

**METRO VANCOUVER REGIONAL DISTRICT (MVRD)  
BOARD OF DIRECTORS****BOARD MEETING****Friday, November 24, 2023****9:00 am****28<sup>th</sup> Floor Boardroom, 4515 Central Boulevard, Burnaby, British Columbia****Webstream available at <https://metrovancouver.org>**[Membership and Votes](#)**A G E N D A<sup>1</sup>****ELECTION****1. Election of Board Chair***Designated Speaker: Dorothy Shermer, Corporate Officer***2. Election of Board Vice Chair***Designated Speaker: Board Chair***3. Election of Alternate Board Chair and/or Alternate Board Vice Chair***Designated Speaker: Board Chair**Note: In the event the elected Board Chair or Vice Chair is not a member of the Greater Vancouver Water District and/or the Greater Vancouver Sewerage and Drainage District, an Alternate Board Chair or Alternate Board Vice Chair must be separately elected for that District.*

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**A. ADOPTION OF THE AGENDA****1. November 24, 2023 Meeting Agenda**

That the MVRD Board adopt the agenda for its meeting scheduled for November 24, 2023 as circulated.

**B. ADOPTION OF THE MINUTES****1. October 27, 2023 Meeting Minutes**

That the MVRD Board adopt the minutes for its meeting held October 27, 2023 as circulated.

*pg. 7*

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<sup>1</sup> Note: Recommendation is shown under each item, where applicable. All Directors vote unless otherwise noted.

**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. REGIONAL PARKS COMMITTEE REPORTS**

**1.1 Kanaka Creek Regional Park – Contribution Agreement for Operation of the Kanaka Creek Bell-Irving Hatchery 2024 – 2026** *pg. 19*

That the MVRD Board approve the Contribution Agreement between the Metro Vancouver Regional District and the Kanaka Education and Environmental Partnership Society toward the operation of the Kanaka Creek Bell-Irving Hatchery for a three-year term in the amount of \$21,525 in Year 1, \$25,000 in Year 2, and \$28,000 in Year 3, commencing January 1, 2024 and ending on December 31, 2026.

**2. CLIMATE ACTION COMMITTEE REPORTS**

**2.1 Air Quality Advisories during the Summer of 2023** *pg. 38*

That the MVRD Board receive for information the report dated October 12, 2023, titled “Air Quality Advisories during the Summer of 2023”.

**3. REGIONAL PLANNING COMMITTEE REPORTS**

**3.1 Metro 2050 Implementation Guideline – Regional Growth Strategy Amendments** *pg. 44*

That the MVRD Board endorse the *Metro 2050* Implementation Guideline – Regional Growth Strategy Amendments as presented in the report dated October 15, 2023, titled “Metro 2050 Implementation Guideline – Regional Growth Strategy Amendments”.

**3.2 Request for Sanitary Service Connection at 14500 Silver Valley Road, Maple Ridge** *pg. 64*

That the MVRD Board:

- a) resolve that sewer service for the property at 14500 Silver Valley Road, City of Maple Ridge is generally consistent with the provisions of *Metro 2050*; and
- b) forward the requested Fraser Sewerage Area amendment application for the property at 14500 Silver Valley Road in the City of Maple Ridge to the GVS&DD Board for consideration.

**3.3 Support for The National Housing Accord: A Multi-Sector Approach to Ending Canada’s Rental Housing Crisis** *pg. 80*

That the MVRD Board endorse the National Housing Accord, a national campaign and policy proposal with recommendations to restore housing affordability, and to build at least two million new affordable and market rental units by 2030.

**3.4 Regional Context Statement from the University of British Columbia** *pg. 85*  
That MVRD Board receive for information the report dated October 5, 2023, titled “Regional Context Statement from the University of British Columbia”.

**3.5 Costs of Providing Infrastructure and Services to Different Residential Densities Study** *pg. 129*  
That the MVRD Board receive for information the report dated October 16, 2023, titled “Costs of Providing Infrastructure and Services to Different Residential Densities Study”.

#### **4. FINANCE COMMITTEE REPORTS**

**4.1 Greater Vancouver Regional Fund – Options for Program Renewal** *pg. 248*  
That the MVRD Board direct staff to prepare a new *Greater Vancouver Regional Fund Policy* and work with UBCM staff to revise the *Administrative Agreement on the Federal Gas Tax Fund in British Columbia* for the years 2024 to 2034 based on:

- a) Member jurisdictions continuing to pool 95 percent of the federal Canada Community-Building Fund distributions in support of regional transportation projects (via TransLink) with the remaining five percent allocated to community projects (via member jurisdictions);
- b) The allocation of any future one-time or permanent increases in Canada Community-Building Fund distributions, beyond the indexed annual rate, being considered on a case-by-case basis by the MVRD Board upon confirmation of the additional funding;
- c) The project eligibility criteria being updated to specify that only zero-emission transportation projects are to be funded through the renewed program, with any exceptions subject to MVRD Board approval; and
- d) The funding allocation and criteria set out in the GVRF Policy being reviewed by the MVRD Board after five years of implementation, or sooner if additional permanent sources of funding have the potential to influence the need for the base allocation.

**4.2 Fraser Basin Council: Renewed Three-year agreement with Metro Vancouver** *pg. 258*  
That the MVRD Board direct staff to develop a contribution agreement with the Fraser Basin Council for an annual amount of \$150,000 for the three-year term from January 1, 2024 to December 31, 2026.

**4.3 Award of an Enterprise Agreement to Microsoft Canada under Government of British Columbia Master Business and Services Agreement** *pg. 283*

That the MVRD Board:

- a) approve award of Microsoft Enterprise Agreement ("Enterprise Agreement") in the amount of up to \$10.8 million (exclusive of taxes) to Microsoft Canada ("Microsoft") and its reseller Partner Softchoice LP for a term of five years, subject to final review by the Chief Administrative Officer; and
- b) authorize the Chief Administrative Officer and the Corporate Officer to execute the required documentation once the Commissioner is satisfied that the award should proceed.

**5. MAYORS COMMITTEE REPORTS**

**5.1 Policing our Ports** *pg. 286*

That the MVRD Board send a letter to the Prime Minister of Canada, Premier of British Columbia, and appropriate federal and provincial ministers requesting a response to the following concerns outlined in the report dated September 12, 2023 titled "Policing Our Ports" by Peter German & Associates:

- the absence of dedicated, uniformed, community-oriented port police services;
- the reduced federal capacity to effectively conduct drug and other controversial investigations, and to respond to seizures conducted by the Canada Border Services Agency;
- the flow of contraband, including illicit drugs, in and out of Canada through its ports; and
- the urgent need for concerted and strategic action to fortify our ports, protect our communities, and preserve the integrity of our nation's security.

**F. ITEMS REMOVED FROM THE CONSENT AGENDA**

**G. REPORTS NOT INCLUDED IN CONSENT AGENDA**

**1. REGIONAL PARKS COMMITTEE REPORTS**

**1.1 MVRD Regional Parks Regulation Amendment Bylaw No. 1372, 2023 – Amends Bylaw No. 1177, 2012** *pg. 362*

That the MVRD Board:

- a) give first, second and third reading to *Metro Vancouver Regional District Regional Parks Regulation Amendment Bylaw No. 1372, 2023*; and
- b) adopt *Metro Vancouver Regional District Regional Parks Regulation Amendment Bylaw No. 1372, 2023*.

## 2. CLIMATE ACTION COMMITTEE REPORTS

### 2.1 MVRD Air Quality Management Fees Regulation Amendment pg. 377 Bylaw No. 1373, 2023

That the MVRD Board:

- a) give first, second, and third reading to *Metro Vancouver Regional District Air Quality Management Fees Regulation Amendment Bylaw No. 1373, 2023*; and
- b) pass and finally adopt *Metro Vancouver Regional District Air Quality Management Fees Regulation Amendment Bylaw No. 1373, 2023*.

## 3. FINANCE COMMITTEE REPORTS

### 3.1 MVRD Temporary Borrowing Bylaw No. 1374, 2023 pg. 382

That the MVRD Board:

- a) authorize to temporarily borrow on behalf of Greater Vancouver Water District (“GVWD”) an amount, or amounts in aggregate, not exceeding \$1.833 billion dollars, the amount authorized by the *Greater Vancouver Water District Borrowing Bylaw No. 261, 2023*, the maximum borrowing authorized; and
- b) give first, second and third readings to *Metro Vancouver Regional District Temporary Borrowing Bylaw Number 1374, 2023*.

## H. MOTIONS FOR WHICH NOTICE HAS BEEN GIVEN

## I. OTHER BUSINESS

### 1. MVRD Board Committee Information Items and Delegation Summaries pg. 387

## 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 meeting scheduled for November 24, 2023 pursuant to section 226 (1) (a) of the *Local Government Act* and the *Community Charter* provisions as follows:

- 90 (1) A part of a council 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;
  - (e) the acquisition, disposition or expropriation of land or improvements, if the council considers that disclosure could reasonably be expected to harm the interests of the municipality;
  - (g) litigation or potential litigation affecting the municipality;

- (h) an administrative tribunal hearing or potential administrative tribunal hearing affecting the municipality, other than a hearing to be conducted by the council or a delegate of council; and
- (i) the receipt of advice that is subject to solicitor-client privilege, including communications necessary for that purpose.

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

**M. ADJOURNMENT/CONCLUSION**

That the MVRD Board adjourn/conclude its meeting of November 24, 2023.

**METRO VANCOUVER REGIONAL DISTRICT  
BOARD OF DIRECTORS**

Minutes of the Regular Meeting of the Metro Vancouver Regional District (MVRD) Board of Directors held at 9:01 am on Friday, October 27, 2023, in the 28<sup>th</sup> Floor Boardroom, 4515 Central Boulevard, Burnaby, British Columbia.

**MEMBERS PRESENT:**

Delta, Chair, Director George V. Harvie	Richmond, Director Chak Au*
Anmore, Vice Chair, Director John McEwen	Surrey, Director Harry Bains*
Belcarra, Director Jamie Ross*	Surrey, Director Mike Bose*
Bowen Island, Director Andrew Leonard* (arrived at 9:08 am)	Surrey, Director Gordon Hepner* (arrived at 9:32 am)
Burnaby, Director Pietro Calendino*	Surrey, Director Pardeep Kooner* (arrived at 9:05 am)
Burnaby, Director Sav Dhaliwal*	Surrey, Director Brenda Locke* (departed at 11:58 am)
Burnaby, Director Mike Hurley*	Surrey, Director Rob Stutt* (arrived at 9:10 am)
Coquitlam, Director Craig Hodge*	scəwáθən məsteyəx <sup>w</sup> (Tsawwassen First Nation), Director Laura Cassidy*
Coquitlam, Director Teri Towner*	Vancouver, Director Rebecca Bligh* (arrived at 9:23 am)
Delta, Director Dylan Kruger*	Vancouver, Director Adriane Carr*
Electoral Area A, Director Jen McCutcheon*	Vancouver, Director Lisa Dominato*
Langley City, Director Paul Albrecht*	Vancouver, Director Sarah Kirby-Yung*
Langley Township, Director Eric Woodward*	Vancouver, Director Mike Klassen* (arrived at 9:06, departed at 11:58 am)
Langley Township, Director Steve Ferguson*	Vancouver, Alternate Director Peter Meiszner* for Ken Sim
Lions Bay, Director Ken Berry*	Vancouver, Director Lenny Zhou* (arrived at 9:15 am)
Maple Ridge, Director Dan Ruimy* (arrived at 9:08 am)	West Vancouver, Alternate Director Sharon Thompson* for Mark Sager
New Westminster, Director Patrick Johnstone*	White Rock, Director Megan Knight*
North Vancouver City, Director Linda Buchanan*	
North Vancouver District, Director Lisa Muri*	
Pitt Meadows, Director Nicole MacDonald* (departed at 11:58 am)	
Port Coquitlam, Director Brad West* (arrived at 9:02 am)	
Port Moody, Director Meghan Lahti*	
Richmond, Director Malcolm Brodie*	
Richmond, Director Bill McNulty*	

**MEMBERS ABSENT:**

None

**STAFF PRESENT:**

Jerry W. Dobrovolny, Chief Administrative Officer  
Dorothy Shermer, Corporate Officer  
Nikki Tilley, Legislative Services Supervisor, Board and Information Services

\* denotes electronic meeting participation as authorized by the *Procedure Bylaw*

**A. ADOPTION OF THE AGENDA**

**1. October 27, 2023 Meeting Agenda**

**It was MOVED and SECONDED**

That the MVRD Board amend the revised agenda for its meeting scheduled for October 27, 2023 by adding the following delegation:

- C1 – Roderick Louis.

