-level ozone, which is a key focus of Metro Vancouver's air quality program. In 2014, Metro Vancouver collaborated with federal, provincial and local government agencies to develop a *Regional Ground-Level Ozone Strategy* to reduce ozone levels in Metro Vancouver and the Fraser Valley Regional District. Work conducted in support of this strategy found that vehicle/equipment refinishing is one of the sources of VOC emissions (900 tonnes or 2% of the regional total amount annually) that may contribute to the formation of ground-level ozone in the region. Ozone is implicated in adverse health effects, including the aggravation of heart and lung disease, as well as negative environmental impacts, such as crop and vegetation damage.

Some of the individual VOCs and other components in vehicle/equipment refinishing products are known or suspected HAPs. HAPs are associated with a variety of adverse health effects, including cancer and neurological, reproductive and developmental issues. Metro Vancouver manages discharges of HAPs at large industrial facilities and has also commissioned studies on HAPs of concern in the region.

The other major air contaminant discharged by vehicle/equipment refinishing activities is PM. Emissions of PM can occur due to paint overspray, which is controlled by exhaust filters in spray booths, and from abrasive paint removal. These emissions have historically led to complaints by neighbouring businesses and residents. Furthermore, a component of PM, fine particulate matter or $PM_{2.5}$, is an air contaminant of concern because of its association with chronic and acute respiratory and cardiac issues.

The provisions of *Bylaw 1086* were first established in 2001 and some no longer represent best management practices for the industry. Furthermore, some provisions create uncertainty and some comparable activities are not covered by the existing regulation.

Guiding principles

Potential amendments to the regulation were developed using these principles:

- Reflect best management practices in the industry and other leading jurisdictions in North America;
- Reduce human health risk by reducing the quantity of ozone pre-cursors, PM, and known or suspected HAPs discharged into the air from vehicle/equipment refinishing activities;
- Standardize requirements so regulation of emissions is applicable to operations conducting similar activities; and
- Improve clarity, simplify enforcement and reduce uncertainty for the regulated community by updating regulatory requirements.

Working within the legislation

Bylaw 1086 regulates air emissions from facilities that apply cleaners or coatings to automobiles, trucks, heavy duty vehicles, trailers, equipment or utility vehicles. The key provisions in *Bylaw 1086* are as follows:

- Most coating activities must be conducted in a spray booth with appropriate filters and ventilation, using high-volume low-pressure spray guns or other equivalent techniques;
- Facilities must follow good housekeeping practices to minimize fugitive releases of VOCs;
- Facilities may only use automotive refinishing products meeting VOC concentration limits defined by Metro Vancouver;
- Coating technicians must complete a recognized environmental training program;
- Automotive refinishing facilities must register with Metro Vancouver and pay an annual fee; and
- Facilities must maintain records of product use, waste disposal, inspections and equipment maintenance.

Metro Vancouver's Environmental Regulation & Enforcement (ER&E) officers inspect automotive refinishing facilities to ensure compliance with *Bylaw 1086*. Facilities are generally inspected on a rotating schedule, but more frequently if air quality complaints are received. A relatively small number of complaints (one to two) are received across the region per year. Complaints primarily relate to VOCs, some of which are odorous, although historically paint overspray has also been an issue.

No provincial regulations specifically target air discharges from the vehicle/equipment refinishing facilities, although the Insurance Corporation of British Columbia and WorkSafeBC both have programs and requirements relevant to the operation of these facilities.

The VOC concentration limits defined in *Bylaw 1086* for products used in vehicle/equipment refinishing were superseded by stricter national limits on the manufacture, import or sale of these products, under a regulation established by Environment and Climate Change Canada (ECCC) in 2009. In addition, the use of some compounds in vehicle/equipment refinishing products is prohibited by regulations under the *Canadian Environmental Protection Act*.

The ECCC limits were based on a model rule developed by the California Air Resources Board (CARB) in 2005, which also covers facility operations. The Los Angeles and San Francisco air districts have the strictest vehicle/equipment refinishing requirements in North America; they follow the CARB model rule and also limit the use of compounds that are known or suspected HAPs.

Potential changes

Metro Vancouver is seeking input from interested parties to inform changes to the vehicle/equipment refinishing regulation. Potential changes include an expansion of the regulatory scope, requirements to improve exhaust filtration, updated product formulation standards, and updated training and administration requirements. The potential amendments under consideration are described in more detail below.

Regulatory scope for cleaning and coating activities

An expansion of the scope of the regulation to include additional vehicle/equipment types, activities and vehicle/equipment refinishing work locations is under consideration. Potential changes described below would ensure that regulatory requirements would apply to operations performing similar operations to the automotive refinishing facilities currently covered by *Bylaw 1086*, and would align with best practices elsewhere.

Potential amendments under consideration include:

- Expanding regulatory requirements to include vehicle/equipment refinishing activities conducted on motorcycles and any mobile equipment that can be pulled or driven on roads or rails (e.g., trains, railcars, mobile cranes, bulldozers, etc.);
- Expanding regulatory requirements to include paint mixing and surface preparation activities conducted prior to coating application (e.g., wax de-greasing, paint removal, sanding, sand/abrasive blasting, and chemical stripping);
- Expanding regulatory requirements to include vehicle/equipment refinishing activities conducted in exterior locations at stationary refinishing facilities; and
- Expanding regulatory requirements to include vehicle/equipment refinishing activities by mobile refinishing operations.

The expanded scope would not include detailing, mechanical or windshield repair facilities unless they also conduct coating activities.

The regulatory requirements for non-coating activities could also be formalized by stating that non-coating activities (primarily surface preparation) could be conducted without PM emission controls as long as the emitted PM does not migrate beyond property boundaries. However, the district director would have the authority to require controls.

Exhaust filter requirements

Spray booth exhaust filters (also known as paint overspray arrestors) are intended to reduce PM discharges. *Bylaw 1086* requires "effective 2-stage" filtration but "effective" is challenging to confirm. Expansion of the regulatory requirements for spray booth exhaust filters would improve protection against excess PM discharges caused by incorrectly installed filters or those that insufficiently capture paint overspray.

Potential amendments under consideration include:

- Expanding regulatory requirements such that exhaust filters must be changed when saturated or pulling away from frame edges (which indicates saturation), or as directed by an ER&E officer or the district director. Filter change requirements are not currently included in *Bylaw 1086*.
- Updating regulatory requirements such that exhaust filters are installed in accordance with manufacturer's instructions, and are either
  a) 2-stage;
  b) Rated to capture 98% of paint overspray; or
  c) Approved by the district director.

The addition of a performance standard, such as a 98% capture efficiency, is intended to provide flexibility to meet the requirement in the most cost effective manner. A 98% efficiency is relatively common and is consistent with best practices in US jurisdictions.

Product formulation standards

The product formulation standards in *Bylaw 1086* need to be updated to reflect the 2009 federal requirements for vehicle/equipment refinishing products. However, cleaners and coatings are available that comply with more stringent standards applied in Los Angeles and San Francisco. Metro Vancouver product formulation requirements could be further updated to meet these highest industry standards, which would reduce emissions of VOCs and HAPs from this sector.

Potential amendments under consideration include:

- Updating VOC concentration limits for cleaners used in vehicle/equipment refinishing to allow high VOC cleaners to be used where necessary, as follows:
  - Cleaners for bug and tar removal: 350 grams per litre (g/L), where usage is less than 5% of annual facility coating usage (by volume) and cleaner is applied using a spray bottle; and
  - Other cleaners, including gunwash: 25 g/L (instead of the ECCC limit of 50 g/L).
- Updating VOC concentration limits for coatings used in vehicle/equipment refinishing to align with ECCC categories and limits except the following updates:
  - Adhesion promoter: 540 g/L (instead of the ECCC limit of 840 g/L);
  - Primer or primer sealer: 250 g/L (instead of the ECCC limit of 340 g/L); and
  - Single-stage coating: 340 g/L (instead of the ECCC limit of 420 g/L).
- Prohibiting the storage and use of vehicle/equipment refinishing products containing compounds that are known or suspected HAPs, or that cause other adverse environmental effects. The compounds of concern include but are not limited to:
  - Tertiary butyl acetate (TBAc) in color and clear coatings (i.e., TBAc can be used in non-topcoat coatings);
  - Cadmium;
  - Hexavalent chromium;
  - Tetrachloroethylene (perchloroethylene);
  - Ethylfluoride (HFC-161);
  - 1,1,1,3,3,3-hexafluoropropane (HFC-236fa);
  - 1,1,2,2,3-pentafluoropropane (HFC-245ca);

  - 1,1,2,3,3-pentafluoropropane (HFC-245ea);
  - 1,1,1,2,3-pentafluoropropane (HFC-245eb);
  - 1,1,1,3,3-pentafluoropropane (HFC-245fa);
  - 1,1,1,2,3,3-hexafluoropropane (HFC-236ea); and
  - 1,1,1,3,3-pentafluorobutane (HFC-365mfc).

It is anticipated that any new product formulation standards would be phased in over time to reflect the typical shelf life of products used in this industry.

Preliminary research on the availability, cost and performance of Los Angeles/San Francisco-compliant cleaners and coatings in the Metro Vancouver region resulted in mixed findings. Since large operations can spend $30,000 per month on coatings, input is sought on the impacts of the potential changes from those who may be affected.

Training requirements

Bylaw 1086 requires that operators (owners and managers) ensure their technicians complete a recognized environmental training program within one year of hire; however technician re-certification and operator training are not required.

Potential amendments under consideration for training requirements include:

- Updating the regulatory requirements such that operators must ensure their technicians re-certify their environmental training every 2 years. This new re-certification requirement will ensure technicians maintain current knowledge of regulatory requirements, and could be done through a shortened online refresher course to minimize work absences and business costs (similar to WHMIS).
- Updating the regulatory requirements such that operators must receive some form of environmental training. This new requirement would ensure that operators understand the regulatory requirements their technicians must follow. An online refresher course is likely sufficient for operators. However, the existing half-day in-person course could be required if an ER&E officer determines the facility is not complying with regulatory requirements.

These provisions would help to maintain current knowledge of regulatory requirements.

Updated bylaw administration

Potential administrative amendments under consideration in *Bylaw 1086* include:

- Increasing the annual fee from $200 to $250 to cover costs associated with administering the regulation. The annual fee has remained $200 since *Bylaw 1086* was adopted in 2008.
- Introducing supplemental increases to the annual fee, either on an annual basis or on a fixed schedule, such as every 5 or 10 years.
- Requiring that all operators and technicians provide identification if requested by ER&E officers during an inspection.
- Specifying the calculation method for VOC concentrations of cleaners and coatings as

  VOC concentration for cleaners (in grams per litre) =

  $$\frac{Ws - Ww - Wec}{Vm}$$

  VOC concentration for coatings (in grams per litre) =

  $$\frac{Ws - Ww - Wec}{Vm - Vw - Vec}$$

  where *Ws* is the weight of volatiles (in grams), *Ww* is the weight of water (in grams), *Wec* is the weight of excluded compounds (in grams), *Vm* is the volume of coating or cleaner (in litres), *Vw* is the volume of water (in litres) and *Vec* is the volume of excluded compounds (in litres). *Bylaw 1086* refers to a method in a federal standard which may not be readily available, and it is thought to be preferable to state these methods explicitly in the Bylaw itself, as is done by ECCC and US jurisdictions.

Minor changes and clarifying language

Some minor clarifications are also being considered. Potential amendments would:

- Add language about how facilities can cancel or suspend their registration;
- Update record keeping requirements;
- Update housekeeping rules to reflect best practices;
- Update the written style of the regulation to improve ease of use;
- Update the definition of "vehicle/equipment refinishing facility" so it applies to any vehicle/equipment refinishing operation that includes coating activity but which is not conducted in a home on personal vehicles;
- Harmonize definitions with other legislation, such as Metro Vancouver bylaws and ECCC regulations; and
- Remove clauses that are no longer relevant.

Providing comments and feedback on the potential changes under consideration

In November and December 2017, Metro Vancouver will meet with public health authorities, vehicle/equipment refinishers, product manufacturers, distributors and industry groups, and will also host two facilitated online webinars. Where possible, Metro Vancouver will try to participate in any relevant industry conferences or symposia occurring in the region during the consultation period. Recordings of the online meetings will be posted on Metro Vancouver's website, with the discussion paper, and a feedback form to invite responses from a broad audience.

The Metro Vancouver Board will receive a summary of the input from these preliminary discussions, which will be considered in the development of proposed amendments. Metro Vancouver will consider all feedback when developing a bylaw amendment proposal, until the Board makes a decision on any bylaw amendments.

Metro Vancouver staff and contractors will treat comments received with confidentiality; however, comments provided and information that identifies individuals as the source of those comments may be publicly available if a freedom of information (FOI) request is made under the Freedom of Information and Protection of Privacy Act.

Please contact Metro Vancouver by email at **ARF@metrovancouver.org** or phone at 604-432-6200 to request an invitation to meetings or webinars, or to provide questions or comments regarding the discussion paper.

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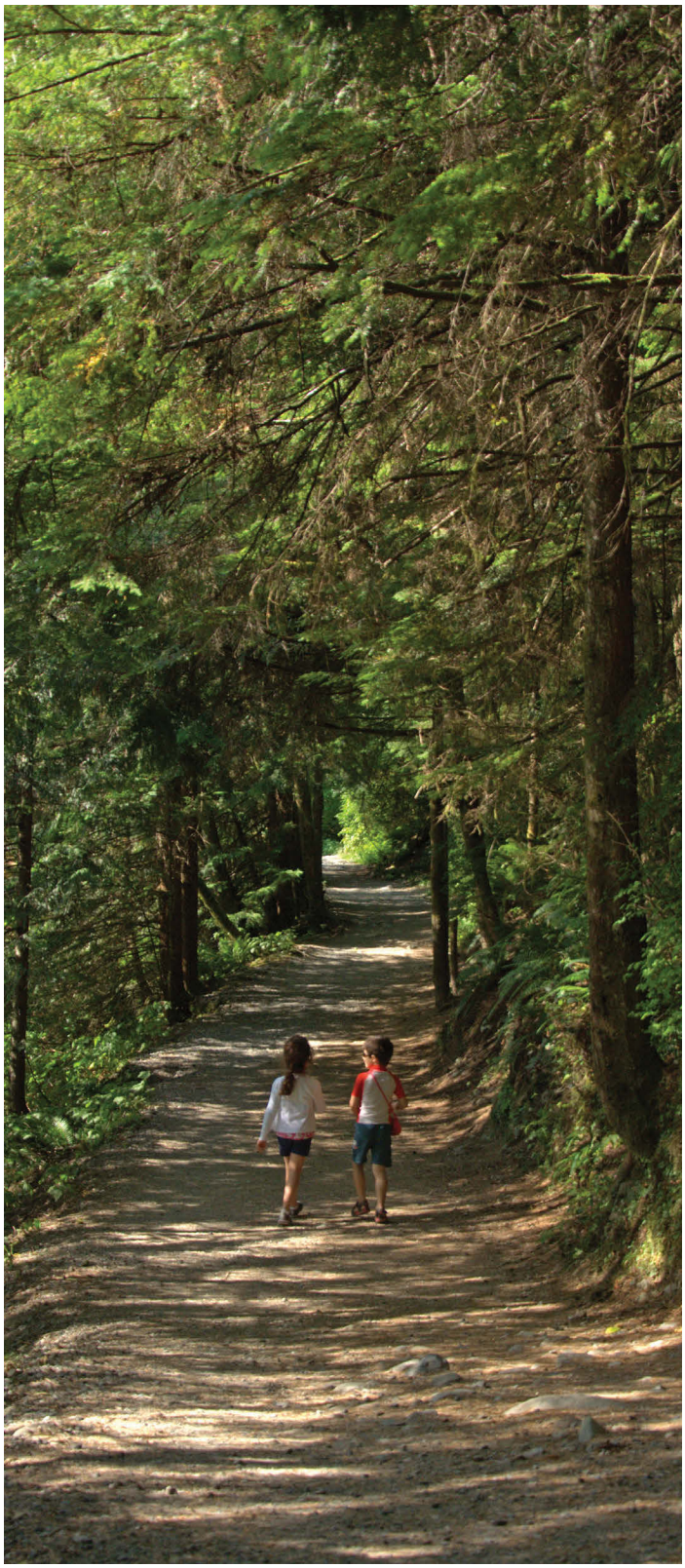


To: Climate Action Committee

From: Ray Robb, Division Manager Environmental Regulation and Enforcement,
Legal and Legislative Services Department

Date: August 1, 2017 Meeting Date: September 20, 2017

Subject: **Staff Appointments as Board-designated Officers**

RECOMMENDATION

That the MVRD Board, pursuant to the *Greater Vancouver Regional District Air Quality Management Bylaw* and the *Environmental Management Act*:

a) appoint as an officer Metro Vancouver employee Brendon Smith; and
b) rescind the appointments as officer of:
    i. Metro Vancouver employees Jeffrey Gogol, Grace Cockle and Alexander Clifford; and
    ii. former Metro Vancouver employees Terry Sunar, Johanna Hercun and Francis Yuen.

PURPOSE

To appoint and rescind appointments of Metro Vancouver employees as Board-designated officers.

BACKGROUND

Employment status and job function changes for Metro Vancouver environmental regulatory staff have resulted in a need to update staff appointments to ensure appropriate authority to advance air quality management goals. Section 29 of the *Environmental Management Act* and the *Greater Vancouver Regional District Air Quality Management Bylaw No. 1082, 2008,* grants authority to Board-designated officers.

Metro Vancouver's Air Quality Regulatory Program supports the goals of the Integrated Air Quality and Greenhouse Gas Management Plan by promoting compliance with air quality management bylaws and regulating the discharge of air contaminants. Officers may enter property, inspect works, and obtain records and other information to promote compliance with the Greater Vancouver Regional District Air Quality Management bylaws.

ALTERNATIVES

1. That the MVRD Board, pursuant to the *Greater Vancouver Regional District Air Quality Management Bylaw* and the *Environmental Management Act:*
    a) appoint as an officer Metro Vancouver employee Brendon Smith; and
    b) rescind the appointments as officer of:
        i. Metro Vancouver employees Jeffrey Gogol, Grace Cockle and Alexander Clifford; and
        ii. former Metro Vancouver employees Terry Sunar, Johanna Hercun and Francis Yuen.
2. That the MVRD Board refer this recommendation back to staff with instructions.

FINANCIAL IMPLICATIONS

There are no financial implications or expenditures as the appointment is for a new hire to fill a vacated position.

SUMMARY / CONCLUSION

Recent changes in staff have resulted in a need to update staff appointments as MVRD Board-designated officers under *Greater Vancouver Regional District Air Quality Management Bylaw* and the *Environmental Management Act*. Staff recommend that the MVRD Board adopt Alternative 1.

23067961

To: Climate Action Committee

From: Francis Ries, Senior Project Engineer
Parks, Planning and Environment Department

Date: September 11, 2017 Meeting Date: September 20, 2017

Subject: **Air Quality Advisories During the Summer of 2017**

RECOMMENDATION
That the MVRD Board receive for information the report dated September 11, 2017, titled "Air Quality Advisories During the Summer of 2017".

PURPOSE
This report provides information about air quality advisories issued by Metro Vancouver during the summer of 2017.

BACKGROUND
Metro Vancouver has issued five air quality advisories to date during the summer of 2017, resulting in advisories being in effect for an unprecedented total of 19 days. An advisory for ground-level ozone was in place from July 6 to 7, an advisory for $PM_{2.5}$ due to smoke from wildfires outside of the region was in place from July 18 to 19, and three advisories for both $PM_{2.5}$ and ground-level ozone were in place from August 1 to 12, August 29 to 30, and September 4 to 9.

METRO VANCOUVER ADVISORY PROGRAM
Metro Vancouver operates a comprehensive air quality monitoring network, consisting of 29 monitoring stations from Horseshoe Bay to Hope, which collects air quality as well as meteorological data around the clock. Data are made available to the public in real time on Metro Vancouver's own website at **airmap.ca**, as well as on the BC Government website at **www2.gov.bc.ca/gov/content/environment/air-land-water/air**. The air quality monitoring network provides the foundation for the regional air quality management program by allowing performance measurement with respect to compliance with air quality standards and objectives and the goal of continuous improvement in air quality, and identifying areas where additional action is needed.

Data from the monitoring network are also used to inform an air quality advisory service, which is a system of alerts to the public when air quality is expected to reach unhealthy levels. The advisory service is delivered in collaboration with other air quality as well as health agencies, including Environment and Climate Change Canada (ECCC), BC Ministry of Environment and Climate Change Strategy (BC MOECCS), Fraser Valley Regional District (FVRD), Vancouver Coastal Health (VCH), and Fraser Health Authority (FHA).

Metro Vancouver operates the advisory service for the entire Lower Fraser Valley (LFV) airshed, including the Metro Vancouver region and for the FVRD on their behalf. The BC MOECCS provides air quality advisory service for the remainder of the province.

The air pollutants of primary concern for Metro Vancouver's air quality advisory service are ground-level ozone and fine particulate matter ($PM_{2.5}$), as these pollutants have the greatest potential to reach levels that may be harmful to human health.

- **Ground-level ozone (O_3)** is one of the main constituents of smog. It is not emitted directly into the air, but rather is formed when nitrogen oxides and volatile organic compounds react in the presence of sunlight. The highest levels of ground-level ozone are generally observed between mid-afternoon and early evening on hot summer days.
- **Fine particulate matter ($PM_{2.5}$)** is made up of tiny solid or liquid particles suspended in the air. It can be emitted directly (primarily from fuel combustion and forest fires) or formed indirectly, such as when nitrogen oxides or sulphur oxides react with ammonia. $PM_{2.5}$ is less than 2.5 microns in diameter (less than 1/30th the width of a human hair), allowing it to penetrate deep into the lungs and into the bloodstream.

Air quality standards and objectives have been established for these pollutants, which indicate acceptable levels for different periods of exposure, such as 1 hour, 8 hour, 24 hour and annual.

SUMMER 2017 ADVISORIES

At the time of writing, air quality advisories have been issued in five distinct periods over the summer of 2017, each lasting between one and 11 days:

- Ground-Level Ozone Advisory, July 6-7, 2017
- Wildfire Smoke Advisory, July 18-19, 2017
- Wildfire Smoke and Ground-Level Ozone Advisory, August 1-12, 2017
- Wildfire Smoke and Ground-Level Ozone Advisory, August 29-30, 2017
- Wildfire Smoke and Ground-Level Ozone Advisory, September 4-9, 2017

A summary of each advisory is provided below. Tables summarizing the stations at which elevated levels of air contaminants occurred during each advisory can be found in the Attachment.

Ground Level Ozone Advisory, July 6-7, 2017

On Wednesday July 5 elevated levels of ground-level ozone occurred, with concentrations exceeding the ground-level ozone objective based on an 8-hour rolling average at three monitoring stations during the late evening. Continuing air quality degradation on Thursday July 6 prompted the issuance of a ground-level ozone advisory for eastern parts of Metro Vancouver and the Fraser Valley. Ozone levels exceeded Metro Vancouver's 8-hour rolling average objective at one monitoring station during the advisory. No exceedances of the 1-hour objective for ground-level ozone were recorded at LFV monitoring stations during the advisory. The advisory was cancelled on Friday July 7 when changes in the weather resulted in lower ground-level ozone concentrations.

Wildfire Smoke Advisory, July 18-19, 2017

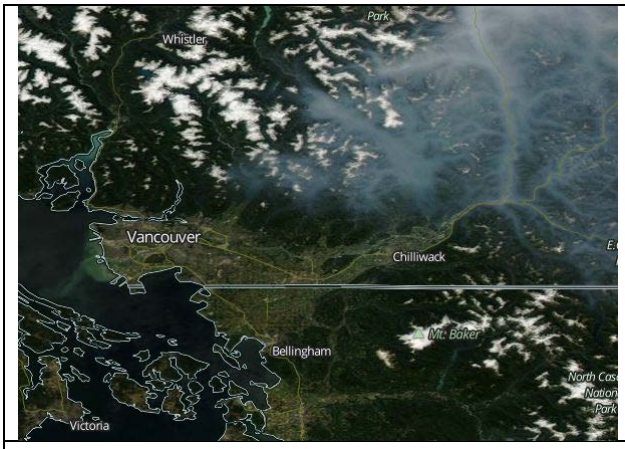
Over 200 wildfires were burning in the BC Interior during the week of July 17, as well as one small fire northeast of Harrison Lake. On the morning of Monday July 17 smoke was observed in the upper air of the LFV, entering from both the northeast via the Coquihalla, Fraser and Harrison valleys, and from the northwest via Howe Sound. Smoke began mixing down to ground level in the afternoon of July 17, causing $PM_{2.5}$ levels in the FVRD and Horseshoe Bay to rise. However, concentrations at all monitoring stations remained below Metro Vancouver's 24-hour rolling average $PM_{2.5}$ objective throughout July 17 and into the early morning of July 18.

Concentrations of $PM_{2.5}$ continued to increase on the morning of July 18 and a fine particulate matter air quality advisory was issued for Metro Vancouver and the FVRD. During the advisory, $PM_{2.5}$ concentrations at one monitoring station exceeded Metro Vancouver's $PM_{2.5}$ objective. By early afternoon on July 18, smoke was dispersing from the LFV and by 10 p.m. no monitoring stations remained in exceedance of the $PM_{2.5}$ objective. On the morning of July 19, $PM_{2.5}$ concentrations throughout the LFV had returned to normal levels and the advisory was ended at 11:30 a.m.

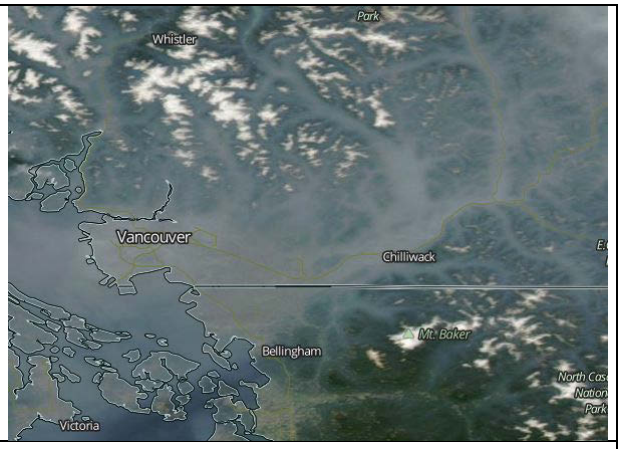
Wildfire Smoke and Ground Level Ozone Advisory, August 1-12, 2017

In the week beginning July 31 over 150 fires were burning throughout the BC Interior, as well as a small fire northeast of Harrison Lake. On July 31, strong outflow winds carried smoke from the fires in the Interior into the LFV. Through the day, visible smoke was largely confined to the upper air, well above ground level. Weather forecast information indicated that winds from the Interior would continue for a number of days, with smoke forecast models indicating smoke would mix down to ground level in the LFV. In consideration of these forecasts and the visible smoke already in the LFV, on July 31 a fine particulate matter air quality advisory was issued preemptively for August 1.

$PM_{2.5}$ concentrations increased in the early morning of August 1 in the eastern Fraser Valley as smoke mixed down to ground level. By noon on August 1, the 24-hour rolling average $PM_{2.5}$ objective was exceeded at two stations, and smoke was visible throughout the LFV. The satellite imagery below shows the position of the smoke plume near midday on July 31 and August 1, illustrating its rapid movement throughout the region.



July 31, 12:05pm



August 1, 12:45pm

$PM_{2.5}$ concentrations rose sharply throughout the entire LFV and by early afternoon on August 2, the $PM_{2.5}$ objective was exceeded at all LFV monitoring stations except the three located nearest to the ocean in the southwest. The period from August 3 to 11 saw $PM_{2.5}$ concentrations remain high as outflow winds continued to transport smoke into the region. Except during a brief reduction in $PM_{2.5}$ levels on August 5, the majority of the monitoring stations remained in exceedance of the 24-hour average $PM_{2.5}$ objective for the duration of the August 3 to 11 period. All of the monitoring stations throughout the LFV were continuously in exceedance of the 24-hour rolling average $PM_{2.5}$ objective for 89 consecutive hours, from 10:00 p.m. August 8 until 2:00 p.m. August 11.

Daytime temperatures were above average during the week of July 31 and peaked on August 2, with locations in the eastern Fraser Valley registering maximums in excess of 35°C. Ground-level ozone levels increased and as a result, an update was issued on August 2 to add ground-level ozone to the

$PM_{2.5}$ advisory, for eastern parts of Metro Vancouver and the Fraser Valley. During the afternoon and evening of August 2, ozone levels exceeded Metro Vancouver's 1-hour ground-level ozone objective at three monitoring stations, and the 8-hour rolling average ground-level ozone objective at one station. On August 3, further exceedances of the 1-hour objective occurred at four monitoring stations and exceedances of the 8-hour rolling average objective at three stations. While the advisory continued for $PM_{2.5}$, it was ended for ground-level ozone on Friday August 4 when cooler temperatures led to lower ground level ozone concentrations.

Hot temperatures returned on August 9, leading to rapid ground level ozone production in the eastern Fraser Valley. The air quality advisory was updated again to add ground-level ozone for eastern parts of Metro Vancouver and the Fraser Valley on August 9. Exceedances of Metro Vancouver's 1-hour ground-level ozone objective occurred at one monitoring station and exceedances of the 8-hour rolling average ozone objective at four stations on August 9. Exceedances of the 1-hour and 8-hour rolling average ozone objectives occurred at several stations on August 10 and 11.

A change in the weather pattern led to smoke beginning to clear from the LFV on August 11. The air quality advisory for $PM_{2.5}$ and ground-level ozone was ended on the morning of August 12 when models and satellite imagery indicated that there was no further immediate risk of smoke returning to the LFV. $PM_{2.5}$ levels at all monitoring stations improved to within the 24-hour rolling average $PM_{2.5}$ objective by the afternoon of August 12. This was longest continuous advisory period (11 days) recorded since the beginning of Metro Vancouver's air quality advisory program in the early 1990s.

Wildfire Smoke and Ground Level Ozone Advisory, August 29-30, 2017

Fires with a total area of more than 1600 km^2 were burning in northwest California and southwest Oregon during the week beginning August 28. These fires brought visible smoke into the upper air of the eastern Fraser Valley on the evening of August 28. Smoke mixed down to ground level overnight causing levels of $PM_{2.5}$ to increase throughout the LFV. In addition, forecasts from ECCC predicted high temperatures and ground level ozone concentrations throughout the LFV on August 29. Due to increasing $PM_{2.5}$ concentrations, poor visual air quality, and the forecasts for high levels of ground-level ozone, an air quality advisory for ground-level ozone (for eastern Metro Vancouver and the FVRD) and fine particulate matter (for all of Metro Vancouver and the FVRD) was issued on the morning of August 29.

$PM_{2.5}$ concentrations exceeded the 24-hour rolling average $PM_{2.5}$ objective at three monitoring stations in the eastern Fraser Valley while the advisory was in place. Ground level ozone concentrations were unusually high during the advisory period, with eight stations exceeding the 1-hour ozone objective, and 13 stations exceeding the 8-hour rolling average ozone objective. A strong push of marine air dispersed smoke from the LFV and reduced the potential for ground-level ozone production on the morning of August 30, leading to the cancellation of the air quality advisory.

Wildfire Smoke and Ground Level Ozone Advisory, September 4-9, 2017

During the week starting September 4, there was extensive wildfire activity throughout northwest California, western Oregon, and Washington State, including significant smoke production from the Diamond Creek Fire that had recently burned across the border into BC east of Manning Park. On the morning of September 4, smoke from these fires began to enter the eastern Fraser Valley, causing levels of $PM_{2.5}$ to increase at a number of monitoring stations. Due to increasing $PM_{2.5}$ concentrations and the forecasts for high temperatures and high levels of ground-level ozone, an air quality advisory

for fine particulate matter (for all of Metro Vancouver and the FVRD) and ground-level ozone (for eastern Metro Vancouver and the FVRD) was issued on the morning of September 4.

Despite high temperatures throughout the LFV on September 4 and 5, ozone levels did not exceed either the 1-hour or 8-hour rolling average ozone objectives, so the ground-level ozone portion of the advisory was cancelled on September 5. $PM_{2.5}$ concentrations exceeded the 24-hour rolling average objective at all monitoring stations throughout Metro Vancouver and the Fraser Valley, with all stations remaining above the objective until September 8. Despite a brief period of rain on the 8th, smoke did not fully disperse until a strong push of marine air entered the LFV early September 9, allowing the fine particulate matter advisory to be ended after a duration of 5 days.

Implications of 2017 Advisory Season

The summer of 2017 has seen prolonged hot and dry conditions throughout the BC Interior and across much of the Pacific Northwest, leading to extreme fire risk conditions and significant wildfire activity. As seen during the summer of 2015, air quality advisories in the summer of 2017 have been dominated by the impacts of wildfire smoke from outside the region. Maximum $PM_{2.5}$ levels due to wildfire smoke measured in 2017 were somewhat lower than those measured at the height of the July 2015 wildfire advisory, but both the duration and geographic scope of wildfire smoke impacts in 2017 significantly exceeded those experienced in 2015.

A further similarity to the 2015 advisory season was the need to add ground-level ozone to advisories originally issued for wildfire smoke-related $PM_{2.5}$. Hot temperatures and high incoming solar radiation normally increase production of ground-level ozone, but both of these can be reduced by the presence of smoke in the air during the smoke-related advisory events. Despite reductions in temperature and solar radiation, ground-level ozone production was actually increased during two of the smoke-related advisory events, indicating that the smoke may have been carrying pollutants that accelerated ozone formation. Although Metro Vancouver's air quality programs have been successful in reducing the average number of summer ground-level ozone advisories over the last 25 years, an emerging challenge is to better understand the transport of wildfire-related air pollutants into the airshed, including not only $PM_{2.5}$ in wildfire smoke, but also products of combustion such as nitrogen oxides and volatile organic compounds which may lead to additional formation of ground-level ozone.

The 2017 summer advisory season clearly demonstrated that Metro Vancouver's air quality programs may need to adapt in response to impacts on regional air quality due to wildfires outside the region, especially if the changing climate increases the frequency and severity of wildfires in the future. As such, the forthcoming process to update Metro Vancouver's Air Quality Management Plan should explicitly consider increasing wildfire impacts when evaluating future management strategies and actions. Further, the development process for Metro Vancouver's Climate 2050 Plan should include adaptation strategies for climate-related impacts on regional air quality.

Advisory Media Engagement

A key part of Metro Vancouver's air quality advisory service is timely communication to the public, including the distribution of advisory information to traditional media outlets such as TV, radio and print, as well as through social media services such as Facebook and Twitter. Advisory notices are disseminated widely via email, and further details are provided to media organizations via telephone or on-camera interviews. Working closely with Media Relations Staff, the Air Quality Advisory team conducted more than 80 different interviews during the 5 advisory events detailed above, with more

than 50 interviews during the August 1-12 event alone. The following table summarizes the number of print / internet stories and TV / radio clips mentioning each of the advisory events. One of the key functions of the advisory service is the dissemination of health-related warnings and precautions, and the broad media reach ensures that residents of the Lower Fraser Valley are provided with clear information about $PM_{2.5}$ and ozone health impacts when an advisory is in place.

Event	Print/online stories	TV/Radio Clips
July 6-7	18	202
July 18-19	27	224
August 1-12	102	1903
August 29-30	27	Not yet available
September 4-9	31 (as of Sept 8th)	Not yet available
Totals	205	2329

ALTERNATIVES
This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS
Staff time for monitoring and analyzing air quality monitoring information, issuing air quality advisories and responding to information requests from media and the public is included in annual operating budgets, including some amount of overtime for evening and weekend work. However, consideration may be needed in future budgets for increased resources if wildfire activity increases with drier, hotter summers in future.

SUMMARY / CONCLUSION
Metro Vancouver has issued five air quality advisories to date during the summer of 2017, resulting in advisories being in effect for an unprecedented total of 19 days. An advisory for ground-level ozone was in place from July 6 to 7, an advisory for $PM_{2.5}$ due to smoke from wildfires outside of the region was in place from July 18 to 19 and three advisories for both $PM_{2.5}$ and ground-level ozone were in place from August 1 to 12, August 29 to 30, and September 4 to 9.

The wildfire smoke episodes of 2017 were unprecedented in terms of their duration and geographic scope, leading to broad regional impacts. In addition to the elevated levels of $PM_{2.5}$, unusually elevated ground-level ozone levels were also recorded. Despite the past success of Metro Vancouver's air quality programs in reducing the average number of ground-level ozone advisories, the summers of 2015 and 2017 have shown that continued improvement may require new management strategies and actions that explicitly consider the impact of wildfire smoke on ozone production. Further, Metro Vancouver's overall air quality program will likely need to adapt in response to the regional air quality impacts of wildfires outside the region, especially if the changing climate results in increased frequency and severity of wildfires in the future.

Attachment
Air Quality Advisories During the Summer of 2017, Monitoring Data Summary *(orbit # 23287479)*

23275094

Air Quality Advisories During the Summer of 2017, Monitoring Data Summary

The following tables summarize the air quality monitoring stations at which elevated levels of air contaminants occurred during each advisory event in July, August and September 2017. The objective levels are listed at the top of each table, and the maximum value for each station exceeding the objectives is shown on the row for that station. The stations are listed in descending order based on the maximum exceedance value of the pollutant for which the advisory was first triggered. *Please note that all values presented in the tables below are preliminary and may be subject to change.*

Table 1: July 6-7 Ground Level Ozone Advisory Event

Monitoring Station	Objective Exceedances (Maximum Value)		
	$PM_{2.5}$ 24hr Rolling Average (ug/m3)	**O_3 1hr Average (ppb)**	**O_3 8hr Rolling Average (ppb)**
Objective Level	*25*	*82*	*65*
Hope	-	-	69

Note: - indicates that parameter is measured at station, but did not exceed objective
x indicates that parameter is not measured at station

Table 2: July 18-19 Fine Particulate Matter Advisory Event

Monitoring Station	Objective Exceedances (Maximum Value)		
	$PM_{2.5}$ 24hr Rolling Average (ug/m3)	**O_3 1hr Average (ppb)**	**O_3 8hr Rolling Average (ppb)**
Objective Level	*25*	*82*	*65*
Hope	29	-	-

Note: - indicates that parameter is measured at station, but did not exceed objective
x indicates that parameter is not measured at station

Table 3: August 1-12 Fine Particulate Matter & Ground Level Ozone Advisory Event

Monitoring Station	Objective Exceedances (Maximum Value)		
	$PM_{2.5}$ 24hr Rolling Average (ug/m3)	O_3 1hr Average (ppb)	O_3 8hr Rolling Average (ppb)
Objective Level	*25*	*82*	*65*
Hope	102	96	81
Agassiz	99	91	71
Chilliwack	93	88	69
Port Moody	89	-	-
Burnaby Kensington Park	83	-	-
Horseshoe Bay	78	x	x
Mission	75	94	80
Abbotsford Airport	72	-	-
North Vancouver Second Narrows	72	-	-
North Vancouver Mahon Park	70	-	-
Burnaby South	68	-	-
Abbotsford Mill Lake	67	86	70
Pitt Meadows	63	-	-
New Westminster	62	-	-
Vancouver Clark Drive	54	-	-
Langley	53	-	67
North Delta	53	-	-
Richmond South	39	-	-
Richmond Airport	37	-	-
Tsawwassen	37	-	-
Maple Ridge	x	84	74
Burnaby Mountain	x	-	71
Surrey East	#	#	#

Note: - indicates that parameter is measured at station, but did not exceed objective

x indicates that parameter is not measured at station

# indicates that parameter is measured at station, but station was offline during event

Table 4: August 29-30 Fine Particulate Matter & Ground Level Ozone Advisory Event

Monitoring Station	Objective Exceedances (Maximum Value)		
	$PM_{2.5}$ 24hr Rolling Average (ug/m3)	O_3 1hr Average (ppb)	O_3 8hr Rolling Average (ppb)
Objective Level	*25*	*82*	*65*
Hope	29	93	78
Agassiz	-	91	73
Mission	-	90	75
Maple Ridge	x	89	74
Chilliwack	29	89	71
Abbotsford Mill Lake	-	87	71
Burnaby Mountain	x	86	71
Burnaby Kensington Park	-	84	67
Abbotsford Airport	-	-	67
Langley	-	-	68
Surrey East	-	-	68
Pitt Meadows	-	-	67
Richmond South	-	-	66

Note: - indicates that parameter is measured at station, but did not exceed objective

x indicates that parameter is not measured at station

Table 5: September 4-9 Fine Particulate Matter & Ground Level Ozone Advisory Event

Monitoring Station	Objective Exceedances (Maximum Value)		
	$PM_{2.5}$ 24hr Rolling Average (ug/m3)	O_3 1hr Average (ppb)	O_3 8hr Rolling Average (ppb)
Objective Level	*25*	*82*	*65*
Hope	88	-	-
North Vancouver Mahon Park	66	-	-
Agassiz	60	-	-
Chilliwack	60	-	-
Mission	51	-	-
North Vancouver Second Narrows	51	-	-
Port Moody	49	-	-
Burnaby Kensington Park	48	-	-
New Westminster	47	-	-
Horseshoe Bay	45	x	x
Abbotsford Mill Lake	44	-	-
Pitt Meadows	44	-	-
Vancouver Clark Drive	43	-	-
North Delta	40	-	-
Burnaby South	39	-	-
Abbotsford Airport	39	-	-
Surrey East	38	-	-
Richmond South	37	-	-
Langley	37	-	-
Richmond Airport	32	-	-
Tsawwassen	27	-	-

Note: - indicates that parameter is measured at station, but did not exceed objective

x indicates that parameter is not measured at station

23287479

To: Climate Action Committee

From: Ray Robb, Division Manager, Environmental Regulation and Enforcement
Legal and Legislative Services Department

Date: September 1, 2017 Meeting Date: September 20, 2017

Subject: **Response to Delegations about Metro Vancouver's Air Quality Permitting Process**

RECOMMENDATION

That the MVRD Board receive for information the report dated September 1, 2017, titled "Response to Delegations about Metro Vancouver's Air Quality Permitting Process".

PURPOSE

This report provides a response to issues concerning two air quality permit applications raised by delegates at the July 5, 2017 Climate Action Committee Meeting.

BACKGROUND

At the Climate Action Committee meeting of July 5, 2017, the Committee received three delegations from concerned persons regarding the Weir Canada Inc. (Weir) and Ebco Metal Finishing Limited Partnership (Ebco) air quality permit applications. Those applications related to two facilities located in Southeast Surrey. The Committee also received a report from staff that outlined Metro Vancouver's air quality permit application process and some specifics about the Weir and Ebco permit applications.

The Climate Action Committee asked staff to report back on the issues raised by the delegates including: the potential air quality impacts associated with the two plants; the expected timing for permit decisions; the possibility of conducting air and water monitoring and sampling in the vicinity; information on regulatory approaches in other jurisdictions; and, Metro Vancouver's enforcement ability.

POTENTIAL AIR QUALITY IMPACTS

The two businesses, Weir and Ebco, have operated similar facilities in Richmond. They have generally operated in compliance with their air quality permits since 1992. Weir and Ebco are relocating their businesses to the Campbell Heights area of Southeast Surrey.

As part of the permit application process, both Ebco and Weir completed dispersion modelling assessments to estimate the ambient concentration of air contaminants in the surrounding community as a result of emissions from their proposed discharges. In addition, Ebco completed an Environmental Assessment to determine the fate and impact of air contaminants on various receptor environments, including water bodies and land.

Staff have reviewed Weir's dispersion modelling results and the company has posted the dispersion model results on their website at https://weirsurrey.ca/ and advised persons that expressed concern on their application of the website. The Weir dispersion model has also been provided to Fraser Health, Ministry of Agriculture, the City of Surrey, Langley City, and the Township of Langley.

At time of writing, staff are seeking further refinement of Ebco's dispersion modelling results before they are provided to agencies and posted on the company website for review by concerned persons.

TIMING OF DECISIONS

Decisions will be made on the permits when the District Director determines;

- that sufficient information has been provided to concerned persons;
- those persons have had the opportunity to comment;
- the Applicants have had the opportunity to respond to the comments; and,
- staff have completed their review of comments, assessment of impacts, and the viability of options to reduce those impacts.

There are also some outstanding FOI requests. If the requesting parties are not satisfied with the extent of the information released they may seek to delay permit decisions until the appeals of the FOI decisions are complete.

RECEIVING ENVIRONMENT MONITORING

The District Director will consider monitoring of receiving environments, including air, surface water, ground water, soils, vegetation, and other receptors as possible permit requirements. Other jurisdictions have required facilities emitting substantial quantities of hazardous air pollutants (for example mercury and lead) to monitor various receptors including soil and water as well as impacts on plant, and animal life. However, currently no permitted dischargers within Metro Vancouver are required to monitor anything other than the receiving environment's air quality and dustfall.

Metro Vancouver currently monitors ambient air quality throughout the region. Other jurisdictions may monitor or require others to monitor surface water bodies, groundwater, soil quality, and occasionally other receptors of concern for impacts from other types of discharges to the environment.

REGULATORY APPROACHES IN OTHER JURISDICTIONS

Metro Vancouver's permitting process is similar to permitting processes elsewhere in the developed world and includes notification of persons that may be concerned to allow them the opportunity to comment and have their comments considered. In addition, Metro Vancouver staff also consider environmental impacts as well as technologies and measures that will mitigate impacts. The legislation allows the District Director to impose requirements considered "advisable for the protection of the environment". Consequently, the District Director must consider requirements to protect air quality, water quality, soil and sediment quality, plant and animal life and all other aspects of the environment. Requirements may include works, measures, limits on emissions and monitoring of discharges and the receiving environment. The District Director is also guided by requirements for similar discharges both within Metro Vancouver and other jurisdictions. The process is rigorous but must also be fair to both the applicant and persons potentially impacted by the discharge. Any party aggrieved by a permit decision may appeal to the Environmental Appeal Board and the District Director must justify the decision as it relates to the guiding legislation including case law.

METRO VANCOUVER'S ENFORCEMENT ABILITY

Effective enforcement is vital to the successful implementation of legislation. Metro Vancouver Environmental Regulatory staff receive training and legal guidance to create permits with enforceable requirements. Staff also receive training in investigative techniques necessary for effective enforcement and have substantial experience in environmental prosecutions.

Efficient use of public resources is also critical. Consequently, like other jurisdictions, Metro Vancouver employs a compliance promotion continuum that emphasizes the use of non-punitive compliance promotion tools for minor offences and punitive enforcement actions for serious offences, especially by repeat offenders.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

As this is an information report, no financial implications arise from the report.

SUMMARY / CONCLUSION

Metro Vancouver's air quality permit application process is rigorous, comprehensive and fair. Permits contain sufficient requirements, including monitoring, to protect the environment. Persons aggrieved by permit decisions have the right to appeal. Permits are written to be enforced and are enforced by knowledgeable, trained and experienced staff.

23286744

To: Climate Action Committee

From: Julie Saxton, Acting Program Manager, Bylaw and Regulation Development
Parks, Planning and Environment Department

Date: September 6, 2017 Meeting Date: October 4, 2017

Subject: **Consultation on a Residential Wood Smoke Regulation for Metro Vancouver**

RECOMMENDATION

That the MVRD Board:

a) Receive for information the report titled "Consultation on a Residential Wood Smoke Regulation for Metro Vancouver", dated September 6, 2017; and
b) Direct staff to proceed with consultation on the proposed approach to regulating indoor residential wood burning, based on the bylaw development consultation paper attached to the report titled "Consultation on a Residential Wood Smoke Regulation for Metro Vancouver", dated September 6, 2017.

PURPOSE

This report seeks MVRD Board approval for staff to proceed with consultation on proposals to regulate the emission of wood smoke from indoor residential wood burning activities.

BACKGROUND

Initiating consultation on potential regulatory mechanisms to reduce emissions from indoor residential wood burning was identified as a priority action in the Climate Action Committee's 2017 work plan. Information about the potential policy options being considered to manage emissions of wood smoke from indoor residential wood burning was presented to the Climate Action Committee at its meeting on January 18, 2017 in the report titled "Development of a Residential Wood Smoke Regulation for Metro Vancouver", dated December 13, 2016. The MVRD Board approved the initiation of preliminary consultation on regulatory options for managing wood smoke from indoor residential wood burning at its meeting on January 27, 2017. A summary of the input received during preliminary consultation is included in this report, along with an overview of the resulting key features of a potential indoor residential wood smoke regulation. A bylaw development consultation paper, informed by the initial consultation work, is attached for Committee and Board's consideration for use in additional public consultation activities.

DEVELOPMENT OF A RESIDENTIAL WOOD SMOKE REGULATION

In January 2017 Metro Vancouver staff received approval to initiate preliminary consultation on policy options being considered in the development of a regulatory approach to manage wood smoke from indoor residential burning. The objectives of preliminary consultation were to:

- Assess the benefits and impacts of different options being considered as elements of a potential residential wood burning regulation;
- Hear concerns and receive feedback on strategies for managing smoke from indoor residential wood burning; and
- Ensure the needs of different communities had been identified in the development of potential residential wood burning regulatory measures.

Overview of Preliminary Consultation

Between March and April 2017 over 300 people were invited to participate in online, in-person, or teleconference presentations about the potential policy options being considered. Feedback was sought on the following options:

- Restrictions on operating residential wood burning appliances based on emissions performance criteria;
- Exemptions from such restrictions under certain conditions, such as a lack of other sources of comfort heating, distance from neighbours, and exceptional events;
- Use of indicators of excessive wood smoke production; and
- Additional restrictions during periods of degraded air quality.

Representatives of public health agencies and research organizations, air quality staff from other government agencies, staff from member jurisdictions and municipal fire departments, wood burning appliance manufacturers, wood burning appliance retailers, wood energy technicians, members of the public impacted by residential wood smoke, and members of the public who burn wood to heat their homes participated in at least one of the 10 events at which the potential policy options were presented by Metro Vancouver staff. A list of the events is provided in Attachment 1.

Opportunities to provide feedback were also promoted to broader audiences of potential participants by outreach through Metro Vancouver's web site and social media channels (Facebook and Twitter) as well as by direct mail and email.

Feedback Received During Preliminary Consultation

More than 100 individuals participated in preliminary consultation events and input was received between March and June 2017 at events as well as through email, phone calls and web-based forms and fora from approximately 160 individuals. The feedback received generally reflected concerns about the nature of proposed restrictions on indoor residential wood burning and a preference for a targeted approach that would appropriately balance the need to avoid undue hardship, for low-income wood heat users and people who rely on wood burning as a primary source of heat, against desired outcomes for local air quality and personal and community health.

Six general themes emerged during the preliminary consultation period.

- Affordability and equity: affordable compliance including meaningful subsidies to offset the cost of new low-emission appliances where possible, consideration of impacts of restrictions for low-income users and those who rely on wood burning as their primary heat source and exemptions where necessary, and consideration of the different circumstances in rural and urban areas that affect wood smoke exposure were important to stakeholders.
- Clarifications and questions about presented data: open hearth fireplaces were identified by stakeholders as a starting point for regulation, since they are often used for ambience rather than heat, and questions about regulations directed at commercial and rural wood burning practices also arose.
- Education and marketing: a strong education and marketing campaign was suggested, to inform the public of the hazards and cumulative impacts of wood smoke and promote any new regulation put in place.
- Health impacts: examples of personal health and quality of life impacts of wood burning in neighbourhoods were described and greater awareness of the negative impacts of wood smoke advocated.

- Existing regulatory requirements: coordination with existing provincial and federal regulations was considered an important attribute of a regional regulation, as well as linking regulatory measures with existing requirements e.g., obligations imposed by home insurers, using existing emissions standards developed by the Canadian Standards Association (CSA) and/or US Environmental Protection Agency (US EPA).
- Monitoring and enforcement: concerns about the capacity for monitoring compliance and effective enforcement were highlighted by preliminary consultation participants, leading to discussions about the potential for empowering wood burners to appropriately self-monitor their emissions.

Additional questions were raised about the impacts of occasional use of wood burning appliances, other sources of wood smoke in the region, and regulation of the installation of wood burning appliances during the sale, construction or renovation of a home. Specific concerns about additional restrictions during periods of degraded air quality emphasized that during the heating season these periods are often also associated with low temperatures, which could have serious implications for low-income residents relying on wood heat for warmth. However there was support for wood burning bans during the summer, when degraded air quality is less likely to coincide with a need for home heating.

A more detailed summary of the issues raised about each option is provided in the attached issues-response table (Attachment 2). The full record of preliminary consultation can be made available upon request.

PROPOSED REGULATORY APPROACH

The potential regulatory approach to managing regional wood smoke emissions from indoor residential wood burning appliances comprises three elements, with implementation proposed to be phased-in between 2020 and 2025:

- A seasonal restriction on the use of indoor residential wood burning appliances between May 15 and September 15, from May 2020;
- Registration requirements for indoor residential wood burning appliances based on particulate matter emission levels, from January 2022; and
- Prohibition of wood smoke emissions from unregistered residential wood burning appliances, unless other conditions applied, from September 2025.

To address concerns expressed by stakeholders throughout preliminary consultation, exemption criteria have been developed that would allow indoor wood burning appliances that do not meet emissions limits requirements to be registered if any of the following conditions apply:

- The residential wood burning appliance is the sole source of space heating or heat source for cooking in the home; or
- The owner of the appliance has insufficient means to pay for heating with a fuel other than wood; or
- The appliance is located outside the Metro Vancouver Urban Containment Boundary.

In addition, during exceptional events, such as power outages lasting more than four hours, it is proposed that the prohibition on emissions of smoke from unregistered indoor wood burning appliances would be suspended.

ADDITIONAL CONSULTATION ON A RESIDENTIAL WOOD SMOKE REGULATION

Staff reviewed and considered all of the feedback received during preliminary consultation and developed a comprehensive proposal for regulating wood smoke emissions from indoor residential wood burning. Staff propose to consult on the potential regulation described in the bylaw development consultation paper titled "Managing Residential Wood Smoke in Metro Vancouver" (Attachment 3) between November 2017 and January 2018.

The objective of additional consultation is to ensure that members of the public and stakeholders who may be impacted by restrictions on emitting wood smoke from indoor residential wood burning appliances are aware of the features and timelines of the potential bylaw being considered and have sufficient opportunity to provide feedback. Since a sizeable portion of the general public residing in the Metro Vancouver region would potentially be regulated under such a bylaw, in order to have confidence in the representativeness of feedback received about the proposals staff have identified a wide cross-section of parties who may have an interest in the potential bylaw:

- Public health authorities, researchers and air quality agency staff;
- Representatives of businesses involved in the sale, installation, use or maintenance of wood burning appliances (e.g. wood energy technicians, appliance manufacturers and retailers);
- Realtors;
- Home insurance providers;
- Municipal staff (e.g. fire departments, bylaw officers, planners);
- Members of the public impacted by residential wood smoke;
- Members of the public who burn wood for heat or ambience;
- Members of the public living in rural areas of the region;
- Members of the public living in communities impacted by wood smoke; and
- Energy service providers.

Broad outreach will target a region-wide audience with additional emphasis on those who burn wood or are affected by wood burning. Outreach efforts will ensure that information and engagement opportunities are easily accessible and will include broad online and offline engagement tools.

Engagement methods

Targeted engagement methods will be used to ensure that information about the proposed regulation of wood smoke emissions from indoor residential wood burning effectively reaches key audiences. Proposed methods include:

- Public open house engagement events in six geographical areas of the region to share information about the proposed regulation, answer the public's questions, and gather feedback;
- Workshop events (in person or by online webinar) to gather detailed feedback on the potential regulation;
- Providing information to stakeholders and stakeholder groups (e.g. representatives of member jurisdictions) who can further disseminate information through their own networks; and
- Involving community influencers in sharing project information and online materials with their networks.

Online engagement will use Metro Vancouver's web site and social media channels to provide information about the regulatory proposals and offer a structured mechanism to simplify providing feedback. Online engagement will be particularly helpful to reach audiences that span a large geographical distance. Proposed tools include:

- A web page displaying information for residents and stakeholders about the potential residential wood smoke management bylaw, including links to the bylaw development consultation paper, a comments form, contact details for providing feedback to Metro Vancouver staff and background information about the effects of wood smoke form indoor residential wood burning on health and the environment in Metro Vancouver;
- An online comments form to allow people to provide feedback on the proposed regulation at their convenience; and
- Social media promotion through Metro Vancouver's Facebook page and Twitter account using a combination of organic and targeted posts.

Engagement will also be conducted through traditional media and use print materials to share information about the proposed regulation, promote open house events, and encourage participation in the consultation. Tactics will include the use of:

- Traditional media advertising in local new publications;
- Outreach through media directed towards the diverse cultural and ethnic audiences in the region;
- Translations of a notice about the consultation initiative.

Staff intend to present a summary of the feedback received during consultation, along with a proposed bylaw for consideration in the first half of 2018.

ALTERNATIVES

1. That the MVRD Board:
   a) Receive for information the report titled "Consultation on a Residential Wood Smoke Regulation for Metro Vancouver", dated September 6, 2017; and
   b) Direct staff to proceed with consultation on the proposed approach to regulating indoor residential wood burning, based on the bylaw development consultation paper attached to the report titled "Consultation on a Residential Wood Smoke Regulation for Metro Vancouver", dated September 6, 2017.
2. That the MVRD Board receive for information the report titled "Consultation on a Residential Wood Smoke Regulation for Metro Vancouver", dated September 6, 2017 and provide alternate direction to staff.

FINANCIAL IMPLICATIONS

If the Board approves Alternative 1, staff will proceed with consultation on a potential bylaw to regulate smoke emissions from indoor residential wood burning. The resources needed, including staff time and other costs associated with the consultation program and subsequent development of a proposed regulation have been approved within program budgets for 2017 and requested for 2018.

SUMMARY / CONCLUSION

Input from stakeholders on potential regulatory options to reduce wood smoke from indoor residential burning highlighted a number of concerns from residents, businesses and health experts as well as some support for measures to reduce wood smoke emissions from this source and the

resulting impacts they have on individuals and communities. The feedback was used to refine the development of a potential indoor residential wood burning regulation described in the attached bylaw development consultation paper titled Managing Residential Wood Smoke in Metro Vancouver.

Staff recommend Alternative 1, to proceed with consultation on potential bylaw to regulate smoke emissions from indoor residential wood burning, as described in the attached bylaw development consultation paper titled Managing Residential Wood Smoke in Metro Vancouver. Restricting emissions of wood smoke from indoor residential wood burning is recognized as a polarizing issue and could potentially require the future adoption of a bylaw by Metro Vancouver that would apply to the general public in their homes. The broad consultation proposed is intended to ensure that the public and stakeholders who may be impacted by a potential regulation to manage wood smoke emissions from indoor residential wood burning have sufficient opportunities to learn about the proposals and provide feedback.

Attachments *(Orbit # 23452695)*

1. Summary of Engagement Events During Preliminary Consultation
2. Preliminary Consultation Issues-Response Table
3. Bylaw Development Consultation Paper: Managing Residential Wood Smoke in Metro Vancouver

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Managing Residential Wood Smoke in Metro Vancouver

SUMMARY OF ENGAGEMENT EVENTS DURING PRELIMINARY CONSULTATION
AUGUST 2017

List of Engagement Events

Between March and April 2017 a total of 101 people participated in in-person, webinar, or by telephone preliminary consultation activities.

Group	Date	Location	Participants
BC Ministry of Environment event	March 14, 2017	Vancouver	17
Regional Engineers Advisory Committee – Climate Protection Sub-committee	March 16, 2017	Metro Vancouver Head Office	14
Public health agencies and research organizations	March 21, 2017	Metro Vancouver Head Office	7
Municipal fire department staff	March 22, 2017	Metro Vancouver Head Office	5
Hearth, Barbeque, and Patio Association of Canada	March 29, 2017	Webinar	11
Lower Fraser Valley Air Quality Coordinating Committee	March 30, 2017	Vancouver	17
Members of the Public	March 30, 2017	Webinar	6
Members of the Public	April 6, 2017	Webinar	3
Hearth, Barbeque, and Patio Association of Canada	April 12, 2017	Conference Call	4
Regional Engineers Advisory Committee – Climate Protection Sub-committee	April 20, 2017	Metro Vancouver Head Office	17

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Managing Residential Wood Smoke in Metro Vancouver

PRELIMINARY CONSULTATION ISSUES-RESPONSE TABLE
AUGUST 2017

Issues-Response Table

Several options, which could potentially be combined in a regulatory approach to managing wood smoke emissions, were presented during preliminary discussions conducted between March and May 2017 to receive feedback from representatives of different stakeholder groups. Engagement activities included face-to-face meetings, webinars, email correspondence, and social media to explore the viability of possible regulatory mechanisms for managing residential wood smoke emissions. Approaches discussed included:

- Restrictions on operating residential wood burning appliances based on emissions performance criteria (Option 1);
- Exemptions from such restrictions under certain conditions, such as a lack of other sources of comfort heating, distance from neighbours, and exceptional events (Option 2);
- Use of indicators of excessive wood smoke production (Option 3); and
- Additional restrictions during periods of degraded air quality (Option 4).

The following issues-response table provides a summary of the issues, comments, and questions raised about each option during the preliminary consultation on Managing Residential Wood Smoke in Metro Vancouver. Additional suggestions are noted as Other in the table below.

MV	Metro Vancouver
VCH	Vancouver Coastal Health
UBC	University of British Columbia
HPBAC	Hearth, Patio, and BBQ Association of Canada
REAC-CPS	Regional Engineers Advisory Committee – Climate Protection Subcommittee

Issue #	Options	Subcategory	Source	Issue/Comment/Question	Metro Vancouver Response
1	Option 1	Affordability/Equity	Members of the public (3)	Opposition to regulation that would require replacement of all conventional fireplaces with more efficient wood burning units. Owns a device that uses seasoned and dry wood, is well-maintained, and only used as back-up home heating during emergency power outages.	Comment noted
2	Option 1	Affordability/Equity	UBC	Comment that lower socioeconomic groups may benefit from regulation as these groups sometimes live downslope where wood smoke emissions tend to accumulate.	Comment noted.
3	Option 1	Affordability/Equity	VCH (2), HPBAC, Members of the public (4)	Concerns regarding affordability if replacement of wood burning devices is mandated. Suggestion to choose an emission level that is achievable by many appliance manufacturers to help people under financial hardship. Suggestion to have incentive programs to help facilitate upgrading of older wood burning devices. Questions about the success of current incentive programs.	Yes, there have been technological improvements/advances; however, there is a long lag in getting that technology to replace older residential wood burning devices. The $250 rebate (through the wood stove exchange program) is not sufficient to replace a device. Affordability is definitely a factor that needs to be considered. If BC passes regulations dictating that all wood burning stoves sold in BC must meet certain requirements, it should influence manufacturing.

Issue #	Options	Subcategory	Source	Issue/Comment/Question	Metro Vancouver Response
4	Option 1	Affordability/Equity	HPBAC, Member of the public, Maple Ridge Fire Department	Support for restrictions on use of open hearth fireplaces, to avoid impacting people experiencing economic hardship. Concerns and questions related to the types of devices that would be included in the proposed policy options.	Metro Vancouver would like to focus the program on open hearth fireplaces. Regarding economics, the wood stove exchange program currently offers only a modest rebate ($250). That program has been matched with the program offered by Fortis BC in some cases to provide a larger rebate.
5	Option 1	Affordability/Equity	HPBAC	Question on how many devices have been replaced through the wood stove exchange program. Suggestion to consider higher rebates for low income families.	400 out of an estimated 100,000 wood burning devices have been replaced. The cost of a replacement device is between $1,800 and $3,000, and the wood stove exchange program rebate offers $250.
6	Option 1	Affordability/Equity	Members of the public (2)	Comment that recently replaced wood insert with efficiency rating of 77.7% was highest efficiency available for zero-clearance fireplace. Hopeful that the new replacement will meet new regulations.	Comment noted.
7	Option 1	Affordability/Equity	Member of the public	Suggestion that exemptions be considered when wood is obtained from own sources (e.g. forest on property) and when wood burning is not an issue for neighbours.	Comment noted.

Issue #	Options	Subcategory	Source	Issue/Comment/Question	Metro Vancouver Response
8	Option 1	Affordability/Equity	HPBAC	Low-emission appliances are more expensive and if prices are too high, many will not update. Question on how to motivate change if this is the case.	The intent of introducing additional regulatory measures is for those who have old, uncertified stoves to be able to continue using them unless they exceed certain emissions levels -- Metro Vancouver could look at coupling it with regulations that make it easier for people to upgrade their stoves. Metro Vancouver hasn't reached a conclusion as to what the level of emissions should be. If restrictions are put in, Metro Vancouver needs input from the public and industry as to what would work best.
9	Option 1	Clarifications/Questions on Presented Data	VCH, Member of the public	Question on how many people in the region use wood as a primary source of heat.	A relatively low percentage of people in Metro Vancouver use wood as a primary source of heat. More people in Metro Vancouver are burning wood for ambiance.
10	Option 1	Clarifications/Questions on Presented Data	VCH	Concerns and questions on the number of complaints coming from specific individuals or geographical area. Suggestion to target specific users.	Metro Vancouver cannot target individuals with a regulation. Reporting does not always occur so it is difficult to base response only on reported incidents.

Issue #	Options	Subcategory	Source	Issue/Comment/Question	Metro Vancouver Response
11	Option 1	Clarifications/Questions on Presented Data	VCH	Concerns and questions on other sources that contribute to PM2.5 emissions within and around the region (e.g. agricultural sector).	Data is available in Metro Vancouver's emission inventory, but the agricultural sector is aggregated into the "other sources" category. The numbers related to this particular issue are only related to Metro Vancouver. However, data from Whatcom County indicates similar levels of emissions from residential wood burning. At a later date, mechanisms to manage emissions from the restaurant and agricultural sectors could be explored.
12	Option 1	Clarifications/Questions on Presented Data	Maple Ridge Fire Department	Wood burning is rare in multi-family dwellings. It is more common in single family homes.	Comment noted.
13	Option 1	Clarifications/Questions on Presented Data	Maple Ridge Fire Department	Question on statistics on age of homes with open hearth devices.	The majority are in homes 30 – 35 years old.
14	Option 1	Clarifications/Questions on Presented Data	HPBAC, Surrey Fire Department	Questions about how Metro Vancouver identifies the type of device emitting wood smoke and/or PM2.5 emissions, and which type of device contributes the most.	When calculating emissions, the emissions inventory looks at the emissions sources rather than the resultant ambient concentrations in the air (which is a different type of monitoring). This allows Metro Vancouver to distinguish between residential burning, agricultural burning, and commercial burning. Open hearth fireplaces are causing the majority of emissions.

Issue #	Options	Subcategory	Source	Issue/Comment/Question	Metro Vancouver Response
15	Option 1	Clarifications/Questions on Presented Data	HPBAC	Suggestion to consider CSA B-415 as a reference standard. Question about inclusion of wood burning stoves that meet new regulations in wood stove exchange program.	Yes, it has to be a certified wood stove. To the extent possible, the EPA and Canadian standards will be considered when developing the Metro Vancouver regulations.
16	Option 1	Clarifications/Questions on Presented Data	Member of the public	Suggestion to focus on other sources that contribute to PM2.5 emissions within the region (e.g. industrial, commercial, mobile sources).	Comment noted. The overall air quality management program in Metro Vancouver addresses a wide range of sources of PM2.5 emissions.
17	Option 1	Clarifications/Questions on Presented Data	REAC-CPS	Question on the number of appliances by municipality.	Comment noted. Question addressed in follow-up meeting, April 20, 2017.
18	Option 1	Clarifications/Questions on Presented Data	REAC-CPS	Request to see graphic of comparative emissions.	Comment noted. Question addressed in follow-up meeting, April 20, 2017.
19	Option 1	Education/Marketing	UBC	Suggestion to cater all education campaigns to aesthetic wood burners.	The long term vision is for aesthetic wood burning to be as unpopular as cigarette smoking. Metro Vancouver will need a strong educational program that connects wood burning to its health impacts. The message needs to be different for people burning wood for heat vs. ambiance.
20	Option 1	Education/Marketing	Member of the public, VCH	Suggestion that the general public responds better to information on the impact of wood burning on the individual, rather than general social health impacts.	Comment noted.

Issue #	Options	Subcategory	Source	Issue/Comment/Question	Metro Vancouver Response
21	Option 1	Education/Marketing	VCH	Suggestion to educate wood burners and to discuss the negative effects on indoor air quality.	Comment noted.
22	Option 1	Education/Marketing	HPBAC	Suggestion to work with industry to develop a more targeted approach to the rebate program.	One approach is to adapt the rebate program based on income. The program currently has a number of participating retailers. If Metro Vancouver could enhance the rebate program and promote it better, it might improve uptake.
23	Option 1	Education/Marketing	HPBAC	Question about current wood burning education programs in the region. Suggestion to develop educational plan about the impact of wood burning on air quality and human health.	Metro Vancouver currently has several educational initiatives to provide the public with information about the effects of residential wood smoke, including the Air Quality Bulletin Program, the Wood Smoke Forecast Line, several articles in "Caring for the Air", Wood Heat Workshops, and the Wood Stove Exchange Program. Metro Vancouver is open to feedback about program improvements. The region offers wood heat workshops, which include information on the proper seasoning and burning of wood. Education programs do discuss proper wood burning techniques, but education has not been enough.

Issue #	Options	Subcategory	Source	Issue/Comment/Question	Metro Vancouver Response
24	Option 1	Education/Marketing	HPBAC	Question about targets and goals of change-outs. Suggestion to focus promotions on targeted areas, to enhance incentives and involve industry.	Currently the target is anyone who wants to change to a cleaner burning technology. There is a $250 rebate provided by the provincial government to help offset the cost of replacement, which tends to be low in comparison to the cost of the change-out.
25	Option 1	Education/Marketing	Members of the public (2)	Modern stoves and masonry heaters can burn cleanly when used properly and fed appropriate fuel. Suggestion to allow use of efficient manufactured stoves and masonry stoves, especially in areas without other sources of heat. Note also that smoke pollution in winter months shows upgrades and education efforts are needed.	Comment noted.
26	Option 1	Education/Marketing	HPBAC	Excessive smoke can be caused by numerous factors including non-EPA appliances and operator error. Comment that both reasons could be addressed through intervention.	The emissions profile does change over the course of the fire - there is the startup and then a steady state. Start-up conditions may result in excessive emissions and this could be taken into consideration for regulation.
27	Option 1	Health/Environmental Impact	UBC	Support for reduction in residential wood burning devices to help reduce GHG emissions and to improve fire safety.	Comment noted.

Issue #	Options	Subcategory	Source	Issue/Comment/Question	Metro Vancouver Response
28	Option 1	Health/Environmental Impact	Member of the public	Question about biodegradability of wood smoke in comparison to petroleum based fuels.	Wood burning would be considered carbon neutral, but there is a trade-off. Local particulate emissions (and their impact on air quality) are the major concern here.
29	Option 1	Health/Environmental Impact	Member of the public	Support for a ban on all wood burning due to its negative impacts on human health.	Comment noted.
30	Option 1	Health/Environmental Impact	Member of the public	High efficiency wood burning inserts are carbon neutral and should be allowed.	Comment noted.
31	Option 1	Health/Environmental Impact	Doctors and Scientists Against Wood Smoke Pollution	Research indicates that per unit of heat generated, wood burning has a greater climate impact than all fossil fuels it is often promoted to replace. Neighbourhoods with wood burning households are subject to diseases and ill-health due to wood smoke in the region, with little regulatory protection or legal redress. Suggestion that wood smoke emissions deserve priority in mitigation strategies.	Comment noted.
32	Option 1	Health/Environmental Impact	Member of the public	High-efficiency burning has a significant positive impact on emissions.	Comment noted.

Issue #	Options	Subcategory	Source	Issue/Comment/Question	Metro Vancouver Response
33	Option 1	Monitoring/Enforcement	Maple Ridge Fire Department, Township of Langley Fire Department, Members of the public (2)	Support for restrictions on all wood burning devices to maintain consistency in enforcement. Suggestion that enforcement is an important consideration in looking at any regulation.	Comment noted.
34	Option 1	Monitoring/Enforcement	Maple Ridge Fire Department, Member of the public	Question on how a wood burning device user would know their emission output.	It will be difficult to assess emissions performance once a device is installed. The point of sale is the best time to find out about emissions. The device will be labeled with the emissions level. Those devices should be in compliance. Montreal has specified a date to register devices and a date after which a device cannot exceed certain emissions standards. Metro Vancouver will look at Montreal's bylaw and enforcement strategy to see if they have been successful in registering devices. For Metro Vancouver to take the best practices from regulations in Montreal, they would need to develop a list of devices that do not meet emissions standards in order for people to determine whether they need a replacement device.

Issue #	Options	Subcategory	Source	Issue/Comment/Question	Metro Vancouver Response
35	Option 1	Monitoring/Enforcement	Maple Ridge Fire Department	Problems and confusion arise when retailers sell devices that people are not allowed to use.	Metro Vancouver has requested that retailers put up signs about the proper usage of wood burning devices that do not meet bylaws (i.e. chimeneas). Metro Vancouver may need to take a different approach to try to get some of the larger retailers onboard.
36	Option 1	Monitoring/Enforcement	Member of the public	Question about having a mobile measuring unit to determine when something other than wood is being burned.	Monitoring is an important component of the program. Unfortunately, there isn't a device that can instantaneously measure wood smoke emissions. Metro Vancouver has a mobile monitoring unit on a large truck platform. It is a fully equipped monitoring station on wheels. Normally the mobile monitoring unit is placed in a stationary location for an extended period of time.
37	Option 1	Monitoring/Enforcement	HPBAC	Broad regulations requiring resources at intermittent times across a large area may be difficult to police and may not be effective in reducing emissions.	Comment noted.
38	Option 1	Monitoring/Enforcement	HPBAC	Concerns about best way to get clean burning technology into people's homes when lifespan of equipment is 30-50 years.	Comment noted.

Issue #	Options	Subcategory	Source	Issue/Comment/Question	Metro Vancouver Response
39	Option 1	Monitoring/Enforcement	Member of the public	Suggestion to create 'hot spot' designation related to how many complaints a house has against it. Suggestion to deliver educational material about the hazards of wood smoke to all homes in the 'hot spot' area.	Comment noted.
40	Option 1	Monitoring/Enforcement	HPBAC	Wood burning cycle from start up to die down should be considered when evaluating wood smoke emissions.	Comment noted.
41	Option 1	Other Regulatory Requirements	VCH, Surrey Fire Department, Member of the public	Questions regarding new building/new construction permitting changes on installation of traditional and wood burning fireplaces.	Traditional fireplaces are not prohibited; however, wood burning devices are generally not seen in new construction. Metro Vancouver has previously spoken to municipalities about building bylaws, heating requirements in new construction. There are no bylaws in place now that ban the installation of new wood burning devices.
42	Option 1	Other Regulatory Requirements	HPBAC	Concerns related to what types of devices will be included in the proposed policy options. Suggestion to include furnaces and boilers.	Comment noted. Clarification provided that Metro Vancouver already has regulatory requirements for furnaces and boilers.
43	Option 1	Other Regulatory Requirements	HPBAC	Question about whether Metro Vancouver would consider adopting new provincial regulations rather than creating new ones.	The proposed Metro Vancouver regulations would build on provincial regulations (especially to assist with replacing existing fireplaces and wood stoves that aren't certified).

Issue #	Options	Subcategory	Source	Issue/Comment/Question	Metro Vancouver Response
44	Option 1	Other Regulatory Requirements	Member of the public, HPBAC, Enfor Consultant	Concerns and questions related to the types of devices that would be included in the proposed policy options and the current number of devices meeting EPA standards. Support for policies to reduce emissions from wood stoves and fireplaces. Suggestion to require installation of compliant appliances over time to avoid creating hardship for residents.	The actual percentage of appliances meeting EPA standards is very small in Metro Vancouver. Comments noted on use of a phased approach.
45	Option 1	Other Regulatory Requirements	HPBAC, Members of the public (2)	Concerns related to the emissions targets for the new policy. Comment that 2 grams/hr emissions target is not feasible, and represents an estimated 96.5% reduction in emissions. Suggestion to ensure target is reasonable for people to achieve so they will participate in the program.	Metro Vancouver staff sought additional information during the discussion on the source of those percent reduction numbers, which was subsequently received. At this stage in the consultation, Metro Vancouver hasn't proposed specific emission limits, but is seeking feedback on the general concepts. The EPA certified stove is about 4.5 grams/hour, so 3.0 grams/hour would be considered fairly low.
46	Option 1	Other Regulatory Requirements	Member of the public	Concern that people are misled when they are able to buy fire pits even when outdoor burning is banned.	Metro Vancouver does intend to look at backyard burning as part of a separate initiative. The focus of this specific program is to deal with indoor residential wood burning, and the scope of applicability would

Issue #	Options	Subcategory	Source	Issue/Comment/Question	Metro Vancouver Response
					be better defined as development proceeds.
47	Option 1	Other Regulatory Requirements	Member of the public	Support regulations on banning the installation of new wood burning fireplaces or replacement of older, less efficient ones to allow natural dying out of devices. This would minimize financially hardship instead of forcing people to stop burning or spend for equipment upgrade.	Comment noted.
48	Option 1	Other Regulatory Requirements	Members of the public (3)	Opposition to new regulations due to concerns that current ones are onerous enough and that new regulations could infringe on people's wood burning enjoyment. People who regularly burn wood are already aware of financial benefits from high efficiency wood burning. People who occasionally burn are likely not major contributors to emissions and regulating their use would be ineffective.	Comment noted.
49	Option 1	Other Regulatory Requirements	Members of the public (3), SBI Stove Builder International Inc.	Suggestion to regulate the equipment with the worst emissions e.g. open fireplaces, and permit recently installed stoves and fireplace inserts that are near-compliant with EPA standards, but not ban wood burning outright.	Comment noted.

Issue #	Options	Subcategory	Source	Issue/Comment/Question	Metro Vancouver Response
50	Option 1	Other Regulatory Requirements	Member of the public	Suggestion to require wood burning certificate to prove understanding of smart burning practices.	Comment noted.
51	Option 1	Other Regulatory Requirements	SBI Stove Builder International Inc.	The City of Montreal created hardship for homeowners by requiring old appliances be retired too quickly and by setting an emissions standard that was difficult for wood fireplace technology to meet and expensive.	Comment noted.
52	Option 1	Other Regulatory Requirements	Member of the public	Support for Option A: 'Restrictions on the use of residential wood burning appliances based on an appliance's level of emissions'.	Comment noted.
53	Option 1	Other Regulatory Requirements	Industrial Chimney Company	Emission targets in EPA's Voluntary Fireplace Program differ between what it defines as fireplaces and those defined as stoves. Emissions rates for fireplaces are much higher than for stoves.	Comment noted.

Issue #	Options	Subcategory	Source	Issue/Comment/Question	Metro Vancouver Response
54	Option 1	Other Regulatory Requirements	HPBAC	Question about whether Metro Vancouver would agree to using 4.5 g/hr level as the standard if the 2.0 g/hr current EPA standard does not hold up in the US.	There are a number of U.S. EPA rules and regulations that are being reviewed. At this point in time Metro Vancouver is seeking feedback on the general concept of setting emission performance standards, which could be enforced at the point of sale, and determining if there is support for that. Consistency with the province and with the federal government regulations will be considered.
55	Option 1	Other Regulatory Requirements	HPBAC	The problem is with old appliances and challenge may not be solved by bringing in more stringent regulations for new technology unless old technology is also replaced.	Metro Vancouver does not regulate point of sale. The provincial government is responsible for those regulations. Metro Vancouver's authority stems from control over what people can emit. Metro Vancouver is looking at the practicality of the appliances that are already in homes as well as the appliances that will be purchased. Specific levels of emissions are not being discussed at this time.
56	Option 1	Other Regulatory Requirements	HPBAC	Emission level restrictions should match with Provincial and National standard so that it is easier for retailers and consumers to meet.	Comment noted.

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57	Option 1	Other Regulatory Requirements	Air Quality Professionals	Question about whether a registration scheme has been considered, in keeping with what's been done in Montreal.	Metro Vancouver staff have been in contact with staff at the City of Montreal. Registration of sources has been used in other regulations in Metro Vancouver.
58	Option 2	Affordability/Equity	Member of the public	Concern that regulations will prohibit people from enjoying the occasional wood fire even though these occasional burning practices contribute very little to overall air pollution.	Comment noted.
59	Option 2	Affordability/Equity	Member of the public	Suggestion to enhance rebates and access to loans to make it easier for people to transition to more efficient technologies.	Comment noted.
60	Option 2	Affordability/Equity	VCH	Suggestion that low-income groups be eligible to receive full replacements rather than exemptions which do not seem to work.	Metro Vancouver plans to go back to the Climate Action Committee to look for alternate sources of funding (acknowledging that $250 is not sufficient). Metro Vancouver would like to reimburse at a rate that is closer to the cost of a new device.
61	Option 2	Affordability/Equity	Fraser Health Authority	Concern that regulations could impose worse conditions (e.g. adverse health consequences) on lower socioeconomic groups, and request for more research about these impacts.	Metro Vancouver requested a list from Fraser Health to clarify the confounding health effects of regulation.
62	Option 2	Affordability/Equity	Air Quality Professionals	Question about how many people in the low income sector use woodstoves and fireplaces.	A relatively small portion of total population. Most burning is for ambience.

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63	Option 2	Clarifications/Questions on Presented Data	HPBAC	Question on whether restaurants using wood burning stoves will be subject to regulations.	Metro Vancouver does receive complaints about restaurants using wood fired devices. Currently, Metro Vancouver is looking at residential wood burning because it is the primary contributor, however, in the future other sources such as restaurants may be considered.
64	Option 2	Clarifications/Questions on Presented Data	Fraser Health Authority	Comment that other studies indicate considerable uncertainties in the estimated benefits from proposed wood-burning restriction policy in Metro Vancouver.	Comment noted.
65	Option 2	Clarifications/Questions on Presented Data	Fraser Health Authority	Comment that studies on apparent temperature and air pollution vs. elderly population mortality in Metro Vancouver shows that approximately 37% of the variation in all-season mortality from circulatory and respiratory causes can be explained by the variation in 7-day moving average apparent temperature.	Comment noted.
66	Option 2	Clarifications/Questions on Presented Data	Fraser Health Authority	Comment that the observed associations between wood smoke exposure and population mortality/morbidity are relatively weak (not causal) and that these could be affected further by socioeconomic, behavioural,	

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				biological/genetic or other environmental confounding factors not included or adequately controlled for in epidemiological studies. Any proposed population health interventions should be formed using evidence-based medicine and evidence-based practice for public health.	
67	Option 2	Education/Marketing	Surrey Fire Department	The perception of allowing open rural burning when residential burning is restricted needs to be considered.	Comment noted.
68	Option 2	Education/Marketing	HPBAC	Question about how wood burning stove manufacturers will be consulted through the process.	Metro Vancouver reached out to manufacturers to engage them in these discussions. Metro Vancouver would like to hear from manufacturers and asked participants in the consultation to provide any contact information for local manufacturers.
69	Option 2	Education/Marketing	Member of the public	Question about why EPA-approved wood stoves that produce emissions are still being promoted.	There are people who use wood burning appliances as their primary source of heat. A more efficient wood burning stove, operated in accordance with recommended practices, emits 75% less particulate matter.

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70	Option 2	Health/Environmental Impact	Member of the public, UBC	Concern that most wood burning is related to ambiance rather than necessity and that human health should take priority.	Comment noted.
71	Option 2	Health/Environmental Impact	Township of Langley Fire Department	Comment that chipping and hauling wood away may have larger environmental impact than burning it.	Comment noted.
72	Option 2	Monitoring/Enforcement	VCH	Comments about needing to handle individuals who are exempt from regulations but who also significantly contribute to emissions.	Comment noted.
73	Option 2	Monitoring/Enforcement	Township of Langley Fire Department	Comment that rural properties can be subject to restrictions on outdoor burning if development occurs on nearby properties.	Comment noted.
74	Option 2	Monitoring/Enforcement	Maple Ridge Fire Department	Comment that camps are exempt from outdoor wood burning restrictions in Maple Ridge (e.g. Boy Scouts, Provincial Parks)	Comment noted. This audience is worth looking into for future consultations.
75	Option 2	Other Regulatory Requirements	Member of the public	Concern that regulations do not take into account the benefits of good wood burning fireplaces.	Comment noted.
76	Option 2	Other Regulatory Requirements	HPBAC, Member of the public	Suggestion that exemptions include certified wood burning and pellet stoves when used correctly so that rural communities are not adversely affected by regulations e.g. during power outages.	Comment noted.

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77	Option 2	Other Regulatory Requirements	Member of the public	Suggestion that homes with access to natural gas should not be eligible for exemptions.	Comment noted.
78	Option 2	Other Regulatory Requirements	Members of the public (3)	Suggestion to consider different restrictions based on population density e.g. rural v. urban locations	Comment noted.
79	Option 2	Other Regulatory Requirements	Member of the public	Comment that wood stoves be required to meet certain standards but should not be banned.	Comment noted.
80	Option 2	Other Regulatory Requirements	VCH	Question about restricting supplies for aesthetic wood burning, for example taxing the sale of wood.	Metro Vancouver is only able to regulate emissions to improve air quality; they cannot regulate the supply side.
81	Option 2	Other Regulatory Requirements	HPBAC	Comment that City of Vancouver has banned natural gas appliances resulting in more wood burning appliances being purchased. Question about how Metro Vancouver and City of Vancouver will work together.	Metro Vancouver will consult with the City on any proposed regulation.
82	Option 2	Other Regulatory Requirements	Member of the public	Question about creating regulation that targets biggest emissions sources first.	Metro Vancouver's emission inventory indicates that residential wood burning is a significant source of emissions, and within that category, open hearth fireplaces are the biggest contributor. It should be noted that larger industrial sources are regulated, typically under an air

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					discharge permit from Metro Vancouver.
83	Option 2	Other Regulatory Requirements	Member of the public	Question about mandating homes to upgrade to natural gas when they are sold.	Metro Vancouver has looked into this and can engage in further discussion with, e.g, the real estate industry and others
84	Option 3	Affordability/Equity	Members of the public (2)	Wood burning keeps heating costs low, adds to ambiance and enhances quality of life for certain people.	Comment noted.
85	Option 3	Affordability/Equity	Member of the public	Newer (2-year old) high-efficiency wood stove does not emit smoke and has minimal CO2 emissions.	Comment noted.
86	Option 3	Affordability/Equity	HPBAC	Question about current rebate program being available only to certain retailers and why retailers need to be approved.	Under the Local Government Act, there is a restriction on providing assistance to the for-profit sector. Assistance can be provided under a partnering agreement, which needs to be approved by the Metro Vancouver Board, for each retailer. It is a legal requirement.
87	Option 3	Clarifications/Questions on Presented Data	Member of the public	Support for residential wood burning. Concerns that minimal impact of residential wood burning does not require costly and difficult enforcement.	Comment noted.
88	Option 3	Clarifications/Questions on Presented Data	VCH, Richmond Fire Department,	Question about whether there is a known correlation between wood burning smoke odour and PM2.5 emissions. Smell is often	Metro Vancouver is not aware of a known correlation. Generally, it is difficult to tell what material is being burned on the basis of smell alone. However, smelling wood smoke may

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			Member of the public	the indicator that influences someone to make a complaint.	help to identify a source that is contravening a regulation.
89	Option 3	Clarifications/Questions on Presented Data	Delta Climate Action and Environment	Concerns and questions on other sources that contribute to PM2.5 emissions within the region (e.g. agricultural burning and heavy duty vehicles).	Heavy duty vehicle emissions have been investigated and programs are in place or under development. Other diesel sources have been addressed through the non-road diesel engine regulations that are in place. In the future, regulations around outdoor burning may be considered. Data suggests that residential wood smoke is the largest contributor to fine particulate matter in the region.
90	Option 3	Health/Environmental Impact	Member of the public	Comment that even low-emission devices can still produce pollution if using inappropriate or wet wood fuel sources.	Comment noted – emissions quality is related to the device, the fuel burned, and the burning practices. Metro Vancouver always recommends using seasoned wood, rather than wet wood. There needs to be a multi-pronged approach in responding to this issue, involving a mix of regulation and education.
91	Option 3	Health/Environmental Impact	Member of the public	Support for regulation to address severe health hazard that is having an impact on residents.	Comment noted.
92	Option 3	Health/Environmental Impact	Member of the public	Reducing air flow can result in more smoke and higher creosote/fire risk.	Comment noted.

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93	Option 3	Health/Environmental Impact	Member of the public	Frequent wood burning in high-density urban areas with older homes can have significant impact on neighbours who may not be able to open their windows or hang their laundry out to dry.	Metro Vancouver does have homes that are increasingly close together. The fire department only has a certain number of tools at their disposal. Metro Vancouver is consulting with fire departments to make sure that they are equipped with tools to deal with issues like this.
94	Option 3	Health/Environmental Impact	Member of the public	Smoke from neighbour's meat smoker is having negative impact on quality of life, but there is little recourse for action through Fire Department or City Bylaw Department.	Comment noted.
95	Option 3	Health/Environmental Impact	Members of the public (2)	Wood burning negatively impacts the quality of life for others in the neighbourhood, infringing on their right to fresh air. Suggestion that residential wood burning needs to be enforced and that no exemptions should be considered.	Comment noted.
96	Option 3	Monitoring/Enforcement	VCH, UBC	Odour and visual cues of wood smoke are not useful indicators because they are highly subjective.	Sensory indicators (odor and visual cues) are difficult to measure objectively. Also, it is difficult to see smoke (opacity) at night and under certain weather conditions – there would need to be special back lighting for the chimney plume. Enforcement could be technology based.

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97	Option 3	Monitoring/Enforcement	UBC, Surrey Fire Department	Wood smoke complaints are sometimes related to neighbourhood disputes and ease of communication has increased which allows for more complaints to come in.	Given that wood smoke is often a neighbourhood problem, it can also mean that people are reluctant to report their neighbours. This can result in under-reporting.
98	Option 3	Monitoring/Enforcement	Surrey Fire Department	It is difficult to tell where wood burning is happening unless smoke is evident. If smoke is seen coming from a residential chimney, fire departments cannot do anything.	Comment noted.
99	Option 3	Monitoring/Enforcement	Surrey Fire Department	Weather (especially wind) can have an impact on how smoke is perceived and level of complaints about wood burning.	Comment noted.
100	Option 3	Monitoring/Enforcement	Delta Fire Department	The Delta Fire Department received 152 calls related to wood burning complaints. Police will make a routine follow up, but most complaints are not addressed as there are no issues. Comment that 65 calls are related to the smell of smoke, 4 of those were related to indoor wood burning. The Fire Services/Safety Act and Delta Fire Regulation Bylaw 5855 gives the Delta Fire Department the authority to enter a private dwelling.	Comment noted.

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101	Option 3	Other Regulatory Requirements	HPBAC	Support for appropriate opacity restrictions and suggestion that this approach requires further study for the Metro Vancouver region.	Comment noted.
102	Option 3	Other Regulatory Requirements	Maple Ridge Fire Department	Standards need to be clear and connected to justified health impacts.	Comment noted.
103	Option 4	Affordability/Equity	Fraser Health Authority	Additional restrictions could apply during times when weather is cold. Suggestion that more research is needed to understand how these restrictions would impact low-income groups during coldest winter days.	Comment noted.
104	Option 4	Clarifications/Questions on Presented Data	HPBAC	Question about definition of additional restrictions.	Metro Vancouver is not proposing to implement an all-out ban. We could restrict the times that wood stoves could be used. For example, we could have a ban in the summer months. Additional restrictions could be in relation to the time of year or the time of day, they could be in relation to geographic region (e.g. rural vs. urban).
105	Option 4	Education/Marketing	VCH	Suggestion to estimate the number of days that additional restrictions would apply, to help people understand the potential impacts of the proposed policy options.	Comment noted.

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106	Option 4	Education/Marketing	Township of Langley Fire Department	Carefully conveying information to residents will be important to help people understand the cumulative impacts of individual burning practices.	Comment noted.
107	Option 4	Monitoring/Enforcement	Port Coquitlam Councillor	Question about Metro Vancouver's capacity for enforcement.	Enforcement will depend on specific requirements of any regulation that is adopted. New regulations can require additional resources in the early stages of implementation.
108	Option 4	Monitoring/Enforcement	BC Ministry of Environment	A burn ban may be easier to enforce than other regulations and may increase understanding of the negative impacts of wood burning.	Comment noted.
109	Option 4	Monitoring/Enforcement	HPBAC	Question about how to handle enforcement during periods of degraded air quality. Comment that enforcement would be challenging, especially during bans and could escalate neighbourhood disputes.	There are a potential challenges to enforcement. Metro Vancouver wants to make sure regulations are enforceable.
110	Option 4	Other Regulatory Requirements	Members of the public (2)	Question about why wood burning appliances are allowed to be used in warm months. Suggestion to ban them from May to end of September.	Provided that the person is burning in compliance, currently people are allowed to burn at any time of the year. Restricting burning during the summer months is something that could be considered as the process moves forward.
111	Option 4	Other Regulatory Requirements	VCH	Additional restrictions could work.	Comment noted.

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112	Option 4	Other Regulatory Requirements	UBC	Additional restrictions should be a lower priority from a population health perspective.	Comment noted.
113	Option 4	Other Regulatory Requirements	HPBAC	Bans wait until certain pollution levels are reached and may be short-lived. Suggestion to focus restrictions on old technology devices by encouraging pro-active replacements.	Comment noted.
114	Option 4	Other Regulatory Requirements	Members of the public (3)	Support for restrictions on indoor wood burning during times of degraded air quality.	Comment noted.
115	Option 4	Other Regulatory Requirements	HPBAC	Support for restricting the use of uncertified appliances during times of degraded air quality.	Comment noted.
116	Options 1, 2	Affordability/Equity	Bowen Island Municipal Councillor (Metro Vancouver Director), Members of the public (4)	Certain communities rely on wood stoves as a primary source of heat or as a supplement to electric heat, because they lack access to natural gas. Suggestion to consider different circumstances around the region and include exemption(s) in the proposed regulation to account for homes using wood burning as a primary source of heat for comfort and for cooking, and during power outages.	Comment noted.

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117	Options 1, 2	Other Regulatory Requirements	Member of the public, Maple Ridge Fire Department	Restrictions make sense in a large urban area, not in rural or low-density areas. Suggestion that restrictions be considered differently for low density areas.	Comment noted.
118	Other	Affordability/Equity	HPBAC	Regulations should not disadvantage any particular segment of the population.	Metro Vancouver is paying close attention to socio-economic impacts.
119	Other	Affordability/Equity	Member of the public	Discussions about whether hydro costs play a role.	Comments noted.
120	Other	Affordability/Equity	Member of the public	Comment that rural areas will be most impacted by regulations because they do not have access to gas, and electricity is considerably more expensive. Comment that wood burning fires also contribute to enjoyment of properties.	Comments noted.
121	Other	Affordability/Equity	Members of the public (25)	Wood burning is an essential source of heat in certain areas and should not be regulated.	Comment noted.
122	Other	Affordability/Equity	Member of the public	Outdoor fires are an important social event and concern that this activity will be banned.	Comment noted. The current initiative is not intended to address outdoor burning.
123	Other	Affordability/Equity	Member of the public	Restricting the use of wood burning fireplaces (a centerpiece to a home) would negatively impact enjoyment of family togetherness.	Comment noted.

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124	Other	Affordability/Equity	Member of the public	Concerns raised about the potential negative economic effects from residential wood burning restrictions.	Comment noted.
125	Other	Clarifications/Questions on Presented Data	Delta Climate Action and Environment, HPBAC	Question about why Metro Vancouver did not see reductions in emissions with the existing bylaw and how the existing bylaw is enforced.	Education and incentives (i.e. stove replacement) have not been sufficient measures to see major changes in emissions. Bylaw provisions are general and it is difficult to prove pollution is being caused. It can also be difficult for officers to gain entry into residential homes, which presents a further enforcement challenge. Current provisions don't provide all the tools needed to protect against impacts from residential wood burning.
126	Other	Clarifications/Questions on Presented Data	Richmond Fire Department	Question about information available on the contribution of religious institutions (e.g. temples) to PM2.5 emissions within the region.	This source was not reflected in the study. This and other sources of smoke may need future investigation.
127	Other	Clarifications/Questions on Presented Data	Surrey Fire Department	Question about whether there are local manufacturers of certified wood burning stoves.	There are wood stove manufacturers in the region. It is likely that their products comply with EPA or CSA certification standards since major markets require it.

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128	Other	Clarifications/Questions on Presented Data	HPBAC	Question about what Metro Vancouver is.	Metro Vancouver regional district is a federation of 23 member jurisdictions. The region extends from Langley and Maple Ridge, in the east to Lions Bay in the west and down to the border in the south.
129	Other	Clarifications/Questions on Presented Data	HPBAC	Question about the actual percentage of cancer risk associated with wood smoke.	Referred to information made available online.
130	Other	Clarifications/Questions on Presented Data	HPBAC	Question about whether the health costs presented in Metro Vancouver's information relate only to the impact of wood smoke or whether it accounts for all emissions sources.	The health costs just reflect the impacts associated with wood smoke in the winter (heating) season.
131	Other	Clarifications/Questions on Presented Data	Member of the public	Questions about the breakdown of sources of PM2.5 emissions by community rather than by region.	The data on health effects is not available at a sub-regional level. In relation to emissions, there is a sense of where the 100,000 fireplaces are located within the region. Public neighbourhood complaints also help identify specific areas of concern.
132	Other	Clarifications/Questions on Presented Data	Member of the public	Questions about the validity of PM2.5 emissions data which seem to show an increase when wood burning seems to be declining.	In terms of percentages, it does look like the percentages are increasing. The level of wood smoke emissions has actually been holding steady but other sources are decreasing, leading to an increase in the relative proportion.

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133	Other	Clarifications/Questions on Presented Data	HPBAC	Question on whether it is an area or just 1 or 2 sources that people are complaining about.	Both types of complaints are received.
134	Other	Clarifications/Questions on Presented Data	Members of the public (3)	Comments on validity of the graphs presented by Metro Vancouver.	Comment noted.
135	Other	Clarifications/Questions on Presented Data	Member of the public	Questions about the measurement of particulate emissions from greenhouses using hog fuel and wood chips.	Agricultural facilities such as greenhouses fall under the Agricultural category in the Emissions Inventory document.
136	Other	Clarifications/Questions on Presented Data	Members of the public (2)	Opposition to banning residential wood burning. Concerns and questions on other sources that contribute to PM2.5 emissions (e.g. agricultural, industrial).	Comments noted. Data were provided to the public on the consultation web page, during webinar presentations as well as discussed on Metro Vancouver's Facebook page.
137	Other	Clarifications/Questions on Presented Data	Members of the public (3)	Questions on validity of data on residential wood burning being a larger contributor to emissions than vehicles and industrial sources. Request to see evidence.	Most of the residential wood smoke in the Metro Vancouver region comes from open hearth fireplaces, resulting in the discharge of over one-quarter (27%) of the fine particles emitted in the region. The proportion of fireplaces used in Metro Vancouver, compared to wood stoves, pellet stoves and other wood burning devices, has also been published in a report produced for BC Ministry of Environment which is available online.

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138	Other	Clarifications/Questions on Presented Data	Members of the public (2)	Residential wood burning is not a concern that requires regulating. Suggestion to focus on health and poverty issues, transit, municipal planning, and idling cars before home dwellers.	Comment noted.
139	Other	Clarifications/Questions on Presented Data	Members of the public (4)	Wood burning is going away on its own and does not require regulation.	Comment noted.
140	Other	Clarifications/Questions on Presented Data	Member of the public	Suggestions to include greenhouse gas emissions in research and to encourage use of EPA certified devices.	Comment noted.
141	Other	Clarifications/Questions on Presented Data	Member of the public	Concerns that pollution from vehicles is much greater in their neighbourhood than emissions from wood burning.	Comment noted.
142	Other	Clarifications/Questions on Presented Data	Member of the public	Concerns that the information being presented by Metro Vancouver is being manipulated to support their argument.	Comment noted.
143	Other	Clarifications/Questions on Presented Data	Member of the public	Living in a neighbourhood with specific topography and density of homes using wood burning fireplaces, could make air intolerable. Request to include identified community in a study.	Comment noted.