**CARRIED**

**It was MOVED and SECONDED**

That the MVRD Board adopt the revised agenda for its meeting scheduled for October 27, 2023 as amended.

**CARRIED**

**B. ADOPTION OF THE MINUTES**

**1. September 29, 2023 Meeting Minutes**

**It was MOVED and SECONDED**

That the MVRD Board adopt the minutes for its meeting held September 29, 2023 as circulated.

**CARRIED**

**2. September 29, 2023 Special Meeting Minutes**

**It was MOVED and SECONDED**

That the MVRD Board adopt the special minutes for its meeting held September 29, 2023 as circulated.

**CARRIED**

**3. October 20, 2023 Special Joint Meeting Minutes**

**It was MOVED and SECONDED**

That the MVRD Board adopt the minutes for the special joint meeting held October 20, 2023 as circulated.

**CARRIED**

Directors West, Kooner, and Klassen entered the meeting at this point.



**C. DELEGATIONS**

**1. Roderick Louis**

Roderick Louis requested that the Development Cost Charge Bylaw be referred back to staff for amendments to account for population growth and to provide for additional uses of the funds, and that the Board and member municipalities submit joint formal written reports twice annually to the provincial and federal governments.

Directors Leonard, Ruimy, and Stutt entered the meeting at this point.

Mr. Louis also requested that the proposed budget and five year financial plan be referred back to staff for amendments to include the delineation of debt levels and debt service costs.

**D. INVITED PRESENTATIONS**

No items presented.

**E. CONSENT AGENDA**

**It was MOVED and SECONDED**

That the MVRD Board adopt the recommendations presented in the following items as presented in the October 27, 2023 MVRD Board Consent Agenda:

- 1.1 Request for Sanitary Service Connection at 1565 – 200 Street and 19925 – 12 Avenue, Township of Langley
- 2.1 Waste-to-Energy Facility District Energy System Stage Gate
- 3.1 Strategic Industries Analytics Project: Discovering Opportunities in the Metro Vancouver Region’s Export Industries Report
- 3.2 Regional Economic Development Strategy
- 3.3 Investment Attraction Update – Third Quarter 2023
- 4.1 Regional Park at Cape Roger Curtis – Project Update and Phase II Engagement Summary
- 4.2 Regional Parks Pilot Project to Permit Alcohol Consumption in 2024 – Update
- 5.1 Metro Vancouver External Agency Activities Status Report - October 2023

The items and recommendations referred to above are as follows:

**1.1 Request for Sanitary Service Connection at 1565 – 200 Street and 19925 – 12 Avenue, Township of Langley**

Report dated September 13, 2023, from Victor Cheung, Senior Policy and Planning Analyst, Regional Planning and Housing Services, seeking MVRD Board concurrence that sewer service for the properties located at 1565 – 200 Street and 19925 – 12 Avenue is generally consistent with *Metro 2050*.

*Recommendation:*

That the MVRD Board:

- a) resolve that sewer service for the properties at 1565 – 200 Street and 19925 – 12 Avenue, Township of Langley is generally consistent with the provisions of Metro 2050; and
- b) forward the requested Fraser Sewerage Area amendment application for properties at 1565 – 200 Street and 19925 – 12 Avenue in the Township of Langley to the GVS&DD Board for consideration.

*Adopted on Consent*

**2.1 Waste-to-Energy Facility District Energy System Stage Gate**

Report dated October 4, 2023, from Marcel Pitre, Division Manager, Policy and Facility Development Solid Waste Services, seeking GVS&DD Board approval to advance the Waste-to-Energy Facility District Energy System in two phases, Phase 1: Energy Centre and River District Hot Water Pipe System (Stage Gate 2), and preliminary design of Phase 2: Burnaby Metrotown and Edmonds Hot Water Pipe System (Stage Gate 1).

*Recommendation:*

That the MVRD Board approve advancing the Waste-to-Energy Facility District Energy System in two phases as follows:

- a) Phase 1: Energy Centre and River District Hot Water Pipe System advancing to detailed design (Stage Gate 2); and
- b) Phase 2: Burnaby Metrotown and Edmonds Hot Water Pipe System advancing to preliminary design (Stage Gate 1).

*Adopted on Consent*

**3.1 Strategic Industries Analytics Project: Discovering Opportunities in the Metro Vancouver Region’s Export Industries Report**

Report dated September 18, 2023, from Lejla Uzicanin, Vice President, Data, Research and Policy, Invest Vancouver, and Gregory Freeman, Senior Economist, Data, Research and Policy, Invest Vancouver, to provide the MVRD Board with an overview of the findings of the Strategic Industries Analytics Project.

*Recommendation:*

That the MVRD Board receive for information the report dated September 18, 2023 titled “Strategic Industries Analytics Project: Discovering Opportunities in the Metro Vancouver Region’s Export Industries report”.

*Adopted on Consent*

### **3.2 Regional Economic Development Strategy**

Report dated September 29, 2023, from Jacquie Griffiths, President, Invest Vancouver, and Bryan Buggey, Executive Vice President, Invest Vancouver, to provide the MVRD Board with information of key deliverables for 2024, a Regional Economic Development Strategy (REDS), that will guide and support the efforts of Invest Vancouver, member jurisdictions, and the broader community in the economic development arena for a 5-year time frame from 2025 to 2030.

*Recommendation:*

That the MVRD Board receive for information the report dated September 29, 2023 titled "Regional Economic Development Strategy".

*Adopted on Consent*

### **3.3 Investment Attraction Update – Third Quarter 2023**

Report dated October 2, 2023, from Bryan Buggey, Executive Vice President, Invest Vancouver, to provide the MVRD Board with an update on investment attraction activities for the third quarter of 2023.

*Recommendation:*

That the MVRD Board receive for information the report dated October 2, 2023, titled "Investment Attraction Update – Third Quarter".

*Adopted on Consent*

### **4.1 Regional Park at Cape Roger Curtis – Project Update and Phase II Engagement Summary**

Report dated September 21, 2023, from Amanda McCuaig, Director of Communications, External Relations and Jeffrey Fitzpatrick, Division Manager, Design and Development, Regional Parks, which provides an update to the Metro Vancouver Board on the park planning, the rezoning and OCP amendment processes, and the phase 2 engagement results as per the Public Engagement Policy, for the proposed regional park at Cape Roger Curtis on Bowen Island.

*Recommendation:*

That the MVRD Board receive for information the report dated September 21, 2023 titled "Regional Park at Cape Roger Curtis - Project Update and Phase 2 Engagement Summary".

*Adopted on Consent*

#### **4.2 Regional Parks Pilot Project to Permit Alcohol Consumption in 2024 – Update**

Report dated August 16, 2023, from David Leavers, Division Manager, Visitor and Operations Services, Regional Parks, to update the MVRD Board regarding plans to develop a pilot project to permit seasonal alcohol consumption in regional parks, and to provide an opportunity for input regarding specific regional parks to be included in a 2024 pilot project.

*Recommendation:*

That the MVRD Board receive for information the report dated September 8, 2023 titled “Regional Parks Pilot Project to Permit Alcohol Consumption in 2024 – Update.”

*Adopted on Consent*

#### **5.1 Metro Vancouver External Agency Activities Status Report - October 2023**

Report dated October 16, 2023, from Janis Knaupp, Program Manager, Board and Information Services, which provides an update on the recent activities of external agencies to which the MVRD Board has appointed representatives for 2023.

*Recommendation:*

That the MVRD Board receive for information the following submissions from Metro Vancouver representatives to external organizations:

- a) Agricultural Advisory Committee;
- b) Delta Heritage Airpark Management Committee;
- c) Fraser Basin Council Lower Mainland Flood Management Strategy Leadership Committee;
- d) Fraser Basin Council Society;
- e) Fraser Valley Regional Library Board;
- f) Howe Sound Biosphere Region Ocean Watch Action Committee;
- g) Katzie Treaty Negotiation Table;
- h) Lower Mainland Local Government Association;
- i) Municipal Finance Authority;
- j) National Zero Waste Council;
- k) Regional Parks Foundation;
- l) Sasamat Volunteer Fire Department Board of Trustees;
- m) Solid Waste and Recycling Industry Advisory Committee;
- n) Solid Waste Management Plan Public/Technical Advisory Committee;
- o) UBCM Indigenous Relations Committee;
- p) Union of BC Municipalities;
- q) Western Transportation Advisory Council (WESTAC); and
- r) Zero Emissions Innovation Centre;

as provided in the report dated October 16, 2023, titled “Metro Vancouver External Agency Activities Status Report – October 2023”.

*Adopted on Consent*

**F. ITEMS REMOVED FROM THE CONSENT AGENDA**

No items presented.

**G. REPORTS NOT INCLUDED IN CONSENT AGENDA**

Directors Zhou, Bligh, and Hepner entered the meeting at this point.

**1.1 Development Cost Charge Engagement Update and Proposed Rate Bylaws**

Report dated October 5, 2023, from Sonu Kailley, Acting Director, Financial Planning, Financial Services, seeking MVRD Board approval on proposed MVRD Development Cost Charge (DCC) rates; and recommending that the MVRD Board give three readings to the *Greater Vancouver Water District Development Cost Charge Amendment Bylaw No. 260* and forward it to the Inspector of Municipalities for approval.

10:56 am Director Bligh departed the meeting.

**Main Motion**

**It was MOVED and SECONDED**

That the MVRD Board:

- a) approve the Development Cost Charge rates as proposed in:
  - Schedule A in the *Metro Vancouver Regional District Development Cost Charge Bylaw No. 1369, 2023*;as found in the memo dated October 24, 2023 titled "Development Cost Charge Engagement Update and Proposed Rate Bylaws On-Table Addition";
- d) give first, second and third reading to the *Metro Vancouver Regional District Development Cost Charge Bylaw No. 1369, 2023* as attached to the memo dated October 24, 2023 titled "Development Cost Charge Engagement Update and Proposed Rate Bylaws On-Table Addition"; and
- e) direct staff to forward to the Inspector of Municipalities for approval:
  - Metro Vancouver Regional District Development Cost Charge Bylaw No. 1369, 2023.

**Amendment to the Main Motion**

**It was MOVED and SECONDED**

That the foregoing motion be amended by adding the following:

- f) direct staff to conduct annual reviews of a) the DCC bylaws, including economic impact analysis, and b) the DCC waiver program with the aim of supporting rental housing and incentivizing affordable housing, and report results to the Board, who after review would forward the updates to the Provincial and Federal Ministers of Housing.

**CARRIED**

**It was MOVED and SECONDED**

That item G1.1 be postponed to a special MVRD Board meeting to be held before the regular meeting of November 24, 2023.

**DEFEATED**

**Recorded Vote**

A member requested that a recorded vote on the Main Motion as amended be conducted.

Name	Number of Votes	
	For	Against
Paul Albrecht	2	
Chak Au		3
Harry Bains		5
Ken Berry		1
Mike Bose		4
Malcolm Brodie		4
Linda Buchanan	3	
Pietro Calendino		4
Adriane Carr	4	
Laura Cassidy	1	
Sav Dhaliwal		4
Lisa Dominato	5	
Steve Ferguson		3
George Harvie		3
Gordon Hepner		5
Craig Hodge	4	
Mike Hurley		5
Patrick Johnstone	4	
Sarah Kirby-Yung	5	
Mike Klassen	5	
Megan Knight	2	
Pardeep Kooner		5
Dylan Kruger		3
Meghan Lahti	2	
Andrew Leonard	1	
Brenda Locke		5
Nicole MacDonald		1
Jen McCutcheon	1	
John McEwen		1
Bill McNulty		4
Lisa Muri		5
Jamie Ross		1
Dan Ruimy	5	

Alt. Dir. Sharon Thompson		3
Alt. Dir. Peter Meiszner	5	
Rob Stutt		5
Teri Towner	4	
Brad West		4
Eric Woodward		4
Lenny Zhou	5	
<b>Total Votes</b>	<b>58</b>	<b>82</b>

**DEFEATED**

**Main Motion**

**It was MOVED and SECONDED**

- a) approve the Development Cost Charge rates as proposed in:
  - Schedule A in the *Metro Vancouver Regional District Development Cost Charge Bylaw No. 1369, 2023*;
 as found in the report dated October 5, 2023 titled “Development Cost Charge Engagement Update and Proposed Rate Bylaws”;
- d) give first, second and third reading to the *Metro Vancouver Regional District Development Cost Charge Bylaw No. 1369, 2023*; and
- e) direct staff to forward to the Inspector of Municipalities for approval: *Metro Vancouver Regional District Development Cost Charge Bylaw No. 1369, 2023*.