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144	Other	Clarifications/Questions on Presented Data	REAC-CPS	Suggestion to clarify data on residential wood burning in the region.	Comment noted. Question addressed in follow-up meeting, April 20, 2017.
145	Other	Clarifications/Questions on Presented Data	Matsqui First Nation	Question was about comparing emissions to the industrial emissions.	The emissions data indicate that 27% and 16% of emissions of fine particulate matter in Metro Vancouver are associated with residential wood burning and industry respectively, making residential wood burning the largest source of emissions of fine particulate matter in the region.
146	Other	Clarifications/Questions on Presented Data	Matsqui First Nation	Question the type of emission reduction methods and pollution indicators being considered.	Metro Vancouver has been seeking input about the potential options that could be considered to reduce emissions from indoor residential wood burning. The broad types of approaches are described in the Discussion Paper available on Metro Vancouver's web site.
147	Other	Clarifications/Questions on Presented Data	Matsqui First Nation	Question on whether it is necessary to raise insurance coverage if you own a woodstove.	That is a matter that should be discussed with an insurance agent or current insurance provider. Metro Vancouver has not yet sought or received input from the insurance industry.
148	Other	Education/Marketing	VCH	Suggestion to involve media in outreach efforts (i.e. public service announcements).	Comment noted.

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149	Other	Education/Marketing	Port Coquitlam Councillor	Question about First Nations engagement on the issue. Question about other groups who need to be engaged.	Metro Vancouver will share information about the residential wood smoke management options being considered with First Nations. Input is being sought about other groups who should be consulted.
150	Other	Education/Marketing	HPBAC	Question about plans for future engagement and consultation with stakeholders.	Feedback can be considered until the MVRD Board makes a decision. It is expected that there will be another round of consultation, subject to approval by the MVRD Board.
151	Other	Education/Marketing	Member of the public	A brochure on good wood burning practices would be useful.	Comment noted. Metro Vancouver has several information products available.
152	Other	Education/Marketing	Member of the public	Question about whether public education about proper wood burning and storage would be beneficial.	Educating people about the use of seasoned wood is critically important. This is already being done at Metro Vancouver wood heat workshops and in information materials.
153	Other	Education/Marketing	Member of the public	Question about possibility of educating people that wood burning fireplaces don't save money by heating homes, but instead pull heat up and out of the house.	Metro Vancouver has a number of education and outreach initiatives and it's an element of the education program. The lack of heating benefits from residential wood burning in an open hearth fireplace is an important point. There are a number of negative impacts associated with residential burning.

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154	Other	Education/Marketing	HPBAC	Question about whether ethnicity plays into areas where wood burning occurs more often.	Metro Vancouver is not aware of any ethnicity factors associated with wood burning. Metro Vancouver is aware of smoke emissions related to places of worship. These are not in the scope of the current proposals. There is a need to know more about consumers in general so they can be reached more effectively, both in terms of education and consultation.
155	Other	Education/Marketing	HPBAC	The wood burning industry would love to be involved in providing assistance and advice to Metro Vancouver as they establish the regulations and associated education/marketing campaigns.	Comment noted.
156	Other	Education/Marketing	HPBAC	WETT inspectors can also be accessed and involved in promoting the new regulations.	Comment noted.
157	Other	Education/Marketing	HPBAC	Suggestion to use local champions to help bring small communities on board with new regulations.	Both small and large community examples are valuable. It may be better to wait until there is more definition around the regulations before engaging local champions.

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158	Other	Education/Marketing	Member of the public	There will be resistance to changing wood burning practices and some people do not have alternative heating sources other than electricity.	Comment noted.
159	Other	Education/Marketing	Members of the public (3)	Education is needed to ensure that public understands the impact of wood burning on human health and air quality.	Comment noted.
160	Other	Education/Marketing	Member of the public	Education on what constitutes clean burning would be helpful in ensuring people use their wood burning appliances effectively.	Comment noted.
161	Other	Education/Marketing	Member of the public	Enquiry about whether Metro Vancouver has considered an education campaign on the Gulf Islands to minimize slash burning, educate on clean burning, and investigate changing out old technology.	Issue beyond Metro Vancouver's jurisdiction.
162	Other	Education/Marketing	HPBAC	Metro Vancouver should consider showing people how to operate their appliances properly to improve performance and reduce emissions, and should not paint all wood burning as being bad. Comment that video posted on Metro Vancouver's website stereotypes wood burning as bad, and reinforces poor burning practices.	The video did try to point out the better practices that could be used by referring to 'burning smart' workshops. Metro Vancouver will look at this as we continue to improve communications materials.

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163	Other	Education/Marketing	REAC-CPS	Question about plans for consulting with municipalities.	Input sought from municipal representatives on REAC-CPS about consultation contacts at municipalities.
164	Other	Health/Environmental Impact	Member of the public	Support for residential wood burning. Comment that it is likely less harmful that burning oil and should be allowed as long as it isn't creating undue fire risk.	Comment noted.
165	Other	Health/Environmental Impact	Member of the public	Wind generators have caused displeasure in one neighbourhood and create noise pollution.	Comment noted.
166	Other	Health/Environmental Impact	Members of the public (8)	Pollution is a result of increased population density. Suggestion to reduce the amount of people in Metro Vancouver.	Comment noted.
167	Other	Health/Environmental Impact	Member of the public	The chemicals in wood smoke negatively impact personal health. Wood smoke knows no boundaries because of its ability to penetrate indoors.	Comment noted.
168	Other	Health/Environmental Impact	Members of the public (3)	Comment on the negative impact of wood smoke on personal health which may be greater than that from exposure to cigarette smoke.	Comment noted.

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169	Other	Health/Environmental Impact	Member of the public	Suggestion to ban residential wood burning in five years' time. Comment that a ban makes sense to preserve community health.	Comment noted.
170	Other	Health/Environmental Impact	Member of the public	Request for Metro Vancouver to address pollution such as pesticides, household chemicals, garden equipment, outdoor cooking devices, and ships in the harbour. Comment that these emissions sources are likely largest contributors to pollution in the region.	Comment noted.
171	Other	Monitoring/Enforcement	VCH	Suggestion to have referral process that allows complaints received by Vancouver Coastal Health to be passed on to Metro Vancouver.	Comment noted.
172	Other	Monitoring/Enforcement	Township of Langley Fire Department	Outdoor fireplaces are sometimes connected to indoor flues, allowing people to burn outside under indoor burning regulations. Comment that non-compliant devices like chimeneas are being used outdoors. Question about whether outdoor burning is permissible?	Outdoor fireplaces are not permissible in some municipalities.
173	Other	Monitoring/Enforcement	HPBAC	Question about how Metro Vancouver plans on enforcing the new regulations.	Metro Vancouver wants to make sure tools included in the new regulations make it enforceable.

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174	Other	Monitoring/Enforcement	HPBAC	Question about nature of the wood burning complaints received by Metro Vancouver including geographic hot spots. Suggestion to target efforts with regards to regulation and enforcement.	There are a variety of complaints across the region and the ones Metro Vancouver receives only scratch the surface. Other agencies also receive complaints and then there are neighbour-to-neighbour complaints. Metro Vancouver is aware generally of where the complaints are happening. Metro Vancouver has been targeting our education efforts to problem areas and partnering with vendors to promote workshops and the wood stove exchange program. When complaints are received information is shared about the program. The challenge is getting people to buy-in to the change-out when they don't understand how they are contributing the problem.
175	Other	Monitoring/Enforcement	Member of the public	Policing the regulation will be difficult.	Comment noted.
176	Other	Monitoring/Enforcement	Air Quality Professionals	Question about how enforcement will be handled.	The focus of the preliminary consultation is getting feedback about the broad concepts outlined as options in the discussion paper.
177	Other	Other Regulatory Requirements	VCH	Interest expressed in understanding about the possibility of municipal tax exemptions for people using	Comment noted.

Issue #	Options	Subcategory	Source	Issue/Comment/Question	Metro Vancouver Response
				efficient, non-wood burning appliances.	
178	Other	Other Regulatory Requirements	UBC	Suggestion to tier regulations based on population density.	Comment noted.
179	Other	Other Regulatory Requirements	UBC	Question about rebates on home insurance for those without a wood burning device. Suggestion that this might be a good incentive.	Some insurers may not insure homes with wood burning devices. Metro Vancouver is interested in getting input from insurance companies.
180	Other	Other Regulatory Requirements	Members of the public (2)	Question about why wood burning appliances are allowed to be used in restaurants. Suggestion that these devices should be included in the regulation.	Restaurant sources are not within the scope of this particular program. In the future we do intend to address restaurant wood burning.
181	Other	Other Regulatory Requirements	Member of the public	Question about whether tying chimney cleaning to home insurance might make wood burning safer.	Metro Vancouver is authorized to control air emissions. Insurance companies may be interested in making sure that appliances are certified and maintained properly. Metro Vancouver interested in speaking with insurance companies further to discuss this issue.
182	Other	Other Regulatory Requirements	Member of the public	Suggestion to restrict burning of garbage.	Comment noted.
183	Other	Other Regulatory Requirements	Member of the public	Suggestion that backyard pizza ovens require neighbour approval.	Comment noted.

Issue #	Options	Subcategory	Source	Issue/Comment/Question	Metro Vancouver Response
184	Other	Other Regulatory Requirements	Government of Yukon, Energy Branch	Whitehorse has appliance and installation regulations in place to reduce emissions from wood burning appliances.	Comment noted.
185	Other	Other Regulatory Requirements	HPBAC	Question about timeline to present policy to the Metro Vancouver Board.	Timing for final presentations for board approval is aimed at early in 2018.

Discussion Paper

Managing Residential Wood Smoke in Metro Vancouver

Bylaw Development Consultation Paper

September 11, 2017

Introduction

Metro Vancouver Regional District (MVRD, operating as Metro Vancouver) is responsible for managing and regulating air quality in the region under authority delegated from the provincial government in the *Environmental Management Act*. Metro Vancouver is committed to protecting the environment and regulating the discharge of air contaminants, including smoke from indoor residential wood burning.

Wood smoke is a mixture of fine particulate matter and many gases, including some toxic air contaminants. Sources of wood smoke in the region include indoor and outdoor residential wood burning, commercial wood fired ovens, campfires, land clearing and agricultural outdoor burning, and wildfires. Indoor residential wood burning is the largest single source of fine particulate matter emissions in the region, which contribute to levels of fine particulate matter that can cause health concerns. Studies indicate that increased wood smoke exposure can be associated with more than 30% increase in incidents of otitis media, the leading reason for clinical visits and antibiotic prescriptions for infants and young children. A key benefit of managing emissions from residential wood burning is improvement in ambient air quality, and more specifically, reduction in the levels of fine particulate matter in the air people breathe, with associated public health benefits.

Metro Vancouver has operated a wood stove exchange program since 2009 and offers workshops to promote best burning practices to reduce wood smoke emissions. However, research on best air quality management practices in other jurisdictions indicates that, in addition to use of good burning practices, limiting the use of wood burning appliances to low-emission devices is essential to minimize emissions from indoor residential wood heating.

In the spring of 2017 Metro Vancouver conducted preliminary consultation on potential regulatory options to reduce wood smoke emissions. The input received during that process informed the development of the proposals outlined in this bylaw development consultation paper.

Purpose

This bylaw development consultation paper describes the effects of wood smoke from indoor residential wood burning, outlines the principles that have guided the development of proposed measures to reduce wood smoke emissions, provides information about voluntary and regulatory measures employed in Metro Vancouver and other jurisdictions to address wood smoke concerns, and summarizes the proposals for a potential bylaw to reduce wood smoke emitted from indoor residential wood burning. These proposals would add an additional tool for wood smoke management in the region and build a comprehensive suite of measures to reduce the negative impacts from wood smoke from indoor residential wood burning on human health, local and regional air quality.

Metro Vancouver prepared this bylaw development consultation paper for parties with an interest in the proposed regulatory measures for managing wood smoke. In particular, Metro Vancouver is interested in input and feedback from people, businesses and organizations dealing with the issues associated with indoor residential wood burning or wood smoke, including:

- People impacted by smoke from indoor residential wood burning;
- People who burn wood in their homes;
- Public health experts and research organizations;
- Wood burning appliance manufacturers and retailers;
- Wood energy technicians;
- Representatives of other businesses involved in the use, installation, or maintenance of wood burning appliances;
- Realtors;
- Home insurance providers;
- Energy service providers (e.g. BC Hydro, Fortis); and
- Representatives of Metro Vancouver member jurisdictions.

Defining the problem

Residential wood burning is widespread in rural and urban areas across the region. In evenings in the fall and winter, periods of air stagnation and reduced dispersion of air pollutants can lead to the development of high, localized concentrations of fine particulate matter from wood smoke in residential neighbourhoods. In addition, in Metro Vancouver wood smoke emissions from residential wood heating occur near people's homes and in more densely populated parts of the region, wood smoke from a single source has the potential to impact more people than may occur in rural areas of Metro Vancouver and the rest of the province.

Fine particulate matter is associated with chronic and acute respiratory and cardiac problems, particularly for children, the elderly, and people with existing lung and heart conditions. High levels of wood smoke close to where people live may exacerbate people's symptoms. Wood smoke also has a distinctive odour that can negatively affect residents' use and enjoyment of their environment, including inside their own homes. The concerns arising from these factors result in complaints and requests for help from members of the public and interest groups to reduce exposure to wood smoke.

Guiding principles

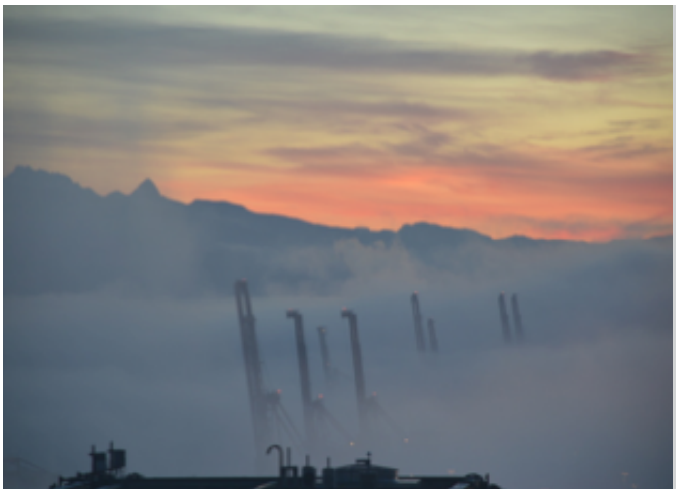
A regulatory strategy to address wood smoke emissions in Metro Vancouver would aim to:

- Minimize the risk to public health from emissions of residential wood smoke;
- Minimize the contribution of residential wood smoke to fine particulate emissions in the region;
- Address concerns expressed by members of the public about residential areas prone to residential wood smoke;
- Require the use of best practices such that only burning of clean, seasoned wood occurs, under circumstances where residential wood burning appliances are authorized to be operated; and
- Prevent undue burden or hardship for vulnerable members of the population who use wood burning as their primary source of heat, while maintaining the integrity of the objective of protecting human health

Working within the legislation

The provincial *Solid Fuel Burning Domestic Appliance Regulation* (SFBDAR) prohibits the sale of new wood burning appliances in British Columbia, unless they meet specific low emission certification requirements. The SFDBAR forms part of the existing regulatory framework for managing wood smoke in Metro Vancouver and has led to nearly all residential wood burning appliances sold in BC since September 2015 having been required to meet US Environmental Protection Agency (EPA) 2015 certification, or equivalent standards set by the Canadian Standards Association (CSA) in 2010. These standards certify wood burning appliance models that are capable of burning wood cleanly, with emission rates meeting acceptable limits. Although the SFBDAR ensures that replacement appliances installed in homes should not have higher emissions than the appliances they are replacing, emissions are largely uncontrolled after installation and depend on operators using good practices and clean burning fuels.

Metro Vancouver utilizes voluntary and regulatory measures to reduce residential wood smoke in the region. Provisions in *Greater Vancouver Regional District Air Quality Management Bylaw No. 1082, 2008* (Bylaw 1082) place restrictions on fuels burned and on the operation of residential wood-burning appliances. However, these restrictions have not fulfilled their intended purpose. Performance of wood burning appliances can be influenced by the type of appliance used, whether it is designed to be low-emission, and by following consistent good operating practices, which include burning clean, seasoned wood, and no prohibited materials which could cause additional negative impacts. Pressure treated or painted wood, plastics, particle board, MDF, plywood, saltwater driftwood, and cardboard are some examples of materials that are currently prohibited from being burned.



VANCOUVER HARBOUR ON JANUARY 21ST 2014, DURING A PERIOD OF STAGNATION.

Metro Vancouver has operated a wood stove exchange program since 2009 that offers incentives for residents to replace fireplaces and uncertified wood stoves with new lower emissions appliances. Metro Vancouver has also developed education materials and offered workshops to residents to promote wood burning best practices to reduce wood smoke emissions. Wood heat workshops provide information about techniques to improve the efficiency of wood burning and reduce wood smoke emissions. Good burning practices to minimize smoke include:

- Burning only clean, seasoned wood, with a moisture content of 20% or less;
- Never burning prohibited materials that can release toxic chemicals;
- Burning small, hot fires;
- Not damping or holding a fire overnight; and
- Getting your chimney inspected and swept regularly.

Since 2015, Metro Vancouver has utilized air quality bulletins to provide residents with guidance about localized air quality degradation and encourage people to take voluntary actions to reduce emissions. A smoke forecast is also made available between October and March through Metro Vancouver's air quality phone line to help residents determine when conditions are best for smoke to dissipate. Although voluntary actions supported by Metro Vancouver initiatives have reduced fine particulate matter emissions and will continue to do so, more robust regulatory initiatives are being considered to provide greater safeguards for air quality and public health in the region.

Some municipalities in Canada have regulated emissions from residential wood burning appliances in recent years, including the City of Montreal in 2015, the City of Port Alberni in 2012 and the Town of Smithers in 2006. These bylaws allow the operation of wood burning appliances as long as they meet specific particulate matter emission rates. Some of these bylaws include prohibitions around the use of wood burning appliances during periods when air quality is degraded. Analysis of air quality before and after wood smoke regulation in the San Joaquin Valley in California suggests that a regulatory approach to managing wood smoke emissions can be effective in providing air quality and health benefits.

Proposed regulation

Metro Vancouver is proposing to develop a regional bylaw to reduce wood smoke emissions from indoor residential wood burning. The proposed regulation would be a part of a comprehensive residential wood smoke management program that includes initiatives promoting cleaner burning practices and offering education on alternative heat options, fuel quality, and wood moisture content to improve burning efficiency and reduce emissions.

- The regional wood smoke emissions regulation proposed for consideration would use a phased-in approach and comprises three elements:
- A seasonal restriction on the use of indoor residential wood burning appliances between May 15 and September 15;
- Registration for indoor residential wood burning appliances based on particulate matter emission levels; and
- Prohibition of emitting wood smoke from residential wood burning appliances, unless the device is registered or if other conditions apply.

These elements are illustrated in Figure 1 and described in more detail in the following sections. The proposed regulation would also replace and clarify the operating requirements with respect to allowable fuels and operation of appliances under Section 8 of the Air Quality Management Bylaw No. 1082, 2008.

The proposed regulation would not apply to Aboriginal spiritual ceremonies and rituals that may involve burning of traditional medicines including, but not limited to, cedar, sage, and willow bark.

Seasonal Restrictions

During warmer months of the year, between May 15 and September 15, residential wood burning appliances in the region would be prohibited from emitting wood smoke under the proposed regulation. This restriction would be applied to all residential indoor wood burning appliances, including but not limited to open hearth fireplaces, fireplace inserts, wood stoves, and pellet stoves. Appliances used only for cooking purposes would be exempt from the seasonal restriction.

The effective start date of the proposed seasonal restriction would be May 15, 2020

SEASONAL WOOD BURNING RESTRICTION*

Smoke emissions from indoor residential wood burning appliances are prohibited from May 15 to September 15.

Appliances include but not limited to
- open hearth fireplaces
- fireplace inserts
- wood stoves
- pellet stoves

* appliances used solely for cooking may be used

INDOOR WOOD BURNING APPLIANCE REGISTRATION**

(WITH ANNUAL CONFIRMATION)

- Is the appliance CSA (B415.1) or US EPA certified?
- Does the appiance meet the CSA or US EPA particulate matter emission limit of 4.5 grams per hour, as declared by an accredited person***?
- Does the appliance meet recognized masonry heaters criteria as defined in applicable codes and standards such as ASTM E1602?

** Registration not required on appliance only operated during temporary service outages lasting 4 hours or more.

***An accredited person is a qualified person or agency, as specified in the regulations by the District Director.

PROHIBITION ON RESIDENTIAL WOOD SMOKE EMISSIONS

(FROM *UNREGISTERED* INDOOR WOOD BURNING APPLIANCES)

If any of the following applies, uncertified appliances may be allowed to be temporarily registered:

- The appliance is the home's sole source for space heating or for cooking

OR

- The owner/operator of the appliance has insufficient means to pay for heating other than with wood

OR

- The appliance is located outside the Urban Containment Boundary (UCB)

FIGURE 1 PROPOSED RESIDENTIAL WOOD SMOKE REGULATION TIMELINE

Registration of Wood Burning Appliances

Under the proposed regulation, people operating indoor residential wood burning appliances would be required to register their appliances to identify them as low-emitting wood burning appliances that meet adequate particulate matter emission levels. Applications for registration would be available at the appliance point of sale, or during installation, inspection, or maintenance by an accredited person, as well as other sources such as through Metro Vancouver directly.

An accredited person will have completed sufficient training, such as the Wood Energy Technical Training program, to ensure that the accredited person has the knowledge and professional competencies required to inspect and maintain wood burning equipment.

Appliances that would qualify for registration include:

- Wood burning appliances that are certified as meeting the CSA performance standard for solid fuel burning heating appliances (CSA B415.1) or US EPA emissions limits for new residential heaters. Newly installed appliances would be required to be CSA or US EPA certified according to the emissions limits applicable at the time of purchase; or
- Wood burning appliances that meet the CSA and US EPA particulate emissions criteria of less than 4.5 grams per hour as demonstrated by emissions testing conducted by a qualified person, or as certified by an accredited person; or
- Site-built or site-assembled wood-fueled heating appliances, consisting of a firebox, a large masonry mass, and a maze of heat exchange channels that are confirmed by an accredited person as complying with recognized masonry heater criteria as defined in applicable codes or standards, such as ASTM E1602.

Figure 2 shows a guide to the appliance registration process.

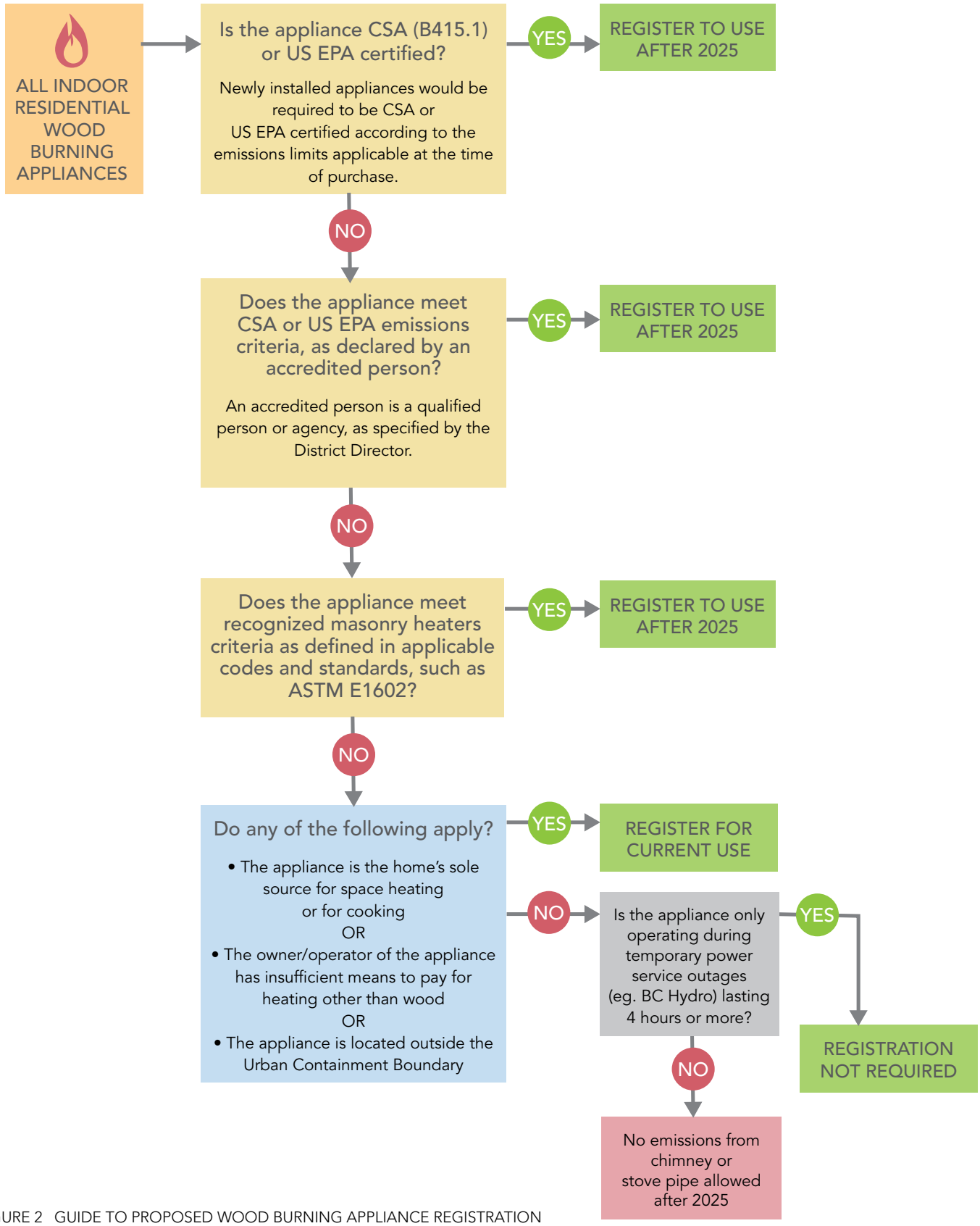


FIGURE 2 GUIDE TO PROPOSED WOOD BURNING APPLIANCE REGISTRATION

Registration would require a declaration form for each indoor residential wood burning appliance to be submitted to Metro Vancouver from the operator, signed by the operator and an accredited person confirming the following:

- The appliance installed at the residential address is certified or has otherwise been declared as being compliant with the requirements of Metro Vancouver's bylaws;
- The operator has a copy of and agrees to follow the recommended operating procedures and fuel quality guidelines provided by the manufacturer or an accredited person;
- The operator has a copy of and agrees to follow Metro Vancouver's recommended cleaner burning practices and maintaining fuel quality to minimize wood smoke emissions; and
- The number of appliances in a home as well as the location (main residence or ancillary building).

In the absence of meeting emissions requirements for registration, the operator could consent to an inspection by a Metro Vancouver officer, with applicable fees, to confirm the appliance's acceptability for registration. All other appliances not meeting emissions requirements for registration would be designated as *unregistered* appliances, unless exemption criteria applied.

Participants in Metro Vancouver's Wood Stove Exchange program could opt to have their appliances registered upon confirmation of program participation.

Reconfirmation of the status of *registered* wood burning appliances would be required annually to ensure that the certified appliance is still in place and to ensure that the current owner of the residence still has and agrees to use recommended operating practices and cleaner burning practices. This requirement is similar to registration of alarm systems required in some member jurisdictions. The role of municipal governments, the real estate industry, home insurance providers and others in ongoing registration processes can be examined.

All qualifying appliances would have to be registered from September 15, 2022 under the proposed bylaw.

Prohibition of Smoke Emissions

Under the proposed regulation, the emission of smoke from residential and ancillary buildings (e.g. garages or workshops) for which there is no registered indoor wood burning appliance would be prohibited after March 31, 2025. Unregistered appliances would not need to be removed.

During exceptional events, such as a power service disruption lasting four or more hours, the prohibition on emissions of smoke from unregistered indoor wood burning appliances could be suspended.

Exemption Criteria

Indoor wood burning appliances that do not meet the emissions limits criteria for registration could be registered if any of the following conditions apply:

- The residential wood burning appliance is the sole source of space heating or heat source for cooking in the home; or
- The owner of the appliance has insufficient means to pay for heating with a fuel other than wood; or
- The appliance is located outside the Metro Vancouver Urban Containment Boundary.

These criteria could be declared for any type of residential indoor wood burning appliance, including but not limited to open hearth fireplaces, fireplace inserts, wood stoves, pellet stoves and cook stoves. Appliances would be registered for the current burning season. Applications for registration under the above exemption criteria would be required to be made annually.

Implementation

A phased approach is being proposed to the implementation of the potential regulation to manage residential wood smoke from indoor residential wood burning. Subject to the approval of a bylaw by the MVRD Board, as outlined in this paper seasonal summer restrictions could start in 2020, registration requirements for indoor wood burning appliances could apply from 2022, and restrictions on emissions of wood smoke could apply from September 2025.

Providing comments on the proposed regulation

Metro Vancouver welcomes feedback on the proposed regulation to manage residential wood smoke from indoor residential wood burning. Opportunities to provide feedback include public open house events, online webinars, an online feedback form, and social media. Feedback may also be provided by email at RWB@metrovancouver.org or telephone on 604-432-6200. Details about consultation events will be posted on the project webpage. For additional information about participating in an event, contact us by email at RWB@metrovancouver.org or telephone on 604-432-6200.

To ensure your comments will be fully considered, please provide feedback **before January 15, 2018**.

Comments and suggestions will be compiled into a consultation summary report. Metro Vancouver will carefully consider all feedback when developing a bylaw proposal for managing wood smoke from indoor residential wood burning, Comments received after January 15, 2018 may be taken into consideration until the MVRD Board makes a decision about a bylaw regulating wood smoke emissions from indoor residential wood burning.

Metro Vancouver staff and contractors will treat comments received with confidentiality. Please note that any comments you provide and information that identifies you as the source of those comments may be publicly available if a freedom of information (FOI) request is made under the Freedom of Information and Protection of Privacy Act.

Thank you for taking the time to consider and provide input on these potential changes to residential wood smoke in Metro Vancouver

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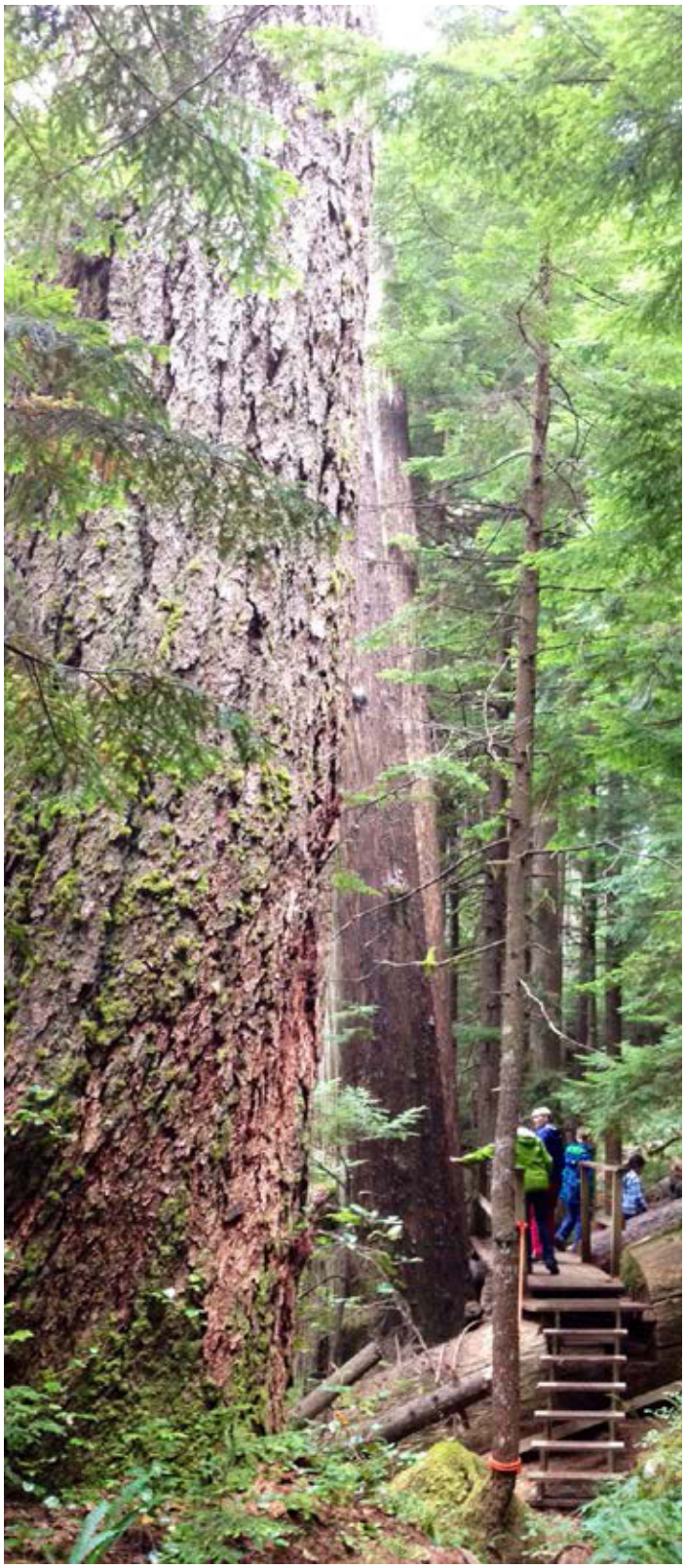

To: Aboriginal Relations Committee

From: Marino Piombini, Supervisor, Aboriginal Relations, Legal and Legislative Services

Date: September 6, 2017 Meeting Date: October 5, 2017

Subject: **2017 Community to Community Forum**

RECOMMENDATION

That the MVRD Board receive for information the report, dated September 6, 2017, titled "2017 Community to Community Forum."

PURPOSE

To provide Aboriginal Relations Committee with an information report on the 2017 Community to Community Forum.

BACKGROUND

One of the priorities for the Aboriginal Relations Committee, as set out in its Terms of Reference, is engagement in initiatives and activities that strengthen relationships between Metro Vancouver municipalities and First Nations within the Metro Vancouver region. Aboriginal Relations, operating under the purview of the Aboriginal Relations Committee, is committed to relationship building with area First Nations. Community to Community Forums are intended to foster positive relationships between communities.

The Aboriginal Relations Committee endeavours to co-host one Community to Community Forum each year with a different First Nation or multiple First Nations in the Metro Vancouver region. In 2014, a Forum was held with Katzie First Nation; in 2015, a Forum was co-hosted with Tsleil-Waututh Nation. Last year, a Community to Community Forum was held with Squamish Nation.

2017 Community to Community Forum

The 2017 Community to Community Forum was held with the Tsawwassen First Nation (TFN) at its Recreation Centre on Tsawwassen Lands on Thursday, July 20, 2017.

The half-day Forum began with a prayer by TFN elder Barbara Joe, followed by a welcome song (drumming) performed by Chief Bryce Williams. The 50 invited participants, who gathered at the Recreation Centre, were elected officials and senior staff from both Metro Vancouver and its Aboriginal Relations Committee as well as Tsawwassen First Nation.

Following the breakfast, Board Vice-Chair Raymond Louie, delivered a speech that focused on the importance of local government-First Nation relations over the next 150 years and beyond.

Chief Williams also delivered an opening speech in which he welcomed and thanked everyone for attending the session.

Metro Vancouver's Chief Administrative Officer (CAO), Carol Mason, presented on the Metro Vancouver federation and organization, its work on Aboriginal Relations, and relationship with Tsawwassen First Nation.

TFN's Interim CAO, Tom Fletcher, and Territorial Management Officer, Andrew Bak, presented on the First Nation's past, present and future, and covered the intent and outcome of TFN's treaty, which became effective on April 3rd, 2009. Benefits of the treaty have included an expanded land base, membership in the regional district (MVRD) and water district (GVWD), access to natural resources, and the development of various construction projects intended to achieve economic parity with other communities.

TFN's residential development was focused on during the presentation and the subsequent guided bus tour of Tsawwassen Lands. The First Nation is endeavouring to develop 2,800 residential market housing units, 42 of which are already occupied. This development is expected to bring an additional 6,000 residents to TFN Lands.

Tsawwassen Mills (the mall), which was the largest real estate deal in 2014 in BC, has resulted in two million square feet of commercial development.

Current policy initiatives for TFN include:

- End of tax exemptions for TFN members who are now paying GST on their land and will be paying income taxes and property taxes beginning in 2021.
- Housing needs and vision of bringing members that live off TFN Lands back to the First Nation's community.
- Maintaining positive relationships with non-members (i.e. leaseholders).
- Investing in community infrastructure such as a youth centre, elders' centre and new administration building.
- Protecting the community area for future Tsawwassen members.

The challenges identified by the First Nation include prioritizing its goals, housing, risk tolerance, lack of familiarity with development and taxation issues. To overcome these challenges, TFN identified making significant progress in its long-term vision (e.g. TFN's unemployment rate is non-existent), partnerships with other entities (e.g. Port of Vancouver, Great West Life), and regaining self-sufficiency as a First Nation.

According to TFN's presentation, Tsawwassen's pursuit of true reconciliation is one that can only be actualized through partnerships grounded in mutual respect and understanding.

The rest of the guided bus tour included TFN facilities such as new playgrounds, the First Nation's long house, the fisheries department and its new sewage treatment plant, as well as the farm school project undertaken in partnership with Kwantlen Polytechnic University (KPU), and the Tsawwassen Mills mall. Chief Williams led the Forum participants inside the mall and focused on the various pieces of First Nations' art and carvings that adorn the shopping complex.

The Community to Community forum concluded with a lunch at the Tsawwassen Recreation Centre.

ALTERNATIVES
There are no alternatives to present as this is an information report.

FINANCIAL IMPLICATIONS
The 2017 Aboriginal Relations budget endorsed by the Board included provisions for a Community to Community Forum event. This Forum was within that budget.

OTHER IMPLICATIONS
The focus of this Community to Community Forum was different from some of the previous events held with Katzie (2014), Tsleil-Waututh (2015) and Squamish (2016). The 2017 Community to Community Forum was a meeting between the Tsawwassen First Nation Executive Council, management and staff meeting with Aboriginal Relations Committee members and Metro Vancouver management and staff.

SUMMARY / CONCLUSION
This report presents a summary of the 2017 Community to Community Forum with Tsawwassen First Nation for the Board's information.

A Community to Community Forum provides an opportunity for bringing together First Nations and local governments to foster positive relationships between communities. Given that one of the priorities for the Aboriginal Relations Committee is engagement in initiatives and activities that strengthen relationships between Metro Vancouver and First Nations within the region, the 2017 Community to Community Forum with Tsawwassen First Nation met the Committee's objectives.

23092446

To: Aboriginal Relations Committee

From: Marino Piombini, Supervisor, Aboriginal Relations, Legal and Legislative Services

Date: September 25, 2017 Meeting Date: October 5, 2017

Subject: **Quarterly Report on Reconciliation Activities**

RECOMMENDATION

That the MVRD Board receive for information the report, dated September 25, 2017, titled "Quarterly Report on Reconciliation Activities."

PURPOSE

To provide Aboriginal Relations Committee members with a quarterly report on reconciliation activities.

BACKGROUND

At its February 2017 meeting, the Aboriginal Relations Committee discussed strengthening relationships with local First Nations and exploring opportunities for Committee members to engage in reconciliation activities. The Committee subsequently endorsed its 2017 Work Plan with the addition of a quarterly update on regional and local reconciliation activities and opportunities.

This report is presented as an information report on reconciliation activities within the Metro Vancouver region.

RECONCILIATION ACTIVITIES

On October 30, 2015, the MVRD Board adopted a resolution endorsing the Summary Report of the Truth and Reconciliation Commission of Canada on Indian Residential Schools, as well as the following objectives:

- Liaise with the Truth and Reconciliation Commissions (and by extension Reconciliation Canada);
- Raise awareness about Indian Residential Schools;
- Provide cultural competency training; and
- Strengthen relationships with First Nations.

The above objectives are highlighted in the Attachment for each of the listed activities:

- Reconciliation events and activities that have been undertaken by Metro Vancouver over the past few months; and
- Upcoming opportunities over the next few months for engaging in such activities.

ALTERNATIVES
There are no alternatives to present as this is an information report.

FINANCIAL IMPLICATIONS
The various activities identified have been included in the Aboriginal Relations budget for 2017. There are no additional financial implications with respect to the items identified in this report.

SUMMARY / CONCLUSION
This report provides a quarterly update on reconciliation activities involving Metro Vancouver and local governments as per the Committee's recommendation and for members' information.

Attachment:
1. Lists of Local and Regional Reconciliation Activities and Opportunities

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ATTACHMENT

Lists of Local and Regional Reconciliation Activities and Opportunities:

Activities Undertaken by Metro Vancouver

Objectives	Activity/Date	Notes
Strengthening Relationships with First Nations	Rising Eagle Reconciliation Concert held July 7, 2017 in Coquitlam, BC	Aboriginal Relations staff responded to requests and provided contact information for local First Nations to the organizers of this event, Rising Eagle. The event was held at the Lafarge Lake Amphitheatre in Coquitlam, BC.
Strengthening Relationships with First Nations	Tsawwassen First Nation-Metro Vancouver 2017 Community to Community Forum held on July 20, 2017 in Tsawwassen, BC	As part of its Annual Work Plan, the Aboriginal Relations Committee co-hosts a Community to Community Forum with a local First Nation. The 2017 Community to Community Forum (C2C) was held at the Tsawwassen First Nation Recreation Centre on Tsawwassen Lands. The 50 invited participants included Tsawwassen's Chief and Executive Council, staff and Tsawwassen members as well as Metro Vancouver's Aboriginal Relations Committee members and Metro Vancouver senior management and staff. A bus tour of Tsawwassen Lands and recent development, including Tsawwassen Mills Mall, was included as part of the Forum.
Raising Awareness	Articles and video of the Tsawwassen First Nation-Metro Vancouver Community to Community Forum held on July 20, 2017 in Tsawwassen, BC	Following the 2017 Community to Community Forum between Tsawwassen First Nation and Metro Vancouver's Aboriginal Relations Committee, Aboriginal Relations staff prepared an Intranet article that summarized and explained the proceedings from the Forum and included photos from that event. An abbreviated version of the Intranet article was also prepared, based on the 2017 Community to Community Forum, for the Chair's Newsletter available on the Internet. A video summarizing the Forum will also be prepared for posting on the Internet as part of the "Metro Vancouver Close Up" series.
Strengthening Relationships with First Nations	Revisions to Metro Vancouver's *Procurement and Real Property Contracting Authority* Policy	At its meeting on July 28, 2017, the Metro Vancouver Regional District (MVRD) Board approved revisions to Metro Vancouver's Procurement Policy to include more opportunities for First Nation Entities to bid on regional district projects.

		This is the second policy that Metro Vancouver has developed in 2017 related to First Nations. Metro Vancouver adopted a Corporate Policy on Information Sharing and Engagement with First Nations for Construction Projects in May 2017.
Raising Awareness	Intranet Article Promoting Reconciliation Walk and Orange Shirt Day	An Intranet article was prepared by Aboriginal Relations staff to promote reconciliation events in September 2017: Reconciliation Walk on September 24 and Orange Shirt Day on September 30.
Liaising with Reconciliation Canada and Raising Awareness	A Walk for Reconciliation, September 24, 2017	Participation in Reconciliation Canada's 2017 Reconciliation Walk from downtown Vancouver, at Cambie and Georgia Streets (9:30am), to Strathcona Park, 851 Malkin Avenue in Vancouver (Reconciliation Expo at 10:30am-3pm) on Sunday, September 24, 2017.

Upcoming Opportunities for Engaging in Reconciliation Activities

Objectives	Activity/Date	Notes
Cultural Competency Training	A free six-week online course: "Reconciliation through Indigenous Education", UBC Office of Indigenous Education. Next intake runs from October 17, 2017 to December 2, 2017 (Register by or before October 17)	This course is intended to help participants envision how Indigenous histories, perspectives, worldviews, and approaches to learning can be made part of the work we do in classrooms, organizations, communities, and our everyday experiences in ways that are thoughtful and respectful. A full course description is available by clicking on this link.
Raising Awareness	A "Lunch and Learn" session for Metro Vancouver staff on October 19, 2017.	Metro Vancouver Aboriginal Relations staff have organized a "Lunch and Learn" session for regional district staff on "The Current Legal Landscape on Aboriginal Rights and Title Issues", to be presented by a nationally-recognized authority on aboriginal law, Thomas Isaac, with the Cassels Brock law firm.

To: Finance and Intergovernment Committee

From: Raymond Kan, Senior Regional Planner, Parks, Planning and Environment

Date: September 26, 2017 Meeting Date: October 11, 2017

Subject: **TransLink Application for Federal Gas Tax Funding from the Greater Vancouver Regional Fund for 2019 Fleet Expansion and Modernization**

RECOMMENDATION

That the MVRD Board approve $121.150 million in funding from the Greater Vancouver Regional Fund for the following transit projects proposed by TransLink in its *Application for Federal Gas Tax funding from the Greater Vancouver Regional Fund for 2019 Fleet Expansion and Modernization* as attached to the report dated September 26, 2017, titled "TransLink Application for Federal Gas Tax Funding from the Greater Vancouver Regional Fund for 2019 Fleet Expansion and Modernization":

a) Project 1 – Year 2019 Double Decker Diesel Bus Purchases for Fleet Expansion
b) Project 2 – Year 2019 Conventional 40' Hybrid Bus Purchases for Fleet Expansion
c) Project 3 – Year 2019 Conventional 60' Hybrid Bus Purchases for Fleet Expansion
d) Project 4 – Year 2019 HandyDART Purchases for Fleet Expansion
e) Project 5 – Year 2019 Double Decker Diesel Bus Purchases for Fleet Replacement
f) Project 6 – Year 2019 HandyDART Gasoline Vehicles for Fleet Replacement
g) Project 7 – Year 2019 Community Shuttle Gasoline Vehicles for Fleet Replacement.

PURPOSE

To present for MVRD Board consideration TransLink's request for federal gas tax funding from the Greater Vancouver Regional Fund (GVRF) under Metro Vancouver's *Federal Gas Tax Fund Expenditures Policy (GVRF Policy)*.

BACKGROUND

TransLink is requesting approval of seven projects for federal gas tax funding from the GVRF to expedite the delivery of new transit vehicles beginning in 2019. The Metro Vancouver Regional District Board has approval authority over requests for GVRF funding, including scope changes. On September 22, 2017, Metro Vancouver received the latest request for GVRF funding, seeking $121.150 million for seven projects.

GREATER VANCOUVER REGIONAL FUND POLICY REQUIREMENTS

The *GVRF Policy* sets out the application process, information requirements, and evaluation criteria to respond to TransLink's request for GVRF funding. In typical cycles, the MVRD Board will issue a call for proposals on an annual basis by April 1. The deadline for TransLink to submit final proposals is September 1. The MVRD Board would make its decisions by November 30. Notwithstanding the prescribed process, Metro Vancouver has accommodated TransLink's desire to expedite the delivery of expansion and replacement vehicles as set out in the *Phase One Investment Plan*. The current application is the third to be submitted by TransLink in 2017. TransLink is also responsible for providing semi-annual reports on projects funded through the GVRF to the MVRD Board. The 2016

semi-annual report is provided under separate cover in the October 11, 2017 Finance and Intergovernment Committee agenda.

POLICY CONTEXT AND RECENT APPLICATIONS

On May 27, 2016, the MVRD Board adopted the *Greater Vancouver Regional Fund Policy*, which establishes the process and criteria for approving expenditures from the GVRF for regional transportation projects proposed by TransLink. The Union of British Columbia Municipalities (UBCM) holds the GVRF monies in trust, and transfers the requested amount of funds to TransLink only upon notification by the MVRD Board of its approval.

On September 23, 2016, the MVRD Board approved $127.182 million in GVRF funds to TransLink for nine projects comprising replacement transit fleet vehicles only (84 community shuttles, 75 HandyDART vehicles, and 238 conventional buses). These projects were consistent with TransLink's 2014 Base Plan and Mayors' Council Transportation and Transit Plan.

On November 23, 2016, the TransLink Board and Mayors' Council on Regional Transportation approved the *2017-2026 Investment Plan – Phase One of the 10-year Vision (Phase One Investment Plan)*, which includes service expansion.

On April 28, 2017, the MVRD Board approved $121.280 million in GVRF funds to TransLink for six projects comprising expansion transit fleet vehicles, four electric battery buses for a pilot program, and equipment for deferred retirement of transit vehicles.

On July 28, 2017, the MVRD Board approved scope changes and $24.210 million in additional GVRF funds to TransLink for three projects approved in 2016. The scope changes involved the purchase of conventional CNG and hybrid buses, rather than conventional diesel buses.

As of July 31, 2017, the balance in the GVRF was $287.081 million.

FEDERAL GAS TAX ADMINISTRATIVE AGREEMENT

The renewed Administrative Agreement on Federal Gas Tax Fund in British Columbia came into effect in April 2014. The Agreement sets out the roles and responsibilities of the federal government, provincial government, and UBCM for the administration of the Federal Gas Tax Fund. The Agreement also sets out the following:

- The GVRF pools 95% of the MVRD and its member municipalities' per-capital allocation of federal gas tax funds to support regional transportation projects proposed for funding by TransLink.
- The MVRD Board must approve all eligible projects proposed by TransLink for funding.
- The MVRD must notify UBCM of the eligible projects that it has approved for funding, after which the UBCM may provide funding to TransLink.
- In order to receive GVRF funding, TransLink must sign a Funding Agreement with UBCM.
- The remaining 5% of federal gas tax funds is allocated among local governments in Metro Vancouver through the Community Works Fund.
- Requests for new projects, amendments to the scope of prior approved projects, and use of approved but unspent funds for other projects must receive approval from the MVRD Board.

PROPOSED PROJECTS

TransLink is seeking approval for seven projects totaling $121.150 million in GVRF funding. Projects 2, 3, and 4 fulfill the transit vehicle expansion commitment set out in the *2017 Phase One Investment Plan*. Projects 6 and 7 comprise new gasoline HandyDART vehicles and Community Shuttles to replace vehicles reaching the end of their service lives. Projects 1 and 5 introduce double decker buses to the fleet. Details about costs, specific GVRF funding amounts, geographic deployment, and route deployment are described in the tables below.

Project Description

Project	Details	Total Cost ($ millions)	Prior Approved GVRF Funding ($ millions)	2018 GVRF Funding Request ($ millions)
1. 2019 Conventional Bus Purchases (double decker)	5 diesel buses for expansion	6.300	0	5.670
2. 2019 Conventional Bus Purchases (40')	7 hybrid buses for expansion	8.100	0	7.290
3. 2019 Conventional Bus Purchases (60')	42 hybrid buses for expansion	67.600	0	60.840
4. 2019 HandyDART Vehicle Purchases	10 vehicles for expansion	1.500	0	1.350
5. 2019 Conventional Bus Purchases (double decker)	27 diesel buses for modernization	33.300	0	30.000
6. 2019 HandyDART Vehicle Purchases	40 gasoline vehicles for modernization	5.750	0	5.200
7. 2019 Community Shuttles Purchases	49 stepless gasoline vehicles for modernization	12.000	0	10.800
Total	**180 vehicles**	**134.550**	**0**	**121.150**

Project Needs

Project	Geographic Deployment	Route Deployment
Projects 1 and 5 (double decker buses)	• 7 buses to Hamilton Transit Centre; • 25 to Richmond Transit Centre	• Route 620 (Tsawwassen Ferry/Bridgeport Station) • Route 351 (Crescent Beach/Bridgeport Station) • Route 555 (Carvolth Exchange/Lougheed Station)
Project 2 (40' conventional hybrid buses)	• 4 to Vancouver Transit Centre • 3 to Burnaby Transit Centre	To be determined; to address service reliability on existing routes
Project 3 (60' conventional hybrid buses)	• 10 to Burnaby Transit Centre • 6 to Vancouver Transit Centre • 10 to Port Coquitlam Transit Centre • 13 to Surrey Transit Centre • 3 spares	B-Line on Marine Drive (North Shore), 41st Avenue, Lougheed Highway, and Fraser Highway
Projects 4 and 6 (HandyDART)	• 50 deployed regionwide	No fixed routes
Project 7 (community shuttles)	• 44 to Hamilton Transit Centre • 5 to West Vancouver Transit Centre	Various routes

METRO VANCOUVER STAFF ANALYSIS
Staff's analysis of TransLink's application is presented below.

Application Completeness and Screening Criteria. TransLink's application meets the application information requirement and screening criteria.

Integrated Criteria Evaluation. The application includes the remaining bus and HandyDART fleet expansion set out in the 2017 Phase One Investment Plan. The application also modernizes highway coaches, HandyDART vehicles, and Community Shuttles. In the aggregate, the application is consistent and supportive of the MVRD Board's policies on regional growth management, air quality, and climate protection, as well as the Board's interest in economic prosperity.

Fleet Expansion and Modernization
The hybrid buses in projects 2 and 3 will have reduced air emissions in comparison to alternative diesel buses. In particular, the 60-ft hybrids will be allocated to four new B-Line corridors serving the following subregions and connecting Urban Centres and Frequent Transit Development Areas beginning in 2019:

- Marine Drive - North Shore,
- 41st Avenue - Vancouver/UBC,
- Lougheed Highway - Northeast Sector and Pitt Meadows/Maple Ridge, and
- Fraser Highway - South of Fraser.

The gasoline HandyDART vehicles in projects 4 and 6 will perform better than their new diesel equivalents in terms of greenhouse gas emissions and nitrogen oxides (precursor to ground-level ozone). The gasoline Community Shuttles in project 7 will be replacing existing gasoline vehicles, therefore emissions will not be significantly different. (While not part of the integrated criteria, the new Community Shuttles will be stepless, thereby improving accessibility for Community Shuttle customers.)

Double Decker Buses
TransLink proposes to purchase five double decker diesel buses to replace the five 60-ft hybrids currently operating on the #620 route (the 60-ft hybrids will be re-assigned to other routes in the system, representing a net increase in the overall bus fleet), and to purchase 27 double decker buses to replace 27 retiring 40-ft highway coaches. The double decker buses will be deployed on three routes:

Route#	Terminus	Route Diagram
620	Tsawwassen Ferry/ Bridgeport Station via Highway 99	#620 Route Diagram: http://infomaps.translink.ca/Route_Diagrams/136/r620.pdf
351	Crescent Beach/Bridgeport Station via Hwy 99 and Hwy 17	#351 Route Diagram: http://infomaps.translink.ca/Route_Diagrams/136/r351.pdf

555	Carvolth Exchange/Lougheed Station via Highway 1	#555 Route Diagram: http://infomaps.translink.ca/Route_Diagrams/136/r555.pdf

According to TransLink, the double decker buses will increase passenger seat capacity (84 seats compared to 46 seats on a 60-ft hybrid and 47 seats on a 40-ft highway coach) and reduce the number of standees on the three highway-based bus routes. While the total passenger capacity between a double decker and 60-ft hybrid is comparable (104 v. 110), the double decker bus is 3,500 kg lighter than the articulated bus given the same number of passengers. The lighter weight supports better fuel economy and lower emissions. When compared to new 40-ft diesel highway coaches, the double decker buses will incur 19% higher GHG emissions on a vehicle basis, but 33% less GHG emissions on a seated passenger basis.

Double Decker Bus Pilot Project

TransLink will be testing the viability of double decker buses beginning in October 2017 using two leased vehicles for a three-month trial period. TransLink is not seeking GVRF funding to support the pilot program. The demonstration trial will examine operating characteristics, operator training requirements, depot infrastructure needs, and potential road changes. Should the demonstration trial indicate that double decker buses meet TransLink's operational objectives, then TransLink would consider proceeding to procurement in early 2018. A request for proposals will be developed in early 2018, with contract award anticipated in fall 2018, and delivery in fall 2019. Conversely, should TransLink decide not to proceed to procurement, then the GVRF funds (if approved by the MVRD Board) would be returned to the pool for other project applications.

Much like the electric battery bus pilot program (the MVRD Board approved GVRF funding for the purchase of four electric battery buses in April 2017), TransLink is exercising due diligence on a transit vehicle type that is new to the public transit fleet. The double decker bus trial program will provide key learnings specific to the Metro Vancouver region's traffic and road operations, and the needs and expectations of transit customers. A potential risk is that through the trial, new costs associated with required upgrades at transit centres and roadway configurations may be identified. While not stated explicitly in the application, the GVRF fund may be a potential source of funding for any eligible capital upgrades required to ensure successful accommodation of the double decker buses.

Hybrid and CNG double decker buses are not being pursued because they have higher capital costs and only marginal emissions reduction due to the higher operating speeds on highways. Moreover, TransLink is not aware of any hybrid, electric battery, or CNG double decker buses that can meet the maximum vehicle height limit of 13.5-ft in the George Massey Tunnel.

Coordination

The level of coordination between TransLink and Metro Vancouver staff has improved markedly in recent applications. TransLink is providing greater lead time for the review of their applications, and staff from Metro Vancouver's Regional Planning and Air Quality/Climate Change divisions are fully engaged in the GVRF review process. The quality of information on emissions performance, for example, has incrementally improved over the past few applications. Moving forward, Metro Vancouver staff will coordinate with TransLink staff to collaborate on the most appropriate metrics, methodologies, and assumptions to use when reporting out on transit vehicle performance. For example, at the urging of Metro Vancouver staff, the current application uses 'grams per kilometre' as the metric for making apples-to-apples comparison between transit vehicles. Other metrics may

be appropriate and could supplement improved communication of the benefits and impacts of fuel and vehicle type choices. TransLink's preparation of the *Low Carbon Fleet Strategy* may also present opportunities for collaboration and knowledge sharing between the two organizations.

Summary of Evaluation Criteria

As per the *GVRF Policy*, the application is evaluated in aggregate against a list of integrated criteria.

Criterion	Description	MV Staff Assessment
Screening Criteria		
Eligible Project Category	Local roads and bridges, including active transportation, OR public transit	Meets criterion
Eligible Expenses	As set out in the 2014 Administrative Agreement.	Meets criterion
Plan Consistency	Projects **must be consistent** with TransLink's existing Capital Plan and future *10-Year Investment Plan,* as well as the *Mayors' Council Transportation and Transit Plan, Metro 2040: Shaping our Future, and the Regional Transportation Strategy.*	Meets criterion
Corporate Policies	Projects must be consistent with applicable TransLink policies such as sustainability, environmental responsibility, emissions, and infrastructure.	Meets criterion
Integrated Criteria: Regional Growth Strategy		
Supports the Regional Growth Strategy	The degree to which the project assists in achieving the five goals in *Metro 2040*.	Excellent.
Urban Centres and Frequent Transit Development Areas	Where applicable, the project is located in, or demonstrates tangible benefits to, the overall performance of Urban Centres and Frequent Transit Development Areas.	Good: subject to performance monitoring as buses are deployed
Integrated Criteria: Transportation Performance		
Headline Targets	Demonstrates tangible beneficial effects on vehicle kilometres travelled and/or walk/cycle/transit mode share.	Good: subject to performance monitoring as buses are deployed
Other Transportation Outcomes	Demonstrates tangible beneficial effects on vehicle congestion, transit passenger congestion, transit ridership, and/or transportation safety for the duration of the project.	Good: subject to performance monitoring as buses are deployed
Project Type	Demonstrated value of the project type.	Good: subject to performance monitoring as buses are deployed
Integrated Criteria: Regional Environmental Objectives		
Supports the Integrated Air Quality and Greenhouse Gas Management Plan	Contributes to the achievement of one or more goals in the *Integrated Air Quality and Greenhouse Gas Management Plan.*	Good
Measurable Beneficial Effects	Demonstrates tangible beneficial effects on greenhouse gas and common air contaminant emissions from on-road transportation sources for the duration of the project.	Good: subject to performance monitoring as buses are deployed
Integrated Criteria: Economic Development		
Supports Regional Prosperity	Contributes to a regional transportation system that moves people and goods and aligns with regional prosperity.	Good
Measurable Beneficial Effects	Tangible beneficial effects on the movement of people and/or goods for the duration of the project.	Good: subject to performance monitoring as buses are deployed

ALTERNATIVES

1. That the MVRD Board approve $121.150 million in funding from the Greater Vancouver Regional Fund for the following transit projects proposed by TransLink in its *Application for Federal Gas Tax funding from the Greater Vancouver Regional Fund for 2019 Fleet Expansion and Modernization* as attached to the report dated September 26, 2017, titled "TransLink Application for Federal Gas Tax Funding from the Greater Vancouver Regional Fund for 2019 Fleet Expansion and Modernization":
    a) Project 1 – Year 2019 Double Decker Diesel Bus Purchases for Fleet Expansion
    b) Project 2 – Year 2019 Conventional 40' Hybrid Bus Purchases for Fleet Expansion
    c) Project 3 – Year 2019 Conventional 60' Hybrid Bus Purchases for Fleet Expansion
    d) Project 4 – Year 2019 HandyDART Purchases for Fleet Expansion
    e) Project 5 – Year 2019 Double Decker Diesel Bus Purchases for Fleet Replacement
    f) Project 6 – Year 2019 HandyDART Gasoline Vehicles for Fleet Replacement
    g) Project 7 – Year 2019 Community Shuttle Gasoline Vehicles for Fleet Replacement

2. That the MVRD Board:
    a) approve $85.480 million in funding from the Greater Vancouver Regional Fund for the following transit projects proposed by TransLink in its *Application for Federal Gas Tax funding from the Greater Vancouver Regional Fund for 2019 Fleet Expansion and Modernization* as attached to the report dated September 26, 2017, titled "TransLink Application for Federal Gas Tax Funding from the Greater Vancouver Regional Fund for 2019 Fleet Expansion and Modernization":
        i. Project 2 – Year 2019 Conventional 40' Hybrid Bus Purchases for Fleet Expansion
        ii. Project 3 – Year 2019 Conventional 60' Hybrid Bus Purchases for Fleet Expansion
        iii. Project 4 – Year 2019 HandyDART Purchases for Fleet Expansion
        iv. Project 6 – Year 2019 HandyDART Gasoline Vehicles for Fleet Replacement
        v. Project 7 – Year 2019 Community Shuttle Gasoline Vehicles for Fleet Replacement
    b) communicate to the TransLink Board and Mayors' Council its support in principle of the demonstration trial of the double decker buses for suitability in the regional transportation system;
    c) request TransLink to share the financial and operational findings of the double decker demonstration trial upon completion in early 2018; and
    d) request TransLink to advance to the MVRD Board for consideration of GVRF funding for the double decker buses and associated eligible infrastructure as soon as TransLink decides to proceed to procurement.

3. That the MVRD Board endorse in principle the report dated September 26, 2017, titled "TransLink Application for Federal Gas Tax Funding from the Greater Vancouver Regional Fund for 2019 Fleet Expansion and Modernization" and refer it to the Mayors' Council on Regional Transportation for comment prior to final consideration by the MVRD Board.

FINANCIAL IMPLICATIONS

If the MVRD Board approves alternative one, the UBCM will be notified within seven business days of the Board's decision to approve $121.150 million in GVRF funding for all of the projects in TransLink's application.

If the MVRD Board approves alternative two, then the UBCM will be notified within seven business of the Board's decision to approve $85.480 million in GVRF funding for Projects 2, 3, 4, 6, and 7 in TransLink's application. The MVRD will communicate to the TransLink Board and Mayors' Council of its support in principle of the double decker demonstration trial. The MVRD will request TransLink to share the findings of the demonstration trial and to submit a GVRF application to request funding for Projects 1 and 5, and associated eligible infrastructure projects, should TransLink choose to proceed to procurement for the 32 double decker buses.

Because there is some uncertainty about the full capital and operating costs associated with double decker buses, choosing alternative two would allow for the completion of the demonstration trial and a more complete understanding of the project scope and costs. In this scenario, once TransLink has decided to proceed with procurement, it can submit a GVRF application in early 2018 to the MVRD Board to request funding for the vehicle purchases and any eligible infrastructure. This scenario also addresses any need for TransLink to return to the MVRD with a scoping change request should additional GVRF funding be required. The potential drawback to alternative two is that any significant amount of additional time to complete the demonstration trial or to process and review a GVRF application may adversely affect the procurement and delivery schedule.

If the MVRD Board approves alternative three, the Metro Vancouver report and recommendations, along with the TransLink application, would be forwarded to the Mayors' Council for comment prior to consideration by the MVRD Board.

SUMMARY / CONCLUSION

TransLink is requesting approval of seven projects for federal gas tax funding from the GVRF totaling $121.150 million. The 64 expansion vehicles fulfill the fleet expansion commitments set out in the *2017 Phase One Investment Plan* and the 116 replacement vehicles will keep the transit fleet in a state of good repair.

A total of 32 double decker buses, 7 40-ft conventional hybrid buses, 42 60-ft conventional hybrid buses, 50 HandyDART vehicles, and 49 Community Shuttles are proposed. The hybrid buses will have reduced air emissions in comparison to alternative diesel buses. In particular, the 60-ft hybrids will be allocated to four B-Line corridors serving the North Shore, Vancouver/UBC, Northeast Sector, and the South of Fraser and connecting Urban Centres and Frequent Transit Development Areas. The gasoline HandyDART vehicles will perform better than their new diesel equivalents in terms of greenhouse gas emissions and nitrogen oxides (precursor to ground-level ozone). The gasoline Community Shuttles will be replacing existing gasoline vehicles, therefore emissions will not be significantly different. While not part of the integrated criteria, the new Community Shuttles will be stepless, meaning improved accessibility for Community Shuttle customers.

TransLink proposes to purchase five double decker buses to replace the five 60-ft hybrid buses currently operating on the #620 route, and to purchase 27 double decker buses to replace 27 retiring highway coaches. The double decker diesel buses are proposed to be deployed on three bus routes traversing the Highway 99, Highway 17, and Highway 1 corridors. The double decker buses will increase passenger capacity and comfort on relatively longer transit journeys on highways. Hybrid and CNG double decker buses are not being pursued because they have higher capital costs and only marginal emissions reduction due to the higher operating speeds on highways. Moreover, TransLink

is not aware of any hybrid, electric battery, or CNG double decker buses that can meet the maximum vehicle height limit of 13.5-ft in the George Massey Tunnel.

TransLink will be testing the viability of double decker buses beginning in October 2017 using two leased vehicles for a three-month trial period. TransLink is not seeking GVRF funding to support the pilot program. The demonstration trial will examine operating characteristics, operator training requirements, depot infrastructure needs, and potential road changes. Should the demonstration trial indicate that double decker buses meet TransLink's operational objectives, then TransLink would consider proceeding to procurement in early 2018. A request for proposals will be developed in early 2018, with contract award anticipated in fall 2018, and delivery in fall 2019. Conversely, should TransLink decide not to proceed to procurement, then the GVRF funds (if approved by the MVRD Board) would be returned to the pool for other project applications.

In the aggregate, the projects in the application will contribute to the implementation of *Metro 2040* by improving transit service in established and emerging transit corridors that also connect Urban Centres and Frequent Transit Development Areas; and the *Integrated Air Quality and Greenhouse Gas Management Plan* by incrementally transitioning the fleet to be more fuel efficient and less emissions intensive. On the basis of the evaluation, staff recommend approval of the projects as proposed and presented under alternative one.

Appendix:
Additional Project Information

Attachment: *(Doc #23400223)*
September 2017 Application for Federal Gas Tax Funding from the Greater Vancouver Regional Fund for the 2019 Fleet Expansion and Modernization

References
#620 Route Diagram: http://infomaps.translink.ca/Route_Diagrams/136/r620.pdf
#351 Route Diagram: http://infomaps.translink.ca/Route_Diagrams/136/r351.pdf
#555 Route Diagram: http://infomaps.translink.ca/Route_Diagrams/136/r555.pdf

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ADDITIONAL PROJECT INFORMATION

Project Eligibility, Purpose, and Type

Project	Project Eligibility	Project Purpose	Project Type
1. 2019 Conventional Bus Purchases (double decker)	Public Transit	The 5 double decker buses will displace the 5 60-ft hybrid buses	Growth, Upgrade, Opportunity
2. 2019 Conventional Bus Purchases (40')	Public Transit	Expansion	Growth
3. 2019 Conventional Bus Purchases (60')	Public Transit	Expansion	Growth
4. 2019 HandyDART Vehicle Purchases	Public Transit	Expansion	Growth
5. 2019 Conventional Bus Purchases (double decker)	Public Transit	State of Good Repair	Maintenance
6. 2019 HandyDART Vehicle Purchases	Public Transit	State of Good Repair	Maintenance
7. 2019 Community Shuttles Purchases	Public Transit	State of Good Repair	Maintenance

Project Staging

Project	Year of Acquisition	Year of Completion	Year of Service Initialization	Year of Renewal	Year of End of Service
1. 2019 Conventional Bus Purchases (double decker)	2019	2019	2019	N/A	2036
2. 2019 Conventional Bus Purchases (40')	2019	2019	2019	N/A	2036
3. 2019 Conventional Bus Purchases (60')	2019	2019	2019	N/A	2036
4. 2019 HandyDART Vehicle Purchases	2019	2019	2019	N/A	2026
5. 2019 Conventional Bus Purchases – double decker	2019	2019	2019	N/A	2036
6. 2019 HandyDART Vehicle Purchases	2019	2019	2019	N/A	2026
7. 2019 Community Shuttles Purchases	2019	2019	2019	N/A	2024

To: Carol Mason, Chief Administrative Officer, Metro Vancouver

From: Cathy McLay, Chief Financial Officer and Executive Vice President, Finance and Corporate Services, TransLink
Geoff Cross, Vice President, Transportation Planning and Policy, TransLink

Date: September 22, 2017

Subject: Application for Federal Gas Tax Funding from the Greater Vancouver Regional Fund for 2019 Fleet Expansion and Modernization

PURPOSE

TransLink is requesting the Metro Vancouver Regional District (Metro Vancouver) approve $121.15 million in Federal Gas Tax Fund (FGTF) funding from the Greater Vancouver Regional Fund (GVRF) for 64 new bus vehicles for service expansion and 116 new bus vehicles for fleet modernization. These vehicles are critical to delivering the service expansion stated in the 2017-2026 Investment Plan (2017 Investment Plan), while ensuring the transit fleet remains in a state of good repair and the reliability of the transit system is maintained. The 2017 Investment Plan approved in November 2016 advances the goals identified in TransLink's long-term Regional Transportation Strategy, and supports goals identified in Metro Vancouver's Regional Growth Strategy, *Metro Vancouver 2040: Shaping Our Future* (*Metro 2040)*.

This request, which includes 49 hybrid buses, will support the region's environmental policies, specifically:

- TransLink's effort to reduce greenhouse gas (GHG) and criteria air contaminants (CAC) emissions and support the development of a Low Carbon Fleet Strategy.
- Metro Vancouver's *Integrated Air Quality and Greenhouse Gas Management Plan* (*IAQGGMP*) strategies:
    - Strategy 1.1 – Reduce emissions of and public exposure to diesel particulate matter;
    - Strategy 1.4 – Reduce air contaminant emissions from cars, trucks, and buses; and
    - Strategy 3.3 – Reduce the carbon footprint of the region's transportation system.
- *Metro Vancouver 2040: Shaping Our Future* (*Metro 2040*) actions to encourage transportation infrastructure that reduce energy consumption and greenhouse gas emissions and improve air quality:
    - Action 3.3.6 – That TransLink pursue reductions of common air contaminants and greenhouse gas emissions from on-road transportation sources in support of regional air quality objectives and greenhouse gas reduction targets; and
    - Action 3.3.7 – That TransLink manage its transit fleet and operations with the goal of increasing fuel efficiency and reducing common air contaminants and greenhouse gas emissions over time, in support of the Regional Growth Strategy and Air Quality Management Plan.

BACKGROUND

Since the FGTF program began in 2005, TransLink has received $1,043.578 million in funding to expand and modernise the transit network. The last application made by TransLink for GVRF funding was approved in July 2017 for an additional $24.21 million to update the September 2016 application of $127.182 million[1]. Interest earned on funds received, which must be used for approved FGTF projects, totalled $31.2 million at July 31, 2017 (the program was renewed in 2014, for another 10 years). Currently, there is $287.081 million in funds available to TransLink. Metro Vancouver has specified that their portion of FGTF funding go to public transportation, with a small amount going to the Community Works Fund, in the renewed program. A summary of the funds and usage is provided below:

Greater Vancouver Regional Fund
(as of July 31, 2017)

In millions

Approved GVRF Funds	$1,043.578
Interest earned on funds received	31.200
Unapproved GVRF Funds	270.369
Total Gas Tax Funds	**$1,345.147**
Less	
Funds applied to completed projects	$(349.053)
[1]Approved funds for active projects	(694.525)
Interest allocated to completed projects	(14.488)
Funds Available for use	**$287.081**
[2]Proposed project Funding	**(121.150)**
Funds Remaining	**$165.931**

1. See table of active projects with FGTF funding below. Excludes interest allocated to active projects
2. See table of proposed GVRF projects below

This application is based on TransLink's the 2017 Investment Plan approved in November 2016 and is aligned with the Mayors' Council 10-Year Vision (10-Year Vision). Appendix A includes a summary of TransLink's strategic plan, the 2017 Investment Plan, including the projects funded or anticipated to be funded by the GVRF, as required under the application process. Included in Appendix A is other funding anticipated in the strategic plan. Additionally, Appendix B provides a short description of each line item in Appendix A.

Active Projects

Table 1 below shows the status of active projects with GVRF funding. The total forecasted project cost for active projects is $819.985 million, with $694.536 million in FGTF funds approved for these projects. At July 31, 2017, project costs totalled $417.068 million, with $327.730 million in FGTF funds spent.

[1] This update was made due to revised fleet selection preference following approval of the 2017 Investment Plan including development of a Low Carbon Fleet Strategy, expected opening of a Compressed Natural Gas (CNG) fueling facility at Surrey Transit Centre in 2017 and unavailability of diesel engines that can handle steep grades.

Table 1: Active projects

Active Projects With GVRF Funding (*Dollar amounts in millions)*	# Vehicles	Forecast Final Cost	Approved Funding	Costs to Date	Interest Allocated to Projects	Funds Spent	Unspent Funds
Expo Line Propulsion Power System Upgrade	N/A	57.017	42.000	57.017	-	42.000	0.000
2nd SeaBus Replacement	1	20.535	19.697	20.035	-	19.234	0.463
SkyTrain Mark I Vehicle Refurbishment	N/A	30.760	24.360	16.558	-	10.388	13.972
2014 Community Shuttles	49	7.400	7.310	7.400	-	7.310	(0.000)
2014 Conventional Bus	45	24.884	24.391	24.884	-	24.391	(0.000)
Hamilton Transit Centre	N/A	134.841	84.978	134.841	-	84.978	-
2013 HandyDART Vehicles	31	3.595	3.535	3.595	0.011	3.535	0.000
2014 HandyDART Vehicles	65	7.577	7.523	7.577	-	7.523	0.000
2015 HandyDART Vehicles	55	6.754	5.370	6.753	-	5.370	-
Defective Community Shuttle Vehicles Replacement	62	9.496	9.350	9.452	-	8.940	0.410
2015 Conventional Bus Replacement	72	55.576	54.800	55.399	-	53.734	1.066
2016 Conventional Bus Replacement - 40'	45	25.342	24.964	25.342	-	24.011	0.953
2016 Conventional Bus Replacement - 60'	26	32.987	25.360	31.612	-	25.360	0.000
2017 Conventional Bus	92	102.566	94.285	-	-	-	94.285
Metrotown Trolley Overhead Rectifier Replacement	N/A	5.806	4.725	0.335		0.311	4.414
Automated Train Control Equipment Replacement	N/A	4.876	4.500	2.297	-	2.240	2.260
Surrey Transit Centre - CNG Facility Retrofit	N/A	14.302	4.000	7.745	-	4.000	-
2016 Additional Conventional Bus Replacements - 40'	40	34.698	32.300	0.661	-	-	32.300
2017 Conventional Bus - Additional funding	14	12.834	11.700	-	-	-	11.700
2015 Community Shuttle Vehicle Replacement	24	4.331	4.674	3.765	-	3.508	1.166
2016 Community Shuttle Vehicle Replacement	20	3.723	3.560	0.961	-	0.876	2.684
2017 Community Shuttle Vehicle Replacement	20	4.002	3.500	0.838	-	0.019	3.481
2018 Community Shuttle Vehicle Replacement	20	3.700	3.830	-	-	-	3.830
2017 HandyDART Vehicle Replacement	35	4.900	5.013	-	-	-	5.013
2018 HandyDART vehicle Replacement	40	6.000	5.605	-	-	-	5.605
2018 Conventional Bus Replacement	92	69.930	61.925	-	-	-	61.925
Conventional Bus Purchases - 40'	94	93.710	85.584	-	-	-	85.584
Conventional Bus Purchases - 60'	11	17.636	17.316	-	-	-	17.316
Community Shuttle Vehicle Purchases	12	3.300	3.175	-	-	-	3.175
HandyDART vehicle Purcahses	13	2.795	2.193	-	-	-	2.193
Electric Bus Pilot	4	7.992	6.892	-	-	-	6.892
Equipment for Deferred Retirement Program	N/A	6.120	6.120	-	-	-	6.120
Total	**982**	**819.985**	**694.536**	**417.068**	**0.011**	**327.730**	**366.806**

PROPOSED PROJECTS AND FUNDING

This application is requesting $121.15 million for six projects, as shown in Table 2. The projects are consistent with the 2017 Investment Plan and the 10-Year Vision. Detailed project descriptions are included in Appendix C.

Table 2: Summary of Projects, Total Costs, and Gas Tax Funding Request

Projects	Scope	($millions)	
		Total Project Budget	Requested Gas Tax Funding
2019 Double Decker Bus Purchase – Expansion	5 42-foot diesel double decker buses	6.300	5.670
2019 Conventional 40-foot Bus Purchase – Expansion	7 40-foot hybrid buses	8.100	7.290
2019 Conventional 60-foot Bus Purchase – Expansion	42 60-foot hybrid buses	67.600	60.840
2019 HandyDART Vehicle Purchase – Expansion	10 HandyDART vehicles	1.500	1.350
2019 Double Decker Bus Purchase – Replacement of 40-foot Diesel buses	27 42-foot diesel double decker buses	33.300	30.000
2019 HandyDART Vehicle Purchase – Replacement	40 HandyDART vehicles	5.750	5.200
2019 Community Shuttle Purchase – Replacement	49 Step less community shuttles	12.000	10.800
Total	**180 vehicles**	**134.550**	**121.150**

Project and Propulsion Selection

All vehicle projects are evaluated based on vehicle purchase cost, fuel and maintenance cost, life-cycle cost, emissions of Green House Gases (GHG), Nitrogen Oxide (NOx) and particulate matter (PM), and aspects of vehicle performance and customer and driver environment such as noise and ride quality. Route characteristics such as topography and average route speed (based on bus stop spacing and traffic conditions) can affect the performance of different technologies. Fuel infrastructure and depot space are considerations in fleet deployment. TransLink considers all these factors in identifying the most advantageous propulsion technology for different vehicle projects, consistent with financial and environmental goals and policies. Based on latest technology information available and policy preferences, diesel propulsion is no longer a preferred option for TransLink's operations compared to compressed natural gas (CNG), hybrid diesel-electric (hybrid) or electric-battery, except for highway routes. Vehicles with diesel propulsion is still a viable option for highway routes as CNG or hybrid would have higher capital cost but marginal emissions reduction due to higher operating speeds.

Fleet procurement projects are reviewed by an internal steering committee to ensure alignment with the 2017 Investment Plan and Regional Transportation Strategy, consider operational aspects of fleet deployment, prioritize submissions and finalize project business cases and financial analyses.

Proposed fleet projects are also reviewed by TransLink's Senior Executive to ensure fiscal responsibility and overall alignment with the Regional Transportation Strategy. The final list of recommended fleet projects, along with all other capital projects is submitted to the Board of Directors for approval and inclusion in the following year's Annual Capital Budget. Additionally, projects are also presented at the Mayors' Council's and TransLink Board's Joint Committee on Transportation Planning and Funding for feedback and presented at the Mayors' Council for information.

Selection of propulsion technology for projects in this application is based on the following:

- Diesel for Double Decker Buses – Double decker buses will be 13 foot and 6 inches in height to allow for operations through the George Massey Tunnel. Hybrid and electric-battery double decker buses are not available at this height and CNG is not an option as fuel tanks would increase the height and preclude operations through the George Massey Tunnel.
- Gasoline for HandyDART vehicles and Community Shuttles – Hybrid propulsion is not available for these vehicles. However, moving to gasoline from diesel for HandyDART vehicles would result in lower greenhouse gas and NOx emissions.
- Hybrid for 40-foot and 60-foot buses – Hybrid buses are currently the best option for reducing emissions for the 40-foot and 60-foot fleet. TransLink is developing a Low Carbon Fleet Strategy (anticipated to be completed in March 2018) with the goal of reducing GHG emissions. TransLink also conducted a two month trial of 40-foot slow-charging electric-battery buses in summer 2017 and is expected to conduct a second trial next year of fast-charging electric-battery buses (funded by a previous GVRF application).

Demonstration Trials of Double Decker Buses

TransLink has conducted an evaluation of buses for highway service examining capacity, financial, customer, emissions and operational considerations. This evaluation concluded double decker buses as the ideal vehicle for highway service among the other alternatives of 60-foot hybrid bus and 40-foot bus with additional capacity, and recommended a demonstration trial be conducted. A three month trial is scheduled to begin October 2017 to examine operating characteristics, operator training requirements, depot infrastructure needs and potential road changes to ensure successful integration of a new vehicle type in 2019. TransLink has committed to lease two double decker buses from the vendor Alexander-Dennis for this trial.

For double decker buses to be in service by fall of 2019, GVRF funding needs to be secured as part of the current application. With GVRF funding approval, the project will seek executive approval in early 2018 to begin the development of vehicle specifications and reach out to market with a request for proposals. Contract award is anticipated for the fall of 2018 to allow bus deliveries by the fall of 2019. Pre-trial assessments have been promising, however if TransLink decides not to procure double decker buses following the results of the trial, TransLink will submit an updated application in the spring of next year to procure 40-foot highway coaches and 60-foot hybrid buses instead.

Project Summaries

2019 Double Decker Bus Purchase – Expansion: This project adds 5 diesel double decker buses to expand service. Double decker buses have higher passenger seating capacities than 40-foot or 60-foot vehicles and are being procured to reduce overcrowding and standees on the highway coach routes. These buses will be deployed on Route 620 (an express service from Bridgeport Station to the BC Ferries Tsawwassen Ferry Terminal). Double decker and 60-foot hybrid buses use the same Cummins ISL9 engine. The engine emission specifications do not take into account the vehicle function (servicing highway vs. urban commute). The weight (3,500 kg less than hybrid) and increased seating capacity (84 for double decker vs. 46 for 60-foot hybrid) of a double decker bus make it better suited for highway travel compared to a 60-foot hybrid vehicle mainly because of fuel efficiency. Based on data available from other agencies, double decker buses emissions (GHG, PM and NOx), fuel efficiency and performance are very similar to a hybrid conventional bus. However, when calculating emissions based on seating capacity, the double decker bus reduces emissions (GHG, PM and NOx) by almost half.

2019 Conventional 40-ft Bus Purchase – Expansion: This project adds 7 hybrid 40-foot buses to expand service. The procurement of hybrid 40-foot buses results in GHG emission reductions of 22% compared to the alternative diesel option and 16% compared to CNG. These hybrid vehicles also have 33% less PM than diesel and 66% less PM than CNG alternative.

2019 Conventional 60-ft Bus Purchase – Expansion: This project adds 42 60-foot hybrid buses to allow implementation of B-Line service on the Marine Drive, 41st Avenue, Lougheed Highway and Fraser Highway B-Line corridors in 2019. The procurement of hybrid buses instead of new diesel would result in emission reductions of approximately 20% in GHG, NOx and PM.

2019 HandyDART Vehicle Purchase – Expansion: This project would procure 10 HandyDART vehicles for service expansion across Metro Vancouver. The expansion of the HandyDART fleet supports the delivery of additional HandyDART trips to meet customer demand as outlined in the 10-Year Vision and the Custom Transit Service Delivery Review, approved by the TransLink Board in March 2017, and reduces wait times via availability of a larger number of vehicles. These 10 vehicles in addition to the 13 vehicles that were approved for Gas Tax Funding in April 2017 would complete the HandyDART fleet expansion of 23 vehicles in the 2017 Investment Plan.

2019 Double Decker Bus Purchase – Replacement of 40-foot Diesel Buses: This project would procure 27 diesel double decker buses to modernize the bus fleet. The existing 40-foot high-floor highway coach fleet has reached the end of its useful life. These buses will be deployed on Route 351 (between Bridgeport Station and Crescent Beach) and Route 555 (between Lougheed Station and Carvolth Exchange). The double decker bus uses a Cummins L9380 engine and the comparison vehicle (highway 40-foot diesel) uses a Cummins ISL9280. The double decker bus has an expected fuel rate of 62L/100km or approx. 19% higher than a comparison vehicle. In absolute emissions, this means the double decker bus emits approx. 19% more GHGs. However, if the higher seating capacity of the double decker bus is factored in (84 vs.

47), the double decker bus emits approx. 33% less GHG per person than its comparison vehicle. Based on the engine specifications (Air Resource Board, EPA), the PM output is equal and the NOx has only marginal increases in double decker of 0.03 grams per kilometer.

2019 HandyDART Vehicle Purchase – Replacement: This project would procure 40 HandyDART vehicles to retire vehicles that have reached the end of useful life and to modernize the HandyDART vehicle fleet. These new vehicles will support maintaining transit system reliability for HandyDART trips. The replacement vehicles are gasoline instead of diesel because the new gasoline vehicles have approximately 3.5% less GHG emissions (g/km) and 44% less NOx (g/km) than diesel engines used previously in these vehicles (based on GM L96 engine for gasoline vs. GM LGH engine for diesel).

2019 Community Shuttle Purchase – Replacement: This project would procure 49 step less community shuttles to modernize the shuttle fleet. These shuttles are operated by Coast Mountain Bus Company (CMBC) out of the Hamilton Transit Center (44), and by West Vancouver Transit in West Vancouver (5).These shuttles would improve accessibility over the existing high floor shuttle fleet, and would allow the retirement of shuttles that have reached the end of useful life thereby maintaining transit system reliability. The emissions would remain similar as the shuttles being replaced are of the same propulsion type.

Service Expansion and Deployment of Proposed Projects

A specific service plan for the 2019 service expansion is still being developed and refined. However, it is anticipated double decker buses would operate on highway coach routes (e.g. Bridgeport Station to Tsawwassen Ferry Terminal, to South Surrey/White Rock), 60-foot buses would operate on the new B-lines identified in the 2017 Investment Plan and HandyDART vehicles would operate region-wide and complete the HandyDART service expansion in the 2017 Investment Plan.

Table 3. Service expansion and deployment of proposed projects

Project Type	# of Expansion Vehicles			Service Expansion		Service Areas for 2019 Vehicles
	Funded to Date	2019 Vehicles (Current Application)	2017 Investment Plan Total	Expansion with 2019 Vehicles	2017 Investment Plan Total	
Conventional 40-ft Bus Purchase – Expansion	94	7	101	Address service reliability and speed. Annual service hours TBD following 2019 service plan	500,000 annual service hours (combined for buses and community shuttles)	Deployed to Vancouver and Burnaby Transit Centers
Double Decker Bus - Expansion	0	5	5	N/A – fleet expansion to allow articulated buses to be operated elsewhere		Highway routes (620, 555, 351)
Conventional 60-ft Bus Purchase - Expansion	11	42	53	148,000 annual service hours		New B-Lines (Fraser Hwy; Marine Dr; Lougheed; 41st Ave)
HandyDART Vehicle Purchase – Expansion	13	10	23	38,000 annual trips	170,000 annual trips	Region-wide

Table 4. Deployment of proposed replacement vehicle projects

Project Type	# of Replacement Vehicles for 2019 (Current Application)	Service Areas for 2019 Vehicles
Double Decker Bus Purchase – Replacement for 40-ft Diesel Buses	27	Highway routes (620, 555, 351)
HandyDART Vehicle Purchase – Replacement	40	Region-wide
Community Shuttle Purchase – Replacement	49	Region-wide

BENEFITS

Improving Accessibility

The new low floor double decker buses and step less community shuttles would improve accessibility over the existing high floor highway coaches and community shuttles. Additionally, low floor double decker buses would have wheelchair ramps instead of lifts to allow for easier and quicker boarding and alighting.

Increasing Passenger Seating Capacity

Double decker buses have a larger passenger seating capacity than the existing highway coaches or alternative choices of 40-foot suburban conventional bus or 60-foot articulated bus.

Double decker buses are anticipated to be deployed on highway coach routes to alleviate overcrowding and this larger seating capacity will improve customer experience, especially for customer traveling longer distances.

Emissions Reduction

Increasing the hybrid bus fleet supports the 10-Year Vision's goal of reducing greenhouse gas emissions and TransLink's efforts to reduce emissions under the forthcoming Low Carbon Fleet Strategy. This Low Carbon Fleet Strategy is expected to be completed in March 2018. Further, there is a reduction of PM and NOx emissions which supports Metro Vancouver's *Integrated Air Quality and Greenhouse Gas Management Plan* (*IAQGGMP*) goal of protecting public health and the environment, improving air quality and reducing the contribution of global climate change. It additionally supports *Metro 2040* goals of reducing energy consumption and greenhouse gas emissions while improving air quality.

Table 5: Emissions reductions from vehicle projects

Projects	Propulsion	GHG Approx. Reduction	NOx Approx. Reduction	PM Approx. Reduction
2019 Double Decker Bus Purchase – Expansion	Diesel	Use same engines as 60' Hybrid. 47% reduction based on seating capacity (per person g/km)	50% reduction based on seating capacity (per person g/km)	46% reduction based on seating capacity (per person g/km)
2019 Conventional 40-ft Bus Purchase – Expansion	Hybrid	22% reduction compared to diesel	9% increase compared to diesel (0.361 g/km vs. 0.392 g/km)	33% reduction compared to diesel (0.002 g/km vs. 0.003 g/km)
2019 Conventional 60-ft Bus Purchase – Expansion	Hybrid	20% reduction compared to diesel (g/km)	20% reduction compared to diesel (g/km)	20% reduction compared to diesel (g/km)
2019 HandyDART Vehicle Purchase – Expansion	Gasoline	3.5% reduction from moving from diesel to gasoline (g/km)	44% reduction from moving from diesel to gasoline (g/km)	Minimal increase from 0.002 g/km to 0.007 g/km
2019 Double Decker Bus Purchase – Replacement	Diesel	19% absolute increase compared to single deck highway diesel (g/km), however 33% reduction per person based on increased seating capacity	Minimal increase from 0.16 g/km (double decker) versus 0.13 g/km (single deck 40' Hwy) based on engine specifications	Similar PM based on engine ratings
2019 HandyDART Vehicle Purchase – Replacement	Gasoline	3.5% reduction from moving from diesel to gasoline (g/km)	44% reduction from moving from diesel to gasoline (g/km)	Minimal increase from 0.002 g/km to 0.007 g/km
2019 Community Shuttle Purchase – Replacement	Gasoline	No change as gasoline to gasoline	No change as gasoline to gasoline	No change as gasoline to gasoline

RISKS

A three month trial of double decker buses is scheduled to begin October 2017 to examine operating characteristics, operator training requirements, depot infrastructure needs and potential road changes to ensure successful integration of a new vehicle type in 2019.

This request for GVRF funding will allow TransLink to begin procurement of these buses by summer 2018 to ensure deliveries in the fall of 2019. TransLink anticipates the demonstration trial to be successful, however if TransLink decides not to procure double decker buses following the trials, TransLink will submit an updated application in the spring of next year to procure 40-foot highway coaches and 60-foot diesel buses instead.

If funding is not received in time, TransLink will have to continue to rely on deferred retirement vehicles to deliver on its promises of expansion or possibly defer expansion. Continued use of deferred retirement vehicles pose a risk to reliability, as well as further cost in terms of continued maintenance and additional equipment costs to keep them in service. This may result in lost opportunities to realize goals of reduced congestion, improved peak hour service and frequency. Furthermore, use of deferred retirement vehicles could also result in higher greenhouse gas (GHG) and criteria air contaminant (CAC) emissions than new vehicles. TransLink may lose credibility among the general public if service expansion is not reliable.

CONCLUSION

TransLink relies on the FGTF funding, made available through the GVRF, to be able to expand the transit fleet and modernize vehicles that have reached the end of their useful life and are ready for replacement. The approval of the requested application will allow TransLink to procure the vehicles necessary to expand transit service and improve customer experience, while also ensuring TransLink's revenue vehicle fleets are in a state of good repair, avoiding increased maintenance costs and protecting the reliability of the transit system. The application supports Metro Vancouver's *Metro 2040* in supporting urban centres and frequent transit development areas and encouraging transportation choices. Finally reduction of GHG and CAC emission supports the environmental goals of Metro Vancouver's *IAQGGMP* and *Metro 2040* and TransLink's future Low Carbon Fleet Strategy.

Appendix A

TransLink 2017-2026 Investment Plan Capital Program and Funding Sources

	Project Budget	Project Expenditures to 2016	2017 Project Expenditures	Final Forecast Cost	Forecast Cost to Complete	Other Funding	Approved GVRF Funding	Requested GVRF Funding	Planned Future GVRF Funding	Total GVRF Funding
Bus										
Equipment	**58,038**	**3,140**	**517**	**58,038**	**54,381**	**(44,936)**			**-**	**-**
Facilities	**46,875**	**3,160**	**570**	**46,941**	**43,211**	**(14,677)**			**-**	**-**
Infrastructure	**459,580**	**168,270**	**4,432**	**458,708**	**286,006**	**(64,969)**	**(93,703)**		**(0)**	**(93,703)**
Depots	152,763	143,022	2,394	151,974	6,558	-	(88,978)		(0)	(88,978)
Exchanges	133,396	3,952	89	133,396	129,356	(54,394)			-	-
Other	127,171	12,888	1,646	127,171	112,636	(830)			-	-
Trolley Overhead	46,250	8,408	303	46,167	37,456	(9,745)	(4,725)		-	(4,725)
Technology	**9,933**	**385**	**201**	**9,933**	**9,347**	**-**			**-**	**-**
Vehicle Non-Revenue	**21,702**	**1,278**	**315**	**21,702**	**20,110**	**(2,473)**			**-**	**-**
Vehicle - Revenue	**1,570,070**	**86,724**	**53,622**	**1,591,097**	**1,450,751**	**(28,220)**	**(529,973)**	**(121,150)**	**(765,381)**	**(1,416,504)**
Conventional Buses	1,336,173	68,989	45,062	1,361,920	1,247,869	-	(445,637)	(103,800)	(654,062)	(1,203,499)
Community Shuttles	111,780	10,995	5,889	110,636	93,752	-	(35,399)	(10,800)	(59,303)	(105,502)
Handy Darts	85,708	4,330	2,671	82,131	75,130	-	(29,240)	(6,550)	(52,016)	(87,806)
Sea Bus	36,410	2,410	-	36,410	34,000	(28,220)	(19,697)		-	(19,697)
Corporate										
Equipment	**5,437**	**386**	**-**	**5,437**	**5,051**	**-**			**-**	**-**
Facilities	**1,791**	**1,641**	**-**	**1,791**	**150**	**-**			**-**	**-**
Infrastructure	**63,958**	**29,588**	**467**	**62,534**	**32,478**	**(2,690)**			**-**	**-**
Bridges	32,464	22,180	344	31,040	8,516	-			-	-
Depots	875	31	123	875	721	-			-	-
Other	30,619	7,377	-	30,619	23,242	(2,690)			-	-
Major Construction	**404,052**	**397,969**	**6,251**	**404,260**	**40**	**-**			**-**	**-**
Technology	**196,683**	**18,873**	**1,403**	**196,683**	**176,407**	**-**			**-**	**-**
Vehicle Non-Revenue	**2,956**	**965**	**-**	**2,956**	**1,991**	**-**			**-**	**-**
Rail										
Equipment	**154,690**	**15,273**	**1,203**	**154,653**	**138,178**	**(32,221)**	**(4,500)**		**-**	**(4,500)**
Facilities	**25,338**	**3,135**	**-**	**25,338**	**22,203**	**-**			**-**	**-**
Infrastructure	**764,904**	**203,013**	**36,810**	**777,750**	**537,927**	**(314,767)**	**(42,000)**		**(0)**	**(42,000)**
Exchanges	-	-	-	-	-	-			-	-
Other	369,231	49,445	64	369,231	319,722	(147,160)			-	-
Stations	319,547	133,759	35,541	332,393	163,094	(161,691)			-	-
Wayside	76,126	19,809	1,206	76,126	55,111	(5,916)	(42,000)		(0)	(42,000)
Technology	**25,689**	**5,561**	**-**	**25,689**	**20,128**	**(12,450)**			**-**	**-**
Vehicle Non-Revenue	**7,699**	**2,393**	**-**	**7,699**	**5,306**	**-**			**-**	**-**
Vehicle - Revenue	**545,420**	**21,187**	**91**	**541,360**	**520,082**	**(183,430)**	**(24,360)**		**(41,212)**	**(65,572)**
Canada Line	88,000	-	-	88,000	88,000	(73,040)			-	-
Sky Train	428,920	21,187	91	424,860	403,582	(92,960)	(24,360)		(35,587)	(59,947)
West Coast Express	28,500	-	-	28,500	28,500	(17,430)			(5,625)	(5,625)
Roads and Bridges										
Infrastructure	**67,655**	**18,918**	**3,511**	**83,785**	**61,356**	**-**			**-**	**-**
Bike	36,022	1,468	4	36,022	34,550	-			-	-
Bridges	31,634	17,450	3,507	47,763	26,807	-			-	-
Road Network										
Infrastructure	**445,033**	**21,991**	**9,419**	**444,573**	**413,163**	**-**			**-**	**-**
Bicycle Infrastructure	30,809	780	169	30,809	29,860	-			-	-
Major Road Network	117,397	7,544	7,124	117,500	102,832	-			-	-
MRNB Pavement rehab and BICCS	293,341	13,667	2,126	292,778	276,985	-			-	-
Transit Priority Implementation Program	3,486	-	-	3,486	3,486	-			-	-
Grand Total	**4,877,504**	**1,003,850**	**118,811**	**4,920,927**	**3,798,267**	**(700,832)**	**(694,536)**	**(121,150)**	**(806,594)**	**(1,622,280)**

Note: The above summary has been updated since the release of TransLink's Phase One Investment Plan for the following:

- Some Projects categorized as "Corporate" were reclassified as "Rail" to better align with those projects' scope; and
- Project costs and funding figures were updated for the projects within this funding application, to reflect current assessment, pricing variation and to add an electric bus pilot project.