**Amendment to the Main Motion**

**It was MOVED and SECONDED**

That the foregoing motion be amended by adding the following:

- f) direct staff to conduct annual reviews of a) the DCC bylaws, including economic impact analysis, and b) the DCC waiver program with the aim of supporting rental housing and incentivizing affordable housing, and report results to the Board, who after review would forward the updates to the Provincial and Federal Ministers of Housing.

**CARRIED**

**Question on the Main Motion**

The question on was then called on the Main Motion as amended and the motion was

**CARRIED**

11:45 am Director Bligh re-entered the meeting.

**2.1 MVRD 2024 Budget and 2024 - 2028 Financial Plan and Five Year Bylaw 1371**

Report dated October 19, 2023 from Harji Varn, General Manager, Financial Services/Chief Financial Officer, presenting the MVRD Board with the proposed 2024 Annual Budget, seeking endorsement of the 2024 – 2028 Financial Plan, and the adoption of *Metro Vancouver Regional District 2024 to 2028 Financial Plan Bylaw No. 1371, 2023*.

**It was MOVED and SECONDED**

That the MVRD Board approve the 2024 Annual Budget and endorse the 2024 - 2028 Financial Plan as shown in Attachment 1 of the report dated October 19, 2023, titled “MVRD 2024 Budget and 2024 - 2028 Financial Plan and Five Year Bylaw 1371”, in the following schedules:

- Revenue and Expenditure Summary
- Air Quality and Climate Action
- E911 Emergency Telephone Service
- Electoral Area Service
- General Government Administration
- General Government Zero Waste Collaboration Initiatives
- Housing Planning and Policy
- Invest Vancouver
- Regional Emergency Management
- Regional Employer Services
- Regional Global Positioning System
- Regional Parks
- Capital Portfolio - Regional Parks
- Regional Planning

**CARRIED**

**It was MOVED and SECONDED**

That the MVRD Board recess its meeting of September 29, 2023.

**CARRIED**

The meeting was recessed at 11:49 am.

The meeting resumed at 11:58 am. Directors Klassen, Locke, and MacDonald departed the meeting.

**It was MOVED and SECONDED**

That the MVRD Board approve the 2024 Annual Budget and endorse the 2024 - 2028 Financial Plan as shown in Attachment 1 as presented for the Sasamat Fire Protection Service, and shown in the following schedules:

- Revenue and Expenditure Summary
- Sasamat Fire Protection Service

**CARRIED**

**It was MOVED and SECONDED**

That the MVRD Board approve the 2024 Reserve Applications as shown in Attachment 2 of the report dated October 19, 2023, titled “MVRD 2024 Budget and 2024 - 2028 Financial Plan and Five Year Bylaw 1359”.

**CARRIED**



**It was MOVED and SECONDED**

That the MVRD Board:

- a) give first, second and third reading to *Metro Vancouver Regional District 2024 to 2028 Financial Plan Bylaw No. 1371, 2023.*

**CARRIED**

**It was MOVED and SECONDED**

That the MVRD Board:

- a) pass and finally adopt *Metro Vancouver Regional District 2024 to 2028 Financial Plan Bylaw No. 1371, 2023.*

**CARRIED**

**H. MOTIONS FOR WHICH NOTICE HAS BEEN GIVEN**

No items presented.

**I. OTHER BUSINESS**

**1. MVRD Board Committee Information Items and Delegation Summaries**

**J. BUSINESS ARISING FROM DELEGATIONS**

No items presented.

**K. RESOLUTION TO CLOSE MEETING**

**It was MOVED and SECONDED**

That the MVRD Board close its meeting scheduled for October 27, 2023 pursuant to section 226 (1) (a) of the *Local Government Act* and the *Community Charter* provisions as follows:

- 90 (1) A part of a council 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 council considers that disclosure could reasonably be expected to harm the interests of the municipality;
  - (g) litigation or potential litigation affecting the municipality;
  - (i) the receipt of advice that is subject to solicitor-client privilege, including communications necessary for that purpose;
  - (k) negotiations and related discussions respecting the proposed provision of a municipal service that are at their preliminary stages and that, in the view of the council, could reasonably be expected to harm the interests of the municipality if they were held in public; and
- (2) A part of a council meeting must be closed to the public if the subject matter being considered relates to one or more of the following:

- (b) the consideration of information received and held in confidence relating to negotiations between the municipality and a provincial government or the federal government or both, or between a provincial government or the federal government or both and a third party.

**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 meeting of October 27, 2023.

**CARRIED**

(Time: 11:59 pm)

CERTIFIED CORRECT

\_\_\_\_\_  
Dorothy Shermer, Corporate Officer

\_\_\_\_\_  
George V. Harvie, Chair

63499811 FINAL

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To: Regional Parks Committee

From: Doug Petersen, Division Manager, East Area, Regional Parks

Date: October 25, 2023 Meeting Date: November 1, 2023

Subject: **Kanaka Creek Regional Park – Contribution Agreement for Operation of the Kanaka Creek Bell-Irving Hatchery 2024 - 2026**

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### **RECOMMENDATION**

That the MVRD Board approve the Contribution Agreement between the Metro Vancouver Regional District and the Kanaka Education and Environmental Partnership Society toward the operation of the Kanaka Creek Bell-Irving Hatchery for a three-year term in the amount of \$21,525 in Year 1, \$25,000 in Year 2, and \$28,000 in Year 3, commencing January 1, 2024 and ending on December 31, 2026.

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### **EXECUTIVE SUMMARY**

This Contribution Agreement proposes a three-year funding amount of \$21,525 in Year 1, \$25,000 in 2025, and \$28,000 in Year 3 for the Kanaka Education and Environmental Partnership Society. The proposed funding supports the Society's operations at Kanaka Creek Bell-Irving Hatchery, with respect to fish production, conservation, education and community involvement activities.

Metro Vancouver Regional District has included cost of living increases. Therefore, this Contribution Agreement includes a cost of living increase of 2.5% for 2024, plus additional increases in 2025 and 2026. The funding amount in the previous contribution agreement (2021-2023) was \$21,000 per year.

Metro Vancouver's contribution is combined with an annual contribution of \$25,000 from the Canadian Federal Department of Fisheries and Oceans to fund a Hatchery Manager and related fish production and administration costs.

### **PURPOSE**

To seek MVRD Board approval to enter into a three-year Contribution Agreement with the Kanaka Education and Environmental Partnership Society toward the operation of the Kanaka Creek Bell- Irving Hatchery.

### **BACKGROUND**

The Kanaka Creek Bell-Irving Hatchery has operated for over 36 years in Kanaka Creek Regional Park through collaboration involving Metro Vancouver, the Department of Fisheries and Oceans, the Kanaka Education and Environmental Partnership Society, and earlier community groups. A new hatchery building, opened in 2013, is a core element of the fully completed Kanaka Creek Watershed Stewardship Centre, opened in April 2017.

The Kanaka Creek Bell-Irving Hatchery program aligns with Metro Vancouver’s Board Strategic Plan 2022-2026, by providing opportunities for the community to engage in stewardship activities in regional parks. It also supports the Action 12.8 of the Regional Parks Plan (2022) to:

*Seek partnerships in program delivery, community engagement and provision of special programs where others have expertise.*

The MVRD Board also approved a three-year Contribution Agreement for Kanaka Education and Environmental Partnership Society capacity building in July 2021, for an annual amount of \$15,000 for the years 2022-2024, towards its broader Park Association activities in community engagement, education and stewardship in Kanaka Creek Regional Park.

### **HATCHERY CONTRIBUTION AGREEMENT**

This Contribution Agreement (Attachment) is solely for the operation of the hatchery. The Operating Plan (Schedule A) sets out the specific expectations for fish production, facility upkeep and operations, public education and outreach, and hatchery administration. The Operating Plan will be reviewed annually during the term with any changes approved by Metro Vancouver staff.

Metro Vancouver’s contribution of \$21,525 in Year 1, \$25,000 in Year 2, and \$28,000 in Year 3 is combined with an annual contribution of \$25,000 from the Department of Fisheries and Oceans to fund a Hatchery Manager and related fish production and administration costs.

In addition to fulfilling fish production and conservation functions, the Kanaka Education and Environmental Partnership Society has developed a robust educational program and community stewardship base. Community volunteers and fundraising augment the program.

### **Term**

The term of the proposed agreement commences on January 1, 2024, and ends on December 31, 2026.

### **ALTERNATIVES**

1. That the MVRD Board approve the Contribution Agreement between the Metro Vancouver Regional District and the Kanaka Education and Environmental Partnership Society toward the operation of the Kanaka Creek Bell-Irving Hatchery for a three-year term in the amount of \$21,525 in Year 1, \$25,000 in Year 2, and \$28,000 in Year 3, commencing January 1, 2024 and ending on December 31, 2026.
2. That the Regional Parks Committee receive for information the report dated November 9, 2023, titled “Kanaka Creek Regional Park - Contribution Agreement for Operation of the Kanaka Creek Bell-Irving Hatchery 2024-2026” and provide staff with alternative direction.

### **FINANCIAL IMPLICATIONS**

Funding in the amount of \$21,525 in Year 1, \$25,000 in Year 2, and \$28,000 in Year 3 toward operation of the Kanaka Creek Bell-Irving Hatchery by the Kanaka Education and Environmental Partnership Society is included for consideration in the recently adopted 2024 annual operating budget for Regional Parks.

### **CONCLUSION**

Alternative 1 seeks MVRD Board approval for Metro Vancouver’s contribution of \$21,525 in Year 1, \$25,000 in Year 2, and \$28,000 in Year 3 to the Kanaka Education and Environmental Partnership Society towards operation of the Kanaka Creek Bell-Irving Hatchery. Fish production, conservation, education and community involvement activities will continue to benefit Kanaka Creek Regional Park and the region.

### **ATTACHMENT**

1. Contribution Agreement for Operation of the Kanaka Creek Bell-Irving Hatchery 2024-2026

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CONTRIBUTION AGREEMENT

THIS AGREEMENT is dated for reference \_\_\_\_\_, 2023

BETWEEN: METRO VANCOUVER REGIONAL DISTRICT, 4515 Central Boulevard, Burnaby, BC, V5H 0C6 (“**MVRD**”)

AND: KANAKA EDUCATION AND ENVIRONMENTAL PARTNERSHIP SOCIETY, 11450 – 256<sup>TH</sup> Street, Maple Ridge, BC, V2W 1H1 (the “**Recipient**”)

WHEREAS:

- A. The Recipient is a non-profit society. One of the purposes of the Recipient is to promote appreciation, understanding, protection and the enjoyment of the Kanaka Creek Regional Park and the natural and historical features of the Kanaka Watershed;
- B. Bell-Irving Hatchery (the “**Hatchery**”) is located at the Kanaka Creek Regional Park and has been developed, maintained and operated with a view to enable stewardship groups and volunteers, and Indigenous people to undertake small, community based projects that restore critical salmon habitat, enhance salmon to support local fisheries, education and volunteerism, educate the public on the importance of salmon conservation and promote a culture of salmon stewardship (the “**Project**”);
- C. Section 263(1)(c) of the *Local Government Act* provides that MVRD may provide assistance for the purpose of benefitting the community or any aspect of the community; and
- D. The Recipient has requested to receive, and MVRD has agreed to provide funding to the Recipient for the purposes of the Project.

NOW THEREFORE, in consideration of the premises, terms and conditions to be hereinafter contained (the receipt and sufficiency of which are hereby acknowledged), the parties hereto covenant and agree each with the other as follows.

## 1.0 INTERPRETATION

In this Agreement the following terms have the following meanings:

**"Agreement"** means this agreement and the appended schedules.

**"Operating Plan"** means the activities to carry out the Project funded under this Agreement and its related outputs as set out in Schedule 'A' of the Agreement, including but not limited to fish production, facility upkeep and operations, public education and outreach, and Hatchery administration.

## 2.0 TERM

The term of this Agreement will commence on January 1, 2024 and end on December 31, 2026 (the **"Term"**) unless otherwise terminated as provided herein.

## 3.0 OPERATING PLAN

3.1 The Recipient will only use the Funds (as defined in section 4.1) in relation to the Operating Plan and in accordance with the terms and conditions of this Agreement.

3.2 The Recipient will implement the Operating Plan under the terms of this Agreement subject to any applicable bylaws of MVRD and applicable legislation and regulations and in a manner consistent with any applicable guidelines provided by MVRD.

3.3 The Operating Plan will not be amended during the Term without the prior written approval of MVRD.

3.4 If the Recipient makes changes to the Operating Plan or operates in a manner contrary to the Operating Plan without the prior written approval of MVRD pursuant to section 3.3, MVRD may, at its sole discretion, immediately terminate the Agreement in accordance with section 10.

3.5 The Recipient represents and warrants that, as of the date of this Agreement, and throughout the Term:

(a) it has, and will have, all the power and authority to enter into this Agreement and perform its obligations under this Agreement; and

(b) it is, and will be, a duly organized society, validly existing, and in good standing under the laws of British Columbia.

3.6 The Recipient will ensure that its directors, employees, agents, licensees and volunteers maintain collaborative, professional, and productive relationship with MVRD, and promptly follow direction and guidance of MVRD in connection with the Project.

#### **4.0 FUNDING AND PAYMENT**

**4.1** During the Term, MVRD will provide to the Recipient annual payment in the amount set out in section 4.3, all inclusive of taxes and disbursements (the “**Funds**”), to support the Recipient's implementation of the Operating Plan in support of the Project.

**4.2** The payment of Funds is conditional on MVRD being satisfied that the Recipient carries out the Operating Plan in accordance with all requirements under the Agreement and otherwise complies with this Agreement.

**4.3** MVRD will deliver the Funds to the Recipient by cheque, or electronic fund transfer, annually, as follows:

(a) On or before January 31, 2024: \$21,194.00;

(b) On or before January 31, 2025: \$25,000.00; and

(c) On or before January 31, 2026: \$28,000.00.

#### **5.0 REPORTING**

The Recipient will report to MVRD in accordance with the requirements set out in the Operating Plan.

#### **6.0 TAXES**

The Recipient will be fully responsible for reporting and remitting all taxes (including GST and PST) payable in connection with the Funds, the Operating Agreement, and this Agreement. Without limiting the foregoing, it is the Recipient's responsibility to determine whether or not it has to be registered for GST and/or PST purposes. The amount of funding provided in this Agreement includes any GST and/or PST which may be payable by MVRD. Any liability for GST and/or PST required in respect of this Agreement will be the responsibility of the Recipient.



## **7.0 SEPARATE FUNDS AND FINANCIAL STATEMENTS**

The Recipient will keep its books of account in accordance with Generally Accepted Accounting Practices, and will retain the books of account of a minimum of six years after the completion of the Term.

## **8.0 RIGHT OF AUDIT**

At any time, MVRD may provide written notice to the Recipient that it wishes its representative to examine the books of account of the Recipient, and the Recipient will produce for examination to such representative within ten days after receipt of such notice, its books of account, and the said representative will have a right of access to all records, documents, books, accounts and vouchers of the Recipient and will be entitled to require from the directors and officers of the Recipient such information and explanations as, in his/her opinion, may be necessary to enable MVRD's staff to report to MVRD's Board of Directors on the financial position of the Recipient.

## **9.0 INDEMNITY AND RELEASE**

**9.1** The Recipient will indemnify and save harmless MVRD from and against all actions, causes of action, claims, liabilities, damages, losses, costs, legal fees, fees, fines, charges or expenses which MVRD may incur, be threatened by or be required to pay by reason of or arising out of the Recipient's activities related to this Agreement, the Recipient's use of any facility in relation to the Operating Plan, the breach by the Recipient of any term of this Agreement, or by the Recipient's contravention of any law, enactment or regulation of a federal, provincial or local government.

**9.2** The Recipient releases MVRD, its elected officials, appointed officers, employees and agents from and waives any claim, right, remedy, action, cause of action, loss, damage, expense, fee or liability which the Recipient may have against any or all of them in respect of an act of MVRD in relation to this Agreement except insofar as such claim, right, remedy, action, cause of action, loss, damage, expense, fee or liability arises from the negligence of MVRD, its elected officials and appointed officers, employees, agents or contractors.

**9.3** This section will survive the expiry or sooner termination of this Agreement.

## **10.0 TERMINATION**

**10.1** Without prejudice to MVRD's rights and remedies, at law or in equity, MVRD may terminate this Agreement immediately at any time by written notice to the Recipient, if:

- (a) the Recipient breaches any of the terms of this Agreement and does not remedy the breach within 10 days after MVRD delivers to the Recipient a written notice requiring the remedy;

- (b) the Recipient becomes insolvent or bankrupt or subject to bankruptcy or insolvency proceedings, or ceases to operate;
- (c) in the opinion of MVRD, the Recipient changes its bylaws, constitution, mission, or purpose in the manner that is not compatible with the Project, or is contrary to the public interest; or
- (d) in the opinion of MVRD, the Recipient uses the Funds, or conducts its administration, or operation, in the manner contrary to the Operating Plan, this Agreement, or the public interest.

**10.2** MVRD may terminate this Agreement, at convenience, without reasons, upon giving 90 days written notice to the Recipient.

**10.3** The Recipient may terminate this Agreement upon giving 30 days written notice to MVRD if the Recipient, for any reason, is unable to meet its obligations with respect to the Operating Plan or comply with this Agreement.

**10.4** In the event of termination of this Agreement:

- (a) the Recipient will immediately return to MVRD any portion of the Funds that has been paid but has not been spent, and provide a full accounting of the portions of the Funds not returned;
- (b) to the extent unpaid, no further Funds will be paid by MVRD to the Recipient; and
- (c) this Agreement will be at an end, and, except as expressly stated in this Agreement, neither party will have any further obligations to the other party.

**11.0 NOTICE**

**11.1** It is hereby mutually agreed that any notice required to be given under this Agreement will be deemed to be sufficiently given:

- (a) if delivered at the time of delivery; or
- (b) if mailed from any government post in the Province of British Columbia by prepaid registered mail addressed as follows:

**To MVRD:**

Mike Redpath, Director, Regional Parks  
Metro Vancouver Regional District  
4515 Central Boulevard  
Burnaby, BC V5H 0C6

**To the Recipient:**

Simon Matthews, Chair  
Kanaka Education & Environmental Partnership Society  
c/o Bell-Irving Hatchery  
11450 - 256<sup>th</sup> Street  
Maple Ridge, BC V2W 1H1

**11.2** Unless otherwise specified herein, any notice required to be given under this Agreement by any party will be deemed to have been given if mailed by prepaid registered mail, or delivered to the address of the other party set forth above or at such other address as the other party may from time to time direct in writing, and any such notice will be deemed to have been received if mailed, seventy-two (72) hours after the time of mailing and if delivered, upon the date of delivery. If normal mail service is interrupted by strike, slow down, force majeure or other cause, then a notice sent by the impaired means of communication will not be deemed to be received until actually received, and the party sending the notice must utilize any other such services which have not been so interrupted or must deliver such notice in order to ensure prompt receipt thereof.

**12.0 AUTHORIZATION**

The execution and delivery of this Agreement and the completion of the transactions contemplated by this Agreement, if any, have been duly and validly authorized by all necessary corporate action of the Recipient, and this Agreement constitutes a legal, valid and binding obligation of the Recipient enforceable against the Recipient in accordance with its terms and the persons signing this Agreement on the Recipient's behalf are duly authorized to do so.

**13.0 TIME**

Time is of the essence in this Agreement.

**14.0 BINDING**

In consideration of being granted the Funds, the Recipient agrees to be bound by the terms and conditions of this Agreement, and if the Recipient represents a group or organization, the Recipient agrees to inform all responsible persons associated with the group or organization of the terms and conditions of this Agreement.

**15.0 ASSIGNMENT**

The Recipient will not assign this Agreement in whole or in part without the prior written consent of MVRD.

**16.0 ENUREMENT**

This Agreement will enure to the benefit of and be binding upon the parties hereto and their respective heirs, administrators, executors, successors and permitted assignees.

## **17.0 RELATIONSHIP OF PARTIES**

No provision of this Agreement will be construed to create a partnering agreement (within the meaning of the *Community Charter*), a partnership or joint venture relationship, an employer-employee relationship, a landlord-tenant relationship, or a principal-agent relationship.

## **18.0 WAIVER**

The waiver by a party of any failure on the part of the other party to perform in accordance with any of the terms or conditions of this Agreement is not to be construed as a waiver of any future or continuing failure, whether similar or dissimilar.

## **19.0 AMENDMENTS**

This Agreement may not be modified or amended except by the written agreement of the parties.

## **20.0 WHOLE AGREEMENT**

The whole agreement between the parties in connection with the Funds is set forth in this document and no representations, warranties or conditions, express or implied, have been made other than those expressed.

## **21.0 LANGUAGE**

Wherever the singular, masculine and neutral are used throughout this Agreement, the same is to be construed as meaning the plural or the feminine or the body corporate or politic as the context so requires.

## **22.0 CUMULATIVE REMEDIES**

No remedy under this Agreement is to be deemed exclusive but will, where possible, be cumulative with all other remedies at law or in equity.

## **23.0 GOVERNING LAW AND JURISDICTION**

This Agreement is to be construed in accordance with and governed by the laws applicable in the Province of British Columbia and the parties attorn to the exclusive jurisdiction of the courts of British Columbia.

## **24.0 COUNTERPARTS**

This Agreement may be executed in counterparts with the same effect as if both parties had signed the same document. Each counterpart will be deemed to be an

original. All counterparts will be construed together and will constitute one and the same Agreement.

**IN WITNESS WHEREOF** the parties hereto have executed this Agreement as of the day and year first above written.

**METRO VANCOUVER REGIONAL DISTRICT**

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Jerry W. Dobrowolny, P. Eng., Chief Administrative Officer

**KANAKA EDUCATION AND ENVIRONMENTAL PARTNERSHIP SOCIETY**

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Simon Matthews, Chair

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Ken Williams, Vice-Chair

## SCHEDULE 'A'

### KANAKA CREEK WATERSHED STEWARDSHIP CENTRE KANAKA CREEK BELL-IRVING HATCHERY\_ OPERATING PLAN 2024-2026

The Kanaka Creek Bell-Irving Hatchery will be operated in 2024 through 2026 by Kanaka Education and Environmental Partnership Society (KEEPS), who in cooperation with Metro Vancouver Regional District (MV) and Department of Fisheries and Oceans Canada (DFO), will provide:

1. Fish Production - deliver eggs and fish according to set targets and standards;
2. Facility Upkeep and Operations - provide daily maintenance and repair of hatchery-related equipment;
3. Public Education and Outreach - provide and/ or facilitate public education, information and outreach; and,
4. Hatchery Administration - handle business needs of the hatchery and its related activities.

These outputs will comply with the expectations and standards below and be delivered between January 1, 2024 and December 31, 2026. KEEPS will retain a Hatchery Manager to fulfill these requirements.

#### 1. Fish Production

- KEEPS must comply with the Fisheries and Oceans Canada Salmonid Enhancement Program through the Production Planning process program and as regulated by the Aquaculture License Agreement;
- Strive to meet fish production targets set by Fisheries and Ocean Canada (DFO), and agreed to by the Hatchery Management Committee (HMC) in an approved Fish Production Plan;
- Provide treatment for fish and eggs to promote quality, health, growth and survival to the standards required by DFO;
- Keep up-to-date and available accurate records, in electronic form, of all fish production related activities. Such records should be complete, consistent, well organized, secure and available when requested, for easy review; and
- Ensure that all equipment and assets are maintained in the best operating condition and available for use at all times and the facilities are maintained in a clean, safe condition for the visiting public.

Under the general direction of DFO, KEEPS will manage the annual cycle of broodstock collection and contribute to stock assessment, in accordance to the Aquaculture License held by the DFO Community Advisor for Bell-Irving Hatchery (AQSEP # 121671). KEEPS will manage egg collection and incubation processes according to the DFO "Best Management Practices" (BMP) document including ponding, fin clipping, rearing, sampling and release. DFO will communicate a release plan and strategies to KEEPS and the HMC annually. KEEPS is required to report species, numbers, weight and locations to DFO as per the current DFO fish production plan and under reporting requirements for the Aquaculture License and BMP.