Appendix B

Descriptions of items in the Capital Program

TransLink 2017-2026 Investment Plan Project Summary	Project Descriptions
Bus	
Equipment	A wide variety of equipment required to maintain and manage TransLink's systems related to the bus network. Examples include fuel delivery system, scheduling, warehouse and yard management systems.
Facilities	Includes improvement projects such as garage roof replacements, hoist replacements; and other projects related to mechanical and civil retrofits to facilities. Also includes PowerSmart upgrades partially funded by BC Hydro.
Infrastructure	
Depots	Includes the "Hamilton Transit Centre" and the "Surrey Transit Centre CNG Retrofit".
Exchanges/Bus loops	Various repairs and replacements to keep the exchanges/bus loops in a state of good repair. For example, replacement of lighting and security equipment, shelters and crew washroom facilities. Also includes projects related to priority B-Line corridors.
Other	Includes general projects related to bus infrastructure such as maintenance and rehabilitation of SeaBus Infrastructure and other facilities and paving replacement.
Trolley Overhead (TOH)	Includes projects related to maintenance of infrastructure related to the trolley buses such as cables, poles and rectifier buildings and equipment.
Technology	Includes the "Trapeze DOMS Product Migration Program" as well as other projects related to software modernization and replacement.
Non-Revenue Vehicles	Includes modernization of non-revenue generating vehicles used by Transit supervisors, security and maintenance staff.
Revenue Vehicles	
Conventional Buses	Fleet expansion and modernization of conventional buses to support maintenance of the transit system and realize benefits such as reduced congestion and emissions.
Community Shuttle	Fleet expansion and modernization of community shuttle vehicles to support maintenance of the transit system and realize benefits such as reduced congestion and emissions.
HandyDART	Fleet expansion and modernization of HandyDART vehicles to support maintenance of the transit system and provide mobility to those with accessibility issues.
SeaBus	Procurement of one additional SeaBus vessel, retrofit of an older SeaBus vessel and projects related to ensuring TransLink continues to meet Transport Canada safety standards and also to reduce maintenance and repair costs associated with ageing assets.
Corporate	
Equipment	A wide variety of equipment such as Ad Panels and radios for Transit Police.
Facilities	Includes renovation and upgrades to offices and related facilities.

TransLink 2017-2026 Investment Plan Project Summary	Project Descriptions
Infrastructure	
Bridges	Includes Pattullo Bridge Rehabilitation Construction
Depots	Infrastructure being built at the UBC Bus Terminal
Other	Includes various general projects related to corporate infrastructure such as wayfinding system integration and efficiency improvement.
Major Construction Projects	Includes large scale projects related to the Evergreen Line as they affect TransLink as a whole.
Technology	Includes projects related to upgrades of various IT applications and systems, security programs, data warehousing etc.
Vehicles Non-Revenue	Includes projects related to non-revenue generating vehicles such as TransLink Police cars and administration vehicles.
Rail	
Equipment	A wide variety of equipment required to maintain and manage the SkyTrain lines. Examples include power supply installations, automatic train control equipment, station equipment, passenger address systems etc.
Facilities	Includes projects related to maintaining and upgrading the operations maintenance and control centre such as space modernization, safety upgrades, yard track reconditioning and seismic upgrades.
Infrastructure	
Other	Includes other rail infrastructure projects related to station escalator replacements, upgrades of guideway and running rail infrastructure, seismic upgrades, smart card/faregates installation and South of Fraser Rapid Transit project readiness.
Stations	Includes projects related to upgrading SkyTrain stations consisting of station upgrades such as the Burrard, Commercial Broadway, Metrotown and Joyce Collingwood stations as well as minor equipment upgrades such as roof replacements to ensure assets are maintained in a state of good repair.
Wayside Power Propulsion	Includes projects related to the propulsion power system for SkyTrain.
Technology	Includes projects related to the upgrade of various software and systems related to the smooth running of the train system.
Non-Revenue Vehicles	Includes projects related to non-revenue generating vehicles used by SkyTrain staff to respond to emergency and routine maintenance.
Revenue Vehicles	
Canada Line	Includes projects related to fleet expansion of the Canada Line cars.
SkyTrain	Includes acquisition of additional SkyTrain cars for Expo and Millennium Line fleet expansion, the refurbishment, mid-life overhaul or replacement of older SkyTrain cars.
WCE	Includes fleet expansion of the West Coast Express cars and mid-life overhaul of five older cars.
Roads and Bridges	
Infrastructure	
Bikes	Includes projects related to the TransLink owned bicycle infrastructure.
Bridges	Includes replacement and rehabilitation of the Pattullo Bridge, rehabilitation of

TransLink 2017-2026 Investment Plan Project Summary	Project Descriptions
	the Knight Street Bridge as well as other projects related to the Golden Ears Bridge and the Westham Island Bridge.
Roads Network	
Infrastructure	
Bike Infrastructure	Includes TransLink's contribution to bicycle infrastructure programs for municipal owned pathways.
MRN	Consists of TransLink's contributions to municipalities for rehabilitation of the Major Road Network (MRN).
MRNB pavement rehab and Bicycle Infrastructure Capital Cost Sharing Program	Consists of projects in three major categories: 1) TransLink's contribution to the MRN Pavement rehabilitation, 2) Minor capital funding to complete and improve as well as encourage construction of more bicycle routes and remove existing barriers to cyclists, and 3) Funding for bicycle infrastructure improvements across the region
Transit Priority Implementation Program	Includes projects related to the Transit Priority Implementation Program.

Appendix C

Project Applications for the Greater Vancouver Regional Fund

APPLICATION FOR FUNDING FROM THE GREATER VANCOUVER REGIONAL FUND FOR FEDERAL GAS TAX FUNDS

Project 1 2019 Double Decker Bus Purchase – Expansion
(Ref# 182132)

B. MAYORS' COUNCIL TRANSPORTATION AND TRANSIT PLAN

Please describe how the project fits within, and provides support to, the Mayors' Council Transportation and Transit Plan.

- ☐ **Maintain what is needed in a state of good repair**
- ☐ **Invest in the road network to improve safety, local access and goods movement**
- ☒ **Expand our transit system to increase ridership in high demand areas and provide basic coverage in low-demand neighbourhoods**
- ☐ **Develop safe and convenient walking connections to transit and pursue early investments to complete the bikeway network, making it possible for more people to travel by these healthy, low cost, and emission-free modes**
- ☐ **Manage our transportation system more effectively with safety and passenger comfort improvements, new personalized incentive programs, advanced technology and infrastructure management solutions, efficient and fair mobility pricing, and better parking management**
- ☐ **Partner to make it happen with explicit implementation agreements and processes that support concurrent decisions on land-use and transportation investments, stable and sufficient long-term funding solutions, and better monitoring of progress**

The Mayors' Council 10-Year Vision (10-Year Vision) on regional transportation outlines a long-term, region-wide, integrated, multi-modal transportation vision to fight congestion, reduce greenhouse gas (GHG) emissions and to keep a fast-growing gateway economy, of almost 2.5 million residents, moving. The 10-Year Vision is built on 3 key strategies to achieve necessary improvements: **invest** in the most urgent and effective investments, **manage** the system more effectively and **partner** to ensure that supportive conditions are in place for these investments to succeed. Following adoption by the Mayors' Council, in June 2014, the 10-Year Vision was subsequently endorsed by the TransLink Board, as the implementation blueprint for the Regional Transportation Strategy (RTS). The 10-Year Vision includes a package of investments aimed at addressing the most basic needs for enhancements to the regional transportation network, allowing the network to keep up with growth in population and employment. It outlines the following transportation priorities related to bus service in the region:

- 25% increase in bus service across the region
- 200 more kilometres of B-Line or Better routes
- More frequent all-day service
- More frequent peak hour service
- Service to new and growing lower density neighbourhoods
- 80% more NightBus service

In November 2016, the TransLink Board and Mayors' Council approved the 2017-2026 Investment Plan (2017 Investment Plan). The 2017 Investment Plan delivers the first three years of the 10-Year Vision,

specifying new services and infrastructure, as well as strategies to make the transportation system more efficient, innovative and sustainable. The 2017 Investment Plan expands transit service across the region to increase system capacity, reduce overcrowding and introduce new bus service to new areas. The 2017 Investment Plan outlines actions and policies to advance the goals identified in TransLink's long-term Regional Transportation Strategy and to support the goals identified in Metro Vancouver's Regional Growth Strategy, *Metro Vancouver 2040: Shaping Our Future* (*Metro 2040*). Some of the highlights for bus service included in the 2017 Investment Plan are:

- 10% increase in bus service and 15% increase in HandyDART service;
- More frequent service on 50 different bus routes; and
- 5 new B-Line routes

This project supports the 10-Year Vision through its strategy to invest in urgent and effective investments. Through expansion of its fleet, TransLink will be able to increase bus service, and provide more frequent and new service and in the process meet a number of 10-Year Vision priorities. This project will also support desired outcomes from the 10-Year Vision, such as reducing transit overcrowding as well as supporting Metro Vancouver's *Integrated Air Quality and Greenhouse Gas Management Plan (IAQGGMP)*.

C. PROJECT DESCRIPTION

Please complete the following for each project proposed for expenditure from the GVRF.

1. Executive Summary (not to exceed two pages)

Project Overview

This project adds five (5) diesel double decker buses to expand service. The double decker buses will have a person and seat capacity of 104 and 84 respectively. Double decker buses are being procured to provide additional passenger seating capacity to reduce overcrowding and standees on highway coach routes. These buses will be deployed on Route 620 (an express service from Bridgeport Station to the BC Ferries Tsawwassen Ferry Terminal). Five (5) double decker buses are anticipated to be procured in 2019. This along with the expansion application for forty two (42) 60-foot conventional buses and seven (7) 40-foot hybrid buses will bring the total bus fleet to 1,505 vehicles.

TransLink strives to optimize resources by matching service to passenger demand, including allocating vehicles of an appropriate size to serve the demand on a route. This allocation is optimized through continuous review and planning to distribute resources where they are most needed. This process is determined by ridership data, which has been substantially enhanced with the deployment of Compass Card. TransLink has also undertaken recent work to determine optimal fleet propulsion technology on each route, which is interdependent with vehicle size.

Based on latest technology information available and policy preferences, diesel propulsion is no longer a preferred option for TransLink's operations compared to compressed natural gas (CNG), hybrid diesel-electric (hybrid) or electric-battery, except for highway routes. Vehicles with diesel propulsion is still a viable option for highway routes as CNG or hybrid would have higher capital cost but marginal emissions reduction due to higher operating speeds. In addition, diesel propulsion is planned for double decker buses as these vehicles will be 13 foot and 6 inches in height to allow for operations through the George Massey Tunnel. Hybrid drives are not available for double decker buses at this height and CNG is not proposed as fuel tanks would increase the height and preclude operations through the George Massey Tunnel.

The double decker bus and 60-foot hybrid bus use the same Cummins ISL9 engine. The engine emission specifications do not take into account the vehicle function (servicing highway vs. urban commute). The weight (3,500 kg less than hybrid) and increased seating capacity (84 for double decker vs. 46 for 60-foot hybrid) of a double decker bus make it better suited for highway travel compared to a 60-foot hybrid vehicle mainly because of fuel efficiency. Based on data available from other agencies, double decker buses emissions (GHG, PM and NOx), fuel efficiency and performance are very similar to a hybrid conventional bus. However, when calculating emissions based on seating capacity, the double decker bus reduces emissions (GHG, PM and NOx) by almost half.

TransLink has conducted an evaluation of buses for highway service examining capacity, financial, customer, emissions and operational considerations. This evaluation concluded double decker buses as the ideal vehicle for highway service among the other alternatives of 60-foot hybrid articulated bus and 40-foot bus with additional seating capacity, and recommended a demonstration trial be conducted. A three month trial is scheduled to begin October 2017 to examine operating characteristics, operator training requirements, depot infrastructure needs and potential road changes to ensure successful integration of a new vehicle type in 2019. TransLink will lease two

double decker buses from the vendor Alexander-Dennis for the trial.

TransLink anticipates the demonstration trial to be successful, however if TransLink decides not to procure double decker buses following the trials, TransLink will submit an updated application in the spring of next year to procure 40-foot highway coaches and 60-foot diesel buses instead.

Tangible Benefits and Outcomes

The new double decker buses have a larger passenger seating capacity than the existing highway coaches or alternative choices of 40-foot suburban conventional bus or 60-foot articulated bus. This larger seating capacity will improve customer experience, especially for customers traveling longer distances. These new low floor double decker buses would have wheelchair ramps instead of lifts to improve accessibility and allow for easier and quicker boarding and alighting over the existing high floor highway coaches. Based on data available from other agencies, double decker buses emissions (GHG, PM and NOx), fuel efficiency and performance are very similar to a hybrid conventional bus. However, when calculating emissions based on seating capacity, the double decker bus reduces emissions (GHG, PM and NOx) by almost half.

Project Budget, Expenses, and GVRF Funding Request

The project budget is $6,300,000 with a Greater Vancouver Regional Fund (GVRF) request of $5,670,000. Expenses covered by this budget primarily include vehicle procurement, ancillary on-board equipment and labour and other miscellaneous project costs. The funding requested in this application will be applied towards expenses considered eligible per the terms of the Administrative Agreement dated April 2014.

2. Project Name

2019 Double Decker Bus Purchase – Expansion (Ref# 182132)

3. Project Need

The objectives are to expand transit service across Metro Vancouver to increase system capacity, maintain high quality customer service; and minimize maintenance and operating costs through the continued provision of reliable, fully-accessible transit vehicles, which are appropriate to routes on which they operate. Emission reductions will occur through the reduction of private vehicle trips.

4. Project Eligibility (check one):

☐ **Local Roads and Bridges, including active transportation**

☒ **Public Transit**

5. Project Purpose (check one):

- ☐ **Expansion:** Expands the carrying capacity of people and/or goods movement.
- ☐ **State of Good Repair:** Replaces or modernizes assets to keep the regional transportation system in a state of good repair.
- ☐ **Operational Efficiency/Effectiveness:** Improves the efficiency or effectiveness of the regional transportation system.
- ☐ **Refurbishment**
- ☐ **New**
- ☒ **Other (please specify : The 5 double decker buses will be displacing 5 60-foot hybrid buses that will be re-assigned to new expansion service in B-Line corridors)**

6. Project Type (check one):

- ☒ **Growth**
- ☒ **Upgrade**
- ☐ **Risk (Resilience)**
- ☐ **Maintenance**
- ☒ **Opportunity**

7. Project Staging:

Year(s) of Acquisition or Start of Construction	Year of Completion of Construction	Year of Service Initialization	Year(s) of Renewal	Year(s) of End of Service
2019	2019	2019	N/A	2036

8. Has the project previously received funding through GVRF? Please explain.

No. This is the first application for GVRF funding for this project.

9. Was GVRF funding previously declined for the project? Please explain.

No. This is the first application for GVRF funding for this project.

10. Is the project anticipated to require additional future GVRF funding? If so, please explain.

No. TransLink is planning to complete this project within budget.

11. Project Cost + Funding

11.a Budget & Expenditures

Budget	Expenditures to Date	Forecast to Complete	Final Forecasted Cost	Variance (budget – final forecasted cost)
$6,300,000	$0	$6,300,000	$6,300,000	$0

11.b Project Funding

Prior Approved GVRF Funding	Current Year GVRF Funding Request	Other Funding – Specify source and whether confirmed/pending
$0	$5,670,000	N/A

11.c Project Budget Schedule

Item	2017	2018	2019	2020	2021	2022
GVRF-funded Project Budget			$3,420,000	$2,250,000		
Total Project Budget			$3,800,000	$2,500,000		

12. Project Budget Rationale

Describe the types of proposed project expenses to be funded by the Greater Vancouver Regional Fund

a. Explain how the project reflects the intent of the GVRF

This project allows for a significant increase in passenger seating capacity and expands the regional public transportation system. It also allows TransLink to efficiently and effectively provide transit service to the general public and those who have accessibility challenges. In addition, it is expected to reduce GHG, NOx and PM emissions through the reduction of private vehicle trips.

b. In the absence of GVRF funding, can the project proceed with other funding sources? What risks do the other funding sources present to the project?

No. TransLink relies on GVRF funding for expansion of its revenue vehicle fleets and plans its annual budgets accordingly.

The other sources of funding available to TransLink are – Building Canada Fund and the Public Transit Infrastructure Fund. The projects chosen by TransLink for GVRF funding are better suited to GVRF funding compared to the other sources of funding, as summarized below:

Building Canada Fund (BCF) - the funding available is intended for “major infrastructure” and focuses on larger, strategic infrastructure projects that are of national or regional significance.

Additionally, all funds in the current allocation have already been allocated to specific projects.

Public Transit Infrastructure Fund (PTIF) – this fund is focused on early works for expansion of the Rapid Transit network such as - the Expo, Millennium and Canada Line networks, along with the Surrey Light Rail Transit projects. Also, under this fund the maximum federal funding towards a project is limited to 50% of the total eligible expenditures; no such limits are identified in the GVRF. Lastly, projects to be funded under this program have already been submitted to the federal government.

In addition, BCF and PTIF funding is only available for a specified period of time: BCF is valid until March 31, 2017 (with some station upgrades extended to March, 2019) and PTIF applies to projects initiating in 2016-17 and 2017-18.

As such, there are no other viable funding sources available for fleet expansion.

c. Identify potential risks – corporate and regional – of this project that could result in this project not being completed or being unsuccessful. Describe possible mitigation strategies to address these risks.

If funding is not received in time, TransLink will have to rely on deferred retirement vehicles to deliver on its promises of expansion. Continued use of deferred retirement vehicles poses a risk to reliability, as well as incremental maintenance costs to keep them in service. This may result in lost opportunities to realize goals of reduced congestion, improved peak hour service and frequency. Further, use of deferred retirement vehicles could also result in higher GHG emissions than new vehicles. TransLink may lose credibility among the general public if service expansion is not reliable.

d. How may the project cost vary as a result of changing external factors, such as interest rates and currency exchange rates?

Project costs may vary due to foreign exchange fluctuations (as parts are procured from the US) and vendor pricing. These uncertainties are mitigated with sufficient contingency allowance to fund price and foreign exchange fluctuations.

e. How may foreseeable changes in investment, regulation, or policies from other orders of government affect the project?

Due to recent increases in senior government funding for public transit projects, many suppliers are experiencing larger demands to order vehicles. This may create a backlog with vendors, and if procurement is not initiated soon, could result in further delay in ordering and receiving vehicles.

f. How may foreseeable changes in technology affect the project?

This application is based on the new vehicles being diesel powered. TransLink has taken into account its existing infrastructure, as well as the opportunity to transition to lower emissions vehicles, in arriving at a decision on diesel technology. Double decker buses for highway service are identified for diesel technology due to height constraints (buses will be 13 foot and 6 inches) of operating through the George Massey Tunnel. Hybrid drives are not available for double decker buses at this height and CNG is not proposed as fuel tanks would increase the height and preclude operations through the George Massey Tunnel.

g. What other corporate or external factors could alter the project need, scope, budget, or timeline for project delivery?

There are no foreseeable corporate or external factors that could alter the project need or scope of this project. Project timeline may be affected by manufacturer's capacity and schedules, availability of parts and/or time for vehicle delivery from the manufacturer. Budget may fluctuate due to parts pricing and/or foreign exchange.

In order to ensure that the vehicles received are up to the standards expected and delivered on time TransLink conducts regular factory audits and inspections of the manufacturers' facilities.

D. EVALUATION CRITERIA

Please describe how project achieves or works towards each criterion by identifying and reporting on relevant performance measures. Where appropriate, present quantitative information. Please do not exceed 10 pages per project.

Two types of evaluation criteria are identified: Screening Criteria, which represent requirements that are mandatory for any project for which GVRF funding is requested; and Integrated Criteria, which allow for a qualitative assessment of proposed projects based on high priority objectives that reflect the intent of the Federal Gas Tax Fund, of Metro Vancouver goals, and of the Mayors' Council Vision.

Criterion	Description	Assessment
	SCREENING CRITERIA	
Eligible Project Category	☐ Local roads and bridges, including active transportation ☒ Public transit	Required
Eligible Expenses	As set out in the 2014 Administrative Agreement (Schedule C) Eligible Item — Expenditure[1] Diesel Double Decker Buses (5) — $5,590,000 On-board equipment — 80,000 Total — $5,670,000 [1] *Per Schedule C, Section 1.1, Part a)*	Required
Plan Consistency	Projects must be consistent with TransLink's existing Capital Plan and future *10-Year Investment Plan,* as well as the *Mayors' Council Transportation and Transit Plan, Metro 2040: Shaping our Future, and the Regional Transportation Strategy.* ☒ 10-Year Investment Plan ☒ Mayors' Council Transportation and Transit Plan	Required

Criterion	Description	Assessment
	☒ Metro 2040: Shaping our Future ☒ Regional Transportation Strategy	
Corporate Policies	Projects must be consistent with applicable TransLink policies such as sustainability, environmental responsibility, emissions and infrastructure ☒ Sustainability policy ☒ Environmental policy ☒ Emissions policy ☐ Infrastructure policy – n/a	Required
INTEGRATED CRITERIA		
Regional Growth Strategy		
Supports the Regional Growth Strategy	*The degree to which the project assists in achieving the five goals in Metro 2040.* ☐ Create a Compact Urban Area ☒ Support a Sustainable Economy ☒ Protect Environment and Respond to Climate Change Impacts ☒ Develop Complete Communities ☒ Support Sustainable Transportation Choices	Poor/Good/ Excellent
Urban Centres and Frequent Transit Development Areas	*Where applicable, the project is located in, or demonstrates tangible benefits to the overall performance of Urban Centres and Frequent Transit Development Areas.* Buses provide services to Metro Vancouver communities within TransLink's transportation service region and offer an environmentally responsible and sustainable transportation alternative to single occupant vehicle travel. They link communities with business, institutional and social hubs and destinations, and facilitate the creation and expansion of Transit Oriented Developments (TODs). They also provide collector and distribution services to Expo, Millennium, Evergreen and Canada Lines, West Coast Express and SeaBus.	Poor/Good/ Excellent
Transportation Performance		
Headline Targets	*Demonstrates tangible beneficial effects on vehicle kilometres travelled and/or walk/cycle/transit mode share.* The project will add double decker buses to the bus fleet thus increasing passenger seating capacity. The entire 10-Year Vision is forecast to decrease annual private vehicle kilometers travelled per person to 5,422 kilometers by 2030 – a 15% decrease compared to 2011. The 2017 Investment Plan delivers the first phase of walking, cycling and transit infrastructure in the 10-Year	Poor/Good/ Excellent

Criterion	Description	Assessment
	Vision, and in doing so, makes it possible for more people in the region to choose alternatives to driving. This expansion of the bus fleet is an important step in delivering this investment. Additionally, the 2017 Investment Plan is forecast to increase ridership from 233 million annual transit journeys in 2016 to 272 million annual transit journeys by 2026. This fleet expansion is a critical step in providing the transit service necessary to reach this increase in transit trips.	
Other Transportation Outcomes	*Demonstrates tangible beneficial effects on vehicle congestion, transit passenger congestion, transit ridership, and/or transportation safety for the duration of the project.* Many routes identified for improvement have been selected due to current crowding or overcrowding conditions. Improvements to capacity will occur through more frequent service and double decker buses with larger passenger seating capacity, resulting in fewer pass-ups and overcrowded vehicles. The full 10-Year Vision is forecast to increase walking, cycling, and transit mode share to 31% by 2030, supporting the RTS target of 50% mode share by 2045. This fleet expansion allows TransLink to expand transit services and continue to make progress toward these targets.	Poor/Good/ Excellent
Project Type	*Demonstrated value of the project type (refer to section 6).* By growing the reach and capacity of public transport, we will provide more options for mobility and be able to reduce congestion on the roads, increase passenger comfort and reliability and pollutant emissions will be reduced	Poor/Good/ Excellent
Regional Environmental Objectives		
Supports the Integrated Air Quality and Greenhouse Gas Management Plan	*Contributes to the achievement of one or more goals in the Integrated Air Quality and Greenhouse Gas Management Plan(IAQGGMP).* The project is expected to reduce GHG emissions through the reduction of private vehicle trips. As such, this project supports *IAQGGMP* strategy 3.3 "Reduce the carbon footprint of the region's transportation system."	Poor/Good/ Excellent
Measurable Beneficial Effects	*Demonstrates tangible beneficial effects on greenhouse gas and common air contaminant emissions from on-road transportation sources for the duration of the project.* By growing the reach and capacity of public transport, we will provide more options for mobility and be able	Poor/Good/ Excellent

Criterion	Description	Assessment
	to reduce congestion on the roads while increasing passenger comfort and reliability. Over time the project is expected to reduce GHG emissions through the reduction of private vehicle trips.	
Economic Development		
Supports regional prosperity	*Contributes to a regional transportation system that moves people and goods and aligns with regional prosperity.* Having additional buses will provide improved reliability to the regional transportation system by improving the consistency of arterial service to institutional, economic and other transit mode hubs. Passengers will have better access to work and/or leisure activities, reducing the use of single occupant vehicle travel.	Poor/Good/ Excellent
Measurable Beneficial Effects	*Tangible beneficial effects on the movement of people and/or goods for the duration of the project.* Having additional buses will improve service and make transit a more reliable option, and ultimately improving economic competitiveness within Metro Vancouver. More reliable transit provides better access to jobs, workers, goods, and markets, while reducing congestion. Many proposed service improvements address overcrowding and will reduce congestion for passengers.	Poor/Good/ Excellent

APPLICATION FOR FUNDING FROM THE GREATER VANCOUVER REGIONAL FUND FOR FEDERAL GAS TAX FUNDS

Project 2 2019 Conventional 40-ft Bus Purchase – Expansion
(Ref# 182132)

B. MAYORS' COUNCIL TRANSPORTATION AND TRANSIT PLAN

Please describe how the project fits within, and provides support to, the Mayors' Council Transportation and Transit Plan.

- ☐ **Maintain what is needed in a state of good repair**
- ☐ **Invest in the road network to improve safety, local access and goods movement**
- ☒ **Expand our transit system to increase ridership in high demand areas and provide basic coverage in low-demand neighbourhoods**
- ☐ **Develop safe and convenient walking connections to transit and pursue early investments to complete the bikeway network, making it possible for more people to travel by these healthy, low cost, and emission-free modes**
- ☐ **Manage our transportation system more effectively with safety and passenger comfort improvements, new personalized incentive programs, advanced technology and infrastructure management solutions, efficient and fair mobility pricing, and better parking management**
- ☐ **Partner to make it happen with explicit implementation agreements and processes that support concurrent decisions on land-use and transportation investments, stable and sufficient long-term funding solutions, and better monitoring of progress**

The Mayors' Council 10-Year Vision (10-Year Vision) on regional transportation outlines a long-term, region-wide, integrated, multi-modal transportation vision to fight congestion, reduce greenhouse gas (GHG) emissions and to keep a fast-growing gateway economy, of almost 2.5 million residents, moving. The 10-Year Vision is built on 3 key strategies to achieve necessary improvements: **invest** in the most urgent and effective investments, **manage** the system more effectively and **partner** to ensure that supportive conditions are in place for these investments to succeed. Following adoption by the Mayors' Council, in June 2014, the 10-Year Vision was subsequently endorsed by the TransLink Board, as the implementation blueprint for the Regional Transportation Strategy (RTS). The 10-Year Vision includes a package of investments aimed at addressing the most basic needs for enhancements to the regional transportation network, allowing the network to keep up with growth in population and employment. It outlines the following transportation priorities related to bus service in the region:

- 25% increase in bus service across the region
- 200 more kilometres of B-Line or Better routes
- More frequent all-day service
- More frequent peak hour service
- Service to new and growing lower density neighbourhoods
- 80% more NightBus service

In November 2016, the TransLink Board and Mayors' Council approved the 2017-2026 Investment Plan (2017 Investment Plan). The 2017 Investment Plan delivers the first three years of the 10-Year Vision,

specifying new services and infrastructure, as well as strategies to make the transportation system more efficient, innovative and sustainable. The 2017 Investment Plan expands transit service across the region to increase system capacity, reduce overcrowding and introduce new bus service to new areas. The 2017 Investment Plan outlines actions and policies to advance the goals identified in TransLink's long-term Regional Transportation Strategy and to support the goals identified in Metro Vancouver's Regional Growth Strategy, *Metro Vancouver 2040: Shaping Our Future* (*Metro 2040*). Some of the highlights for bus service included in the 2017 Investment Plan are:

- 10% increase in bus service and 15% increase in HandyDART service;
- More frequent service on 50 different bus routes; and
- 5 new B-Line routes

This project supports the 10-Year Vision through its strategy to invest in urgent and effective investments. Through expansion of its fleet, TransLink will be able to increase bus service, and provide more frequent and new service and in the process meet a number of 10-Year Vision priorities. This project will also support desired outcomes from the 10-Year Vision, such as reducing transit overcrowding as well as supporting Metro Vancouver's *Integrated Air Quality and Greenhouse Gas Management Plan (IAQGGMP)*.

C. PROJECT DESCRIPTION

Please complete the following for each project proposed for expenditure from the GVRF.

1. Executive Summary (not to exceed two pages)

Project Overview

This project adds seven (7) hybrid 40-foot buses to expand service. The 40-foot buses will have a person and seat capacity of 73 and 36 respectively. They will be operated out of the Vancouver Transit Center and Burnaby Transit Center. Seven (7) 40-foot hybrid buses are anticipated to be procured in 2019. This along with the expansion application for five (5) double decker buses and forty two (42) 60-foot conventional buses will bring the total bus fleet to 1,505 vehicles.

TransLink strives to optimize resources by matching service to passenger demand, including allocating vehicles of an appropriate size to serve the demand on a route. This allocation is optimized through continuous review and planning to distribute resources where they are most needed. This process is determined by ridership data, which has been substantially enhanced with the deployment of Compass Card. TransLink has also undertaken recent work to determine optimal fleet propulsion technology on each route, which is interdependent with vehicle size.

The bus fleet propulsion technologies available to TransLink include diesel, CNG, trolley, hybrid and electric-battery for 40-foot buses. Hybrid buses are currently the best option for reducing emissions for the 40-foot bus fleet. TransLink is developing a Low Carbon Fleet Strategy (anticipated to be completed in March 2018) with the goal of reducing GHG emissions. TransLink also conducted a two month trial of 40-foot slow-charging electric-battery buses in summer 2017 and is expected to conduct a second trial next year of fast-charging electric-battery buses (funded by a previous GVRF application).

Tangible Benefits and Outcomes

The choice of hybrid buses supports the Metro Vancouver *Integrated Air Quality and Greenhouse Gas Management Plan* and TransLink's efforts to reduce emissions under the forthcoming Low Carbon Fleet Strategy. Hybrid buses have 22 per cent less GHG emissions than the diesel alternative and 16 per cent less GHG emissions than the CNG alternative. The Hybrids also have 33 per cent less PM than diesel and 66 per cent less PM than CNG alternative.

Project Budget, Expenses, and GVRF Funding Request

The project budget is $8,100,000 with a Greater Vancouver Regional Fund (GVRF) request of $7,290,000. Expenses covered by this budget primarily include vehicle procurement, ancillary on-board equipment and labour and other miscellaneous project costs. The funding requested in this application will be applied towards expenses considered eligible per the terms of the Administrative Agreement dated April 2014.

2. Project Name

2019 Conventional 40-ft Bus Purchase – Expansion (Ref# 182132)

3. Project Need

The objectives are to expand transit service across Metro Vancouver to increase system capacity, maintain high quality customer service; and minimize maintenance and operating costs through the continued provision of reliable, fully-accessible transit vehicles, which are appropriate to routes on which they operate. Hybrid buses will reduce GHG emissions and other emission reductions will occur through the reduction of private vehicle trips.

4. Project Eligibility (check one):

☐ **Local Roads and Bridges, including active transportation**
☒ **Public Transit**

5. Project Purpose (check one):

☒ **Expansion:** Expands the carrying capacity of people and/or goods movement.
☐ **State of Good Repair:** Replaces or modernizes assets to keep the regional transportation system in a state of good repair.
☐ **Operational Efficiency/Effectiveness:** Improves the efficiency or effectiveness of the regional transportation system.
☐ **Refurbishment**
☐ **New**
☐ **Other (please specify :_____)**

6. Project Type (check one):

☒ **Growth**
☐ **Upgrade**
☐ **Risk (Resilience)**
☐ **Maintenance**
☐ **Opportunity**

7. Project Staging:

Year(s) of Acquisition or Start of Construction	Year of Completion of Construction	Year of Service Initialization	Year(s) of Renewal	Year(s) of End of Service
2019	2019	2019	N/A	2036

8. Has the project previously received funding through GVRF? Please explain.

No. This is the first application for GVRF funding for this project.

9. Was GVRF funding previously declined for the project? Please explain.

No. This is the first application for GVRF funding for this project.

10. Is the project anticipated to require additional future GVRF funding? If so, please explain.

No. TransLink is planning to complete this project within budget.

11. Project Cost + Funding

11.a Budget & Expenditures

Budget	Expenditures to Date	Forecast to Complete	Final Forecasted Cost	Variance (budget – final forecasted cost)
$8,100,000	$0	$8,100,000	$8,100,000	$0

11.b Project Funding

Prior Approved GVRF Funding	Current Year GVRF Funding Request	Other Funding – Specify source and whether confirmed/pending
$0	$7,290,000	N/A

11.c Project Budget Schedule

Item	2017	2018	2019	2020	2021	2022
GVRF-funded Project Budget			$4,410,000	$2,880,000		
Total Project Budget			$4,900,000	$3,200,000		

12. Project Budget Rationale

Describe the types of proposed project expenses to be funded by the Greater Vancouver Regional Fund

a. Explain how the project reflects the intent of the GVRF

This project expands the regional public transportation system, and ensures efficient and effective transit service. In addition, it is expected to reduce GHG, NOx and PM emissions through the reduction of private vehicle trips and utilization of hybrid buses.

b. In the absence of GVRF funding, can the project proceed with other funding sources? What risks do the other funding sources present to the project?

No. TransLink relies on GVRF funding for expansion of its revenue vehicle fleets and plans its annual budgets accordingly.

The other sources of funding available to TransLink are – Building Canada Fund and the Public Transit Infrastructure Fund. The projects chosen by TransLink for GVRF funding are better suited to GVRF funding compared to the other sources of funding, as summarized below:

Building Canada Fund (BCF) - the funding available is intended for "major infrastructure" and focuses on larger, strategic infrastructure projects that are of national or regional significance. Additionally, all funds in the current allocation have already been allocated to specific projects.

Public Transit Infrastructure Fund (PTIF) – this fund is focused on early works for expansion of the Rapid Transit network such as - the Expo, Millennium and Canada Line networks, along with the Surrey Light Rail Transit projects. Also, under this fund the maximum federal funding towards a project is limited to 50% of the total eligible expenditures; no such limits are identified in the GVRF. Lastly, projects to be funded under this program have already been submitted to the federal government.

In addition, BCF and PTIF funding is only available for a specified period of time: BCF is valid until March 31, 2017 (with some station upgrades extended to March, 2019) and PTIF applies to projects initiating in 2016-17 and 2017-18.

As such, there are no other viable funding sources available for fleet expansion.

c. Identify potential risks – corporate and regional – of this project that could result in this project not being completed or being unsuccessful. Describe possible mitigation strategies to address these risks.

If funding is not received in time, TransLink will have to rely on deferred retirement vehicles to deliver on its promises of expansion. Continued use of deferred retirement vehicles poses a risk to reliability, as well as incremental maintenance costs to keep them in service. This may result in lost opportunities to realize goals of reduced congestion, improved peak hour service and frequency. Further, use of deferred retirement vehicles could also result in higher GHG emissions than new vehicles. TransLink may lose credibility among the general public if service expansion is not reliable.

d. How may the project cost vary as a result of changing external factors, such as interest rates and currency exchange rates?

Project costs may vary due to foreign exchange fluctuations (as parts are procured from the US) and vendor pricing. These uncertainties are mitigated with sufficient contingency allowance to fund price and foreign exchange fluctuations.

e. How may foreseeable changes in investment, regulation, or policies from other orders of government affect the project?

Due to recent increases in senior government funding for public transit projects, many suppliers are experiencing larger demands to order vehicles. This may create a backlog with vendors, and if procurement is not initiated soon, could result in further delay in ordering and receiving vehicles.

f. How may foreseeable changes in technology affect the project?

This application is based on the new vehicles being hybrid powered. TransLink has taken into account its existing infrastructure, as well as the opportunity to transition to lower emissions vehicles, in arriving at a decision on hybrid technology. Also, many routes identified for improvement are in urban areas where hybrid buses are well suited and provide the best fuel economy due to low average speeds.

g. What other corporate or external factors could alter the project need, scope, budget, or timeline for project delivery?

There are no foreseeable corporate or external factors that could alter the project need or scope of this project. Project timeline may be affected by manufacturer's capacity and schedules, availability of parts and/or time for vehicle delivery from the manufacturer. Budget may fluctuate due to parts pricing and/or foreign exchange.

In order to ensure that the vehicles received are up to the standards expected and delivered on time TransLink conducts regular factory audits and inspections of the manufacturers' facilities.

D. EVALUATION CRITERIA

Please describe how project achieves or works towards each criterion by identifying and reporting on relevant performance measures. Where appropriate, present quantitative information. Please do not exceed 10 pages per project.

Two types of evaluation criteria are identified: Screening Criteria, which represent requirements that are mandatory for any project for which GVRF funding is requested; and Integrated Criteria, which allow for a qualitative assessment of proposed projects based on high priority objectives that reflect the intent of the Federal Gas Tax Fund, of Metro Vancouver goals, and of the Mayors' Council Vision.

Criterion	Description	Assessment
	SCREENING CRITERIA	
Eligible Project Category	☐ Local roads and bridges, including active transportation ☒ Public transit	Required
Eligible Expenses	As set out in the 2014 Administrative Agreement (Schedule C)	Required

Criterion	Description	Assessment
	Eligible Item — Expenditure[1] Hybrid Buses (7) — 6,870,000 On-board equipment — 420,000 Total — $7,290,000 [1] *Per Schedule C, Section 1.1, Part a)*	
Plan Consistency	Projects must be consistent with TransLink's existing Capital Plan and future *10-Year Investment Plan,* as well as the *Mayors' Council Transportation and Transit Plan, Metro 2040: Shaping our Future, and the Regional Transportation Strategy.* ☒ 10-Year Investment Plan ☒ Mayors' Council Transportation and Transit Plan ☒ Metro 2040: Shaping our Future ☒ Regional Transportation Strategy	Required
Corporate Policies	Projects must be consistent with applicable TransLink policies such as sustainability, environmental responsibility, emissions and infrastructure ☒ Sustainability policy ☒ Environmental policy ☒ Emissions policy ☐ Infrastructure policy – n/a	Required
INTEGRATED CRITERIA		
Regional Growth Strategy		
Supports the Regional Growth Strategy	*The degree to which the project assists in achieving the five goals in Metro 2040.* ☐ Create a Compact Urban Area ☒ Support a Sustainable Economy ☒ Protect Environment and Respond to Climate Change Impacts ☒ Develop Complete Communities ☒ Support Sustainable Transportation Choices	Poor/Good/ Excellent
Urban Centres and Frequent Transit Development Areas	*Where applicable, the project is located in, or demonstrates tangible benefits to the overall performance of Urban Centres and Frequent Transit Development Areas.* Conventional buses provide services to Metro Vancouver communities within TransLink's transportation service region and offer an environmentally responsible and sustainable transportation alternative to single occupant vehicle travel. They link communities with business, institutional and social hubs and destinations, and facilitate the creation and expansion of Transit Oriented	Poor/Good/ Excellent

Criterion	Description	Assessment
	Developments (TODs). They also provide collector and distribution services to Expo, Millennium, Evergreen and Canada Lines, West Coast Express and SeaBus.	
Transportation Performance		
Headline Targets	*Demonstrates tangible beneficial effects on vehicle kilometres travelled and/or walk/cycle/transit mode share.* The project will increase the 40-foot bus fleet size to the bus fleet thus increasing passenger capacity. The entire 10-Year Vision is forecast to decrease annual private vehicle kilometers travelled per person to 5,422 kilometers by 2030 – a 15% decrease compared to 2011. The 2017 Investment Plan delivers the first phase of walking, cycling and transit infrastructure in the 10-Year Vision, and in doing so, makes it possible for more people in the region to choose alternatives to driving. This expansion of the bus fleet is an important step in delivering this investment. Additionally, the 2017 Investment Plan is forecast to increase ridership from 233 million annual transit journeys in 2016 to 272 million annual transit journeys by 2026. This fleet expansion is a critical step in providing the transit service necessary to reach this increase in transit trips.	Poor/Good/ Excellent
Other Transportation Outcomes	*Demonstrates tangible beneficial effects on vehicle congestion, transit passenger congestion, transit ridership, and/or transportation safety for the duration of the project.* Many routes identified for improvement have been selected due to current crowding or overcrowding conditions. Improvements to capacity will occur through more frequent service and double decker buses with larger passenger capacity, resulting in fewer pass-ups and overcrowded vehicles. The full 10-Year Vision is forecast to increase walking, cycling, and transit mode share to 31% by 2030, supporting the RTS target of 50% mode share by 2045. This fleet expansion allows TransLink to expand transit services and continue to make progress toward these targets.	Poor/Good/ Excellent
Project Type	*Demonstrated value of the project type (refer to section 6).* By growing the reach and capacity of public transport, we will provide more options for mobility and be able to reduce congestion on the roads, increase passenger comfort and reliability and pollutant emissions will be reduced	Poor/Good/ Excellent

Criterion	Description	Assessment
Regional Environmental Objectives		
Supports the Integrated Air Quality and Greenhouse Gas Management Plan	*Contributes to the achievement of one or more goals in the Integrated Air Quality and Greenhouse Gas Management Plan(IAQGGMP).* The project is expected to reduce GHG and PM emissions through increasing the hybrid bus fleet and the reduction of private vehicle trips. As such, this project supports *IAQGGMP* strategies 1.1 "Reduce emissions of and public exposure to diesel particulate matter", 1.4 "Reduce air contaminant emissions from cars, trucks, and buses", 3.3 "Reduce the carbon footprint of the region's transportation system."	Poor/Good/ Excellent
Measurable Beneficial Effects	*Demonstrates tangible beneficial effects on greenhouse gas and common air contaminant emissions from on-road transportation sources for the duration of the project.* By growing the reach and capacity of public transport, we will provide more options for mobility and be able to reduce congestion on the roads while increasing passenger comfort and reliability. Over time the project is expected to reduce GHG emissions through the reduction of private vehicle trips.	Poor/Good/ Excellent
Economic Development		
Supports regional prosperity	*Contributes to a regional transportation system that moves people and goods and aligns with regional prosperity.* Having additional buses will provide improved reliability to the regional transportation system by improving the consistency of arterial service to institutional, economic and other transit mode hubs. Passengers will have better access to work and/or leisure activities, reducing the use of single occupant vehicle travel.	Poor/Good/ Excellent
Measurable Beneficial Effects	*Tangible beneficial effects on the movement of people and/or goods for the duration of the project.* Having additional buses will improve service and make transit a more reliable option, and ultimately improving economic competitiveness within Metro Vancouver. More reliable transit provides better access to jobs, workers, goods, and markets, while reducing congestion. Many proposed service improvements address overcrowding and will reduce congestion for passengers.	Poor/Good/ Excellent

APPLICATION FOR FUNDING FROM THE GREATER VANCOUVER REGIONAL FUND FOR FEDERAL GAS TAX FUNDS

Project 3 2019 Conventional 60-ft Bus Purchase – Expansion
(Ref# 182132)

B. MAYORS' COUNCIL TRANSPORTATION AND TRANSIT PLAN

Please describe how the project fits within, and provides support to, the Mayors' Council Transportation and Transit Plan.

- ☐ **Maintain what is needed in a state of good repair**
- ☐ **Invest in the road network to improve safety, local access and goods movement**
- ☒ **Expand our transit system to increase ridership in high demand areas and provide basic coverage in low-demand neighbourhoods**
- ☐ **Develop safe and convenient walking connections to transit and pursue early investments to complete the bikeway network, making it possible for more people to travel by these healthy, low cost, and emission-free modes**
- ☐ **Manage our transportation system more effectively with safety and passenger comfort improvements, new personalized incentive programs, advanced technology and infrastructure management solutions, efficient and fair mobility pricing, and better parking management**
- ☐ **Partner to make it happen with explicit implementation agreements and processes that support concurrent decisions on land-use and transportation investments, stable and sufficient long-term funding solutions, and better monitoring of progress**

The Mayors' Council 10-Year Vision (10-Year Vision) on regional transportation outlines a long-term, region-wide, integrated, multi-modal transportation vision to fight congestion, reduce greenhouse gas (GHG) emissions and to keep a fast-growing gateway economy, of almost 2.5 million residents, moving. The 10-Year Vision is built on 3 key strategies to achieve necessary improvements: **invest** in the most urgent and effective investments, **manage** the system more effectively, and **partner** to ensure that supportive conditions are in place for these investments to succeed. Following adoption by the Mayors' Council, in June 2014, the 10-Year Vision was subsequently endorsed by the TransLink Board, as the implementation blueprint for the Regional Transportation Strategy (RTS). The 10-Year Vision includes a package of investments aimed at addressing the most basic needs for enhancements to the regional transportation network, allowing the network to keep up with growth in population and employment. It outlines the following transportation priorities related to bus service in the region:

- 25% increase in bus service across the region
- 200 more kilometres of B-Line or Better routes
- More frequent all-day service
- More frequent peak hour service
- Service to new and growing lower density neighbourhoods
- 80% more NightBus service

In November 2016, the TransLink Board and Mayors' Council approved the 2017-2026 Investment Plan (2017 Investment Plan). The 2017 Investment Plan delivers the first three years of the 10-Year Vision,

specifying new services and infrastructure, as well as strategies to make the transportation system more efficient, innovative and sustainable. The 2017 Investment Plan expands transit service across the region to increase system capacity, reduce overcrowding, and introduce new bus service to new areas. The 2017 Investment Plan outlines actions and policies to advance the goals identified in TransLink's long-term Regional Transportation Strategy and to support the goals identified in Metro Vancouver's Regional Growth Strategy, *Metro Vancouver 2040: Shaping Our Future* (*Metro 2040*). Some of the highlights for bus service included in the 2017 Investment Plan are:

- 10% increase in bus service and 15% increase in HandyDART service;
- More frequent service on 50 different bus routes; and
- 5 new B-Line routes

This project supports the 10-Year Vision through its strategy to invest in urgent and effective investments. Through expansion of its fleet, TransLink will be able to increase bus service, and provide more frequent and new service, and in the process meet a number of 10-Year Vision priorities. This project will also support desired outcomes from the 10-Year Vision, such as reducing transit overcrowding as well as supporting Metro Vancouver's *Integrated Air Quality and Greenhouse Gas Management Plan (IAQGGMP).*

C. PROJECT DESCRIPTION

Please complete the following for each project proposed for expenditure from the GVRF.

1. Executive Summary (not to exceed two pages)

Project Overview

This project is to add forty two (42) 60-foot hybrid buses to increase frequency and improve service quality on existing routes. The new vehicles acquired will have a person and seat capacity of 110 and 47 respectively. Forty-two (42) 60-foot buses are anticipated to be procured in 2019. This along with the expansion application for five (5) diesel double decker buses and seven (7) 40-foot hybrid buses will bring the total bus fleet to 1,505 vehicles.

TransLink strives to optimize its resources by matching service to passenger demand, including allocating vehicles of an appropriate size to serve the demand on a route. This allocation is optimized through continuous review and planning processes that allocates resources where they are most needed. This process is informed by ridership data, which has been substantially enhanced with the deployment of Compass Card. TransLink has also undertaken recent work to determine optimal fleet propulsion technology on each route, which is interdependent with vehicle size.

The bus fleet propulsion technologies available to TransLink include diesel, CNG, trolley and hybrids. Based on current demand and optimization of resources, TransLink expects the 42 new 60-foot buses to be hybrid. In addition to being well-matched to low speed urban routes due to their fuel efficiency characteristics, hybrids are also suitable for these routes due to the ability of the hybrid drive train to smooth out emission peaks. Because urban routes are the most highly populated, emissions reduction on these routes has the largest positive benefit in terms of population exposures to GHG, NOx and PM. The procurement of hybrid buses instead of diesel would result in emission reductions of approximately 20% in GHG, NOx and PM.

Tangible Benefits and Outcomes

The new 60-foot hybrid buses will allow TransLink to commence B-Line service on the Marine Drive, 41st Avenue, Lougheed Highway and Fraser Highway B-Line corridors in 2019, as per the approved 2017 Investment Plan. These hybrid buses will provide 148,000 annual service hours on these four corridors.

TransLink's B-Line routes provide frequent and reliable service throughout the day and across the week. Because they are limited-stop services, they have the added bonus of being fast—which can be faster than the same trip by automobile. Ultimately 200 kilometres of B-Line services are planned to be implemented over the span of the Mayors' Council 10-Year Vision, creating a grid network of fast, frequent and reliable B-Lines connecting regional centres across Metro Vancouver. These four B-Line services are key additions to the development of the ultimate B-Line network operating across our region.

The target identified in the 2017 Investment Plan for additional annual service hours is 500,000 across conventional buses and community shuttles; this application for 42 60-foot buses represents 30% of the total expansion service hours. This expansion will result in reduced wait time as well as extended service hours on some routes. In addition, the use of hybrid vehicles will lead to lower emissions in GHG, NOx and PM.

Project Budget, Expenses, and GVRF Funding Request

The project budget is $67,600,000 with a Greater Vancouver Regional Fund (GVRF) request of $60,840,000. Expenses covered by this budget primarily include vehicle procurement, ancillary on-board equipment and labour, and other miscellaneous project costs. The funding requested in this application will be applied towards expenses considered eligible per the terms of the Administrative Agreement dated April 2014.

2. Project Name

2019 Conventional 60-ft Bus Purchase – Expansion (Ref# 182132)

3. Project Need

The objectives are to expand transit service across Metro Vancouver to increase system capacity, maintain high quality customer service and minimize maintenance and operating costs through the continued provision of reliable, fully-accessible transit vehicles, which are appropriate to routes on which they operate. In addition, the project will reduce air pollutants (PM and NOx) and GHG emissions through the use of vehicles with improved lifecycle GHG emissions and lower tailpipe emissions of NOx and PM, and through the reduction of private vehicle trips.

4. Project Eligibility (check one):

- ☐ **Local Roads and Bridges, including active transportation**
- ☒ **Public Transit**

5. Project Purpose (check one):

- ☒ **Expansion:** Expands the carrying capacity of people and/or goods movement.
- ☐ **State of Good Repair:** Replaces or modernizes assets to keep the regional transportation system in a state of good repair.
- ☐ **Operational Efficiency/Effectiveness:** Improves the efficiency or effectiveness of the regional transportation system.
- ☐ **Refurbishment**
- ☐ **New**
- ☐ **Other (please specify :_____)**

6. Project Type (check one):

- ☒ **Growth**
- ☐ **Upgrade**
- ☐ **Risk (Resilience)**
- ☐ **Maintenance**
- ☐ **Opportunity**

7. Project Staging:

Year(s) of Acquisition or Start of Construction	Year of Completion of Construction	Year of Service Initialization	Year(s) of Renewal	Year(s) of End of Service
2019	2019	2019	N/A	2036

8. Has the project previously received funding through GVRF? Please explain.

No. This is the first application for GVRF funding for this project.

9. Was GVRF funding previously declined for the project? Please explain.

No. This is the first application for GVRF funding for this project.

10. Is the project anticipated to require additional future GVRF funding? If so, please explain.

No. TransLink is planning to complete this project within budget.

11. Project Cost + Funding

11.a Budget & Expenditures

Budget	Expenditures to Date	Forecast to Complete	Final Forecasted Cost	Variance (budget – final forecasted cost)
$67,600,000	$0	$67,600,000	$67,600,000	$0

11.b Project Funding

Prior Approved GVRF Funding	Current Year GVRF Funding Request	Other Funding – Specify source and whether confirmed/pending
$0	$60,840,000	N/A

11.c Project Budget Schedule

Item	2017	2018	2019	2020	2021	2022
GVRF-funded			$36,540,000	$24,300,000		

Project Budget						
Total Project Budget			**$40,600,000**	**$27,000,000**		

12. Project Budget Rationale

Describe the types of proposed project expenses to be funded by the Greater Vancouver Regional Fund

a. Explain how the project reflects the intent of the GVRF

This project expands the regional public transportation system, and ensures efficient and effective transit service. In addition it is expected to reduce GHG, NOx and PM emissions through the reduction of private vehicle trips, all of which support the *IAQGGMP*.

b. In the absence of GVRF funding, can the project proceed with other funding sources? What risks do the other funding sources present to the project?

No. TransLink relies on GVRF funding for expansion of its revenue vehicle fleets and plans its annual budgets accordingly.

The other sources of funding available to TransLink are – Building Canada Fund and the Public Transit Infrastructure Fund. The projects chosen by TransLink for GVRF funding are better suited to GVRF funding compared to the other sources of funding, as summarized below:

Building Canada Fund (BCF) - the funding available is intended for "major infrastructure" and focuses on larger, strategic infrastructure projects that are of national or regional significance. Additionally, all funds in the current allocation have already been allocated to specific projects.

Public Transit Infrastructure Fund (PTIF) – this fund is focused on early works for expansion of the Rapid Transit network such as - the Expo, Millennium and Canada Line networks, along with the Surrey Light Rail Transit projects. Also, under this fund the maximum federal funding towards a project is limited to 50% of the total eligible expenditures; no such limits are identified in the GVRF. Lastly, projects to be funded under this program have already been submitted to the federal government.

In addition, BCF and PTIF funding is only available for a specified period of time: BCF is valid until March 31, 2017 (with some station upgrades extended to March, 2019) and PTIF applies to projects initiating in 2016-17 and 2017-18.

As such, there are no other viable funding sources available for fleet expansion.

c. Identify potential risks – corporate and regional – of this project that could result in this project not being completed or being unsuccessful. Describe possible mitigation strategies to address these risks.

If funding is not received in time, TransLink will have to rely on deferred retirement vehicles to deliver on its promises of expansion. Continued use of deferred retirement vehicles poses a risk to reliability, as well as incremental maintenance costs to keep them in service. This may result in lost opportunities to realize goals of reduced congestion, improved peak hour service and frequency. Further, use of deferred retirement vehicles could also result in higher GHG emissions than new

vehicles. TransLink may lose credibility among the general public if service expansion is not reliable.

d. How may the project cost vary as a result of changing external factors, such as interest rates and currency exchange rates?

Project costs may vary due to foreign exchange fluctuations (as parts are procured from the US) and vendor pricing. These uncertainties are mitigated with sufficient contingency allowance to fund price and foreign exchange fluctuations.

e. How may foreseeable changes in investment, regulation, or policies from other orders of government affect the project?

Due to recent increases in senior government funding for public transit projects, many suppliers are experiencing larger demands to order vehicles. This may create a backlog with vendors, and if procurement is not initiated soon, could result in further delay in ordering and receiving vehicles.

f. How may foreseeable changes in technology affect the project?

This application is based on the new vehicles being hybrid powered. TransLink has taken into account its existing infrastructure, as well as the opportunity to transition to lower emissions vehicles, in arriving at a decision on this particular technology. Also, many routes identified for improvement are in urban areas where hybrid buses are well suited and provide the best fuel economy due to low average speeds.

g. What other corporate or external factors could alter the project need, scope, budget, or timeline for project delivery?

There are no foreseeable corporate or external factors that could alter the project need or scope of this project. Project timeline may be affected by manufacturer's capacity and schedules, availability of parts and/or time for vehicle delivery from the manufacturer. Budget may fluctuate due to parts pricing and/or foreign exchange.

In order to ensure that the vehicles received are up to the standards expected and delivered on time TransLink conducts regular factory audits and inspections of the manufacturers' facilities.

D. EVALUATION CRITERIA

Please describe how project achieves or works towards each criterion by identifying and reporting on relevant performance measures. Where appropriate, present quantitative information. Please do not exceed 10 pages per project.

Two types of evaluation criteria are identified: Screening Criteria, which represent requirements that are mandatory for any project for which GVRF funding is requested; and Integrated Criteria, which allow for a qualitative assessment of proposed projects based on high priority objectives that reflect the intent of the Federal Gas Tax Fund, of Metro Vancouver goals, and of the Mayors' Council Vision.

Criterion	Description	Assessment
	SCREENING CRITERIA	
Eligible Project Category	☐ Local roads and bridges, including active transportation ☒ Public transit	Required
Eligible Expenses	As set out in the 2014 Administrative Agreement (Schedule C) Eligible Item — Expenditure[1] Hybrid Buses (42) — $58,968,000 On-board equipment — 1,872,000 Total — $60,840,000 [1] *Per Schedule C, Section 1.1, Part a)*	Required
Plan Consistency	Projects must be consistent with TransLink's existing Capital Plan and future *10-Year Investment Plan,* as well as the *Mayors' Council Transportation and Transit Plan, Metro 2040: Shaping our Future, and the Regional Transportation Strategy.* ☒ 10-Year Investment Plan ☒ Mayors' Council Transportation and Transit Plan ☒ Metro 2040: Shaping our Future ☒ Regional Transportation Strategy	Required
Corporate Policies	Projects must be consistent with applicable TransLink policies such as sustainability, environmental responsibility, emissions and infrastructure ☒ Sustainability policy ☒ Environmental policy ☒ Emissions policy ☐ Infrastructure policy – n/a	Required

Criterion	Description	Assessment
INTEGRATED CRITERIA		
Regional Growth Strategy		
Supports the Regional Growth Strategy	*The degree to which the project assists in achieving the five goals in Metro 2040.* ☐ Create a Compact Urban Area ☐ Support a Sustainable Economy ☒ Protect Environment and Respond to Climate Change Impacts ☒ Develop Complete Communities ☒ Support Sustainable Transportation Choices	Poor/Good/ Excellent
Urban Centres and Frequent Transit Development Areas	*Where applicable, the project is located in, or demonstrates tangible benefits to the overall performance of Urban Centres and Frequent Transit Development Areas.* Conventional buses provide services to Metro Vancouver communities within TransLink's transportation service region, and offer an environmentally responsible and sustainable transportation alternative to single occupant vehicle travel. They link communities with business, institutional and social hubs and destinations, and facilitate the creation and expansion of Transit Oriented Developments (TODs). They also provide collector and distribution services to Expo, Millennium, Evergreen and Canada Lines, West Coast Express and SeaBus.	Poor/Good/ Excellent
Transportation Performance		
Headline Targets	*Demonstrates tangible beneficial effects on vehicle kilometres travelled and/or walk/cycle/transit mode share.* The project will increase the 60-foot bus fleet size thus increasing passenger capacity. The entire 10-Year Vision is forecast to decrease annual vehicle kilometers travelled per person to 5,422 kilometers by 2030 – a 15% decrease compared to 2011. The 2017 Investment Plan delivers the first phase of walking, cycling and transit infrastructure in the 10-Year Vision, and in doing so, makes it possible for more people in the region to choose alternatives to driving. This expansion of the bus fleet is an important step in delivering this investment. Additionally, the 2017 Investment Plan is forecast to increase ridership from 233 million annual transit journeys in 2016 to 272 million annual transit journeys by 2026. This fleet expansion is a critical step in providing the transit service necessary to reach this increase in transit trips.	Poor/Good/ Excellent

Criterion	Description	Assessment
Other Transportation Outcomes	*Demonstrates tangible beneficial effects on vehicle congestion, transit passenger congestion, transit ridership, and/or transportation safety for the duration of the project.* Many routes identified for improvements have been selected due to current crowding or overcrowding conditions. Improvements will provide more capacity through more frequent service and resulting in fewer pass-ups and overcrowded vehicles. The full 10-Year Vision is forecast to increase walking, cycling, and transit mode share to 31% by 2030, supporting the RTS target of 50% mode share by 2045. This fleet expansion allows TransLink to expand transit services, and continue to make progress toward these targets.	Poor/Good/ Excellent
Project Type	*Demonstrated value of the project type (refer to section 6).* By growing the reach and capacity of public transport, we will provide more options for mobility and be able to reduce congestion on the roads, increase passenger comfort and reliability and pollutant emissions will be reduced.	Poor/Good/ Excellent
Regional Environmental Objectives		
Supports the Integrated Air Quality and Greenhouse Gas Management Plan	*Contributes to the achievement of one or more goals in the Integrated Air Quality and Greenhouse Gas Management Plan(IAQGGMP).* Tangible benefits of the project will include reductions in fleet GHG, NOx and PM emissions compared to diesel vehicles. In addition, over time the project is expected to reduce CAC and GHG emissions through the reduction of private vehicle trips. As such, this project supports *IAQGGMP* strategies 1.1 “Reduce emissions of and public exposure to diesel particulate matter”, 1.4 “Reduce air contaminant emissions from cars, trucks, and buses”, and 3.3 “Reduce the carbon footprint of the region’s transportation system.”	Poor/Good/ Excellent
Measurable Beneficial Effects	*Demonstrates tangible beneficial effects on greenhouse gas and common air contaminant emissions from on-road transportation sources for the duration of the project.* By growing the reach and capacity of public transport, we will provide more options for mobility and be able to reduce congestion on the roads while increasing passenger comfort and reliability. Over time the project is expected to decrease GHG emissions through the reduction of private vehicle trips.	Poor/Good/ Excellent

Criterion	Description	Assessment
Economic Development		
Supports regional prosperity	*Contributes to a regional transportation system that moves people and goods and aligns with regional prosperity.* Having additional buses will improve reliability to the regional transportation system and arterial service to institutional, economic and other transit mode hubs. Passengers will have better access to work and/or leisure activities, therefore decreasing the use of single occupant vehicle.	Poor/Good/ Excellent
Measurable Beneficial Effects	*Tangible beneficial effects on the movement of people and/or goods for the duration of the project.* Having additional buses will improve service and make transit a more reliable option. Ultimately economic competitiveness within Metro Vancouver will improve. More reliable transit provides better access to jobs, workers, and markets, while reducing congestion facilitating the efficient movement of workers and goods. Many proposed service improvements address overcrowding and will reduce congestion for passengers.	Poor/Good/ Excellent

APPLICATION FOR FUNDING FROM THE GREATER VANCOUVER REGIONAL FUND FOR FEDERAL GAS TAX FUNDS

Project 4 2019 HandyDART Vehicle Purchase – Expansion
(Ref# 182142)

B. MAYORS' COUNCIL TRANSPORTATION AND TRANSIT PLAN

Please describe how the project fits within, and provides support to, the Mayors' Council Transportation and Transit Plan.

- ☐ **Maintain what is needed in a state of good repair**
- ☐ **Invest in the road network to improve safety, local access and goods movement**
- ☒ **Expand our transit system to increase ridership in high demand areas and provide basic coverage in low-demand neighbourhoods**
- ☐ **Develop safe and convenient walking connections to transit and pursue early investments to complete the bikeway network, making it possible for more people to travel by these healthy, low cost, and emission-free modes**
- ☐ **Manage our transportation system more effectively with safety and passenger comfort improvements, new personalized incentive programs, advanced technology and infrastructure management solutions, efficient and fair mobility pricing, and better parking management**
- ☐ **Partner to make it happen with explicit implementation agreements and processes that support concurrent decisions on land-use and transportation investments, stable and sufficient long-term funding solutions, and better monitoring of progress**

The Mayors' Council 10-Year Vision (10-Year Vision) on regional transportation outlines a long-term, region-wide, integrated, multi-modal transportation vision to fight congestion, reduce greenhouse gas (GHG) emissions and to keep a fast-growing gateway economy, of almost 2.5 million residents, moving. The 10-Year Vision is built on 3 key strategies to achieve necessary improvements: **invest** in the most urgent and effective investments, **manage** the system more effectively and **partner** to ensure that supportive conditions are in place for these investments to succeed. Following adoption by the Mayors' Council, in June 2014, the 10-Year Vision was subsequently endorsed by the TransLink Board, as the implementation blueprint for the Regional Transportation Strategy (RTS). The 10-Year Vision includes a package of investments aimed at addressing the most basic needs for enhancements to the regional transportation network, allowing the network to keep up with growth in population and employment. It outlines the following transportation priorities related to bus service in the region:

- 25% increase in bus service across the region
- 200 more kilometres of B-Line or Better routes
- More frequent all-day service
- More frequent peak hour service
- Service to new and growing lower density neighbourhoods
- 80% more NightBus service

In November 2016, the TransLink Board and Mayors' Council approved the 2017-2026 Investment Plan (2017 Investment Plan). The 2017 Investment Plan delivers the first three years of the 10-Year Vision,

specifying new services and infrastructure, as well as strategies to make the transportation system more efficient, innovative and sustainable. The 2017 Investment Plan expands transit service across the region to increase system capacity, reduce overcrowding, and introduce new bus service to new areas. The 2017 Investment Plan outlines actions and policies to advance the goals identified in TransLink's long-term Regional Transportation Strategy and to support the goals identified in Metro Vancouver's Regional Growth Strategy, *Metro Vancouver 2040: Shaping Our Future* (*Metro 2040*). Some of the highlights for bus service included in the 2017 Investment Plan are:

- 10% increase in bus service and 15% increase in HandyDART service;
- More frequent service on 50 different bus routes; and
- 5 new B-Line routes

This project supports the 10-Year Vision through its strategy to invest in urgent and effective investments. Through expansion of its fleet, TransLink will be able to increase bus service, and provide more frequent and new service, and in the process meet a number of 10-Year Vision priorities. This project will also support desired outcomes from the 10-Year Vision, such as reducing transit overcrowding as well as supporting Metro Vancouver's *Integrated Air Quality and Greenhouse Gas Management Plan (IAQGGMP)*.

C. PROJECT DESCRIPTION

Please complete the following for each project proposed for expenditure from the GVRF.

1. Executive Summary (not to exceed two pages)

Project Overview

HandyDART vehicles are operated and maintained by TransLink's contractors MVT Canadian Bus Inc. and Nat's Repair. These vehicles provide a valuable service to people with disabilities and are booked through a reservation system, with each vehicle being able to accommodate up to 2 wheelchairs.

This project adds ten (10) HandyDART midibuses to TransLink's current fleet. The new vehicles acquired will have a person and seat capacity of 12. The 10 midibuses will help meet the target expansion fleet of 23 additional HandyDART vehicles required to implement the additional 170,000 trips per year as outlined in the 2017 Investment Plan. This along with the 2018 expansion application for 13 midibuses will bring the total HandyDART bus fleet to 332 vehicles.

TransLink strives to optimize its resources by matching service to passenger demand, including allocating vehicles of an appropriate size to serve the demand on a route. Optimization is achieved through continuous review and planning processes that allocate resources where they are most needed. Information on ridership data has been substantially enhanced with the deployment of Compass Card. TransLink has also undertaken recent work to determine optimal fleet propulsion technology on each route, which is interdependent with vehicle size.

The fleet propulsion technology available to TransLink consists of gasoline only as hybrid propulsion is not available for these vehicles. Based on current demand and optimization of resources, TransLink expects the 10 new vehicles to be gasoline powered. Vehicle size and propulsion type choices will continue to be optimized, as informed by ongoing monitoring of ridership and propulsion technologies.

Tangible Benefits and Outcomes

The new vehicles will allow TransLink to increase existing service across Metro Vancouver adding 38,000 trips annually. The target identified in the 2017 Investment Plan for additional trips is 170,000 per year; this application for 10 HandyDART expansion vehicles represents 22.4% of the total expansion trips. This expansion will result in reduced wait times through the availability of a greater number of vehicles. The gasoline powered vehicles have 3.5 per cent less GHG and 44 per cent less NOx than the diesel engines used previously in these vehicles (based on GM L96 engine for gasoline vs. GM LGH engine for diesel).

Project Budget, Expenses, and GVRF Funding Request

The project budget is $1,500,000 with a Greater Vancouver Regional Fund (GVRF) request of $1,350,000. Expenses covered by this budget primarily include vehicle procurement, ancillary on-board equipment and labour, and other miscellaneous project costs. The funding requested in this application will be applied towards expenses considered eligible per the terms of the Administrative Agreement dated April 2014.

2. Project Name

2019 HandyDART Vehicle Purchase – Expansion (Ref# 182142)

3. Project Need

The objectives are to expand transit service across Metro Vancouver to increase system capacity, reduce reservation cancellations and introduce bus service to new areas. In addition, over time the project is expected to reduce criteria air contaminant and GHG emissions through the reduction of private vehicle trips. The criteria for achieving these objectives are reduction of wait times, fewer reservation cancellations, improved accessibility and improved service.

4. Project Eligibility (check one):

☐ **Local Roads and Bridges, including active transportation**
☒ **Public Transit**

5. Project Purpose (check one):

☒ **Expansion:** Expands the carrying capacity of people and/or goods movement.
☐ **State of Good Repair:** Replaces or modernizes assets to keep the regional transportation system in a state of good repair.
☐ **Operational Efficiency/Effectiveness:** Improves the efficiency or effectiveness of the regional transportation system.
☐ **Refurbishment**
☐ **New**
☐ **Other (please specify :_____)**

6. Project Type (check one):

☒ **Growth**
☐ **Upgrade**
☐ **Risk (Resilience)**
☐ **Maintenance**
☐ **Opportunity**

7. Project Staging:

Year(s) of Acquisition or Start of Construction	Year of Completion of Construction	Year of Service Initialization	Year(s) of Renewal	Year(s) of End of Service
2019	2019	2019	N/A	2026

8. Has the project previously received funding through GVRF? Please explain.

No. This is the first application for GVRF funding for this project.

9. Was GVRF funding previously declined for the project? Please explain.

No. This is the first application for GVRF funding for this project.

10. Is the project anticipated to require additional future GVRF funding? If so, please explain.

No. TransLink is planning to complete this project within budget.

11. Project Cost + Funding

11.a Budget & Expenditures

Budget	Expenditures to Date	Forecast to Complete	Final Forecasted Cost	Variance (budget – final forecasted cost)
$1,500,000	$0	$1,500,000	$1,500,000	$0

11.b Project Funding

Prior Approved GVRF Funding	Current Year GVRF Funding Request	Other Funding – Specify source and whether confirmed/pending
$0	$1,350,000	N/A

11.c Project Budget Schedule

Item	2017	2018	2019	2020	2021	2022
GVRF-funded Project Budget			$1,350,000			
Total Project Budget			$1,500,000			

12. Project Budget Rationale

Describe the types of proposed project expenses to be funded by the Greater Vancouver Regional Fund

a. Explain how the project reflects the intent of the GVRF

This project expands the regional public transportation system, and ensures efficient and effective transit service to those who have accessibility challenges. In addition it provides a reduction in CAC and GHG emissions through the reduction of private vehicle trips. The use of gasoline vehicles also reduces GHG and NOx emission compared to diesel vehicles used in the past.

b. In the absence of GVRF funding, can the project proceed with other funding sources? What risks do the other funding sources present to the project?

No. TransLink relies on GVRF funding for expansion of its revenue vehicle fleets and plans its annual budgets accordingly.

The other sources of funding available to TransLink are – Building Canada Fund and the Public Transit Infrastructure Fund. The projects chosen by TransLink for GVRF funding are better suited to GVRF funding compared to the other sources of funding, as summarized below:

Building Canada Fund (BCF) - the funding available is intended for "major infrastructure" and focuses on larger, strategic infrastructure projects that are of national or regional significance. Additionally, all funds in the current allocation have already been allocated to specific projects.

Public Transit Infrastructure Fund (PTIF) – this fund is focused on early works for expansion of the Rapid Transit network such as - the Expo, Millennium and Canada Line networks, along with the Surrey Light Rail Transit projects. Also, under this fund the maximum federal funding towards a project is limited to 50% of the total eligible expenditures; no such limits are identified in the GVRF. Lastly, projects to be funded under this program have already been submitted to the federal government.

In addition, BCF and PTIF funding is only available for a specified period of time: BCF is valid until March 31, 2017 (with some station upgrades extended to March, 2019) and PTIF applies to projects initiating in 2016-17 and 2017-18.

As such, there are no other viable funding sources available for fleet expansion.

c. Identify potential risks – corporate and regional – of this project that could result in this project not being completed or being unsuccessful. Describe possible mitigation strategies to address these risks.

If funding is not received in time, TransLink will have to continue to rely on deferred retirement vehicles to deliver on its promises of expansion. This may result in lost opportunities to realize goals of reduced congestion, improved peak hour service and frequency. Further, use of deferred retirement vehicles could also result in higher GHG emissions than new vehicles. This may result in lost opportunities to realize goals of reduced congestion, improved peak hour service and frequency, as well as reduced GHG emissions. TransLink may lose credibility among the general public if service expansion is not reliable.

d. How may the project cost vary as a result of changing external factors, such as interest rates and currency exchange rates?

Project costs may vary due to foreign exchange fluctuations (as parts are procured from the US) and vendor pricing. These uncertainties are mitigated with sufficient contingency allowance to fund price and foreign exchange fluctuations.

e. How may foreseeable changes in investment, regulation, or policies from other orders of government affect the project?

Due to recent increases in senior government funding for public transit projects, many suppliers are experiencing larger demands to order vehicles. This may create a backlog with vendors, and if procurement is not initiated soon, could result in further delay in ordering and receiving vehicles.

f. How may foreseeable changes in technology affect the project?

This application is based on the new vehicles being gasoline powered. TransLink also has to consider that these vehicles are operated and maintained by contractors who may not be able to support fueling or maintenance requirements if there is a change in propulsion technology.

TransLink does not anticipate vendors providing in the immediate future alternative fuels for HandyDART vehicles that meet our needs to deliver reliable and cost-effectively service to customers. TransLink continues to monitor the vehicle technology industry very closely to identify options available in the market, and to evaluate their suitability for its fleet.

g. What other corporate or external factors could alter the project need, scope, budget, or timeline for project delivery?

There are no foreseeable corporate or external factors that could alter the project need or scope. Project timelines may be affected by manufacturer capacity and schedules, availability of parts and/or time for vehicle delivery from the manufacturer. Budget may fluctuate due to parts pricing and/or foreign exchange.

In order to ensure that the vehicles received are up to the required standard and within expected timeframes, TransLink conducts regular factory audits and inspections of the manufacturers' facilities.

D. EVALUATION CRITERIA

Please describe how project achieves or works towards each criterion by identifying and reporting on relevant performance measures. Where appropriate, present quantitative information. Please do not exceed 10 pages per project.

Two types of evaluation criteria are identified: Screening Criteria, which represent requirements that are mandatory for any project for which GVRF funding is requested; and Integrated Criteria, which allow for a qualitative assessment of proposed projects based on high priority objectives that reflect the intent of the Federal Gas Tax Fund, of Metro Vancouver goals, and of the Mayors' Council Vision.

Criterion	Description	Assessment
	SCREENING CRITERIA	
Eligible Project Category	☐ Local roads and bridges, including active transportation ☒ Public transit	Required
Eligible Expenses	As set out in the 2014 Administrative Agreement (Schedule C) Eligible Item — Expenditure[1] Vehicles (10) — $1,295,000 On-board equipment — 55,000 Total — $1,350,000 [1] *Per Schedule C, Section 1.1, Part a)*	Required
Plan Consistency	Projects must be consistent with TransLink's existing Capital Plan and future *10-Year Investment Plan,* as well as the *Mayors' Council Transportation and Transit Plan, Metro 2040: Shaping our Future, and the Regional Transportation Strategy.* ☒ 10-Year Investment Plan ☒ Mayors' Council Transportation and Transit Plan ☒ Metro 2040: Shaping our Future ☒ Regional Transportation Strategy	Required
Corporate Policies	Projects must be consistent with applicable TransLink policies such as sustainability, environmental responsibility, emissions and infrastructure ☒ Sustainability policy ☒ Environmental policy ☒ Emissions policy ☐ Infrastructure policy – n/a	Required

Criterion	Description	Assessment
INTEGRATED CRITERIA		
Regional Growth Strategy		
Supports the Regional Growth Strategy	*The degree to which the project assists in achieving the five goals in Metro 2040.* ☐ Create a Compact Urban Area ☐ Support a Sustainable Economy ☒ Protect Environment and Respond to Climate Change Impacts ☒ Develop Complete Communities ☒ Support Sustainable Transportation Choices	Poor/Good/ Excellent
Urban Centres and Frequent Transit Development Areas	*Where applicable, the project is located in, or demonstrates tangible benefits to the overall performance of Urban Centres and Frequent Transit Development Areas.* HandyDART buses provide a valuable service to disabled people within our community. The service promotes greater mobility for social connectivity, running errands, attending appointments and improving quality of life. The buses also connect people with disabilities to the current transit network of train stations and bus hubs.	Poor/Good/ Excellent
Transportation Performance		
Headline Targets	*Demonstrates tangible beneficial effects on vehicle kilometres travelled and/or walk/cycle/transit mode share.* The project will increase the HandyDART fleet size. The entire 10-Year Vision is forecast to decrease annual private vehicle kilometers travelled per person to 5,422 kilometers by 2030 – a 15% decrease compared to 2011. The 2017 Investment Plan delivers the first phase of walking, cycling and transit infrastructure in the 10-Year Vision, and in doing so, makes it possible for more people in the region to choose alternatives to driving. This expansion of the bus fleet is an important step in delivering this investment. Additionally, the 2017 Investment Plan is forecast to increase ridership from 233 million annual transit journeys in 2016 to 272 million annual transit journeys by 2026. This fleet expansion is a critical step in providing the transit service necessary to reach this increase in transit trips.	Poor/Good/ Excellent
Other Transportation Outcomes	*Demonstrates tangible beneficial effects on vehicle congestion, transit passenger congestion, transit ridership, and/or transportation safety for the duration of the project.* Because HandyDART service does not run on fixed routes and provides services on demand, the increase in number of vehicles will have a minimal impact on	Poor/Good/ Excellent

Criterion	Description	Assessment
	congestion. The additional capacity will increase existing service across Metro Vancouver adding 38,000 trips annually, and reduce wait times.	
Project Type	*Demonstrated value of the project type (refer to section 6).* By growing the reach and capacity of public transport, we will provide more options for mobility and be able to reduce congestion on the roads and increase passenger comfort and reliability. Over time the project is expected to reduce GHG and CAC emissions through the reduction of private vehicle trips.	Poor/Good/ Excellent
Regional Environmental Objectives		
Supports the Integrated Air Quality and Greenhouse Gas Management Plan	*Contributes to the achievement of one or more goals in the Integrated Air Quality and Greenhouse Gas Management Plan(IAQGGMP).* The project is expected to cumulatively reduce CAC and GHG emissions through the reduction of private vehicle trips. As such, this project supports *IAQGGMP* strategies 1.1 "Reduce emissions of and public exposure to diesel particulate matter", 1.4 "Reduce air contaminant emissions from cars, trucks, and buses", and 3.3 "Reduce the carbon footprint of the region's transportation system." Utilizing gasoline vehicles also reduces GHG and NOx emission which supports the *IAQGGMP*.	Poor/Good/ Excellent
Measurable Beneficial Effects	*Demonstrates tangible beneficial effects on greenhouse gas and common air contaminant emissions from on-road transportation sources for the duration of the project.* Cumulatively, the gasoline vehicles are expected to reduce CAC and GHG emissions and noise through the reduction of private vehicle trips.	Poor/Good/ Excellent
Economic Development		
Supports regional prosperity	*Contributes to a regional transportation system that moves people and goods and aligns with regional prosperity.* Additional HandyDART vehicles will provide improved reliability to the regional transportation system, resulting in improved service reliability to people with disabilities. Passengers will have better access to conventional bus routes and hubs, train stations, healthcare providers, and social functions. Passengers will enjoy a better quality of life and benefit from greater independence.	Poor/Good/ Excellent

Criterion	Description	Assessment
Measurable Beneficial Effects	*Tangible beneficial effects on the movement of people and/or goods for the duration of the project.* Additional HandyDART vehicles will improve service and make transit a more reliable option by ensuring that service requests are not denied due to a lack of availability. The improved reliability of the transit network will help customers with disabilities be more independent and increase their contributions towards the economic success of the region.	Poor/Good/ Excellent

APPLICATION FOR FUNDING FROM THE GREATER VANCOUVER REGIONAL FUND FOR FEDERAL GAS TAX FUNDS

Project 5 Double Decker Bus Purchase – Replacement of 40-foot Diesel Buses (Ref# 182130)

B. MAYORS' COUNCIL TRANSPORTATION AND TRANSIT PLAN

Please describe how the project fits within, and provides support to, the Mayors' Council Transportation and Transit Plan.

☒ **Maintain what is needed in a state of good repair**

☐ **Invest in the road network to improve safety, local access and goods movement**

☐ **Expand our transit system to increase ridership in high demand areas and provide basic coverage in low-demand neighbourhoods**

☐ **Develop safe and convenient walking connections to transit and pursue early investments to complete the bikeway network, making it possible for more people to travel by these healthy, low cost, and emission-free modes**

☐ **Manage our transportation system more effectively with safety and passenger comfort improvements, new personalized incentive programs, advanced technology and infrastructure management solutions, efficient and fair mobility pricing, and better parking management**

☐ **Partner to make it happen with explicit implementation agreements and processes that support concurrent decisions on land-use and transportation investments, stable and sufficient long-term funding solutions, and better monitoring of progress**

TransLink has an ongoing program of fleet modernization to keep the transit network in a state of good repair. This modernization program is foundational to TransLink, and it is critical to the success of Metro Vancouver's expansion, as outlined by the *Mayors' Council on Regional Transportation* vision: "Regional Transportation Investments: A Vision for Metro Vancouver" (Mayors' Council 10-Year Vision).

The Mayors' Council 10-Year Vision (10-Year Vision) on regional transportation outlines a long-term, region-wide, integrated, multi-modal transportation vision to fight congestion, reduce greenhouse gas (GHG) emissions and to keep a fast-growing gateway economy, of almost 2.5 million residents, moving. The 10-Year Vision is built on 3 key strategies to achieve necessary improvements: **invest** in the most urgent and effective investments, **manage** the system more effectively and **partner** to ensure that supportive conditions are in place for these investments to succeed. Following adoption by the Mayors' Council, in June 2014, the 10-Year Vision was subsequently endorsed by the TransLink Board, as the implementation blueprint for the Regional Transportation Strategy (RTS). The 10-Year Vision includes a package of investments aimed at addressing the most basic needs for enhancements to the regional transportation network, allowing the network to keep up with growth in population and employment.

In November 2016, the TransLink Board and Mayors' Council approved the 2017-2026 Investment Plan (2017 Investment Plan). The 2017 Investment Plan includes development of a Low Carbon Fleet Strategy to reduce emissions from transit vehicles across the region of which this application aligns to. This project, through fleet modernization, supports the 10-Year Vision desired outcomes of maintaining the transit system and reducing GHG emissions.

C. PROJECT DESCRIPTION

Please complete the following for each project proposed for expenditure from the GVRF.

1. Executive Summary (not to exceed two pages)

Project Overview

TransLink has 1,390 conventional 40' and 60' buses in its fleet

Criteria for identifying vehicles due for retirement are based on a number of factors including:

- Age (life expectancy of 17 years);
- Mileage (generally 1,000,000 km);
- State of repair/condition; and
- Severity of service duty cycle.

This project is to retire twenty seven (27) existing 40-foot high-floor highway coach fleets which have reached the end of useful life. Double decker buses are planned as these buses have higher passenger seating capacity than 40-foot suburban buses, and are low-floor thereby increasing accessibility. The double decker buses will have a person and seat capacity of 104 and 84 respectively. These buses will be deployed on Route 351 (between Bridgeport Station and Cresent Beach) and Route 555 (between Lougheed Station and Carvolth Exchange).

The vehicles due to retire were acquired in 2001, have a median age of 18 years and will have travelled more than 1,000,000 service kilometres by the end of useful life.

TransLink strives to optimize resources by matching service to passenger demand, including allocating vehicles of an appropriate size to serve route demand. This allocation is optimized through continuous review and planning processes that allocates resources where they are most needed. This process is informed by ridership data, which has been substantially enhanced with the deployment of Compass Card. TransLink has also undertaken recent work to determine optimal fleet propulsion technology on each route, which is interdependent with vehicle size.

Based on latest technology information available and policy preferences, diesel propulsion is no longer a preferred option for TransLink's operations compared to compressed natural gas (CNG), hybrid diesel-electric (hybrid) or electric-battery, except for highway routes. Vehicles with diesel propulsion is still a viable option for highway routes as CNG or hybrid would have higher capital cost but marginal emissions reduction due to higher operating speeds. In addition, diesel propulsion is planned for double decker buses as these buses will be 13 foot and 6 inches in height to allow for operations through the George Massey Tunnel. Hybrid drives are not available for double decker buses at this height and CNG is not proposed as fuel tanks would increase the height and preclude operations through the George Massey Tunnel.

The double decker bus uses a Cummins L9380 engine and the comparison vehicle (highway 40-foot diesel) uses a Cummins ISL9280. The double decker bus has an expected fuel rate of 62L/100km or approx. 19% higher than a comparison vehicle. In absolute emissions, this means the double decker bus emits approx. 19% more GHGs. However, if the higher seating capacity of the double decker bus is factored in (84 vs. 47), the double decker bus emits approx. 33% less GHG per person than its comparison vehicle. Based on the engine specifications (Air Resource Board, EPA), the PM output is equal and the NOx has only marginal increases in double decker of 0.03 grams per kilometer.

TransLink has conducted an evaluation of buses for highway service examining capacity, financial, customer, emissions and operational considerations. This evaluation concluded double decker buses as the ideal vehicle for highway service among the other alternatives of 60-foot articulated bus and 40-foot bus with additional seating capacity, and recommended a demonstration trial be conducted. A three month trial is scheduled to begin October 2017 to examine operating characteristics, operator training requirements, depot infrastructure needs and potential road changes to ensure successful integration of a new vehicle type in 2019. TransLink will lease two double decker buses from vendor Alexander-Dennis for the trial.

TransLink anticipates the demonstration trial to be successful, however if TransLink decides not to procure double decker buses following the trials, TransLink will submit an updated application in the spring of next year to procure 40-foot highway coaches and 60-foot diesel buses instead.

Tangible Benefits and Outcomes

Double decker buses have a larger passenger seating capacity than the existing highway coaches or alternative choices of either the 40-foot suburban conventional bus or 60-foot articulated bus. This larger seating capacity will reduce overcrowding and pass-ups and improve customer experience, especially for customers traveling longer distances. Additionally these new low floor double decker buses would have wheelchair ramps instead of lifts to improve accessibility and allow for easier and quicker boarding and alighting over the existing high floor highway coaches. See emission details under project description for the tangible benefits.

Project Budget, Expenses, and GVRF Funding Request

The project budget is $33,300,000 with a Greater Vancouver Regional Fund (GVRF) request of $30,000,000. Expenses covered by this budget primarily include vehicle procurement, ancillary on-board equipment and labour, and other miscellaneous project costs. The funding requested in this application will be applied towards expenses considered eligible per the terms of the Administrative Agreement.

2. Project Name

2019 Double Decker Bus Purchase – Replacement of 40-foot Diesel Buses (Ref# 182130)

3. Project Need

The objectives are to maintain high quality customer service and minimize maintenance and operating costs through continued provision of reliable, fully-accessible transit vehicles that are appropriate to routes on which they operate. Emission reductions will occur through the reduction of private vehicle trips.

The criteria for achieving these objectives are avoidance of incremental maintenance and operating costs, reduced vehicle breakdowns, less vehicle downtime, improved accessibility and improved service reliability.

4. Project Eligibility (check one):

☐ **Local Roads and Bridges, including active transportation**
☒ **Public Transit**

5. Project Purpose (check one):

☐ **Expansion:** Expands the carrying capacity of people and/or goods movement.
☒ **State of Good Repair:** Replaces or modernizes assets to keep the regional transportation system in a state of good repair.
☐ **Operational Efficiency/Effectiveness:** Improves the efficiency or effectiveness of the regional transportation system.
☐ **Refurbishment**
☐ **New**
☐ **Other (please specify :_____)**

6. Project Type (check one):

☐ **Growth**
☐ **Upgrade**
☐ **Risk (Resilience)**
☒ **Maintenance**
☐ **Opportunity**

7. Project Staging:

Year(s) of Acquisition or Start of Construction	Year of Completion of Construction	Year of Service Initialization	Year(s) of Renewal	Year(s) of End of Service
2019	2019	2019	N/A	2036

8. Has the project previously received funding through GVRF? Please explain.

No. This is the first application for GVRF funding for this project.

9. Was GVRF funding previously declined for the project? Please explain.

No. This is the first application for GVRF funding for this project.

10. Is the project anticipated to require additional future GVRF funding? If so, please explain.

No. TransLink is planning to complete this project within budget.

11. Project Cost + Funding

11.a Budget & Expenditures

Budget	Expenditures to Date	Forecast to Complete	Final Forecasted Cost	Variance (budget – final forecasted cost)
$33,300,000	$0	$33,300,000	$33,300,000	$0

11.b Project Funding

Prior Approved GVRF Funding	Current Year GVRF Funding Request	Other Funding – Specify source and whether confirmed/pending
$0	$30,000,000	N/A

11.c Project Budget Schedule

Item	2017	2018	2019	2020	2021	2022
GVRF-funded Project Budget			$11,400,000	$18,600,000		
Total Project Budget			$12,600,000	$20,700,000		

12. Project Budget Rationale

Describe the types of proposed project expenses to be funded by the Greater Vancouver Regional Fund

a. Explain how the project reflects the intent of the GVRF

This project allows for a significant increase in passenger seating capacity and expands the regional public transportation system. In addition it provides a reduction in GHG, NOx and PM emissions through the reduction of private vehicle trips and ensures TransLink's assets are maintained in a State of Good Repair. It also allows TransLink to efficiently and effectively provide transit service to the general public and those who have accessibility challenges.

b. In the absence of GVRF funding, can the project proceed with other funding sources? What risks do the other funding sources present to the project?

No. TransLink relies on GVRF funding for expansion of its revenue vehicle fleets and plans its annual budgets accordingly.

The other sources of funding available to TransLink are – Building Canada Fund and the Public Transit Infrastructure Fund. The projects chosen by TransLink for GVRF funding are better suited to GVRF funding compared to the other sources of funding, as summarized below:

Building Canada Fund (BCF) - the funding available is intended for "major infrastructure" and focuses on larger, strategic infrastructure projects that are of national or regional significance. Additionally, all funds in the current allocation have already been allocated to specific projects.

Public Transit Infrastructure Fund (PTIF) – this fund is focused on early works for expansion of the Rapid Transit network such as - the Expo, Millennium and Canada Line networks, along with the Surrey Light Rail Transit projects. Also, under this fund the maximum federal funding towards a project is limited to 50% of the total eligible expenditures; no such limits are identified in the GVRF. Lastly, projects to be funded under this program have already been submitted to the federal government.

In addition, BCF and PTIF funding is only available for a specified period of time: BCF is valid until March 31, 2017 (with some station upgrades extended to March, 2019), and PTIF applies to projects initiating in 2016-17 and 2017-18.

As such, there are no other viable funding sources available for fleet modernizations

c. Identify potential risks – corporate and regional – of this project that could result in this project not being completed or being unsuccessful. Describe possible mitigation strategies to address these risks.

TransLink requires these vehicles to be in service for 2019 in order to retire vehicles reaching the end of their useful service lives. Also, there is an approximate lead time of 12 to 18 months between TransLink ordering vehicles and those same vehicles entering service. As such, it is important to have the funding in place to ensure the timely retirement of vehicles before they reach the end of their useful service lives.

If funding is not received in time, TransLink will have to rely on deferred retirement vehicles to deliver transit service. Continued use of deferred retirement vehicles poses a risk to reliability, as well as incremental maintenance costs to keep them in service. This may result in lost opportunities to realize goals of reduced congestion, improved peak hour service and frequency. Furthermore, use of deferred retirement vehicles could also result in higher CAC and GHG emissions than new vehicles. TransLink may lose credibility among the general public if service expansion is not reliable.

d. How may the project cost vary as a result of changing external factors, such as interest rates and currency exchange rates?

Project costs may vary due to foreign exchange fluctuations (as parts are procured from the US) and vendor pricing. These uncertainties are mitigated with sufficient contingency allowance to fund price and foreign exchange fluctuations.

e. How may foreseeable changes in investment, regulation, or policies from other orders of government affect the project?

Due to recent increases in senior government funding for public transit projects, many suppliers are experiencing larger demand on ordered vehicles. This may create a backlog with vendors, and if procurement is not initiated soon, could result in further delay in ordering and receiving vehicles.

f. How may foreseeable changes in technology affect the project?

This application is based on the new vehicles being diesel. TransLink has taken into account its existing infrastructure, as well as the opportunity to transition to lower emissions vehicles, in arriving at a decision on diesel technology. Double decker buses for highway service are identified for diesel technology due to height constraints (buses will be 13 foot and 6 inches) of operating through the George Massey Tunnel. Hybrid drives are not available for double decker buses at this height and CNG is not proposed as fuel tanks would increase the height and preclude operations through the George Massey Tunnel.

g. What other corporate or external factors could alter the project need, scope, budget, or timeline for project delivery?

There are no foreseeable corporate or external factors that could alter the project need or scope of this project. Project timeline may be affected by manufacturer's capacity and schedules, availability of parts and/or time for vehicle delivery from the manufacturer. Budget may fluctuate due to parts pricing and/or foreign exchange.

In order to ensure that the vehicles received are up to the standards expected and delivered on time TransLink conducts regular factory audits and inspections of the manufacturers' facilities.

D. EVALUATION CRITERIA

Please describe how project achieves or works towards each criterion by identifying and reporting on relevant performance measures. Where appropriate, present quantitative information. Please do not exceed 10 pages per project.

Two types of evaluation criteria are identified: Screening Criteria, which represent requirements that are mandatory for any project for which GVRF funding is requested; and Integrated Criteria, which allow for a qualitative assessment of proposed projects based on high priority objectives that reflect the intent of the Federal Gas Tax Fund, of Metro Vancouver goals, and of the Mayors' Council Vision.

Criterion	Description	Assessment
	SCREENING CRITERIA	
Eligible Project Category	☐ Local roads and bridges, including active transportation ☒ Public transit	Required
Eligible Expenses	As set out in the 2014 Administrative Agreement (Schedule C) Eligible Item — Expenditure[1] Double Decker Buses (27) — $29,700,000 On-board equipment — 300,000 Total — $30,000,000 [1] *Per Schedule C, Section 1.1, Part a)*	Required
Plan Consistency	Projects must be consistent with TransLink's existing Capital Plan and future *10-Year Investment Plan,* as well as the *Mayors' Council Transportation and Transit Plan, Metro 2040: Shaping our Future, and the Regional Transportation Strategy.* ☒ 10-Year Investment Plan ☒ Mayors' Council Transportation and Transit Plan ☒ Metro 2040: Shaping our Future ☒ Regional Transportation Strategy	Required
Corporate Policies	Projects must be consistent with applicable TransLink policies such as sustainability, environmental responsibility, emissions and infrastructure ☒ Sustainability policy ☒ Environmental policy ☒ Emissions policy ☐ Infrastructure policy – n/a	Required

Criterion	Description	Assessment
INTEGRATED CRITERIA		
Regional Growth Strategy		
Supports the Regional Growth Strategy	*The degree to which the project assists in achieving the five goals in Metro 2040.* ☐ Create a Compact Urban Area ☐ Support a Sustainable Economy ☒ Protect Environment and Respond to Climate Change Impacts ☒ Develop Complete Communities ☒ Support Sustainable Transportation Choices	Poor/Good/ Excellent
Urban Centres and Frequent Transit Development Areas	*Where applicable, the project is located in, or demonstrates tangible benefits to the overall performance of Urban Centres and Frequent Transit Development Areas.* Buses provide services to Metro Vancouver communities within TransLink's transportation service region, and offer an environmentally responsible and sustainable transportation alternative to single occupant vehicle travel. They link communities with business, institutional and social hubs and destinations, and facilitate the creation and expansion of Transit Oriented Developments (TODs). They also provide collector and distribution services to Expo, Millennium, Evergreen and Canada Lines, West Coast Express and SeaBus.	Poor/Good/ Excellent
Transportation Performance		
Headline Targets	*Demonstrates tangible beneficial effects on vehicle kilometres travelled and/or walk/cycle/transit mode share.* This is a one-for-one replacement vehicle project with a passenger seating capacity increase due to replacement with double decker buses. There are no incremental vehicle-kilometers travelled. The larger passenger seating capacity with double decker buses will reduce overcrowding and pass-ups but not increase the walk/cycle/transit mode share substantially.	Poor/Good/ Excellent
Other Transportation Outcomes	*Demonstrates tangible beneficial effects on vehicle congestion, transit passenger congestion, transit ridership, and/or transportation safety for the duration of the project.* This is a one-for-one replacement vehicle project with a passenger seating capacity increase due to replacement with double decker buses. There are no incremental benefits to vehicle congestion, transit ridership and/or transportation safety. Transit passenger congestion would decrease with double decker buses providing larger passenger seating capacity.	Poor/Good/ Excellent

Criterion	Description	Assessment
Project Type	*Demonstrated value of the project type (refer to section 6).* By maintaining TransLink's assets in good repair, vehicles will have fewer breakdowns and service disruptions, operating costs will not increase, and pollutant emissions will be reduced.	Poor/Good/ Excellent
Regional Environmental Objectives		
Supports the Integrated Air Quality and Greenhouse Gas Management Plan	*Contributes to the achievement of one or more goals in the Integrated Air Quality and Greenhouse Gas Management Plan(IAQGGMP).* The project is expected to reduce GHG emissions through the reduction of private vehicle trips. As such, this project supports *IAQGGMP* strategy 3.3 "Reduce the carbon footprint of the region's transportation system."	Poor/Good/ Excellent
Measurable Beneficial Effects	*Demonstrates tangible beneficial effects on greenhouse gas and common air contaminant emissions from on-road transportation sources for the duration of the project.* The newer buses will allow Coast Mountain Bus Company (CMBC) to maintain existing service and reduce overcrowding and pass-ups, thereby impacting growth of private vehicle trips and emissions.	Poor/Good/ Excellent
Economic Development		
Supports regional prosperity	*Contributes to a regional transportation system that moves people and goods and aligns with regional prosperity.* Replacement buses provide improved reliability to the regional transportation system and arterial service to institutional, economic and other transit mode hubs. Passengers will have better access to work and/or leisure activities, causing a reduction to single occupant vehicle travel.	Poor/Good/ Excellent
Measurable Beneficial Effects	*Tangible beneficial effects on the movement of people and/or goods for the duration of the project.* Replacement buses provide improved reliability to the regional transportation system and arterial service to institutional, economic and other transit mode hubs. Passengers will have better access to work and/or leisure activities, causing a reduction to single occupant vehicle travel.	Poor/Good/ Excellent

APPLICATION FOR FUNDING FROM THE GREATER VANCOUVER REGIONAL FUND FOR FEDERAL GAS TAX FUNDS

Project 6 2019 HandyDART Vehicle Purchase – Replacement
(Ref# 182140)

B. MAYORS' COUNCIL TRANSPORTATION AND TRANSIT PLAN

Please describe how the project fits within, and provides support to, the Mayors' Council Transportation and Transit Plan.

- ☒ **Maintain what is needed in a state of good repair**
- ☐ **Invest in the road network to improve safety, local access and goods movement**
- ☐ **Expand our transit system to increase ridership in high demand areas and provide basic coverage in low-demand neighbourhoods**
- ☐ **Develop safe and convenient walking connections to transit and pursue early investments to complete the bikeway network, making it possible for more people to travel by these healthy, low cost, and emission-free modes**
- ☐ **Manage our transportation system more effectively with safety and passenger comfort improvements, new personalized incentive programs, advanced technology and infrastructure management solutions, efficient and fair mobility pricing, and better parking management**
- ☐ **Partner to make it happen with explicit implementation agreements and processes that support concurrent decisions on land-use and transportation investments, stable and sufficient long-term funding solutions, and better monitoring of progress**

TransLink has an ongoing program of fleet modernization to keep the transit network in a state of good repair. This modernization program is foundational to TransLink, and it is critical to the success of Metro Vancouver's expansion, as outlined by the *Mayors' Council on Regional Transportation* vision: "Regional Transportation Investments: A Vision for Metro Vancouver" (Mayors' Council 10-Year Vision).

The Mayors' Council 10-Year Vision (10-Year Vision) on regional transportation outlines a long-term, region-wide, integrated, multi-modal transportation vision to fight congestion, reduce greenhouse gas (GHG) emissions and to keep a fast-growing gateway economy, of almost 2.5 million residents, moving. The 10-Year Vision is built on 3 key strategies to achieve necessary improvements: **invest** in the most urgent and effective investments, **manage** the system more effectively, and **partner** to ensure that supportive conditions are in place for these investments to succeed. Following adoption by the Mayors' Council, in June 2014, the 10-Year Vision was subsequently endorsed by the TransLink Board, as the implementation blueprint for the Regional Transportation Strategy (RTS). The 10-Year Vision includes a package of investments aimed at addressing the most basic needs for enhancements to the regional transportation network, allowing the network to keep up with growth in population and employment.