- Undertake incubation and egg maintenance including but not limited to:
  - o Operate and maintain incubators;
  - o Monitor and adjusting water flows;
  - o Cull dead eggs;
  - o Clean trays and troughs as required; and,

- o Ensure appropriate ponding strategies and feeding regimes are adhered to at all times.
- Undertake rearing activities including but not limited to:
  - o Transfer fry from incubation to troughs at the appropriate time;
  - o Feed fish as prescribed by DFO;
  - o Clean troughs and ponds;
  - o Fish weight sampling to adjust feeding rates as required;
  - o Transfer fingerlings to earthen ponds; and,
  - o Co-ordinate and supervise releases under DFO direction;
  - o Undertake and manage coho marking annually of coho smolt production numbers.
- Undertake broodstock collection activities including but not limited to:
  - o Install the 240<sup>th</sup> St. fish fence with the assistance of DFO and volunteers early enough in the season to catch adequate brood stock to meet the approved Fish Production Plan, within limits provided by DFO;
  - o Retrieve the 240<sup>th</sup> St. fish fence with the assistance of DFO and volunteers, at the earliest opportunity and as soon as brood stock collection targets have been met;
  - o Organize and coordinate volunteer broodstock anglers as necessary;
  - o Pickup fish caught by volunteer broodstock anglers;
  - o Secure appropriate vehicle(s) that might be rented, donated or provided in kind, to transport broodstock;
  - o Leave fish in the fish trap for public events and programs;
  - o Operate the fish fence using appropriate personal protective equipment while keeping emergency water rescue equipment at the ready, and review safety guidelines yearly with staff and volunteers;
  - o Ensure safety guidelines for the delivery of MV and KEEPS public education programming.
  - o Operate the fish fence, panels and trap to maximize broodstock collection opportunities and the keep the fence clear of debris; and,
  - o Conduct egg takes to maximize efficient use of paid labour, volunteers and associated resources.

## 2. Facility Upkeep and Operations

KEEPS upkeep and operations tasks for the Hatchery include:

- Inspect mechanical fittings, valves for leaks and proper functions as required;
- Maintain and store all equipment and tools in an appropriate fashion;
- Clean and maintain water intake screens at main intake, sumps, and the two earthen ponds on a regular basis according to an approved schedule;
- Maintain and complete minor repairs to Hatchery water systems such as pumps, valves, pipes, meters, monitors and alarms;
- Operate and maintain McFadden creek water intake to maximize positive results;
- Inform DFO, MV and KEEPS immediately of any major equipment failure or required repairs;
- Oversee the activities of the additional Hatchery volunteers as required;
- Inform MV, DFO and KEEPS about all fish related facility deficiencies, fish culture operations, major mortalities and need for assistance as required;
- Actively pursue Hatchery operations cost saving initiatives (energy consumption savings etc.);

Ensure that the Hatchery facility and washroom are kept in a clean, safe and presentable manner at all times for use by volunteers, KEEPS, DFO and MV staff. MV will provide the required paper, hand towels and cleaning products.

General:

- Arrange for on-call coverage during typical and forecast stormy weather and busy periods through April to June then October to December;
- Arrange for emergency low water alarm calls;
- Checks the eggs and fish on a schedule as laid out by DFO best management practices for salmon enhancement;
- Provide information to the public and assist with public events as agreed with MV; and
- Recruit additional volunteers and Hatchery operations assistance as required.

### **3. Public Education and Outreach**

KEEPS will provide staff, contractors or volunteers with the necessary training, education, aptitude and public service skills to interface with the public, students, and volunteers regarding salmonid life cycles, fish production, Kanaka Creek watershed issues and MV messaging in an effective, positive, safe and engaging fashion. KEEPS staff will hold a current and valid BC Driver's license, a valid first aid certificate and must submit to a criminal records check with respect to working alone with children and other vulnerable people. **Any other personnel working alone with children and other vulnerable people must also have a criminal records check.** MV will provide site and corporate orientation sessions to ensure that KEEPS staff, contractors, and volunteers have a basic working knowledge of MV's philosophy, operating objectives and policies, as necessary.

The Hatchery Manager is expected to:

- Attend Education Committee meetings
- Assist with or facilitate KEEPS and MV educational and interpretive program delivery;
- Work cooperatively with the KEEPS Program Coordinator to make the facilities available for programs when requested; as outlined in the Building Use Procedures guiding document;
- Support educational opportunities around various aspects of hatchery operations such as egg takes, egg picking, feeding and weighing/sampling as appropriate;
- Work with DFO/MV to make some aspects of the hatchery operation (incubation, rearing) visible to the public, where appropriate;
- Organize and or/ assist MV with special events and activities;
- Assist with fundraising initiatives and grant applications when required;
- Be available at the Hatchery facility or Fish Fence during KEEPS open houses, to show the facility (when appropriate) and answer questions from visitors;
- Assist with the active recruitment and training of volunteers to help support the KEEPS hatchery program; Participate in MV interpretive training programs educational meetings as required;
- Assist in the design, assembly and maintenance of displays;
- Assist in hiring and training of additional labour and/or volunteers;
- Assist in the production of educational material;
- Take every reasonable opportunity to maximize the education benefits provided by the Hatchery;



- Arrange for a responsible alternate replacement when on leave;
- Support the Kanaka Creek Watershed Stewardship Centre Interpretation Plan's goals, themes, and messages;
- Support hatchery access requests in accordance with the Building Use Procedures guiding document.

#### 4. Hatchery Administration

The Hatchery Manager or KEEPS supervisor is expected to:

- On behalf of KEEPS, respond to written and electronic correspondence regarding issues concerning the Hatchery;
- Transfer requests beyond the scope of the Hatchery operation onto DFO, KEEPS, or MV resources as applicable.
- Keep daily records:
  - o Collect and record data in electronic form;
  - o Perform regular electronic data back up;
  - o Maintain an accurate accounting of all fish and/or eggs on-site;
  - o Complete enumerations of eggs/fish at egg takes, egg shocking, ponding, fish transfer and release, and after any abnormal or significant mortality of fish or eggs, in accordance with DFO's Best Management Practices document;
  - o Maintain equipment service records and manuals for all equipment on-site; and,
  - o Maintain a daily journal/diary to track routine, and unusual activities, time worked for all paid hatchery operations, labour, and volunteers; and a subject journal for regular review by MV and DFO staff.
- Keep additional records:
  - o Numbers of visitors to the Hatchery (dates, number); numbers of tours given or programs (including program and or school names);
  - o Fish fence operating details including dates of operation, fish collected and released;
  - o Produce and submit detailed semi - annual reports to DFO and MV at completion of egg takes for the year (Dec 31) and after the release of all outplanted juveniles (May 31);
  - o Write and submit reports pertaining to the Hatchery operation as requested; and,
  - o Summary of fish fence operations.
- Meetings:
  - o Attend day or evening meetings related to Hatchery operation and management as required by KEEPS, MV and or DFO.
  - o Maintain guidelines, procedures and safety plans/protocols to be review with the Hatchery Management Committee yearly;
  - o Provide an annual month-by-month maintenance schedule for hatchery operations and the fish fence.

#### 5. General Agreements

The Hatchery Management Committee (HMC) comprised of representatives from KEEPS, MV and DFO will set targets and procedures and review and amend this plan as needed. The parties will seek consensus on all related business matters. KEEPS should contact DFO's

Community Advisor directly for fish production matters and MV's designated East Area Supervisor, Park Operations for major changes to infrastructure and all other activities.

Attachment 1 outlines Hatchery Management Committee Terms of Reference (TOR).

Kanaka Creek Bell-Irving Hatchery will be operated by KEEPS following the approved budget outlined in Attachment 2. No additional operating funds will be provided by MV or DFO.

KEEPS will keep accurate up-to-date records of all expenditures and follow proper accounting and bookkeeping practices and provide a year-end financial report.

KEEPS will ensure that adequate and appropriate WorkSafe BC coverage and compliance.

DFO, MV and KEEPS will review fish production targets and will develop public education and outreach objectives, and finalize plans by March 31 and September 15 respectively, each year.

KEEPS will maintain commercial general liability insurance in the amount of not less than **\$5,000,000.00** per occurrence, affording coverage for public liability and/or death and/or damage to property. Such insurance will cover all the activities and function of KEEPS, its officers and volunteers, including KEEPS operation of a hatchery and its related activities and functions at Kanaka Creek Regional Park in Maple Ridge, BC. Metro Vancouver Regional District will be stated as an additional insured on such liability insurance obtained by KEEPS.

KEEPS will obtain property insurance for its own assets that are kept at Kanaka Creek Regional Park in Maple Ridge, BC. The property insurance will contain a waiver of subrogation by KEEPS' insurer(s) against Metro Vancouver Regional District, its administrators, directors, official, officers, employees, servants, agents and related entities.

For any vehicles owned or leased by KEEPS, KEEPS will obtain third party liability insurance in the amount of not less than **\$5,000,000.00** per occurrence.

KEEPS will provide currently valid certificates of insurance to Metro Vancouver Regional District annually.

KEEPS agrees to implement this Operating Plan for the Bell-Irving Hatchery while working collaboratively to benefit the Kanaka Creek Watershed, Kanaka Creek Regional Park and the salmonid resources of the lower Mainland.

### **Hatchery Management Committee (HMC) Terms of Reference**

The operation of the Bell-Irving Hatchery is a shared responsibility between Department of Fisheries and Oceans Canada (DFO), Kanaka Education and Environmental Partnership Society (KEEPS) and Metro Vancouver (MV), three partners who contribute both funding and in-kind support toward the operation of the facility. The Hatchery will be managed under the general direction and guidance of the Hatchery Management Committee (HMC). KEEPS is responsible for the day-to-day operation of the Hatchery as set out in the Operating Plan.

#### Committee Membership

The HMC will consist of:

- A KEEPS Board liaison and an alternate;
- A minimum of two MV staff members;
- The DFO Community Advisor;

#### Decision-Making

- The HMC will communicate in a respectful, open and transparent manner;
- Each partner determines independently the resources (both funding and in-kind) that they can contribute each year and cannot guarantee future funding levels based on past contributions;
- Once fish production numbers, budget and programming targets are accepted by the HMC, any changes will be reviewed by HMC

#### Frequency of Meetings

- MV will arrange at least two HMC meetings per year. The spring meeting will review fish production numbers for the fall broodstock season; provide an update on spring releases and to discuss budget requests for the following year. The fall meeting will discuss the result of budget requests and confirm budget for the following year, and be used to discuss on broodstock capture, programming and other issues;
- Additional meetings may be scheduled at the request of any one partner.
- HMC will review fish production numbers, labour and equipment needs and determine the resources necessary to operate the Fish Hatchery on an annual basis;
- HMC partners will discuss available contributions (funding and in-kind) and determine any short-falls that may require additional resources from other sources in order to operate the facility;
- KEEPS will keep MV informed of any staff changes
- Review and set the budget and services for the Operating Plan.

**2024-2026 BELL-IRVING OPERATING BUDGET**

**Wages and Benefits paid by KEEPS from MV/DFO grant**

<b>Expense</b>	<b>Cost, Year 1</b>	<b>Cost, Year 2</b>	<b>Cost, Year 3</b>
Hatchery Manager	\$36,525	\$40,869	\$40,869
Employer EI and CPP	2,655	2,655	2,655
WCB insurance	718	718	718
Administration	3,144	3,144	3,144
Equipment rental	2,852	2,852	5,852
Mileage	300	300	300
<b>TOTAL CONTRIBUTION FUNDING</b>	<b>\$46,194</b>	<b>\$50,538</b>	<b>\$53,538</b>
<b>MV contribution</b>	<b>\$21,194</b>	<b>\$25,000</b>	<b>\$28,000</b>
<b>DFO contribution</b>	<b>\$25,000</b>	<b>\$25,000</b>	<b>\$25,000</b>

**Wages and Benefits paid by KEEPS**

<b>Expense</b>	<b>Cost, Year 1</b>	<b>Cost, Year 2</b>	<b>Cost, Year 3</b>
Hatchery Manager	\$6,000	\$6,000	\$6,000
Vacation pay	3,401	3,765	4,049
<b>TOTAL</b>	<b>\$9,401</b>	<b>\$9,765</b>	<b>\$10,049</b>

**Additional fixed operating costs are fully paid by MV. Current costs are:**

<b>Expense</b>	<b>Cost/year</b>
Electricity	\$6,500
Natural gas	1,500
Water (CMR)	1,000
Alarm/wifi	672
Purchased repairs & maintenance	1,500
Fish fence installation	1,000
<b>Subtotal MV</b>	<b>\$12,172</b>

**Additional DFO funding paid directly to KEEPS**

<b>Expenses</b>	<b>Cost/year</b>
Storm drain marking, fish food and "Salmonids in the classroom"	\$3,000
<b>Subtotal DFO</b>	<b>\$3,000</b>

**TOTAL ANNUAL HATCHERY COSTS**

	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>
<b>Total MV</b>	\$33,366	\$37,172	\$40,172
<b>Total DFO</b>	\$28,000	\$28,000	\$28,000
<b>Total KEEPS</b>	\$9,402	\$9,765	\$10,049
<b>HATCHERY TOTAL</b>	\$70,767	\$74,937	\$78,221

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To: Climate Action Committee

From: Geoff Doerksen, Air Quality Planner  
Ken Reid, Superintendent, Environmental Sampling and Monitoring  
Air Quality and Climate Action Services

Date: October 12, 2023 Meeting Date: November 2, 2023

Subject: **Air Quality Advisories during the Summer of 2023**

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### **RECOMMENDATION**

That the MVRD Board receive for information the report dated October 12, 2023, titled “Air Quality Advisories during the Summer of 2023”.

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### **EXECUTIVE SUMMARY**

British Columbia experienced a record-breaking wildfire season in 2023 with more than twice the area burned compared with the previous record in 2018. This resulted in widespread wildfire smoke impacts. Metro Vancouver issues air quality advisories for the Lower Fraser Valley airshed, including Metro Vancouver and the Fraser Valley Regional District, to help protect public health during periods of degraded air quality.

Metro Vancouver issued five air quality advisories during the summer of 2023, resulting in advisories being in effect for a total of ten days. A ground-level ozone advisory was issued on May 15, the earliest ozone advisory in any year since the air quality advisory program began in 1993. Elevated levels of ozone occurred during an early heatwave with above seasonal temperatures. On June 7, a single-day ozone and fine particulate matter (PM<sub>2.5</sub>) advisory was issued due to hot, sunny weather and wildfire smoke. A one-day ozone advisory was issued on July 6 due to emissions sources in the region during hot, sunny weather, as well as wildfire smoke, which is known to enhance ozone formation. Metro Vancouver issued a three-day advisory starting on August 19 and a four-day advisory starting on August 25, both due to smoke from wildfires burning throughout BC and Washington State. An ozone advisory lasting two days was added on August 27 due to a combination of emission sources in the region and hot, sunny weather.

Wildfire smoke advisories in seven of the last nine summers, and elevated ground-level ozone due to extreme heat waves, emphasize how climate change is presenting new challenges for air quality.

### **PURPOSE**

To provide the Climate Action Committee with information about air quality advisories issued by Metro Vancouver during the summer of 2023, historical trends, and implications for future air quality.

### **BACKGROUND**

The Climate Action Committee 2023 Work Plan includes a priority to provide a report on the 2023 air quality advisory season.

## METRO VANCOUVER ADVISORY PROGRAM IN 2023

Metro Vancouver operates the advisory program for the entire Lower Fraser Valley airshed, including Metro Vancouver and the Fraser Valley Regional District (FVRD). The advisory program is operated through Metro Vancouver's delegated authority to manage air quality in the Metro Vancouver region and through a shared service agreement for the FVRD. BC Ministry of Environment and Climate Change Strategy (BC ENV) provides an air quality advisory program for the remainder of the province.

Metro Vancouver issues air quality advisories to the public when air quality is degraded or expected to degrade relative to Metro Vancouver's ambient air quality objectives, which are benchmarks for acceptable air quality. The advisory program is delivered in collaboration with Environment and Climate Change Canada, BC ENV, Fraser Valley Regional District, Vancouver Coastal Health, Fraser Health Authority, First Nations Health Authority, and the BC Centre for Disease Control (BC CDC).

Metro Vancouver operates a comprehensive network of air quality monitoring stations. Data is available in real time on Metro Vancouver's website at [airmap.ca](http://airmap.ca) (Reference 1) and informs the air quality advisory service. The contaminants of primary concern for Metro Vancouver's air quality advisory service are:

- **Ground-level ozone (O<sub>3</sub>):** produced when nitrogen oxides (NO<sub>x</sub>) emitted when fuels are burned and volatile organic compounds (VOC) emitted from solvents, plants, and other sources react in sunlight on hot summer days.
- **Fine particulate matter (PM<sub>2.5</sub>):** particles that are less than 2.5 microns in diameter, allowing them to penetrate deep into the lungs and into the bloodstream. These particles can be emitted directly (primarily from fuel combustion and wildfires) or formed indirectly, such as when nitrogen oxides or sulphur oxides react with ammonia.

These contaminants have the greatest potential to reach levels in the region that may be harmful to human health. Metro Vancouver has established ambient air quality objectives for these contaminants, which indicate acceptable levels for different periods of exposure, such as one-hour, eight-hour, 24-hour, and annual.

## ENHANCEMENTS TO AIR QUALITY ADVISORY PROGRAM IN 2023

In preparation for air quality advisories in 2023, Metro Vancouver worked closely with health authorities and the BC CDC to update advisory messaging and public outreach materials with actions people can take to reduce their exposure to degraded air quality (e.g., taking shelter in public air-conditioned buildings, or reducing intensity of outdoor exercise). Translation options for air quality advisories were added to Metro Vancouver's website. The format of the air quality advisory was revised to include clearer identification of the locations for which advisories are "in effect".

Metro Vancouver enhanced its public communication of air quality conditions before and during air quality advisories as needed through Metro Vancouver's website. Advisory notices and air quality status updates were also e-mailed to residents that had subscribed online.

## **SUMMER 2023 ADVISORIES**

Five air quality advisories were issued during the summer of 2023, for a combined total of ten days. A summary of outreach statistics is provided in Attachment 1 (Table 1) including total number of media interviews conducted, advisory email subscribers, social media posts, and advisory emails sent.

Metro Vancouver has a performance indicator that aims for zero advisory days due to emission sources located within the airshed. In the last decade there have been between 0 and 8 days with such advisories each year. Analysis of this performance indicator is conducted at the end of the year, to provide a complete accounting, and is not yet available for 2023. The pervasiveness of smoke from climate-induced wildfires is making the analysis of this performance indicator increasingly complex.

### **Ground-Level Ozone, May 15, 2023**

The first air quality advisory of 2023 was a single day advisory issued on May 15, the earliest ozone advisory in any year since the air quality advisory program began in 1993. The advisory was initiated for ground-level ozone in northeast Metro Vancouver and the Fraser Valley during unseasonably hot temperatures that reached 35°C in parts of the region. While the frequency and severity of ozone advisories has been reduced in the last two decades with management actions (e.g., *Regional Ground-Level Ozone Strategy*, which is being updated), a combination of emissions, wind patterns, high temperatures, and sunny, hot weather caused elevated ozone concentrations. During the advisory, wildfire smoke from the Davis Lake fire (near Mission, BC) contributed to hazy conditions in the northeast part of the region, however fine particulate matter concentrations remained well below advisory levels.

### **Ground-Level Ozone and Fine Particulate Matter, June 7, 2023**

A single day ground-level ozone and PM<sub>2.5</sub> advisory was issued on June 7. Wildfires burning near Harrison Lake contributed to degraded air quality and hazy conditions. Hot and sunny weather in combination with local emissions and wildfire smoke resulted in elevated levels of ground-level ozone. The advisory was in effect for eastern parts of Metro Vancouver and the Fraser Valley.

### **Ground-Level Ozone, July 6, 2023**

A single day advisory was issued on July 6 due to high concentrations of ground-level ozone. Hot and sunny weather combined with enhancement by wildfire smoke contributed to elevated ground-level ozone concentrations. The advisory was in effect for eastern parts of Metro Vancouver and the Fraser Valley.

### **Wildfire Smoke Advisory, August 19-22, 2023**

On August 19, a three-day PM<sub>2.5</sub> advisory was issued for the entire region due to elevated levels of PM<sub>2.5</sub> from the many wildfires burning throughout BC. The Fraser Valley experienced the highest PM<sub>2.5</sub> concentrations. The advisory was continued the following day with most monitoring stations measuring levels in exceedance of Metro Vancouver's 24-hour PM<sub>2.5</sub> objective. On August 21, the region-wide advisory was continued with the exception of the Metro Vancouver–Southwest region, where much lower PM<sub>2.5</sub> concentrations were measured. The advisory was cancelled on August 22 due to a change in weather.



### **Wildfire Smoke and Ground-Level Ozone Advisory, August 25-29, 2023**

On August 25, a four-day PM<sub>2.5</sub> advisory was issued for the entire region due to wildfire smoke from fires burning throughout BC and Washington. Exceedances of Metro Vancouver's 24-hour PM<sub>2.5</sub> objective were widespread with the highest concentrations measured on August 27 in the Fraser Valley. On August 27, an ozone advisory was added for eastern parts of Metro Vancouver and the Fraser Valley due to hot, sunny weather and enhancement by wildfire smoke. The advisories for ozone and PM<sub>2.5</sub> were cancelled on August 29 due to a change in weather.

### **IMPLICATIONS FOR FUTURE AIR QUALITY**

A record-breaking wildfire season was experienced in 2023 with numerous fires threatening communities across the Province, with twice the area burned than in the previous record year (2018). A trend has emerged with an increasing number of fires and area burned annually. For context, more area has burned in BC in the last 7 years (2017-2023) than in the 58 years preceding (1959-2016). Recently published research shows that current climate trends will lead to more, larger, and longer-burning fires in BC in the coming decades. A summary of one such study, titled "Abrupt, climate-induced increase in wildfires in British Columbia since the mid-2000s", can be found in the November 2023 Climate Action Committee Agenda Package under item 5.4, titled "Manager's Report".

The attachment to this report provides information on historical trends related to air quality advisories, including contributing factors to advisory events. Occurrences of wildfire smoke impacting Metro Vancouver has seen an upward trend in recent years. Seven of the last nine summers have experienced widespread wildfire smoke throughout the region for many days. With a changing climate, we expect longer, hotter, drier summers, more extended drought periods, and drier forest conditions. More heat waves and wildfires due to our changing climate mean that we expect more frequent and severe wildfire smoke and elevated levels of ground-level ozone. Advisory trends demonstrate that Metro Vancouver's air quality programs must continue to respond to a changing climate and new challenges that are being presented.

Metro Vancouver's *Climate 2050* strategy has identified the need for adaptation to climate-related impacts on regional air quality. As *Climate 2050* actions are developed, co-benefits will be emphasized. The Board-adopted *Clean Air Plan* outlines strategies for continuous improvement in regional air quality, including actions for updating the *Regional Ground-Level Ozone Strategy* and better protections against wildfire smoke such as "clean air" shelters in public buildings, resources to help residents and businesses manage indoor air quality, and providing high quality information to the public during air quality advisories.

### **ALTERNATIVES**

This is an information report. No alternatives are presented.

### **FINANCIAL IMPLICATIONS**

Staff time for the air quality advisory program is included in annual operating budgets, including overtime for evening and weekend work during the summer period. Increased resource levels may be needed as wildfire activity continues to increase in the future and have been considered in long term financial planning.

## **CONCLUSION**

Public notification of degraded air quality is delivered by Metro Vancouver's air quality advisory program. There is considerable public and media interest in air quality during the summer, especially when advisories are in place. In preparation for advisory season this summer, several improvements to the advisory program were made including working closely with health authorities, and improved public communications through enhancements to the advisory notice and social media posts. Five air quality advisories were issued in 2023. High levels of ground-level ozone were due to a combination of emissions in the region and wildfire smoke, along with hot and sunny weather, while PM<sub>2.5</sub> was elevated due to wildfire smoke from fires burning in BC. Wildfire smoke advisories in seven of the last nine years emphasize how climate change is presenting new challenges for air quality management and the need for adaptation to climate-related impacts on regional air quality.