In November 2016, the TransLink Board and Mayors' Council approved the 2017-2026 Investment Plan (2017 Investment Plan). The 2017 Investment Plan includes development of a Low Carbon Fleet Strategy to reduce emissions from transit vehicles across the region of which this application aligns to. This project, through fleet modernization, supports the 10-Year Vision desired outcomes of maintaining the transit system and reducing GHG and air emissions.

C. PROJECT DESCRIPTION

Please complete the following for each project proposed for expenditure from the GVRF.

1. Executive Summary (not to exceed two pages)

Project Overview

HandyDART vehicles are operated and maintained by TransLink's contractors MVT Canadian Bus Inc. and Nat's Repair. These vehicles provide a valuable service to people with disabilities and are booked through a reservation system, with each vehicle being able to accommodate up to 2 wheelchairs.

Criteria for identifying buses due for retirement are based on a number of factors including:

- Age (life expectancy of 7 years for microbuses and midibuses);
- Mileage (generally 250,000 km);
- State of repair/condition; and
- Severity of service duty cycle.

These vehicles must be replaced when they reach end of service life, because maintenance costs and downtime will increase substantially, affecting passenger service reliability. By 2018, major components (e.g. engine, transmission), minor components (e.g. air conditioning, wheelchair lift), and chassis and body (e.g. cracked frames, rusted doorframes, rotting floors) will be worn out.

This project is to replace forty (40) HandyDART microbuses that have reached the end of service life and met criteria for replacement, with 40 new buses consisting of 28 microbuses and 12 midibuses.

The vehicles due to retire were acquired in 2011 and 2012, have a median age of 7-8 years and median mileage of 250,000 km. The new vehicles will have a person and seat capacity of 8 and 6 respectively for microbuses and 12 for midibuses.

TransLink strives to optimize its resource allocation by matching service to passenger demand, which includes allocating vehicles of an appropriate size to serve the demand on a route. Optimization is achieved through continuous review and process planning to allocate resources where they are most needed. This process is informed by ridership data, which has been substantially enhanced with the deployment of Compass Card. TransLink has also undertaken recent work to determine optimal fleet propulsion technology on each route, which is interdependent with vehicle size.

The fleet propulsion technologies available to TransLink consist of only gasoline as hybrid propulsion is not available for these vehicles. Based on current demand and optimization of resources, TransLink expects the 40 new vehicles to be gasoline powered as new gasoline vehicles have approximately 3.5 per cent less GHG emissions than the diesel vehicles they are replacing and 44 per cent less NOx. Choices of vehicle size and propulsion types will continue to be optimized, as determined by the ongoing monitoring of ridership and propulsion technologies. This may result in the vehicle technology mix changing if it is subsequently determined that a different mix better optimizes our resource allocation.

Tangible Benefits and Outcomes

The new vehicles will allow CMBC to maintain existing service, reduce downtime, avoid incremental operating and maintenance costs, and reduce pollutants. Compared to the retiring vehicles, new vehicles are expected to have a 3.5% reduction in GHG emissions and a 44% reduction in NOx.

Project Budget, Expenses, and GVRF Funding Request

The project budget is $5,750,000 with a Greater Vancouver Regional Fund (GVRF) request of $5,200,000. Expenses covered by this budget primarily include vehicle procurement, ancillary on-board equipment and labour, and other miscellaneous project costs. The funding requested in this application will be applied towards expenses considered eligible per the terms of the Administrative Agreement.

2. Project Name

2019 HandyDART Vehicle Purchase – Replacement (Ref# 182140)

3. Project Need

The objectives are to maintain high quality customer service while minimizing maintenance and operating costs through continued provision of reliable, fully-accessible transit vehicles that are appropriate for routes on which they operate. In addition, the GHG and NOx emissions will be reduced by switching from diesel to gasoline vehicles.

The criteria for achieving these objectives are: avoidance of incremental maintenance and operating costs, reduced vehicle breakdowns, less vehicle downtime, improved accessibility and fewer reservation cancellations, and reduced HandyDART fleet emissions.

4. Project Eligibility (check one):

☐ **Local Roads and Bridges, including active transportation**
☒ **Public Transit**

5. Project Purpose (check one):

☐ **Expansion:** Expands the carrying capacity of people and/or goods movement.
☒ **State of Good Repair:** Replaces or modernizes assets to keep the regional transportation system in a state of good repair.
☐ **Operational Efficiency/Effectiveness:** Improves the efficiency or effectiveness of the regional transportation system.
☐ **Refurbishment**
☐ **New**
☐ **Other (please specify :_____)**

6. Project Type (check one):

- ☐ **Growth**
- ☐ **Upgrade**
- ☐ **Risk (Resilience)**
- ☒ **Maintenance**
- ☐ **Opportunity**

7. Project Staging:

Year(s) of Acquisition or Start of Construction	Year of Completion of Construction	Year of Service Initialization	Year(s) of Renewal	Year(s) of End of Service
2019	**2019**	**2019**	**N/A**	**2026**

8. Has the project previously received funding through GVRF? Please explain.

No. This is the first application for GVRF funding for this project.

9. Was GVRF funding previously declined for the project? Please explain.

No. This is the first application for GVRF funding for this project.

10. Is the project anticipated to require additional future GVRF funding? If so, please explain.

No. TransLink is planning to complete this project within budget.

11. Project Cost + Funding

11.a Budget & Expenditures

Budget	Expenditures to Date	Forecast to Complete	Final Forecasted Cost	Variance (budget – final forecasted cost)
$5,750,000	**$0**	**$5,750,000**	**$5,750,000**	**$0**

11.b Project Funding

Prior Approved GVRF Funding	Current Year GVRF Funding Request	Other Funding – Specify source and whether confirmed/pending
$0	$5,200,000	N/A

11.c Project Budget Schedule

Item	2017	2018	2019	2020	2021	2022
GVRF-funded Project Budget			$4,966,000	$234,000		
Total Project Budget			$5,490,000	$260,000		

12. Project Budget Rationale

Describe the types of proposed project expenses to be funded by the Greater Vancouver Regional Fund

a. Explain how the project reflects the intent of the GVRF

This project provides a reduction in GHG emissions and ensures TransLink's assets are maintained in a State of Good Repair, so as to allow TransLink to efficiently and effectively provide transit service to the general public and those who have accessibility challenges. The purchase of vehicles with improved lifecycle GHG emissions and lower NOx emissions also aligns with Metro Vancouver's *IAQGGMP* goals.

b. In the absence of GVRF funding, can the project proceed with other funding sources? What risks do the other funding sources present to the project?

No. TransLink relies on GVRF funding for expansion of its revenue vehicle fleets and plans its annual budgets accordingly.

The other sources of funding available to TransLink are – Building Canada Fund and the Public Transit Infrastructure Fund. The projects chosen by TransLink for GVRF funding are better suited to GVRF funding compared to the other sources of funding, as summarized below:

Building Canada Fund (BCF) - the funding available is intended for "major infrastructure" and focuses on larger, strategic infrastructure projects that are of national or regional significance. Additionally, all funds in the current allocation have already been allocated to specific projects.

Public Transit Infrastructure Fund (PTIF) – this fund is focused on early works for expansion of the Rapid Transit network such as - the Expo, Millennium and Canada Line networks, along with the Surrey Light Rail Transit projects. Also, under this fund the maximum federal funding towards a project is limited to 50% of the total eligible expenditures; no such limits are identified in the GVRF. Lastly, projects to be funded under this program have already been submitted to the federal government.

In addition, BCF and PTIF funding is only available for a specified period of time: BCF is valid until

March 31, 2017 (with some station upgrades extended to March, 2019), and PTIF applies to projects initiating in 2016-17 and 2017-18.

As such, there are no other viable funding sources available for fleet modernizations

c. Identify potential risks – corporate and regional – of this project that could result in this project not being completed or being unsuccessful. Describe possible mitigation strategies to address these risks.

TransLink requires these vehicles to be in service for 2019 in order to retire vehicles reaching the end of their useful service lives. Also, there is an approximate lead time of 12 to 18 months between TransLink ordering the vehicles and those vehicles entering service. As such, it is important to have the funding in place to ensure the timely retirement of vehicles before they reach the end of their useful service lives.

If funding is not received in time, TransLink will have to rely on deferred retirement vehicles to deliver transit service. Continued use of deferred retirement vehicles poses a risk to reliability, as well as incremental maintenance costs to keep them in service. This may result in lost opportunities to realize goals of reduced congestion, improved peak hour service and frequency. Further, use of deferred retirement vehicles could also result in higher CAC and GHG emissions than new vehicles. TransLink may lose credibility among the general public if service expansion is not reliable.

d. How may the project cost vary as a result of changing external factors, such as interest rates and currency exchange rates?

Project costs may vary due to foreign exchange fluctuations (as parts are procured from the US) and vendor pricing. These uncertainties are mitigated with a sufficient contingency allowance to fund price and foreign exchange fluctuations.

e. How may foreseeable changes in investment, regulation, or policies from other orders of government affect the project?

Due to recent increases in senior government funding for public transit projects, many suppliers are experiencing larger demands to order vehicles. This may create a backlog with vendors, and if procurement is not initiated soon, could result in further delay in ordering and receiving vehicles.

f. How may foreseeable changes in technology affect the project?

This application is based on the new vehicles being gasoline powered. TransLink needs to consider that these vehicles are operated and maintained by contractors who may not be able to support fueling or maintenance for a change in propulsion technology.

TransLink does not anticipate vendors providing alternative fuel options for HandyDART vehicles that meet our needs to deliver reliable and cost-effective service to customers in the immediate future. TransLink continues to monitor the vehicle technology industry very closely to identify what options are available in the market, and to evaluate their suitability for its fleet.

g. What other corporate or external factors could alter the project need, scope, budget, or timeline for project delivery?

There are no foreseeable corporate or external factors that could alter the project need or scope of this project. Project timeline may be affected by manufacturer's capacity and schedules, availability of parts and/or time for vehicle delivery from the manufacturer. Budget may fluctuate due to parts pricing and/or foreign exchange.

In order to ensure that the vehicles received meet standards and delivery expectation TransLink conducts regular factory audits and inspections of the manufacturers' facilities.

D. EVALUATION CRITERIA

Please describe how project achieves or works towards each criterion by identifying and reporting on relevant performance measures. Where appropriate, present quantitative information. Please do not exceed 10 pages per project.

Two types of evaluation criteria are identified: Screening Criteria, which represent requirements that are mandatory for any project for which GVRF funding is requested; and Integrated Criteria, which allow for a qualitative assessment of proposed projects based on high priority objectives that reflect the intent of the Federal Gas Tax Fund, of Metro Vancouver goals, and of the Mayors' Council Vision.

Criterion	Description	Assessment
	SCREENING CRITERIA	
Eligible Project Category	☐ Local roads and bridges, including active transportation ☒ Public transit	Required
Eligible Expenses	As set out in the 2014 Administrative Agreement (Schedule C) Eligible Item — Expenditure[1] HandyDART vehicles (40) — $5,183,000 On-board equipment — 17,000 Total — $5,200,000 [1] *Per Schedule C, Section 1.1, Part a)*	Required
Plan Consistency	Projects must be consistent with TransLink's existing Capital Plan and future *10-Year Investment Plan,* as well as the *Mayors' Council Transportation and Transit Plan, Metro 2040: Shaping our Future, and the Regional Transportation Strategy.* ☒ 10-Year Investment Plan ☒ Mayors' Council Transportation and Transit Plan ☒ Metro 2040: Shaping our Future ☒ Regional Transportation Strategy	Required
Corporate Policies	Projects must be consistent with applicable TransLink policies such as sustainability, environmental responsibility, emissions and infrastructure ☒ Sustainability policy ☒ Environmental policy ☒ Emissions policy ☐ Infrastructure policy – n/a	Required

Criterion	Description	Assessment
INTEGRATED CRITERIA		
Regional Growth Strategy		
Supports the Regional Growth Strategy	*The degree to which the project assists in achieving the five goals in Metro 2040.* ☐ Create a Compact Urban Area ☐ Support a Sustainable Economy ☒ Protect Environment and Respond to Climate Change Impacts ☒ Develop Complete Communities ☒ Support Sustainable Transportation Choices	Poor/Good/ Excellent
Urban Centres and Frequent Transit Development Areas	*Where applicable, the project is located in, or demonstrates tangible benefits to the overall performance of Urban Centres and Frequent Transit Development Areas.* HandyDART buses provide a valuable service to the community for people with disabilities. The service promotes greater mobility for social connectivity, running errands, attending appointments and improving quality of life. The buses also connect disabled people to the current transit network of train stations and bus hubs.	Poor/Good/ Excellent
Transportation Performance		
Headline Targets	*Demonstrates tangible beneficial effects on vehicle kilometres travelled and/or walk/cycle/transit mode share.* This is a like-for-like vehicle fleet replacement project with no change in service provided (ie. incremental vehicle-kilometers travelled or shift to walk/cycle/transit mode share).	Poor/Good/ Excellent
Other Transportation Outcomes	*Demonstrates tangible beneficial effects on vehicle congestion, transit passenger congestion, transit ridership, and/or transportation safety for the duration of the project.* This is a like-for-like vehicle fleet replacement project with no change in service provided. As such, there are no incremental benefits to vehicle congestion, transit passenger congestion, transit ridership and/or transportation safety.	Poor/Good/ Excellent
Project Type	*Demonstrated value of the project type (refer to section 6).* By maintaining TransLink's assets in good repair, vehicles will have fewer breakdowns and service disruptions, operating costs will not increase, and pollutant emissions will be reduced.	Poor/Good/ Excellent

Criterion	Description	Assessment
Regional Environmental Objectives		
Supports the Integrated Air Quality and Greenhouse Gas Management Plan	*Contributes to the achievement of one or more goals in the Integrated Air Quality and Greenhouse Gas Management Plan (IAQGGMP).* New vehicles built with year 2017 compliant engines will have lower GHG and NOx emissions per service kilometre compared to earlier acquisitions, thus minimizing the emissions impact of the increased service provided by the project. In addition, over time the project is expected to reduce GHG emissions and noise through the reduction of private vehicle trips. As such, this project supports *IAQGGMP* strategies 1.1 “Reduce emissions of and public exposure to diesel particulate matter”, 1.4 “Reduce air contaminant emissions from cars, trucks, and buses”, and 3.3 "Reduce the carbon footprint of the region’s transportation system".	Poor/Good/ Excellent
Measurable Beneficial Effects	*Demonstrates tangible beneficial effects on greenhouse gas and common air contaminant emissions from on-road transportation sources for the duration of the project.* The newer vehicles will allow existing service to be maintained, thereby reducing the growth of private vehicle trips and emissions.	Poor/Good/ Excellent
Economic Development		
Supports regional prosperity	*Contributes to a regional transportation system that moves people and goods and aligns with regional prosperity.* Replacement of HandyDART vehicles will provide improved reliability to the regional transportation system, resulting in improved service reliability to people with disabilities. Passengers will have better access to conventional bus routes and hubs, train stations, healthcare providers, and social functions. Passengers will enjoy a better quality of life and benefit from greater independence.	Poor/Good/ Excellent
Measurable Beneficial Effects	*Tangible beneficial effects on the movement of people and/or goods for the duration of the project.* Replacement of HandyDART vehicles will improve service and make transit a more reliable option via ensuring that service requests are not denied due to a lack of availability. The improved reliability of the transit network will help customers with disabilities be more independent and increase their contributions towards the economic success of the region.	Poor/Good/ Excellent

APPLICATION FOR FUNDING FROM THE GREATER VANCOUVER REGIONAL FUND FOR FEDERAL GAS TAX FUNDS

Project 7 2019 Community Shuttle Purchase – Replacement
(Ref# 182150)

B. MAYORS' COUNCIL TRANSPORTATION AND TRANSIT PLAN

Please describe how the project fits within, and provides support to, the Mayors' Council Transportation and Transit Plan.

- ☒ **Maintain what is needed in a state of good repair**
- ☐ **Invest in the road network to improve safety, local access and goods movement**
- ☐ **Expand our transit system to increase ridership in high demand areas and provide basic coverage in low-demand neighbourhoods**
- ☐ **Develop safe and convenient walking connections to transit and pursue early investments to complete the bikeway network, making it possible for more people to travel by these healthy, low cost, and emission-free modes**
- ☐ **Manage our transportation system more effectively with safety and passenger comfort improvements, new personalized incentive programs, advanced technology and infrastructure management solutions, efficient and fair mobility pricing, and better parking management**
- ☐ **Partner to make it happen with explicit implementation agreements and processes that support concurrent decisions on land-use and transportation investments, stable and sufficient long-term funding solutions, and better monitoring of progress**

TransLink has an ongoing program of fleet modernization to keep the transit network in a state of good repair. This modernization program is foundational to TransLink, and it is critical to the success of Metro Vancouver's expansion, as outlined by the *Mayors' Council on Regional Transportation* vision: "Regional Transportation Investments: A Vision for Metro Vancouver" (Mayors' Council 10-Year Vision).

The Mayors' Council 10-Year Vision (10-Year Vision) on regional transportation outlines a long-term, region-wide, integrated, multi-modal transportation vision to fight congestion, reduce greenhouse gas (GHG) emissions and to keep a fast-growing gateway economy, of almost 2.5 million residents, moving. The 10-Year Vision is built on 3 key strategies to achieve necessary improvements: **invest** in the most urgent and effective investments, **manage** the system more effectively, and **partner** to ensure that supportive conditions are in place for these investments to succeed. Following adoption by the Mayors' Council, in June 2014, the 10-Year Vision was subsequently endorsed by the TransLink Board, as the implementation blueprint for the Regional Transportation Strategy (RTS). The 10-Year Vision includes a package of investments aimed at addressing the most basic needs for enhancements to the regional transportation network, allowing the network to keep up with growth in population and employment.

In November 2016, the TransLink Board and Mayors' Council approved the 2017-2026 Investment Plan (2017 Investment Plan). The 2017 Investment Plan includes development of a Low Carbon Fleet Strategy to reduce emissions from transit vehicles across the region of which this application aligns to. This project, through fleet modernization, supports the 10-Year Vision desired outcomes of maintaining the transit system and reducing GHG emissions.

C. PROJECT DESCRIPTION

Please complete the following for each project proposed for expenditure from the GVRF.

1. Executive Summary (not to exceed two pages)

Project Overview

TransLink's Community Shuttle service began in 2001 and has expanded steadily. Currently, the shuttle fleet comprises approximately 13% of TransLink's rubber tired revenue vehicle fleet and totals 192 vehicles. Approximately 79% of the Community Shuttle fleet is operated by CMBC with the remaining 21% operated by private contractors.

Criteria for identifying vehicles due for retirement are based on a number of factors including:

- Age (life expectancy of 5 and 7 years for gasoline and diesel powered vehicles, respectively);
- Mileage (generally 330,000 and 450,000 km for gasoline and diesel powered vehicles, respectively);
- State of repair/condition; and
- Severity of service duty cycle.

This project is to retire forty nine (49) gasoline powered community shuttles, which will reach the end of their useful service lives in 2019, with 49 new gasoline powered community shuttles. These shuttles are operated by Coast Mountain Bus Company (CMBC) out of the Hamilton Transit Center (44), and by West Vancouver Transit in West Vancouver (5). These shuttles would improve accessibility over the existing high floor shuttle fleet, and would allow the retirement of shuttles that have reached the end of their useful life thereby maintaining transit system reliability.

The vehicles due to retire were acquired in 2014, have a median age of 5 years and median mileage of 300,000 km. Mileage is expected to be in line with the above criteria at replacement. The new vehicles to be acquired will have a person and seat capacity of 23 and 20 respectively.

TransLink strives to optimize its resource allocation by matching service to passenger demand, including allocating vehicles of an appropriate size to serve the demand on a route. This allocation is optimized through continuous review and planning processes that allocates resources where they are most needed. This process is informed by ridership data, which has been substantially enhanced with the deployment of Compass Card. TransLink has also undertaken recent work to determine optimal fleet propulsion technology on each route, which is interdependent with vehicle size.

The fleet propulsion technologies available to TransLink consist of only gasoline, which is the same propulsion technology as those being replaced as hybrid propulsion is not available for these vehicles. There may be slight efficiency improvements depending on models purchased, which could slightly (1-2%) reduce GHG emissions. Choices of vehicle size and propulsion types will continue to be optimized, as informed by ongoing monitoring of ridership and propulsion technologies. This may result in the vehicle technology mix changing, if it is later determined that a different mix will better optimize our resource allocation.

Tangible Benefits and Outcomes

The new vehicles will allow CMBC to maintain existing service, reduce downtime, avoid incremental operating and maintenance costs, and reduce pollutants.

Project Budget, Expenses, and GVRF Funding Request

The project budget is $12,000,000 with a Greater Vancouver Regional Fund (GVRF) request of $10,800,000. Expenses covered by this budget primarily include vehicle procurement, ancillary on-board equipment and labour, and other miscellaneous project costs. The funding requested in this application will be applied towards expenses considered eligible per the terms of the Administrative Agreement.

2. Project Name

2019 Community Shuttle Purchase – Replacement (Ref# 182150)

3. Project Need

The objectives are to maintain high quality customer service while minimizing maintenance and operating costs through continued provision of reliable, fully-accessible transit vehicles that are appropriate to routes on which they operate. The criteria for achieving these objectives are avoidance of incremental maintenance and operating costs, reduced vehicle breakdowns, less vehicle downtime, improved accessibility and improved service reliability.

4. Project Eligibility (check one):

- ☐ **Local Roads and Bridges, including active transportation**
- ☒ **Public Transit**

5. Project Purpose (check one):

- ☐ **Expansion:** Expands the carrying capacity of people and/or goods movement.
- ☒ **State of Good Repair:** Replaces or modernizes assets to keep the regional transportation system in a state of good repair.
- ☐ **Operational Efficiency/Effectiveness:** Improves the efficiency or effectiveness of the regional transportation system.
- ☐ **Refurbishment**
- ☐ **New**
- ☐ **Other (please specify :_____)**

6. Project Type (check one):

- ☐ **Growth**
- ☐ **Upgrade**
- ☐ **Risk (Resilience)**
- ☒ **Maintenance**
- ☐ **Opportunity**

7. Project Staging:

Year(s) of Acquisition or Start of Construction	Year of Completion of Construction	Year of Service Initialization	Year(s) of Renewal	Year(s) of End of Service
2019	2019	2019	N/A	2024

8. Has the project previously received funding through GVRF? Please explain.

No. This is the first application for GVRF funding for this project.

9. Was GVRF funding previously declined for the project? Please explain.

No. This is the first application for GVRF funding for this project.

10. Is the project anticipated to require additional future GVRF funding? If so, please explain.

No. TransLink is planning to complete this project within budget.

11. Project Cost + Funding

11.a Budget & Expenditures

Budget	Expenditures to Date	Forecast to Complete	Final Forecasted Cost	Variance (budget – final forecasted cost)
$12,000,000	$0	$12,000,000	$12,000,000	$0

11.b Project Funding

Prior Approved GVRF Funding	Current Year GVRF Funding Request	Other Funding – Specify source and whether confirmed/pending
$0	$10,800,000	N/A

11.c Project Budget Schedule

Item	2017	2018	2019	2020	2021	2022

GVRF-funded Project Budget			**$900,000**	**$9,900,000**		
Total Project Budget			**$1,000,000**	**$11,000,000**		

12. Project Budget Rationale

Describe the types of proposed project expenses to be funded by the Greater Vancouver Regional Fund

a. Explain how the project reflects the intent of the GVRF

This project ensures TransLink's assets are maintained in a State of Good Repair. This allows TransLink to efficiently and effectively provide transit service to the general public and those who have accessibility challenges.

b. In the absence of GVRF funding, can the project proceed with other funding sources? What risks do the other funding sources present to the project?

No. TransLink relies on GVRF funding for expansion of its revenue vehicle fleets and plans its annual budgets accordingly.

The other sources of funding available to TransLink are – Building Canada Fund and the Public Transit Infrastructure Fund. The projects chosen by TransLink for GVRF funding are better suited to GVRF funding compared to the other sources of funding, as summarized below:

Building Canada Fund (BCF) - the funding available is intended for "major infrastructure" and focuses on larger, strategic infrastructure projects that are of national or regional significance. Additionally, all funds in the current allocation have already been allocated to specific projects.

Public Transit Infrastructure Fund (PTIF) – this fund is focused on early works for expansion of the Rapid Transit network such as - the Expo, Millennium and Canada Line networks, along with the Surrey Light Rail Transit projects. Also, under this fund the maximum federal funding towards a project is limited to 50% of the total eligible expenditures; no such limits are identified in the GVRF. Lastly, projects to be funded under this program have already been submitted to the federal government.

In addition, BCF and PTIF funding is only available for a specified period of time: BCF is valid until March 31, 2017 (with some station upgrades extended to March, 2019), and PTIF applies to projects initiating in 2016-17 and 2017-18.

As such, there are no other viable funding sources available for fleet modernizations

c. Identify potential risks – corporate and regional – of this project that could result in this project not being completed or being unsuccessful. Describe possible mitigation strategies to address these risks.

TransLink requires these vehicles to be in service for 2019 in order to retire vehicles reaching the end of their useful service lives. Also, there is an approximate lead time of 12 to 18 months between TransLink ordering the vehicles and those vehicles entering service. As such, it is important to have the funding in place to ensure the timely retirement of vehicles before they reach the end of their

useful service lives.

If funding is not received in time, TransLink will have to rely on deferred retirement vehicles to deliver transit service. Continued use of deferred retirement vehicles poses a risk to reliability, as well as incremental maintenance costs to keep them in service. This may result in lost opportunities to realize goals of reduced congestion, improved peak hour service and frequency. Further, use of deferred retirement vehicles could also result in higher CAC and GHG emissions than new vehicles as engines deteriorate. TransLink may lose credibility among the general public if service expansion is not reliable.

d. How may the project cost vary as a result of changing external factors, such as interest rates and currency exchange rates?

Project costs may vary due to foreign exchange fluctuations (as parts are procured from the US) and vendor pricing. These uncertainties are mitigated with a sufficient contingency allowance to fund price and foreign exchange fluctuations.

e. How may foreseeable changes in investment, regulation, or policies from other orders of government affect the project?

Due to recent increases in senior government funding for public transit projects, many suppliers are experiencing larger demands to order vehicles. This may create a backlog with vendors, and if procurement is not initiated soon, could result in further delay in ordering and receiving vehicles.

f. How may foreseeable changes in technology affect the project?

This application is based on the new vehicles being gasoline powered. TransLink also has to consider that a number of these vehicles are operated and maintained by contractors who may not be able to support fueling or maintenance for a change in propulsion technology.

TransLink does not anticipate vendors coming out with alternative fuels for community shuttles that meet our needs to deliver reliable and cost-effectively service to customers in the immediate future. TransLink continues to monitor the vehicle technology industry very closely to identify what options are available in the market, and to evaluate their suitability for its fleet.

g. What other corporate or external factors could alter the project need, scope, budget, or timeline for project delivery?

There are no foreseeable corporate or external factors that could alter the project need or scope of this project. Project timeline may be affected by manufacturer's capacity and schedules, availability of parts and/or time for vehicle delivery from the manufacturer. Budget may fluctuate due to parts pricing and/or foreign exchange.

In order to ensure that the vehicles received are up to the standards expected and delivered on time TransLink conducts regular factory audits and inspections of the manufacturers' facilities.

D. EVALUATION CRITERIA

Please describe how project achieves or works towards each criterion by identifying and reporting on relevant performance measures. Where appropriate, present quantitative information. Please do not exceed 10 pages per project.

Two types of evaluation criteria are identified: Screening Criteria, which represent requirements that are mandatory for any project for which GVRF funding is requested; and Integrated Criteria, which allow for a qualitative assessment of proposed projects based on high priority objectives that reflect the intent of the Federal Gas Tax Fund, of Metro Vancouver goals, and of the Mayors' Council Vision.

Criterion	Description	Assessment
	SCREENING CRITERIA	
Eligible Project Category	☐ Local roads and bridges, including active transportation ☒ Public transit	Required
Eligible Expenses	As set out in the 2014 Administrative Agreement (Schedule C) Eligible Item — Expenditure[1] Community Shuttles (49) — $10,420,000 On-board equipment — 380,000 Total — $10,800,000 [1] *Per Schedule C, Section 1.1, Part a)*	Required
Plan Consistency	Projects must be consistent with TransLink's existing Capital Plan and future *10-Year Investment Plan,* as well as the *Mayors' Council Transportation and Transit Plan, Metro 2040: Shaping our Future, and the Regional Transportation Strategy.* ☒ 10-Year Investment Plan ☒ Mayors' Council Transportation and Transit Plan ☒ Metro 2040: Shaping our Future ☒ Regional Transportation Strategy	Required
Corporate Policies	Projects must be consistent with applicable TransLink policies such as sustainability, environmental responsibility, emissions and infrastructure ☒ Sustainability policy ☒ Environmental policy ☒ Emissions policy ☐ Infrastructure policy – n/a	Required

Criterion	Description	Assessment
INTEGRATED CRITERIA		
Regional Growth Strategy		
Supports the Regional Growth Strategy	*The degree to which the project assists in achieving the five goals in Metro 2040.* ☐ Create a Compact Urban Area ☐ Support a Sustainable Economy ☒ Protect Environment and Respond to Climate Change Impacts ☒ Develop Complete Communities ☒ Support Sustainable Transportation Choices	Poor/Good/ Excellent
Urban Centres and Frequent Transit Development Areas	*Where applicable, the project is located in, or demonstrates tangible benefits to the overall performance of Urban Centres and Frequent Transit Development Areas.* Community shuttles provide service to communities located outside of major bus routes and hubs, and offer an environmentally responsible and sustainable transportation choice to single occupant vehicle travel. These vehicles transport passengers to urban centres and frequent transit networks (FTNs) to connect remote communities with populous destinations.	Poor/Good/ Excellent
Transportation Performance		
Headline Targets	*Demonstrates tangible beneficial effects on vehicle kilometres travelled and/or walk/cycle/transit mode share.* This is a like-for-like vehicle fleet replacement project with no change in service provided (ie. incremental vehicle-kilometers travelled or a shift to walk/cycle/transit mode share).	Poor/Good/ Excellent
Other Transportation Outcomes	*Demonstrates tangible beneficial effects on vehicle congestion, transit passenger congestion, transit ridership, and/or transportation safety for the duration of the project.* This is a like-for-like vehicle fleet replacement project with no change in service provided. As a result, there are no incremental benefits to vehicle congestion, transit passenger congestion, transit ridership and/or transportation safety.	Poor/Good/ Excellent
Project Type	*Demonstrated value of the project type (refer to section 6).* By maintaining TransLink's assets in good repair, vehicles will have fewer breakdowns and service disruptions, operating costs will not increase, and pollutant emissions will be reduced.	Poor/Good/ Excellent

Criterion	Description	Assessment
Regional Environmental Objectives		
Supports the Integrated Air Quality and Greenhouse Gas Management Plan	*Contributes to the achievement of one or more goals in the Integrated Air Quality and Greenhouse Gas Management Plan(IAQGGMP).* New vehicles built with year 2017 compliant engines may be slightly more fuel efficient compared to earlier acquisitions, thus minimizing the emissions impact of the increased service provided by the project. This project supports *IAQGGMP* strategies 1.1 "Reduce emissions of and public exposure to diesel particulate matter", 1.4 "Reduce air contaminant emissions from cars, trucks, and buses", and 3.3 "Reduce the carbon footprint of the region's transportation system."	Poor/Good/ Excellent
Measurable Beneficial Effects	*Demonstrates tangible beneficial effects on greenhouse gas and common air contaminant emissions from on-road transportation sources for the duration of the project.* The newer vehicles will allow existing service to be maintained, thereby reducing the growth of private vehicle trips and emissions.	Poor/Good/ Excellent
Economic Development		
Supports regional prosperity	*Contributes to a regional transportation system that moves people and goods and aligns with regional prosperity.* Replacement of community shuttles will provide improved reliability of the Community Shuttle fleet. Offering reliable service to more remote communities not close to conventional bus routes and/or hubs results in improved reliability to the regional transportation system. Passengers will have better access to populous destinations for work and/or leisure activities, reducing the use of single occupant vehicle travel.	Poor/Good/ Excellent
Measurable Beneficial Effects	*Tangible beneficial effects on the movement of people and/or goods for the duration of the project.* Replacement of community shuttles will provide improved reliability of the bus fleet, resulting in improved reliability to the transit network, and ultimately improving economic competitiveness. More reliable transit provides better access to jobs, workers, and markets, while reducing congestion and improving reliability for the movement of workers and goods.	Poor/Good/ Excellent

To: Finance and Intergovernment Committee

From: Raymond Kan, Senior Regional Planner, Parks, Planning and Environment

Date: September 22, 2017 Meeting Date: October 11, 2017

Subject: **2016 Greater Vancouver Regional Fund Semi-Annual Report**

RECOMMENDATION

That the MVRD Board receive for information the report prepared by TransLink titled "Report on Federal Gas Tax Funding received from the Greater Vancouver Regional Fund (GVRF)" as attached to the report dated September 22, 2017, titled "2016 Greater Vancouver Regional Fund Semi-Annual Report."

PURPOSE

To present for information to the MVRD Board TransLink's status report on active projects funded by federal gas tax funds through the Greater Vancouver Regional Fund (GVRF).

BACKGROUND

In accordance with the *Federal Gas Tax Fund Expenditures Policy (GVRF Policy)* adopted by the MVRD Board in 2016, TransLink is required to provide to the MVRD Board semi-annual reports on projects funded through the GVRF. At a minimum, the reports must include updated project-level information on variances to budget and total cost, expenditures to date, project schedule, and risk assessment. The attached report represents TransLink's first submittal.

2016 GVRF SEMI-ANNUAL REPORT

TransLink's first semi-annual report is attached in partial fulfillment of the MVRD Board's *GVRF Policy*. The report contains cumulative information on active projects funded through the GVRF as of December 31, 2016 (even though a project may have been implemented, it may remain active to reflect outstanding charges to be paid off prior to project close-out). The 24 active projects have received $549.1 million in GVRF funding, of which $273.6 million have been expended

The regional transportation authority reports that it has delivered the majority of GVRF-funded projects on or ahead of schedule and with favourable cost variances.

The report also provides an overview of future funding requests in relationship to the current 10-year investment plan and the Mayors' Council vision. Through the *2017 Phase One Investment Plan*, TransLink has budgeted $977 million in GVRF funding for capital expenditures on:

- Procurement of buses for expansion and modernization (also guided by a future Low Carbon Fleet Strategy);
- Rehabilitation of SkyTrain vehicles;
- New bus depot to support bus fleet expansion and implementation of the Low Carbon Fleet Strategy; and
- Other transit infrastructure improvements.

Looking ahead, it is anticipated that TransLink will advance semi-annual reports on active GVRF projects to the MVRD Board regularly twice per year.

ALTERNATIVES
This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS
There are no financial implications.

SUMMARY / CONCLUSION
TransLink has submitted the first semi-annual report on active projects funded through the GVRF to the MVRD Board in partial fulfilment of the *GVRF Policy*. The report presents information on active projects as of December 31, 2016. As per TransLink's report, the regional transportation authority has been successful in delivering the majority of GVRF-funded projects on or ahead of schedule and incurring favourable cost variances. The report also provides an overview of future funding requests in relationship to the current 10-year investment plan and the Mayors' Council vision.

Attachment: *(Doc #23400427)*
Report on Federal Gas Tax Funding received from the Greater Vancouver Regional Fund (GVRF)

23401309

To: Carol Mason, Chief Administrative Officer, Metro Vancouver

From: Cathy McLay, Chief Financial Officer and Executive Vice President, Finance and Corporate Services

Date: September 19, 2017

Subject: Report on Federal Gas Tax Funding received from the Greater Vancouver Regional Fund (GVRF)

PURPOSE

The "Federal Gas Tax Fund Expenditures Policy", approved by the Board of Directors of the Greater Vancouver Regional District (Metro Vancouver) on May 27, 2016, requires TransLink to report to the Metro Vancouver Board on active projects that have received funding from the Federal Gas Tax Fund (FGTF) through the Greater Vancouver Regional Fund (GVRF).

The report frequency is semi-annual and has the following objectives:

A. Project budget to actual cost variances;
B. Project expenditures to date;
C. Current project schedule; and
D. Overall risk assessment.

This first report will provide historical information on active projects with FGTF (GVRF) as at December 31, 2016 and an overview of anticipated future funding requests.

BACKGROUND

Since the FGTF (GVRF) program began in 2005, TransLink has received $898.2 million in funding to expand and modernise the transit network. Interest earned on funds received, which must be used for approved FGTF (GVRF) projects, totalled $28.5 million at December 31, 2016. Also, there was $415.8 million in funds available to TransLink as at December 31, 2016.

Delivering the 10-Year Vision

The 10-Year Vision for Metro Vancouver Transit and Transportation, adopted by the Mayors' Council and TransLink Board in 2014, assumes the FGTF (GVRF) will continue to support investments in transit throughout Metro Vancouver. TransLink's 2017 Investment Plan was the first step to begin the implementation of the Vision. The Plan forecasts $977 million[1] in capital expenditures from 2017 through 2026 and assumes FGTF (GVRF) funding to support bus fleet expansion and modernization projects, SkyTrain rehabilitation, and other transit infrastructure improvements. As the 10-Year Vision is implemented through subsequent investment plans, it is expected that the FGTF (GVRF) will continue to be a major source of funding for fleet and other investments.

[1] Forecasted amount assumes the FGTF (GVRF) program is renewed in 2024.

Active Projects

As of December 31, 2016 there were 24 active projects funded by the FGTF (GVRF). The total budget for these projects is $677.1 million, with $549.1 million in FGTF (GVRF) funds approved by the Metro Vancouver Board. Table 1 is a summary of the total project costs and funding and Table 2 provides a detailed breakdown of active projects with FGTF (GVRF) funding, including budget and forecast final cost, expenditures-to-date and estimated project schedule.

Table 1: Active Project Summary[1]

in $ millions

	Budget	Forecast Final Cost	Variance[2]
Total Project Costs	$677.067	$666.756	$10.311
Ineligible Costs under FGTF (GVRF) Funding[3]	(127.930)	(121.455)	(6.475)
FGTF (GVRF) Funding	549.137	545.301	3.836

1. See Table 2 for project details.
2. Variance from total project approved budget vs. forecast at December 31, 2016.
3. Ineligible costs represent mainly expenditures incurred by TransLink that are not eligible to be claimed under FGTF (GVRF) such as internal labor charge, overhead, internal training and maintenance costs.

Table 2 – List of active projects with FGTF (GVRF) funding

Active Projects With GVRF Funding (Dollar amounts in millions)	Budget	Expenditures to December 31, 2016	Forecast Final Cost	Forecast to Budget Variance $	Forecast to Budget Variance %	Approved Funding	Funding used up to December 31, 2016	Forecast In-service Date	Actual In-service Date	Delay in months (approx.)
2nd SeaBus Replacement	21.183	20.035	20.475	0.708	-3.34%	19.697	19.234	December 2014	December 2014	0
2013 HandyDART Vehicles	3.822	3.595	3.595	0.227	-5.95%	3.561	3.535	December 2015	February 2015	-11
2014 Conventional Bus	25.400	24.884	24.884	0.516	-2.03%	24.450	24.391	March 2016	February 2015	-13
2014 Community Shuttles	7.800	7.400	7.400	0.400	-5.13%	7.310	7.347	April 2016	March 2015	-13
2014 HandyDART Vehicles	8.000	7.577	7.577	0.423	-5.29%	7.530	7.523	May 2016	April 2015	-13
Expo Line Propulsion Power System Upgrade	57.135	56.481	56.831	0.304	-0.53%	42.000	41.870	January 2016	June 2016	5
2015 HandyDART Vehicles	7.550	6.729	6.878	0.672	-8.90%	5.370	5.370	July 2017	August 2016	-11
Hamilton Transit Centre	135.367	133.230	134.892	0.475	-0.35%	84.978	84.978	September 2016	September 2016	0
Defective Community Shuttle Vehicles Replacement	10.000	9.307	9.428	0.572	-5.72%	9.350	8.643	December 2016	November 2016	-1
2016 Conventional Bus Replacement - 40'	55.654	25.341	55.547	0.107	-0.19%	53.464	23.999	December 2016	April 2017	4
2016 Conventional Bus Replacement - 60'	33.296	0.180	32.893	0.403	-1.21%	25.360	-	December 2016	April 2017	4
2015 Conventional Bus Replacement	57.100	40.425	56.364	0.736	-1.29%	54.800	35.773	March 2017		N/A
Automated Train Control Equipment Replacement	5.100	1.139	5.070	0.030	-0.59%	4.500	1.109	August 2017		N/A
2015 Community Shuttle Vehicle Replacement	4.699	-	4.699	-	0.00%	4.674	-	September 2017		N/A
Surrey Transit Centre - CNG Facility Retrofit	15.000	0.756	15.008	(0.008)	0.05%	4.000	0.733	October 2017		N/A
2016 Community Shuttle Vehicle Replacement	3.892	-	3.892	0.001	-0.01%	3.560	-	October 2017		N/A
2017 Community Shuttle Vehicle Replacement	4.210	-	4.210	0.001	-0.01%	3.500	-	November 2017		N/A
Metrotown - Trolley Overhead Rectifier Replacement	5.765	0.228	6.256	(0.491)	8.52%	4.725	0.220	December 2017		N/A
2017 HandyDART Vehicle Replacement	5.600	-	4.900	0.700	-12.50%	5.013	-	March 2018		N/A
2017 Conventional Bus Replacement	96.900	-	96.900	-	0.00%	86.700	-	April 2018		N/A
2018 HandyDART vehicle Replacement	6.000	-	6.200	(0.200)	3.33%	5.605	-	October 2018		N/A
2018 Conventional Bus Replacement	66.600	-	66.600	-	0.00%	60.800	-	November 2018		N/A
2018 Community Shuttle Vehicle Replacement	3.700	-	4.000	(0.300)	8.12%	3.830	-	December 2018		N/A
SkyTrain Mark I Vehicle Refurbishment	37.294	14.434	32.257	5.037	-13.51%	24.360	8.894	October 2021		N/A
Total	**677.067**	**351.741**	**666.756**	**10.311**	**-1.52%**	**549.137**	**273.619**			

A. Project Budget to Actual Costs Variance

The majority of projects have favorable variances compared to budget. See table 2 for detailed list of active projects and breakdown of variances from current forecast and approved budget. Below is a discussion of those projects with variances between budgeted and Forecast Final Cost (FFC) greater than $1 million:

SkyTrain Mark I Vehicle Refurbishment – This project is showing a positive variance of $5 million between the budgeted cost and the FFC. This is mainly attributable to the current forecast cost for materials required for the refurbishment being less than the budgeted amount. Due to the forecast cost reduction, there is a positive variance of $2.3 million between the funding allocated to this project and the total forecast funding. TransLink will continue to monitor these variances as the project progresses. If at the end of the project a positive variance remains, any unspent FGTF funds will be returned to the GVRF. Once returned these funds will become available for use towards other projects as approved by Metro Vancouver.

Please refer to Table 2 for the detailed breakdown of other project variances.

B. Project Expenditures to Date

At December 31, 2016, total project costs were $351.7 million with $273.6 million in funding coming from the FGTF (GVRF). Below is a summary of the total project and funding spent as of December 31, 2016:

in $ millions	**Expenditures to date as of December 31, 2016[1]**
Total Project Costs	$351.741
Ineligible Costs under FGTF (GVRF) Funding[2]	78.122
Expenditure of FGTF (GVRF) Funding	273.619

1. See Table 2 for cost to date breakdown by project.
2. Ineligible costs represent mainly expenditures incurred by TransLink that are not eligible to be claimed under FGTF (GVRF) such as internal labor charge, overhead, internal training and maintenance costs.

C. Current Project Schedule

Table 2 shows an estimate for each project schedule based on current forecast in-service dates as at December 31, 2016 and the approximate delay in months when compared to original forecast in-service dates. Schedule delays can be caused by numerous reasons, such as delay in equipment delivery from vendors or project complexity. Below is a schedule summary for all active projects as at December 31, 2016:

Project Schedule Summary	Number of Projects	FFC ($ millions)	FFC % of Total Cost
Delay greater than 3 months	3	$145.2	22
On or ahead of schedule	21	521.6	78
	24	$666.8	100%

Table 3 – List of active projects with schedule delays greater than 3 months:

Project	Delay in Months	FFC ($ millions)	Reason for Delay
Expo Line Propulsion Power System Upgrade	5	56.8	Delay in project schedule of approximately 5 months due to delays in delivery and installation of substation equipment.
2016 Conventional Bus Replacement - 40'	4	55.5	Delay in project schedule of approximately 4 months due to delays in vehicle deliveries (45 buses applied to FGTF under Year 8).
2016 Conventional Bus Replacement - 60'	4	32.9	Delay in project schedule of approximately 4 months due to delays in vehicle deliveries (26 buses applied to FGTF under Year 9).

D. Overall Risk Assessment

TransLink's follows standard project management practices and provides an internal oversight structure for each capital project, including projects utilizing FGTF (GVRF) Funding. The higher the project's risk profile (measured as a function of risk, business value, size and complexity), the greater the degree of rigour that is applied to its governance model.

Specific project risks are identified prior to project initiation and listed in the project risk register. Monthly reports on risks and issues are provided to TransLink's Project Management Office (PMO). In addition, projects with increased complexity and/or elevated risk profile would also have a specific project steering committee assigned.

Below is a list of known risks and actions taken to date for active projects receiving FGTF (GVRF) funding:

RISK TITLE	RISK DESCRIPTION (EVENT)	CAUSE OF RISK
Foreign Exchange rate	Deterioration of the Canadian/US Dollar exchange rate may cause vehicle pricing to exceed project budget	Currency conversion volatility between $USD and $CDN
Vehicle Manufacturer (Chassis) Delay	Chassis Manufacture Order window closes before order can be placed resulting in 12 month delay in production	Chassis Manufacturer sells out current year production capacity
Vehicle Delivery Delay (Vendor)	Vehicle delivery delayed at acceptance stage, impact of 2-4 weeks	Issues with parts shortages, defects, paint and prep delays, etc. experienced by the vendor prior to presentation of the vehicle for delivery
Schedule Delay - Procurement	Poor or no market response to RFQ	Potential suppliers fail to bid or no market response due to lack of interest

Currently, there are no other known factors that would significantly impact the ability of any active project to reach completion according to planned schedules and within budget.

TransLink will continue to monitor these variances as the projects progress. If at the end of the project there is a positive variance remaining, any unspent FGTF (GVRF) funds will be returned to the FGTF (GVRF).

FUTURE FUNDING REQUESTS

In the 2017 Investment Plan, it is anticipated that $1,489.3 million in FGTF (GVRF) funds available over the ten year plan period assuming the program will be renewed in 2024, and there will be $1,002 million available over seven years until the 2024 renewal date. TransLink has budgeted $977 million in capital expenditures from 2017 through 2026 as outlined in the 2017 Investment Plan for procurement of vehicles for fleet expansion and modernization, refurbishment of SkyTrain cars, and other transit infrastructure improvements. FGTF (GVRF) funds not allocated are $506.3 million.

TransLink is in the process of updating its current 2017-2026 Investment Plan to continue implementing the 10-Year Vision which will update future usage of the FGTF (GVRF).

Future usage is anticipated to include:

- Continued procurement for bus expansion and modernization;
- Rehabilitation of SkyTrain cars;
- Bus procurement based on the Low Carbon Fleet Strategy;
- New bus depot to support bus fleet expansion and the Low Carbon Fleet Strategy; and
- Other transit infrastructure improvements.

CONCLUSION

TransLink has been able to deliver the majority of the projects funded via the FGTF (GVRF) as promised. Best efforts have been made to ensure that variances from budget and schedule are kept at a minimum and contingency plans made where appropriate. TransLink will continue to apply FGTF (GVRF) to support the implementation of the Mayor's 10-Year Vision.

To: Housing Committee

From: Theresa Harding, Manager, Homelessness Partnering Strategy

Date: September 29, 2017 Meeting Date: October 13, 2017

Subject: **Homelessness Partnering Strategy Community Entity Updates on the 2017 Homeless Count**

RECOMMENDATION

That the MVRD Board receive for information the report dated September 29, 2017, titled "Homelessness Partnering Strategy Community Entity Updates on the 2017 Homeless Count".

PURPOSE

To provide the Housing Committee and MVRD Board with final results from the 2017 Homeless Count in Metro Vancouver.

BACKGROUND

The 2017 Homeless Count Final Report was completed and made public at a media event on September 26, 2017. This report is being brought forward to the Housing Committee and the MVRD Board for information.

2017 HOMELESS COUNT

The 2017 Homeless Count in Metro Vancouver took place throughout the region over a 24-hour period between March 7 and 8, 2017. Approximately 1,200 volunteers faced winter conditions as they walked the streets and visited shelters to conduct anonymous surveys. This was the first time the Count was held on a night when an emergency weather response notice was issued due to cold and snowy weather.

Held every three years, Homeless Counts provide a conservative estimate of homelessness in Metro Vancouver and the results assist service providers, planners, community groups, health authorities, municipalities and funders to address the needs of people who are homeless.

In 2017, the Project Team tested new ways to better capture the extent and diversity of homelessness throughout the region. This included sending teams of volunteers out on boats along local waterways to find people living aboard derelict vessels, giving more attention to rural areas, and returning on three consecutive days to survey the homeless population in the Surrey-Newton area.

BC NON-PROFIT HOUSING ASSOCIATION PRESENTATION ON THE 2017 HOMELESS COUNT

The 2017 Count was carried out by the BC Non-Profit Housing Association in partnership with M. Thomson Consulting on behalf of Metro Vancouver, the Community Entity for the Government of Canada's Homelessness Partnering Strategy (HPS), which has funded the majority of costs associated with the Count. Homeless Counts are a requirement under the Community Entity Agreement.