## **ATTACHMENT**

1. Air Quality Advisory Outreach Statistics and Trends

## **REFERENCE**

1. [Metro Vancouver's airmap.ca website](https://www.metrovancouver.org/services/air-quality/airmap-ca-website)

59378699

### Air Quality Advisory Outreach Statistics and Trends

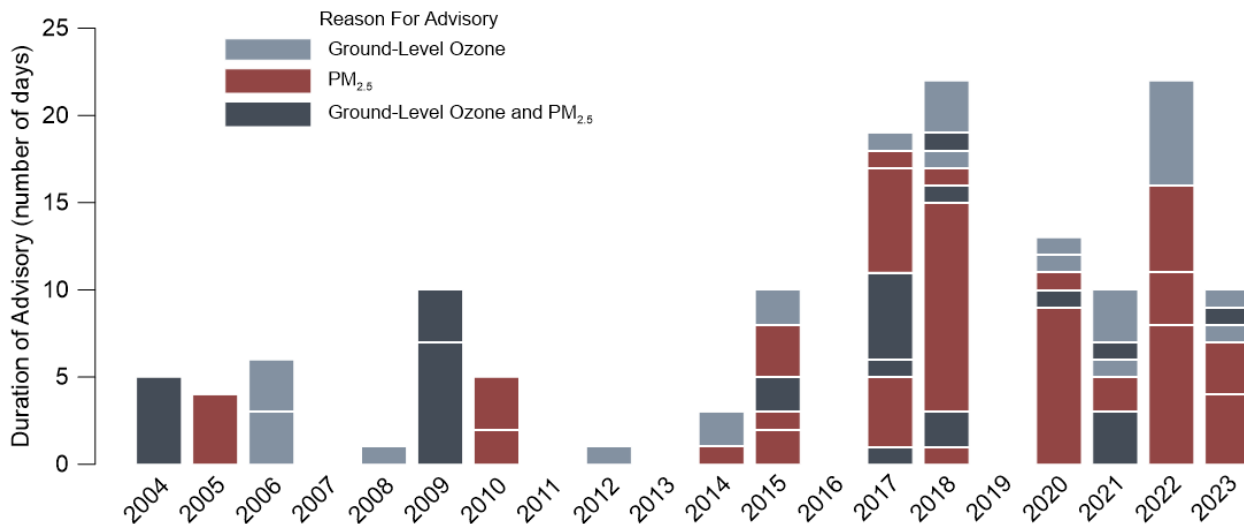
Metro Vancouver maintains a subscription list of media outlets, key stakeholders, and members of the public who have subscribed to receive information about air quality advisories. Shown in Table 1 is the number of advisory subscribers, air quality advisory emails sent, media interviews conducted, and social media posts issued to support the air quality advisory program.

Air quality status updates	43
Air quality status update subscribers	865
Air quality status update emails sent	37,195
Media advisory subscribers	309
Public advisory subscribers	4,646
Advisory media releases issued	15
Advisory emails sent	74,325
Media interviews conducted by advisory team	15
Social media posts	51

Table 1: Air quality advisory outreach statistics for 2023.

### Air Quality Advisory Trends

In the last twenty years, the number of days on which air quality advisories were in place has ranged from zero to twenty-two days annually. Shown in Figure 1 is the historical trend of the number of days the Lower Fraser Valley was under an advisory. The legend indicates the reason for the advisory being issued.



Note: Trigger levels for advisories have changed over the years; care must be taken when interpreting advisory trends.

Figure 1: Number of days of air quality advisories in the Lower Fraser Valley.

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To: Regional Planning Committee

From: Jessica Jiang, Regional Planner, Regional Planning and Housing Services

Date: October 15, 2023 Meeting Date: November 3, 2023

Subject: **Metro 2050 Implementation Guideline – Regional Growth Strategy Amendments**

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### RECOMMENDATION

That the MVRD Board endorse the *Metro 2050* Implementation Guideline – Regional Growth Strategy Amendments as presented in the report dated October 15, 2023, titled “Metro 2050 Implementation Guideline – Regional Growth Strategy Amendments”.

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### EXECUTIVE SUMMARY

Metro Vancouver staff are in the process of developing and updating a suite of implementation guidelines to support the interpretation and implementation of *Metro 2050*. The update to the Regional Growth Strategy Amendments Implementation Guideline is now ready for Board consideration.

The main changes in the updated *Metro 2050* Implementation Guideline – Regional Growth Strategy Amendments include:

- new information on submission requirements, engagement timelines, and relationship with Regional Context Statements;
- new examples of council resolutions and submission cover letter;
- a new regional growth strategy amendment process diagram; and
- formatting for better readability.

### PURPOSE

To provide the Regional Planning Committee and the MVRD Board with the opportunity to consider and endorse the *Metro 2050* Implementation Guideline – Regional Growth Strategy Amendments.

### BACKGROUND

Implementation Guidelines were first introduced as companion documents to support the previous Regional Growth Strategy, *Metro 2040*, adopted in 2011. This included *Metro 2040* Implementation Guideline #2: Amendments to the Regional Growth Strategy (Reference 1), which has been updated following the adoption of *Metro 2050* and is being presented for endorsement as part of this report.

### SUMMARY OF UPDATES TO THE IMPLEMENTATION GUIDELINE

The *Metro 2050* Implementation Guideline – Regional Growth Strategy Amendments (Attachment 1) outlines the amendment request procedure, including the three types of regional growth strategy amendments, along with their submission and review process. The Implementation Guideline will be updated periodically to ensure the most current information is available to member jurisdictions.

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The main changes between the updated *Metro 2050* Implementation Guideline and its *Metro 2040* predecessor include:

- new information on submission requirements, engagement timelines, and relationship with Regional Context Statements;
- new examples of council resolutions and submission cover letter;
- a new regional growth strategy amendment process diagram; and
- formatting for better readability.

The updated Implementation Guideline is intended to be a resource that member jurisdictions can refer to when considering *Metro 2050* amendments.

The Implementation Guideline includes the following key sections:

- **Regional Growth Strategy Amendment Types:** This section outlines the three types of amendments to *Metro 2050* and the corresponding minimum voting threshold for each to be approved.
- **Regional Growth Strategy Amendment Common Examples:** This section describes the scenarios under which a *Metro 2050* amendment may be considered.
- **Regional Growth Strategy Amendment Submission:** This section outlines how a member jurisdiction can request an amendment and the materials required for submitting an amendment request.
- **Regional Growth Strategy Amendment Process:** This section demonstrates a typical amendment submission and review process and outlines the initiating member jurisdiction's expected participation in presentations to Committees and the MVRD Board.

### **REGIONAL PLANNING ADVISORY COMMITTEE FEEDBACK**

An information report for the *Metro 2050* Implementation Guideline – Regional Growth Strategy Amendments was brought forward to the October 13, 2023 Regional Planning Advisory Committee (RPAC) meeting to seek RPAC members' feedback. To date, no comments or concerns have been identified by RPAC members for this implementation guideline.

### **ALTERNATIVES**

1. That the MVRD Board endorse the *Metro 2050* Implementation Guideline – Regional Growth Strategy Amendments as presented in the report dated October 15, 2023, titled "*Metro 2050* Implementation Guideline – Regional Growth Strategy Amendments".
2. That the Regional Planning Committee receive for information the report dated October 15, 2023, titled "*Metro 2050* Implementation Guideline – Regional Growth Strategy Amendments" and provide alternative direction to staff.

### **FINANCIAL IMPLICATIONS**

There are no financial implications associated with this report as all work to develop implementation guidelines are within the Regional Planning work program.

## **CONCLUSION**

The *Metro 2050* Implementation Guideline – Regional Growth Strategy Amendments was updated to support the interpretation and implementation of *Metro 2050* goals, strategies and actions. Staff recommend Alternative 1, that the MVRD Board endorse the updated *Metro 2050* Implementation Guideline – Regional Growth Strategy Amendments.

## **ATTACHMENTS**

1. *Metro 2050* Implementation Guideline – Regional Growth Strategy Amendments.
2. Presentation re: Metro 2050 Implementation Guideline – Regional Growth Strategy Amendments.

## **REFERENCES**

1. [\*Metro 2040 Implementation Guideline #2: Amendments to the Regional Growth Strategy\*](#)

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# **Metro 2050**

## IMPLEMENTATION GUIDELINE Regional Growth Strategy Amendments

October 2023

## Preamble

The successful implementation of [Metro 2050](#), the regional growth strategy, depends on ongoing cooperation and collaboration between Metro Vancouver and affected local governments. *Metro 2050* represents consensus among member jurisdictions to work collaboratively on meeting five long-term regional planning goals:

1. Create a compact urban area
2. Support a sustainable economy
3. Protect the environment, address climate change, and respond to natural hazards
4. Provide diverse and affordable housing choices
5. Support sustainable transportation choices

*Metro 2050* is the regional federation’s collective vision for how growth will be managed to support the creation of complete, connected, and resilient communities, while protecting important lands and supporting the efficient provision of urban infrastructure.

Member jurisdictions can request that the Metro Vancouver Regional District Board consider an amendment to *Metro 2050*. This *Metro 2050* Implementation Guideline provides guidance to member jurisdictions on regional growth strategy amendments. Specifically, this Guideline outlines the three types of *Metro 2050* amendments, along with their submission and review processes.

The Implementation Guideline will be updated periodically to ensure the most current information is available to member jurisdictions. This guideline should be read in conjunction with *Metro 2050* and the [Local Government Act](#), and does not replace or supersede the requirements set out in those documents.

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# 1.0 REGIONAL GROWTH STRATEGY AMENDMENT TYPES

## AMENDMENT TYPES

*Metro 2050*, the regional growth strategy, represents the collaborative vision of the regional federation, and is accepted by all affected local governments. *Metro 2050* may be amended from time to time to maintain consistency between local and regional land use designations, plans, and targets. *Metro 2050* has been designed so that the more regionally significant an issue, the higher the degree of regional federation involvement in decision-making. This is reflected in the three types of *Metro 2050* amendments and the votes required to pass each respective amendment type. For the purposes of this Implementation Guideline, the terms “Regional Growth Strategy Amendment” and “*Metro 2050*” amendment share the same meaning and are used interchangeably.

### Type 1 Amendments to the Regional Growth Strategy

Type 1 Amendments require an amendment bylaw to be passed by an affirmative **50% + 1 weighted vote** of the MVRD Board and **acceptance by all affected local governments**. The following types of amendments are classified as Type 1:

- a) The addition or deletion of a regional growth strategy goal or strategy;
- b) An amendment to the process for making minor amendments to the regional growth strategy for Type 2 and 3 amendments; and
- c) The matters specified in [section 437\(4\)](#) of the *Local Government Act*.

### Type 2 Amendments to the Regional Growth Strategy

Type 2 Amendments require an amendment bylaw to be passed by an **affirmative two-thirds weighted vote** of the MVRD Board. Enhanced public engagement is also expected for Type 2 amendments, with additional details provided in section 4.0 of this Implementation Guideline. The following types of amendments are classified as Type 2:

- a) Amendment to the Urban Containment Boundary;
- b) Amendment of Agricultural or Conservation and Recreation regional land use designations, except for the Type 3 amendments listed at [section 6.3.4\(e\), \(f\), and \(g\)](#) of *Metro 2050* (also see Type 3 amendments below);
- c) Amendment from a Rural to Industrial, Employment, or General Urban regional land use designations;
- d) Amendment of sites located outside the Urban Containment Boundary from Employment to a General Urban regional land use designation;
- e) The addition or deletion of an Urban Centre; or
- f) The addition or deletion of, or amendment to, the descriptions of the regional land use designations or actions listed under each strategy of *Metro 2050*.

### Type 3 Amendments to the Regional Growth Strategy

Type 3 Amendments require an amendment bylaw to be passed with an affirmative **50% + 1 weighted vote** of the MVRD Board. The following types of amendments are classified as Type 3:

- a) The addition or deletion of a Frequent Transit Development Area;
- b) For sites within the Urban Containment Boundary, amendments from Industrial, Employment or General Urban to any other such regional land use designation(s);
- c) Amendment from Industrial, Employment, or General Urban to Rural, Agricultural, or Conservation and Recreation regional land use designations;

- d) Amendment from Rural to Agricultural or Conservation and Recreation regional land use designation;
- e) Amendment from a Conservation and Recreation to an Agricultural regional land use designation;
- f) For sites that are contiguous with, or within, the Urban Containment Boundary, and are not within the Agricultural Land Reserve and are not subject to the *Agricultural Land Commission Act*, amendment from Agricultural or Rural to an Industrial regional land use designation, and associated Urban Containment Boundary adjustments;
- g) For sites that are identified as Special Study Areas\* on Map 12 of *Metro 2050*, an amendment to another regional land use designation and associated Urban Containment Boundary adjustments;
- h) Removal of the Trade-Oriented Lands overlay from parcels with an Industrial regional land use designation;
- i) Housekeeping amendments to figures, tables or maps, performance measures or other items related to document structure that do not alter the intent of the regional growth strategy;
- j) Amendments to mapping to incorporate maps included in accepted Regional Context Statements;
- k) The reclassification of a Frequent Transit Development Area to an Urban Centre, or reclassification of an Urban Centre type to another Urban Centre type;
- l) An amendment to the Major Transit Growth Corridors; and
- m) All other amendments not identified under a Type 1 or Type 2 Amendment.