2017 HOMELESS COUNT IN METRO VANCOUVER – FINAL REPORT

On April 10, 2017, the preliminary data report for the 2017 Homeless Count was released through a media event held at Metro Vancouver, providing basic high-level data generated from the Homeless Count surveys. The 2017 Homeless Count in Metro Vancouver Final Report (Attachment 1) was released through a media event September 26, 2017, providing deeper analysis of the data. The media event included participation by Chair Moore, Director Clay, Lorraine Copas (Community Advisory Board Chair for Metro Vancouver Community Entity), David Wells (Chair of the Aboriginal Homelessness Steering Committee), and Jonquil Hallgate (Chair of the Council of Community Homelessness Tables for Metro Vancouver and Fraser Valley). This was the first time the Final Homeless Count report has been released through a media event. The attention it garnered demonstrated the high level of interest in homelessness in the region. Questions were well-informed and responses built on the report findings to provide insight into the causes and conditions of homelessness, and spoke to the need for a regional collaborative approach to address homelessness.

ABORIGINAL 2017 HOMELESS COUNT REPORT

The 2017 Homeless Count represented the first time the Aboriginal/ Indigenous community authored the analysis and narrative related to the data and findings of a homeless count in the region (Attachment 2). It was released September 25, 2017 and also received strong media attention. It was funded through the Metro Vancouver Homelessness Partnering Strategy Community Entity.

2017 REPORT ON HOMELESSNESS IN THE LOWER MAINLAND

A press release was distributed on October 4, 2017 with the 2017 Report on Homelessness in the Lower Mainland. This report represents the first time the Metro Vancouver and Fraser Valley communities have jointly planned and implemented a Homeless Count, and have shared, analysed and reported on the data. This report combines, compares and contrasts information from 2017 Homeless Counts in the Metro Vancouver Regional District (MVRD) and the Fraser Valley Regional District (FVRD) to examine the diversity and extent of homelessness throughout the region. This report is not yet available.

The Lower Mainland Report drew from both the above Metro Vancouver Count report and "Out in the Cold - 2017 Homelessness Survey – Fraser Valley Regional District" report (Attachment 3) which was presented to the Fraser Valley Regional District Board September 20, 2017.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

There are no financial implications to Metro Vancouver. The 2017 Homeless Count was funded by the Homelessness Partnering Strategy through a request for proposals process under the direction of the Community Advisory Board for the Metro Vancouver Community Entity. The Count also received resources from other funders, as well as in-kind supports.

SUMMARY / CONCLUSION

The Aboriginal Homelessness 2017 Count in Metro Vancouver and the 2017 Homeless Count Final Report were published September 25 and 26, 2017 respectively, generating strong media coverage on the issues of homelessness. The 2017 Report on Homelessness in the Lower Mainland, a joint effort of communities in Metro Vancouver and the Fraser Valley, will be published October 4, 2017.

References

1. 2017 Homeless Count in Metro Vancouver Final Report
2. Aboriginal Homelessness 2017 Count in Metro Vancouver
3. Out in the Cold – 2017 Homelessness Survey – Fraser Valley Regional District

To: MVRD Board of Directors

From: Chris Plagnol, Corporate Officer

Date: October 17, 2017 Meeting Date: October 27, 2017

Subject: **Changes in Voting Strength and Director Representation on the Board**

RECOMMENDATION

That the MVRD Board receive for information the report dated October 17, 2017, titled "Changes in Voting Strength and Director Representation on the Board".

PURPOSE

To inform the board of changes to voting allocation and director representation on the Board as a result of population changes identified in the 2016 Federal Census.

BACKGROUND

Metro Vancouver received correspondence from the Ministry of Municipal Affairs and Housing notifying of changes to the voting strength resulting from population changes identified in the 2016 federal census. This information is being brought forward to the board as the changes to voting strength and composition takes effect November 1, 2017.

CURRENT VOTING STRUCTURE

The *Local Government Act* and Metro Vancouver Regional District's Letters Patent establishes the MVRD Board structure in terms of board composition, number of directors and number of votes assigned to each Regional District participant.

Population Growth and Board Composition

Population is a key determinant in the size of the Board and the number of votes assigned to each director on the Board. As population grows in the region, the Board will correspondingly increase in terms of the number of directors appointed, and the number of votes each is assigned, based on the formula set out in the *Local Government Act* and MVRD Letters Patent.

Under this formula, each member jurisdiction's population is divided by 20,000 (as stipulated in the Letters Patent) which produces the total number of votes for that jurisdiction. Those votes are then divided by 5 (as stipulated by section 191 of the *Local Government Act*) to determine the number of directors for that jurisdiction. No director is allotted more than 5 votes; and votes must be equally distributed among those jurisdictions with more than one director.

Population Determined by Census

Section 196(3) of the *Local Government Act* specifies that population is determined by census, and that for the purposes of voting power on a board, a change in the population takes effect in the year following the year in which that census was taken. The reason it takes effect later in the year is because the Ministry responsible must verify that the federal census data conform with British Columbia boundaries and First Nation populations. The Ministry has notified Metro Vancouver of the certified population numbers based on the 2016 census.

CHANGES TO BOARD MEMBERSHIP

Based on the 2016 census population, as certified by the Ministry of Municipal Affairs and Housing, the changes to board composition and/or voting strength are as follows:

Jurisdictions	Change in number of Votes and/or Directors
Abbotsford	Increase from 7 votes to 8 votes
Delta	Increase from 5 votes to 6 votes Increase from 1 director to 2 directors
Maple Ridge	Increase from 4 votes to 5 votes
Surrey	Increase from 24 votes to 26 votes Increase from 5 directors to 6 directors
Vancouver	Increase from 31 votes to 32 votes

Overall, the Board increases its directors from 38 directors (not including Abbotsford) holding among them 129 votes to 40 directors holding among them 134 votes. See Attachment 1.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The financial implications of changing the board's composition by adding 2 directors largely relates to remuneration for meeting attendance in accordance with the *Remuneration Bylaw*. Those changes are accommodated within the annual budget.

SUMMARY / CONCLUSION

Metro Vancouver received correspondence from the Ministry of Municipal Affairs and Housing notifying of changes to the voting strength resulting from population changes identified in the 2016 federal census. These changes affect the board's composition by increasing the number of directors to 40 holding among them 134 votes. This change takes effect November 1, 2017.

Attachments

1. MVRD Board Composition 2011 to 2016 Resulting from Federal Census
2. MVRD Populations Certified by the Ministry of Municipal Affairs and Housing

23465760

ATTACHMENT 1

Metro Vancouver Regional District
Board Composition 2011 to 2016 Resulting from Federal Census

	2011 (Effective 2012)			**2016** (Effective 2017)		
Member Jurisdiction	Population[1]	Votes[2]	Directors[3]	Population[1]	Votes[2]	Directors[3]
Anmore	2,092	1	1	2,210	1	1
Belcarra	644	1	1	643	1	1
Bowen Island	3,402	1	1	3,680	1	1
Burnaby	223,218	12	3	232,755	12	3
Coquitlam	126,495	7	2	139,338	7	2
Delta	99,868	5	1	102,248	6	2
Electoral Area A	13,035	1	1	16,182	1	1
Langley City	25,081	2	1	25,888	2	1
Langley Township	104,743	6	2	117,890	6	2
Lion's Bay	1,318	1	1	1,334	1	1
Maple Ridge	76,052	4	1	82,256	5	1
New Westminster	65,976	4	1	70,996	4	1
North Vancouver City	48,770	3	1	53,474	3	1
North Vancouver District	86,396	5	1	87,913	5	1
Pitt Meadows	17,965	1	1	18,835	1	1
Port Coquitlam	56,347	3	1	58,612	3	1
Port Moody	32,975	2	1	33,551	2	1
Richmond	190,473	10	2	198,309	10	2
Surrey	468,359	24	5	518,007	26	6
Tsawwassen	720	1	1	816	1	1
Vancouver	605,071	31	7	633,138	32	7
West Vancouver	44,989	3	1	45,404	3	1
White Rock	19,339	1	1	19,952	1	1
Totals	**2,313,328**	**129**	**38**	**2,463,431**	**134**	**40**
Abbotsford[4]	133,765	7	2	141,685	8	2

Notes
[1] Population numbers based on federal census including subsequent changes certified by the Province.
[2] Votes (i.e. voting strength) are calculated by dividing the population by 20,000 (voting unit as per the Letters Patent)
[3] Number of Directors is calculated by dividing the voting strength by 5 (as per the *Local Government Act*)
[4] Abbotsford participates in the Metro Vancouver Regional District parks function only.

Metro Vancouver Regional District

(incorporated June 29, 1967)

Voting Unit: 20,000 population

	2016 Census including subsequent population changes certified by the Minister [1]	Number of Directors (voting strength/5)	Voting Strength (population/ voting unit)
Cities:			
Burnaby	232,755	3	12
Delta	102,248	2	6
Coquitlam	139,338	2	7
Langley	25,888	1	2
Maple Ridge	82,256	1	5
New Westminster	70,996	1	4
North Vancouver	53,474	1	3
Pitt Meadows	18,835	1	1
Port Coquitlam	58,612	1	3
Port Moody	33,551	1	2
Richmond	198,309	2	10
Surrey	518,007	6	26
Vancouver	633,138	7	32
White Rock	19,952	1	1
Districts:			
Bowen Island	3,680	1	1
Langley	117,890	2	6
North Vancouver	87,913	1	5
West Vancouver	45,404	1	3
Villages:			
Anmore	2,210	1	1
Belcarra	643	1	1
Lions Bay	1,334	1	1
Treaty First Nation:			
Tsawwassen	816	1	1
Electoral Area:			
A	16,182	1	1
Totals:	2,463,431	40	134

Populations certified as necessary by the Minister of Municipal Affairs and Housing under sections 196 and 197 of the *Local Government Act* as per the definition in the Schedule to the Community Charter.

Effective November 1, 2017.

These population figures are to be used only in the determination of voting strength and Director representation.

1. Population includes people residing on Indian Reserves and boundary extensions to December 31, 2016.

Fraser Valley Regional District

(incorporated December 12, 1995)

Voting Unit: 5,000 population

	2016 Census including subsequent population changes certified by the Minister [1]	Number of Directors (voting strength/5)	Voting Strength (population/ voting unit)
City:			
Abbotsford	141,685	6	29
Chilliwack	87,802	4	18
District:			
Hope	6,181	1	2
Kent	6,867	1	2
Mission	38,833	2	8
Village:			
Harrison Hot Springs	1,468	1	1
Electoral Area:			
A	551	1	1
B	1,495	1	1
C	2,218	1	1
D	1,741	1	1
E	1,787	1	1
F	1,293	1	1
G	2,166	1	1
H*	1,847	1	1
Totals:	295,934	23	68

Populations certified as necessary by the Minister of Municipal Affairs and Housing under sections 196 and 197 of the *Local Government Act* as per the definition in the Schedule to the Community Charter.

Effective November 1, 2017.

These population figures are to be used only in the determination of voting strength and Director representation.

1. Population includes people residing on Indian Reserves and boundary extensions to December 31, 2016.

*Electoral Area H was created in 2015

To: MVRD Board of Directors

From: Kelly Hardy, Office Supervisor, Board and Information Services, Legal and Legislative Services

Date: October 5, 2017 Meeting Date: October 27, 2017

Subject: **Delegations Received at Committee October 2017**

RECOMMENDATION

That the MVRD Board receive for information the report, dated October 5, 2017, titled "Delegations Received at Committee October 2017" containing submissions received from the following delegates:

a) Dale Littlejohn, Executive Director, Community Energy Association (CEA).

PURPOSE

The purpose of this report is to keep the Board informed of delegation activities at Committee in accordance with Board direction.

Attached are summaries of the delegates to the following committees:

Climate Action Committee:

a) Dale Littlejohn, Executive Director, Community Energy Association (CEA)
The delegation spoke to the Committee about local government collaborations, Federal funding for climate change projects and energy actions, and CEA activities. No further action was taken.

23488242

ATTACHMENT A

Community Energy Association

Date: September 20, 2017

To: Metro Vancouver Climate Action Committee

From: Community Energy Association

RE: **October 4, 2017 Presentation by Dale Littlejohn, Executive Director - Community Energy Association**

We would like to thank Metro Vancouver for your continued support of the Community Energy Association (CEA). For over 20 years, CEA has provided a unique, permanent table for collaboration among organizations involved with supporting communities in climate and energy, primarily through the built environment, transportation, renewable energy and infrastructure. CEA connects local governments to all available climate and energy resources. We currently have twenty-one municipal members and twelve additional members representing utilities, transportation planning agencies, funding organizations, subject matter experts, Union of BC Municipalities, and the land development community.

In 2016, CEA helped many local governments 'close the implementation gap' between plans and practical actions on climate change and energy through programs supporting both *people* and *projects*. We help communities accelerate climate action through planning, implementation support and technology acceleration. We do this through workshops, research, collaboration and peer learning at the political and staff level. We also recognize and celebrate local government achievements through the *Climate & Energy Action Awards*. Throughout BC, CEA has delivered almost 60 community energy and emissions plans, 40 carbon neutral action plans for local government operations and numerous builder workshops and community energy diets (building retrofit programs). CEA is also the Regional Climate Advisor for BC and the Yukon through the Federation of Canadian Municipalities (FCM) Partners for Climate Protection Program.

This is a time of unprecedented opportunity to move forward on the climate file. Our presentation will provide a summary of:

- BC progress on GHG emission reductions,
- lessons learned from cross-Canada research on plan implementation,
- new mandates for the BC Ministry of Environment & Climate Change Strategy,
- new FCM, federal and provincial funding opportunities,
- opportunities to reduce emissions from transportation and infrastructure
- the BC Energy Step Code,
- the *Accelerate Kootenays* rural EV charging project, and
- the Climate Leadership Institute (November 1 - 3)

We look forward to speaking with you on October 4.

To: Regional Planning Committee

From: Terry Hoff, Senior Regional Planner, Parks, Planning and Environment Department

Date: September 26, 2017 Meeting Date: October 13, 2017

Subject: ***Metro Vancouver 2040: Shaping our Future* Amendment to Reflect Accepted Regional Context Statements**

RECOMMENDATION

That the MVRD Board:

a) give third reading to "Greater Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1246, 2017";
b) pass and finally adopt "Greater Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1246, 2017".

PURPOSE

To seek MVRD Board adoption of an amendment to *Metro Vancouver 2040: Shaping our Future* (*Metro 2040*) to reflect accepted Regional Context Statements from the Township of Langley, City of Surrey and City of North Vancouver.

BACKGROUND

The proposed *Metro 2040* amendment incorporates *Metro 2040* regional land use designation and overlay map revisions contained in accepted Regional Context Statements submitted by the Township of Langley, City of North Vancouver and City of Surrey. On June 30, 2017 the Metro Vancouver Board gave 1st and 2nd readings to Regional Growth Strategy Amendment Bylaw No.1246. Member jurisdictions were notified of the proposed amendment and the closing date for comments September 29, 2017.

REGIONAL CONTEXT STATEMENTS

Metro 2040 Section 6.2.6 allows the MVRD Board to accept Regional Context Statements (RCSs) that include revisions to *Metro 2040* that the MVRD Board deems to be 'generally consistent' with *Metro 2040*. *Metro 2040* Section 6.3.4 i) provides that these revisions can be incorporated into the regional growth strategy through a Type 3 amendment. Adoption of a Type 3 amendment requires adoption of an amendment bylaw by an affirmative 50%+1 weighted vote of the Board, and does not require a regional Public Hearing.

Since the adoption of *Metro 2040* on July 29, 2011, the MVRD Board has accepted Regional Context Statements from all member jurisdictions. The Township of Langley Regional Context Statement, originally submitted in late 2013, was the subject of a dispute resolution process that was resolved on October 21, 2016. The Township's RCS was subsequently accepted by the MVRD Board on November 25, 2016. The MVRD Board has also accepted Regional Context Statement amendments from the City of North Vancouver on February 24, 2017, and the City of Surrey on April 28, 2017.

SUMMARY OF PROPOSED AMENDMENT

The Township of Langley Regional Context Statement includes 21 amendments to the *Metro 2040* Land Use Designation Map. Eighteen of the amendments involve a variety of land use designation changes that were considered minor and considered by the MVRD Board to be generally consistent with *Metro 2040* in late 2013 when the Township's initial RCS was submitted for consideration. Three of the amendments involve changes from an Agricultural to a General Urban regional land use designation; these were included in an updated RCS following the settlement agreement between the Township of Langley Council and the MVRD Board. The Township's RCS also includes the addition of one Frequent Transit Development Area.

The City of Surrey RCS includes minor regional land use designation amendments from Rural to Mixed Employment that were accepted by the MVRD Board as generally consistent with *Metro 2040*.

The City of North Vancouver RCS includes a minor regional land use designation amendment from Industrial to Conservation and Recreation to correct a mapping error. This change was accepted by the MVRD Board as consistent with *Metro 2040.*

Metro Vancouver staff provided specific analysis for all of the proposed land use changes, as well as including review and comment from the Regional Planning Advisory Committee, as part of the respective Regional Context Statement acceptance processes. The proposed *Metro 2040* land use designation amendments and overlays will update Maps 2, 3, 4, 5, 6, 7, 8, and 12 within the Metro Vancouver 2040 *Shaping our Future* document.

RESPONSES RECEIVED FROM AFFECTED LOCAL JURISDICTIONS

Following procedures contained in *Metro 2040* Section 6.4.2, Metro Vancouver sent notification of the proposed bylaw amendment to affected local jurisdictions, and requested any comment be submitted to Metro Vancouver by September 29, 2017. Four local jurisdictions responded: the City of Coquitlam, the City of Port Moody, the City of Richmond and TransLink. There are no objections to the proposed amendment.

City of Coquitlam. In a letter dated September 25, 2017, City of Coquitlam staff commented, "Please be advised that Coquitlam staff do not have any comments regarding the proposed Type 3 amendment to the RGS". Staff comment also noted that Coquitlam City Council has not received / considered a staff report on the proposed RGS amendment.

City of Richmond. In an e-mail dated August 29, 2017, City of Richmond staff commented, "Please be advised that the Richmond City Council as "no comment" regarding the proposed MV RGS Amendment Bylaw No. 1246, 2017, as it does not materially affect Richmond".

City of Port Moody. A letter dated September 13, 2017, a resolution (RC12/349) by the City of Port Moody Council stated: "THAT Metro Vancouver be notified that the City of Port Moody has no objections to the proposed amendments in Bylaw No. 1246, 2017 as recommended in the report dated September 1, 2017 from Development Services Department – Planning Division regarding *Metro Vancouver 2040: Shaping our Future* – Amendment to Reflect Accepted Regional Context Statements – Bylaw No. 1246, 2017."

TransLink. In letter dated September 6, 2017, the Chair of the TransLink Board of Directors stated that "TransLink has no objection to the proposed Metro 2040 amendment".

With no objections by member jurisdictions, staff recommends that the MVRD Board proceed with third reading and final approval of Regional Growth Strategy Amendment Bylaw No.1246.

ALTERNATIVES

1. That the MVRD Board:
   a) give third reading to "Greater Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1246, 2017";
   b) pass and finally adopt "Greater Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1246, 2017".

2. That the MVRD Board receive for information the report dated September 26, 2017 titled "*Metro Vancouver 2040: Shaping our Future* Amendment to Reflect Accepted Regional Context Statements".

FINANCIAL IMPLICATIONS

No financial implications are anticipated as a result of this report.

If the MVRD Board chooses Alternative 1, staff will update the regional growth strategy maps to incorporate changes as a result of the amendment.

If the MVRD Board chooses Alternative 2, the regional growth strategy will not be updated to include changes already accepted as "generally consistent" by the Board, and the regional growth strategy, as the publicly accessible consolidation of all RCS maps, will not be an accurate record of the Board's decisions.

SUMMARY / CONCLUSION

Metro 2040 Section 6.2.6 allows the MVRD Board to accept Regional Context Statements (RCS) which include revisions to *Metro 2040* that the MVRD Board deems to be 'generally consistent' with *Metro 2040*. *Metro 2040* Section 6.3.4 i) provides that these revisions can be incorporated into the regional growth strategy through a Type 3 amendment. Adoption of a Type 3 amendment requires adoption of an amendment bylaw by affirmative 50%+1 weighted vote of the Board, and does not require a regional Public Hearing.

On June 30, 2017 the MVRD Board gave 1st and 2nd readings to Regional Growth Strategy Amendment Bylaw No.1246. The proposed amendment incorporates *Metro 2040* land use designation and overlay revisions accepted in Regional Context Statements submitted by the Township of Langley, City of Surrey and City of North Vancouver. Metro Vancouver staff provided specific analysis for all of the proposed land use changes, as well as receiving review and comment from the Regional Planning Advisory Committee, as part of the respective MVRD Board Regional Context Statement acceptance processes.

Following 1st and 2nd readings of amendment bylaw No.1246 on June 30, 2017, Metro Vancouver notified potentially affected local jurisdictions and provided opportunity to comment on the proposed amendment through a 90-day period ending September 29, 2017. Four jurisdictions

responded, and there were no objections. Therefore, Metro Vancouver staff recommend Alternative 1, that the MVRD Board proceed with third reading and final adoption of Regional Growth Strategy Amendment Bylaw No.1246.

Attachments *(Orbit #23429608)*

1. *Metro Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1246, 2017*.
2. Member jurisdiction responses to *Metro Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1246, 2017*.

METRO VANCOUVER REGIONAL DISTRICT
REGIONAL GROWTH STRATEGY AMENDMENT BYLAW NO. 1246, 2017

A Bylaw to Amend
Greater Vancouver Regional District Regional Growth Strategy Bylaw No. 1136, 2010.

WHEREAS:

A. The Metro Vancouver Regional District Board (the "Board"), formerly known as Greater Vancouver Regional District, adopted the Greater Vancouver Regional District Regional Growth Strategy Bylaw No. 1136, 2010 on July 29, 2011;

B. The Board has accepted Regional Context Statements from the Township of Langley (November 25, 2016), City of Surrey (April 28, 2017), and the City of North Vancouver (February 14, 2017);

C. In accordance with regional growth strategy section 6.3.4 (h,i), an amendment to the regional growth strategy to incorporate maps included in accepted Regional Context Statements is a Type 3 Minor Amendment;

D. The Board wishes to replace the Regional Growth Strategy Maps 2, 3, 4, 5, 6, 7, 8, and 12;

NOW THEREFORE, the Board of the Metro Vancouver Regional District in open meeting assembled enacts as follows:

1. The Greater Vancouver Regional District Regional Growth Strategy Bylaw No. 1136, 2010 is hereby amended as follows:

   Maps 2, 3, 4, 5, 6, 7, 8, and 12 contained in Greater Vancouver Regional District Regional Growth Strategy Bylaw No. 1136, 2010, are deleted and replaced with Maps 2, 3, 4, 5, 6, 7, 8, and 12 as contained in Schedule A;

2. The official citation for this bylaw is "*Metro Vancouver Regional District Regional Growth Strategy Amendment Bylaw No, 1246, 2017*". This bylaw may be cited as "*Regional Growth Strategy Amendment Bylaw No. 1246, 2017*".

Read a First time this 23 day of June, 2017

Read a Second time this 23 day of June, 2017

Read a Third time this _____ day of _____, ____

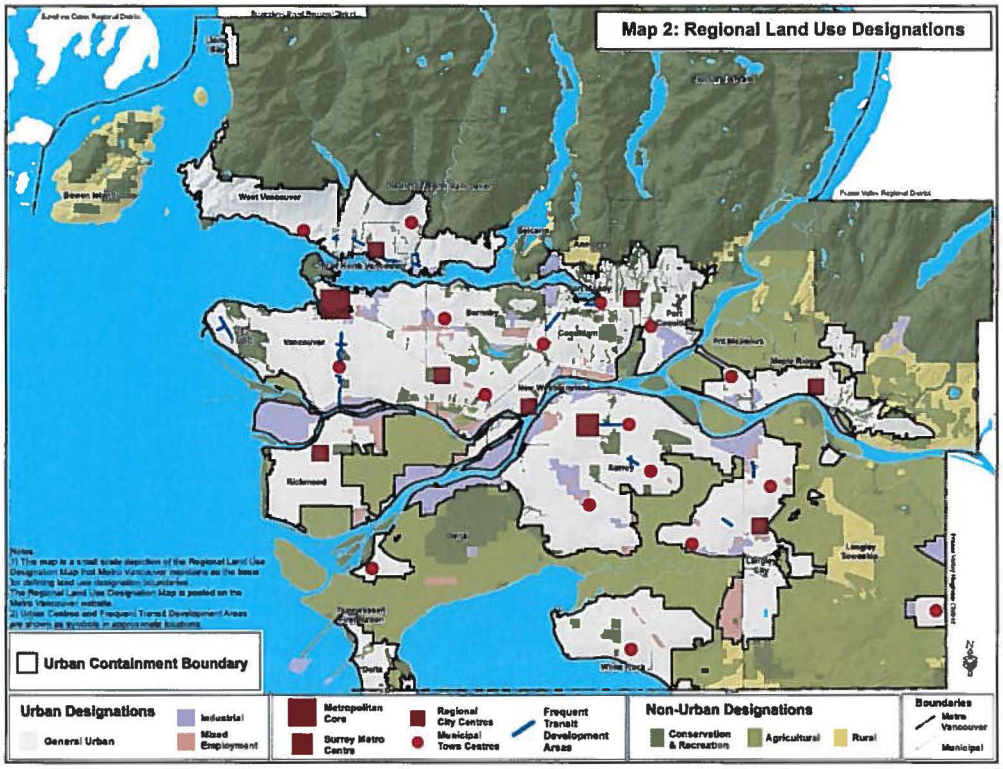
Passed and Finally Adopted this _____ day of _____, ____

Chris Plagnol
Corporate Officer

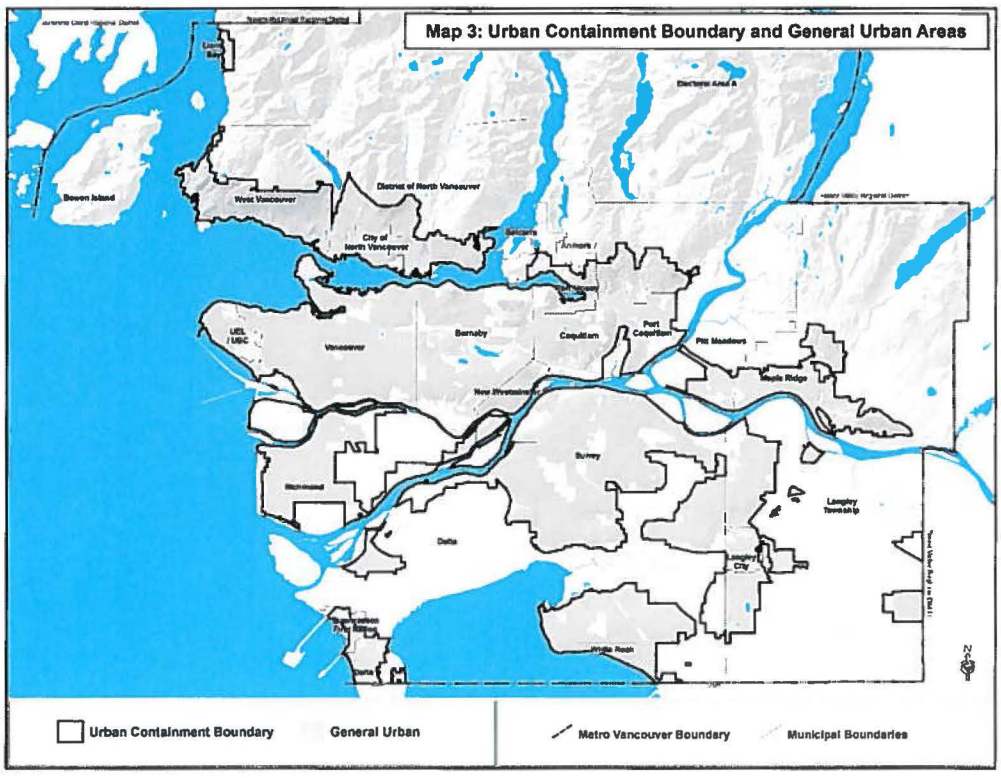
Greg Moore
Chair

SCHEDULE A

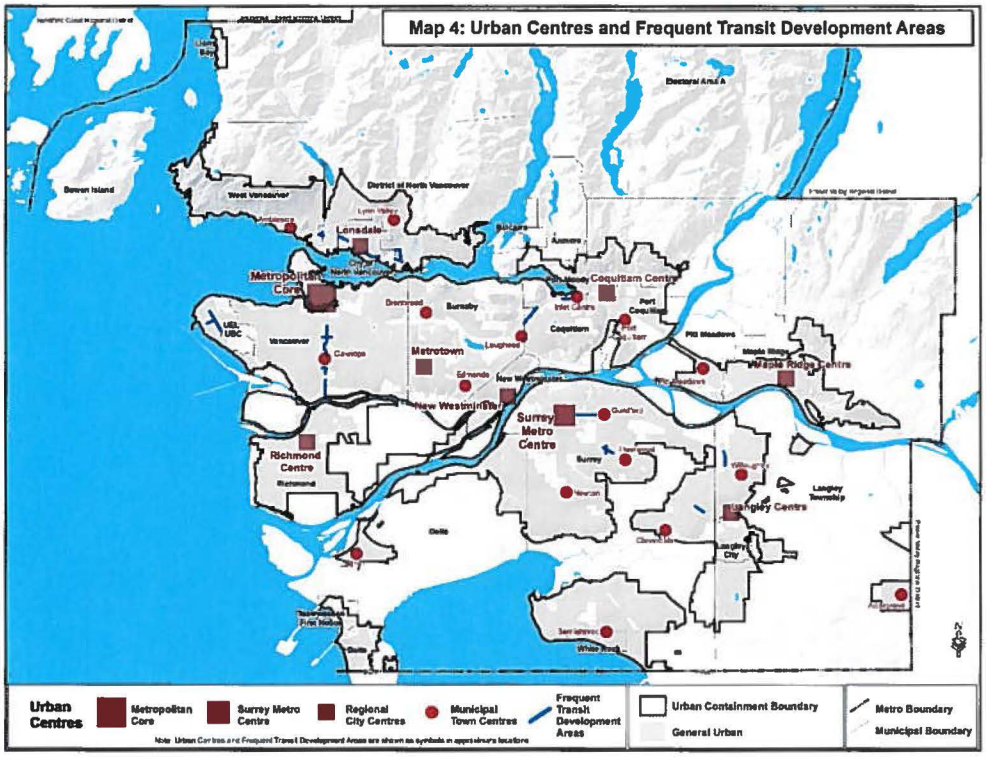
Map 2. Regional Land Use Designations



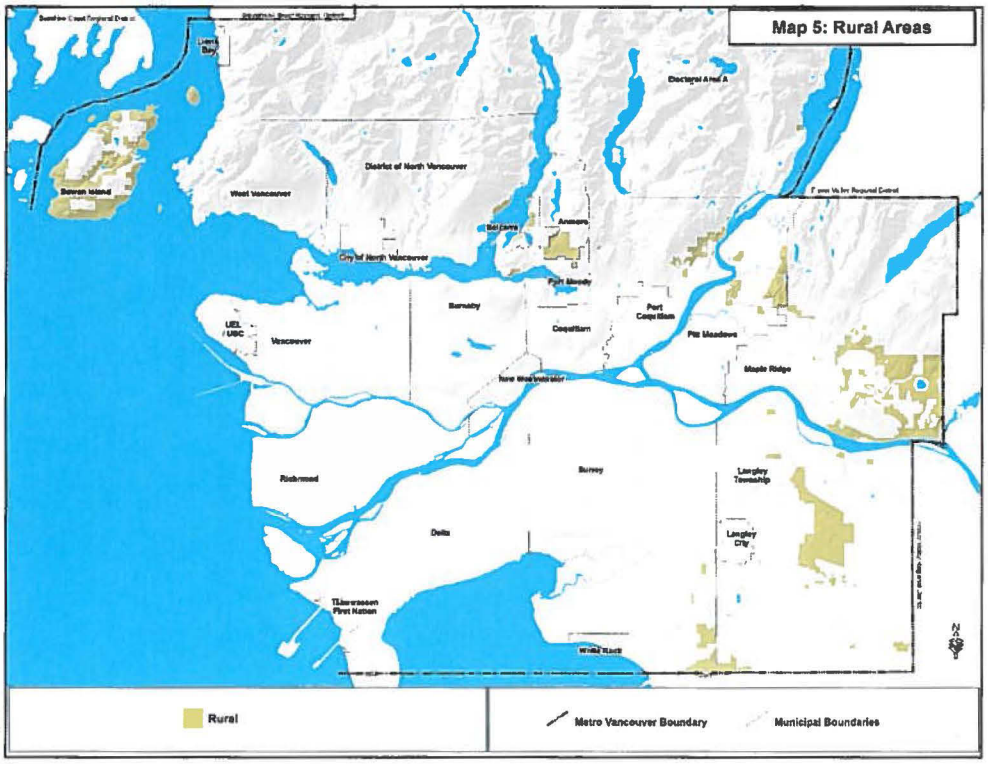
Map 3. Urban Containment Boundary and General Urban Area



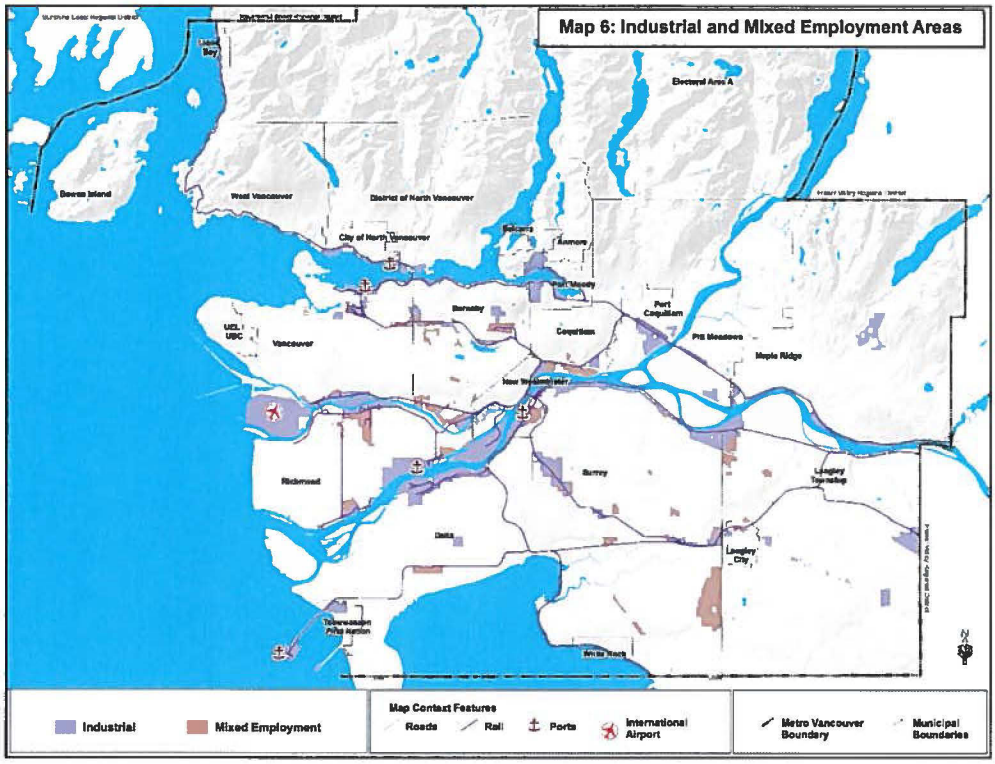
Map 4. Urban Centres and Frequent Transit Development Areas



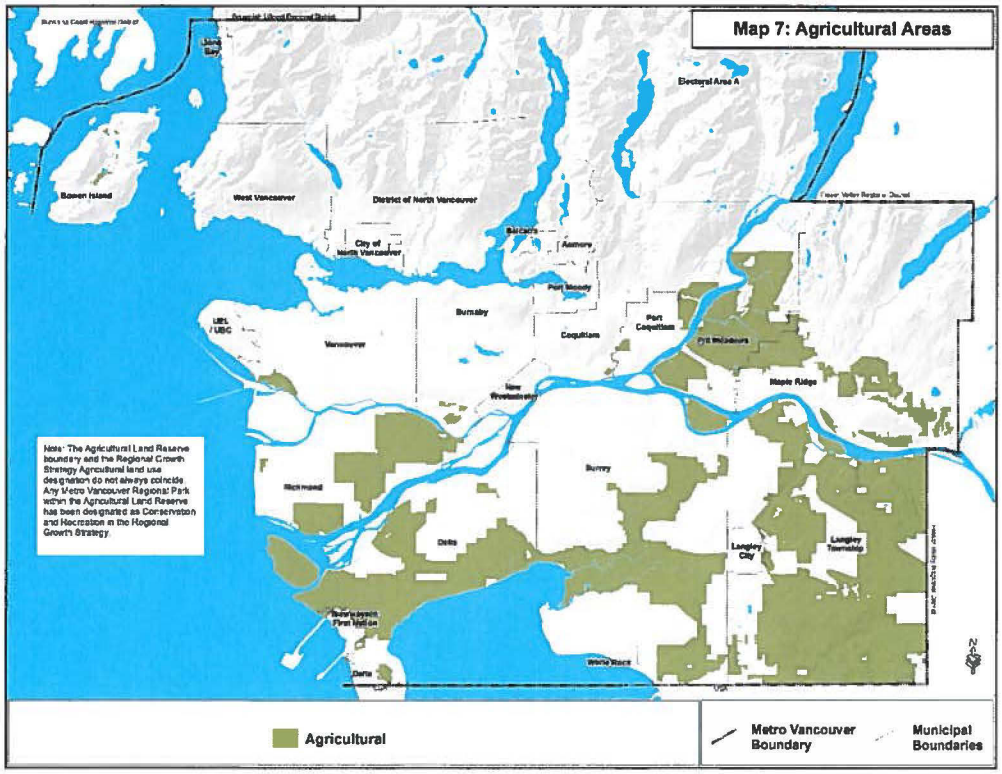
Map 5. Rural Areas



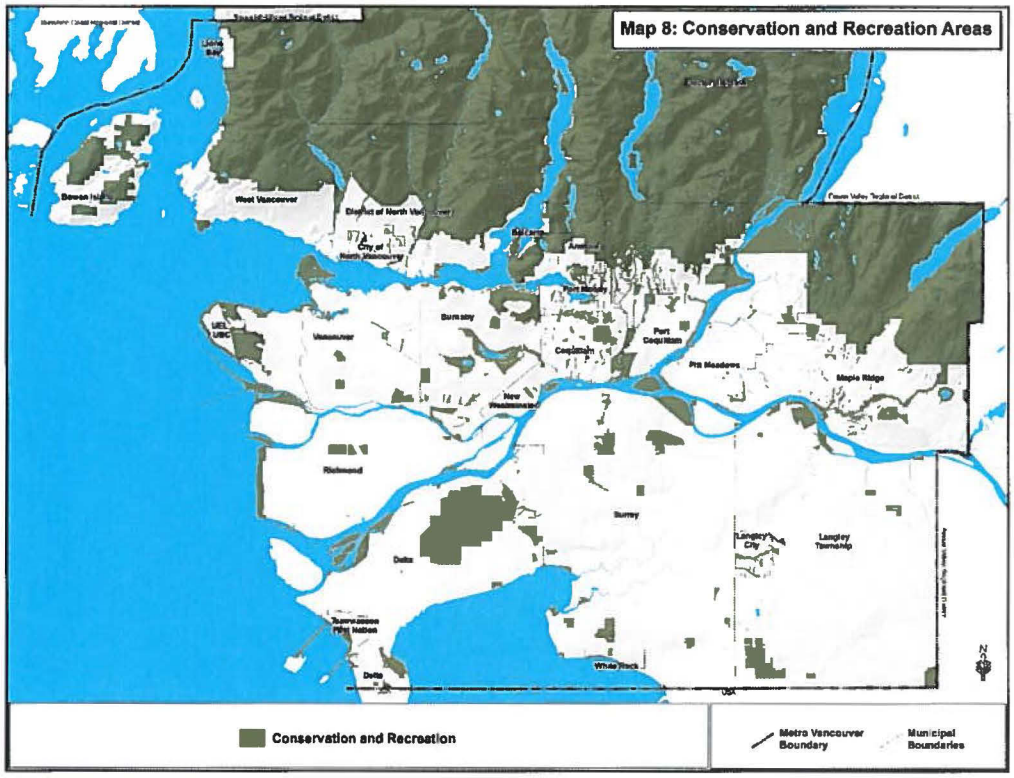
Map 6. Industrial and Mixed Employment Areas



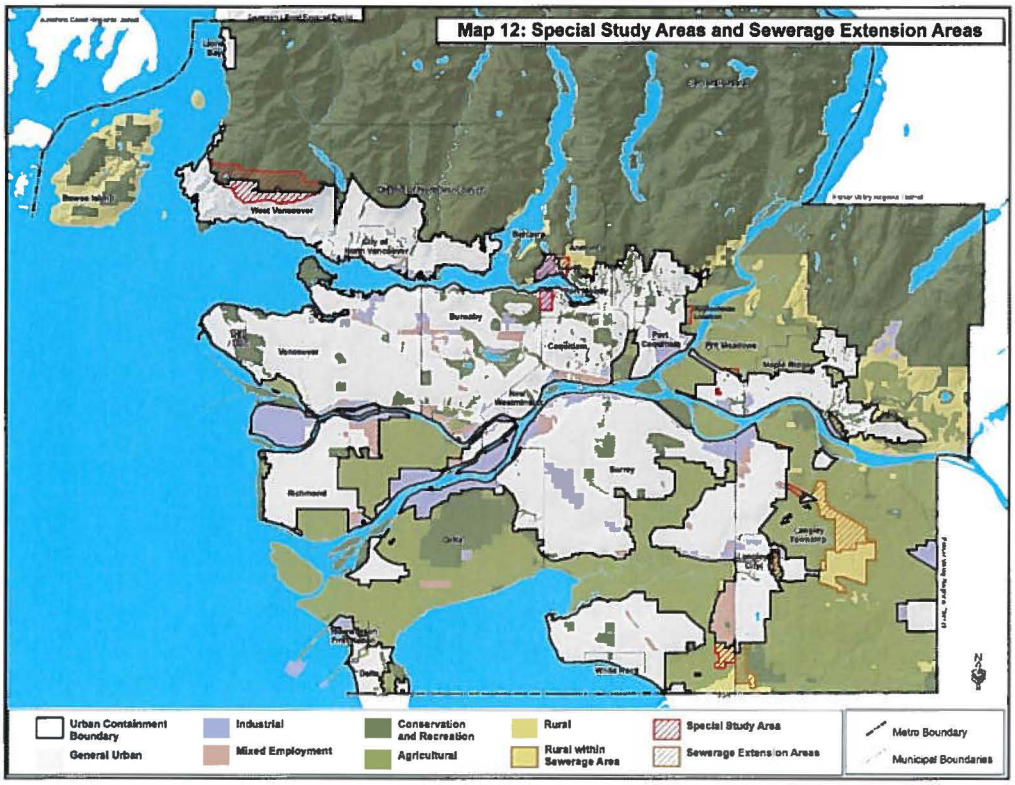
Map 7. Agricultural Areas



Map 8. Conservation and Recreation Areas



Map 12. Special Study Areas and Sewerage Extension Areas



Coquitlam

September 25, 2017
Our File: 01-0480-20/RD13-01/2017-1
Doc #: 2718150.v1

Chris Plagnol
Corporate Officer, Metro Vancouver
4330 Kingsway
Burnaby BC V5H 4G8

Dear Chris Plagnol:

RE: *Metro Vancouver 2040: Shaping our Future* Amendment to Reflect Accepted Regional Context Statements – Bylaw 1246, 2017

In response to your letter dated August 1, 2017, addressed to City of Coquitlam Mayor and Council, thank you for the opportunity to review and comment on the subject proposed by Metro Vancouver Regional District (MVRD) Regional Growth Strategy (RGS) Amendment Bylaw No. 1246, 2017.

Please be advised that Coquitlam staff do not have any comments or concerns regarding the proposed Type 3 amendment to the RGS, to change regional land use designations in the Township of Langley, City of North Vancouver and City of Surrey. These land use designation changes reflect Regional Context Statements for these three municipalities accepted by the MVRD Board between late 2016 and mid-2017. The MVRD Board has determined that the amendment for the City of Surrey (from Rural to Mixed Employment), as well as 18 of the 21 amendments in the Township of Langley are minor and generally consistent with the RGS. The remaining 3 of 21 amendments in the Township of Langley (from Agricultural to General Urban) follow the October 21, 2016 settlement agreement between the Township of Langley and the MVRD Board and include the addition of one Frequent Transit Development Area. The single amendment in the City of North Vancouver (from Industrial to Conservation and Recreation) is to correct a mapping error.

Please note that these are only staff comments, and Coquitlam Council has not received / considered a staff report on this proposed RGS amendment. However, Coquitlam Council will be made aware of this proposed RGS amendment and associated staff comments, and the City's Metro Vancouver Board representatives will be considering the proposed RGS amendment bylaw at a future Metro Vancouver Board meeting.

Should you have any questions or require any further information with respect to this matter, please feel free to contact me by email at amerrill@coquitlam.ca or by phone at 604-927-3416.

Regards,

Andrew Merrill, RPP, MCIP
Manager, Community Planning
City of Coquitlam
3000 Guildford Way, Coquitlam, BC V3B 7N2
Office: 604. 927. 3000
coquitlam.ca

PORT MOODY
CITY OF THE ARTS

100 Newport Drive, Port Moody, B.C., V3H 5C3, Canada
Tel 604.469.4500 Fax 604.469.4550
www.portmoody.ca

September 13, 2017

File: 01-0480-20-03

Via Email: greg.moore@metrovancouver.org

Greg Moore
Chair, Metro Vancouver Board
4330 Kingsway
Burnaby, BC V5H 4G8

Dear Chair Moore,

Re: *Metro Vancouver 2040: Shaping our Future* Amendment to Reflect Accepted Regional Context Statements – Bylaw No. 1246, 2017

At the Regular Council meeting of September 12, 2017, Port Moody Council considered your letter dated August 1, 2017 and the attached report, and passed the following resolution:

> *RC17/349*
> THAT Metro Vancouver be notified that the City of Port Moody has no objections to the proposed amendments in Bylaw No. 1246, 2017 as recommended in the report dated September 1, 2017 from Development Services Department – Planning Division regarding *Metro Vancouver 2040: Shaping our Future* – Amendment to Reflect Accepted Regional Context Statements – Bylaw No. 1246, 2017.

A copy of the report is enclosed for your reference.

Sincerely,

Tracey Takahashi
Deputy Corporate Officer

Cc: Chris Plagnol, Corporate Officer
Terry Hoff, Acting Division Manager of Growth Management
Heather McNell, Acting Director of Regional Planning and Electoral Area Services

Encl.: Report dated September 1, 2017 from Development Services Department – Planning Division re *Metro Vancouver 2040: Shaping Our Future* Amendment to Reflect Accepted Regional Context Statements – Bylaw No. 1246, 2017

From: Crowe,Terry <TCrowe@richmond.ca>
Sent: Tuesday, August 29, 2017 3:40 PM
To: Chris Plagnol
Cc: Hopkins,John; Atva,Tina; Terry Hoff; Heather McNell
Subject: Richmond Council Response: Invitation from the Metro Vancouver Board regarding the Proposed Regional Growth Strategy Type 3 Map Housekeeping Amendment Bylaw No. 1246, 2017

To Chris Plagnol,
Please be advised that the Richmond City Council as "no comment" regarding the proposed MV RGS Amendment Bylaw No. 1246, 2017, as it does not materially affect Richmond.
For clarification, please contact me at 778.228.2433
Terry Crowe, RPP, MCIP,
Manager, Policy Planning Department (PPD)
City of Richmond,
Richmond, BC V6Y 2C1
Office Tel: (604) 276-4139
Office Fax: (604) 276-4052
Office Cell: (788) 228-2433

TransLink
400 - 287 Nelson's Court
New Westminster, BC V3L 0E7
Canada
Tel 778-375-7500
www.translink.ca

South Coast British Columbia
Transportation Authority

Metro Vancouver File No: CR-12-01

September 6, 2017

Greg Moore
Chair, Metro Vancouver Board of Directors
Metro Vancouver
4330 Kingsway
Burnaby, BC V5H 4G8

Dear Chair Moore,

Re: *Metro Vancouver 2040: Shaping Our Future* Amendment to Reflect Accepted Regional Context Statements – Bylaw No. 1246, 2017

The following constitutes comments from the TransLink Board of Directors to the above-described notification from Metro Vancouver, dated August 1, 2017.

We appreciate the opportunity to provide input to the proposed amendment to Metro Vancouver's regional growth strategy, *Metro 2040: Shaping Our Future* (*Metro 2040*), which we understand to be required to provide formal approval for three updated Regional Context Statements (RCSs) previously accepted by the Metro Vancouver Board.

Pursuant to our legislative mandate to review Official Community Plans (OCPs) and OCP amendments, TransLink collaborates with municipalities and Metro Vancouver to provide comments on proposed RCS updates and to address implications for the regional transportation system.

TransLink has no objection to the proposed *Metro 2040* amendment to align *Metro 2040* with changes stemming from the three RCSs accepted in 2016 and 2017 for the Township of Langley, City of North Vancouver, and City of Surrey.

TransLink's *Regional Transportation Strategy* (RTS) highlights the importance of partnering with regional and local governments to advance the land use objectives identified in Metro Vancouver's regional growth strategy, including policies to locate jobs and housing in places that advance regional transportation goals. Based on the RTS, our commitment to supporting *Metro 2040*, and our *Transit-Oriented Communities Design Guidelines*, TransLink supports development which:

- Is located in designated Urban Centres, Frequent Transit Development Areas (FTDAs), and on the Frequent Transit Network (FTN);
- Creates compact and complete communities; and
- Facilitates most trips being possible by walking, cycling and transit.

If you have any questions regarding the above comments, please contact Sarah Ross, Director of System Planning, at 778-375-7636, or sarah.ross@translink.ca.

Regards,

Lorraine Cunningham
Chair, TransLink Board of Directors

cc: Kevin Desmond, Chief Executive Officer, TransLink
Geoff Cross, Vice President Transportation Planning and Policy, TransLink