\*Special Study Areas identify locations where, prior to the adoption of the previous regional growth strategy, *Metro 2040*, a member jurisdiction had expressed an intention to alter the existing land use for some or part of an area after undertaking a planning process, and is anticipating requesting a future regional land use designation amendment as a result. Amending regional land use designations for areas with a Special Study Area overlay is a Type 3 amendment, and is intended to acknowledge some future land use change, lower the voting threshold for amendments for areas with an Agricultural, Rural, or Conservation and Recreation regional land use designation to an urban designation where a member jurisdiction has yet to undertake the planning process for the area, but anticipates land use change.

#### Member Jurisdiction Flexibility Provision

[Section 6.2.7](#) of *Metro 2050* provides member jurisdictions with the flexibility to adjust the boundaries of regional land use designations within the Urban Containment Boundary (UCB) under certain circumstances without triggering a *Metro 2050* amendment. To utilize the discretionary provisions in this section, the member jurisdiction must include language within its Regional Context Statement permitting amendments to their Official Community Plan (OCP) for regional land use designations boundary adjustments, and must specify the circumstances outlined in section 6.2.7 where this can occur.

[Section 6.2.8](#) of *Metro 2050* provides member jurisdictions with the flexibility to amend the boundaries of Urban Centres and Frequent Transit Development Areas without triggering an amendment to the regional growth strategy. Member jurisdictions must include appropriate language within their Regional Context Statement in order to have this flexibility. If a member jurisdiction includes language in its Regional Context Statement that permits flexibility as described in sections 6.2.7 and 6.2.8 of *Metro 2050*, these adjustments do not require a *Metro 2050* amendment and an accompanying Regional Context Statement amendment. All other adjustments to regional land use designation boundaries will

require an amendment, which must be submitted to the MVRD Board for acceptance in accordance with the requirements of the *Local Government Act*.

Should a member jurisdiction wish to engage the flexibility provisions, the member jurisdiction must notify the MVRD Board in writing, of any and all adjustments within thirty days after the member jurisdiction has adopted its Official Community Plan amendment bylaw in accordance with [section 6.2.9](#) of *Metro 2050*.

## 2.0 REGIONAL GROWTH STRATEGY AMENDMENT COMMON EXAMPLES

A *Metro 2050* amendment may be sought by either a member jurisdiction or Metro Vancouver under several circumstances, including:

- Seeking the addition or deletion of a *Metro 2050* goal or strategy;
- Requesting amendments to a site's regional land use designation or movement of the Urban Containment Boundary;
- Seeking to add or amend an Urban Centre or Frequent Transit Development Area; or
- Seeking changes, additions or deletions to a particular policy, policy area, or performance measure.

The most common type of amendment request is to seek a regional land use designation amendment for a particular site. Three scenarios where a member jurisdiction may request a change to the regional land use designation for a site are outlined below. Member jurisdiction staff is encouraged to connect with Metro Vancouver staff if they are unsure which example applies, or if an amendment is required.

Member Jurisdiction amends OCP without a Regional Context Statement or *Metro 2050* Amendment  
The member jurisdiction proposes to make amendments to its OCP land use designations which will not impact the regional land use designation or Regional Context Statement, or the proposed change falls within the flexibility provision in [section 6.2.7](#) of *Metro 2050*. In this case, no amendments to the Regional Context Statement or *Metro 2050* are required. The member jurisdiction notifies the Metro Vancouver [Corporate Officer](#) of the change made to the OCP by letter within 30 days of the amendment being made.

Member Jurisdiction seeks to amend OCP that triggers a change to the Regional Context Statement, but does not require a *Metro 2050* Amendment

The member jurisdiction proposes to make amendments to its OCP land use designations or policies that are not consistent with the accepted Regional Context Statement, and that are beyond the flexibility provided for in [section 6.2.7](#) of *Metro 2050*, but are 'generally consistent' with *Metro 2050*. For example, an amendment might be proposed to align the OCP designation with the existing use, which requires a corresponding amendment to the regional growth strategy. However, the amendment is small enough or considered an up-designation not requiring a regional dialogue and formal amendment process. In this case, the applicant would request an amendment to the Regional Context Statement, and if passed, Metro Vancouver staff would propose a subsequent housekeeping amendment to *Metro 2050* to incorporate changes made as a result of accepted Regional Context Statements. Member jurisdiction staff are encouraged to engage early with Metro Vancouver staff to determine whether an amendment to *Metro 2050* is also required. For guidance on developing, submitting, and the acceptance process for

Regional Context Statements that are not part of an *Metro 2050* amendment application, see the [Regional Context Statement Implementation Guideline](#).

The MVRD Board may accept the revised Regional Context Statement, or may not agree with the member jurisdiction's assessment of general consistency and decline to accept the revised Regional Context Statement, asking instead for the member jurisdiction to submit a proposed amendment to *Metro 2050* and a consequential amendment to their Regional Context Statement.

Member Jurisdiction seeks to amend OCP that requires both a *Metro 2050* Amendment and a consequential amendment to the Regional Context Statement

The member jurisdiction proposes amendments to its OCP land use designations or policies that are inconsistent with *Metro 2050* regional land use designation(s) and/or policies and are also beyond the flexibility provided in [section 6.2.7](#) of *Metro 2050* and that require a consequential amendment to the Regional Context Statement.

Often, member jurisdiction requests for *Metro 2050* amendments (e.g. a land use designation change for a site that amends *Metro 2050* maps), will also warrant an update to their Regional Context Statement maps to ensure general consistency between *Metro 2050* and the member jurisdiction's OCP. When preparing the OCP amending bylaw, member jurisdictions should ensure that the amending bylaw language includes both the local policy amendment (e.g. an OCP land use designation change) as well as the corresponding update to the Regional Context Statement that forms part of the OCP. Sample language for member jurisdictions amendment resolutions are provided as reference below.

***Sample bylaw resolution for a proposed Metro 2050 amendment and consequential Regional Context Statement amendment***

*Metro 2050 Amendment Sample Resolution Language*

*That subject to Council granting Third Reading to [OCP Bylaw Amendment], authorize staff to submit a [Amendment Type] amendment to the Metro Vancouver Regional District Board for approval to change the regional land use designation from [current regional land use designation] to [proposed regional land use designation].*

*Regional Context Statement Amendment Sample Resolution Language*

*That subject to Council granting Third Reading to [OCP Bylaw Amendment], authorize staff to submit a Regional Context Statement amendment reflecting the proposed regional land use designation change to the Metro Vancouver Regional District Board for approval.*

In this case, the member jurisdiction passes two Council resolutions, one seeking an amendment to *Metro 2050* and another seeking acceptance of a consequential amendment to the Regional Context Statement. The member jurisdiction submits only the *Metro 2050* amendment, not the Regional Context Statement amendment as a part of its initial request to the MVRD Board. The *Local Government Act* stipulates the MVRD Board has 120 days to either accept or refuse to accept a Regional Context Statement by resolution once it is received for consideration. Given that processing a proposed *Metro 2050* amendment may take more than 120 days, the member jurisdiction is requested to submit the Regional Context Statement amendment request once the MVRD Board has given initial readings to the *Metro 2050* amendment bylaw. The Regional Context Statement must be submitted in its entirety.

Metro Vancouver staff will then review the proposed *Metro 2050* amendment in relation to *Metro 2050* goals and policies, and draft a report for review by the Regional Planning Advisory Committee. The following month, the report is considered by the Regional Planning Committee, and the MVRD Board. The MVRD Board contemplates the Metro Vancouver staff assessment and considers initiating the amendment process. The MVRD Board will give initial readings to the amendment bylaw should it decide to consider the amendment.

Following the MVRD Board's initial readings of the amendment bylaw, it will be referred to affected local governments in the region and First Nations for comment as outlined in [section 6.5](#) of *Metro 2050*. The amendment bylaw will also be posted to the Metro Vancouver website for public comment. The comment period will be for a minimum of 45 days.

Following the comment period, Metro Vancouver staff will bring a report to the MVRD Board summarizing any comments received. The MVRD Board may at this time decide to accept or decline the *Metro 2050* amendment. The final reading of the *Metro 2050* amendment bylaw and acceptance of the Regional Context Statement can be considered by the MVRD Board at the same meeting.

## **3.0 REGIONAL GROWTH STRATEGY AMENDMENT SUBMISSION**

### **EARLY ENGAGEMENT WITH METRO VANCOUVER AND OTHER PARTNER ORGANIZATIONS**

Member jurisdictions should engage with Metro Vancouver staff early when considering proposing a *Metro 2050* amendment to ensure that amendment procedures and submission requirements are clearly understood. At this stage, Metro Vancouver staff can advise member jurisdictions on potential timelines and presentation requirements.

#### TransLink

Member jurisdictions should connect with TransLink to discuss components that may have an impact on regional transportation systems or priorities. Member jurisdictions can also request Metro Vancouver staff and TransLink staff provide early feedback on any proposed Frequent Transit Development Areas. Metro Vancouver staff will forward any proposed *Metro 2050* amendments to TransLink as part of the standard referral process to partner organizations as outlined in [section 6.6](#) of *Metro 2050*.

#### Agricultural Land Commission

*Metro 2050* includes policies for working with the Agricultural Land Commission (ALC) to protect the region's agricultural land base. [Section 2.3.4](#) of *Metro 2050* states that Metro Vancouver will not consider amending the Agricultural or Rural regional land use designations of a site if it is still within the Agricultural Land Reserve (ALR).

Should the ALC provide conditional approval to exclude the site from the ALR, the MVRD Board may also provide conditional approval of a regional land use designation amendment, subject to the ALC exclusion conditions being met. The ALC process should be completed prior to initiating the Metro Vancouver process, and written confirmation of the ALC's decision must be included with the proposed *Metro 2050* amendment.

### Port of Vancouver, YVR, and Ministry of Transportation and Infrastructure

If the proposed amendment involves redesignating a site from Industrial or Employment to General Urban, the MVRD Board will also notify the Port of Vancouver, the Vancouver International Airport Authority (YVR), and the Ministry of Transportation and Infrastructure, as appropriate.

### **INITIATING A REGIONAL GROWTH STRATEGY AMENDMENT**

Member jurisdictions are encouraged to submit a proposed *Metro 2050* amendment to Metro Vancouver after their local public engagement process has been completed, specifically after the member jurisdiction's public hearing and subsequent bylaw reading of the OCP amendment bylaw. The MVRD Board has expressed preference that the proposal is supported by the local community via the results of the public hearing in advance of the region considering the proposal. In addition, submitting a proposed amendment to the MVRD Board before the member jurisdiction's public hearing may introduce the possibility that the *Metro 2050* amendment will need to be re-submitted to accommodate any bylaw changes made after the public hearing. Member jurisdictions can submit their amendment applications by email to Metro Vancouver's [Corporate Officer](#).

### **SUBMISSION REQUIREMENTS**

*Metro 2050* amendments should include the items listed below, as appropriate.

#### All applications

- *Correspondence*: A letter stating a member jurisdiction's intent to amend *Metro 2050* and their Regional Context Statement to ensure alignment with proposed OCP changes. The letter should reference the relevant council resolution, bylaw readings, and public hearing dates. A sample letter is provided in Appendix A for reference.
- *Member Jurisdiction Staff Report*: The staff report to Council outlining the OCP amendment, including the Regional Context Statement update. This report typically includes a Council resolution requesting that *Metro 2050* be amended, and that the member jurisdiction intends to submit an updated Regional Context Statement following third reading of the proposed *Metro 2050* amendment bylaw by the MVRD Board.

After the MVRD Board has given first, second, and third reading to the *Metro 2050* amendment bylaw:

- *Updated Regional Context Statement*: Correspondence conveying the relevant Council resolution and the proposed updates to the Regional Context Statement, along with a certified copy of the updated Regional Context Statement in its entirety.

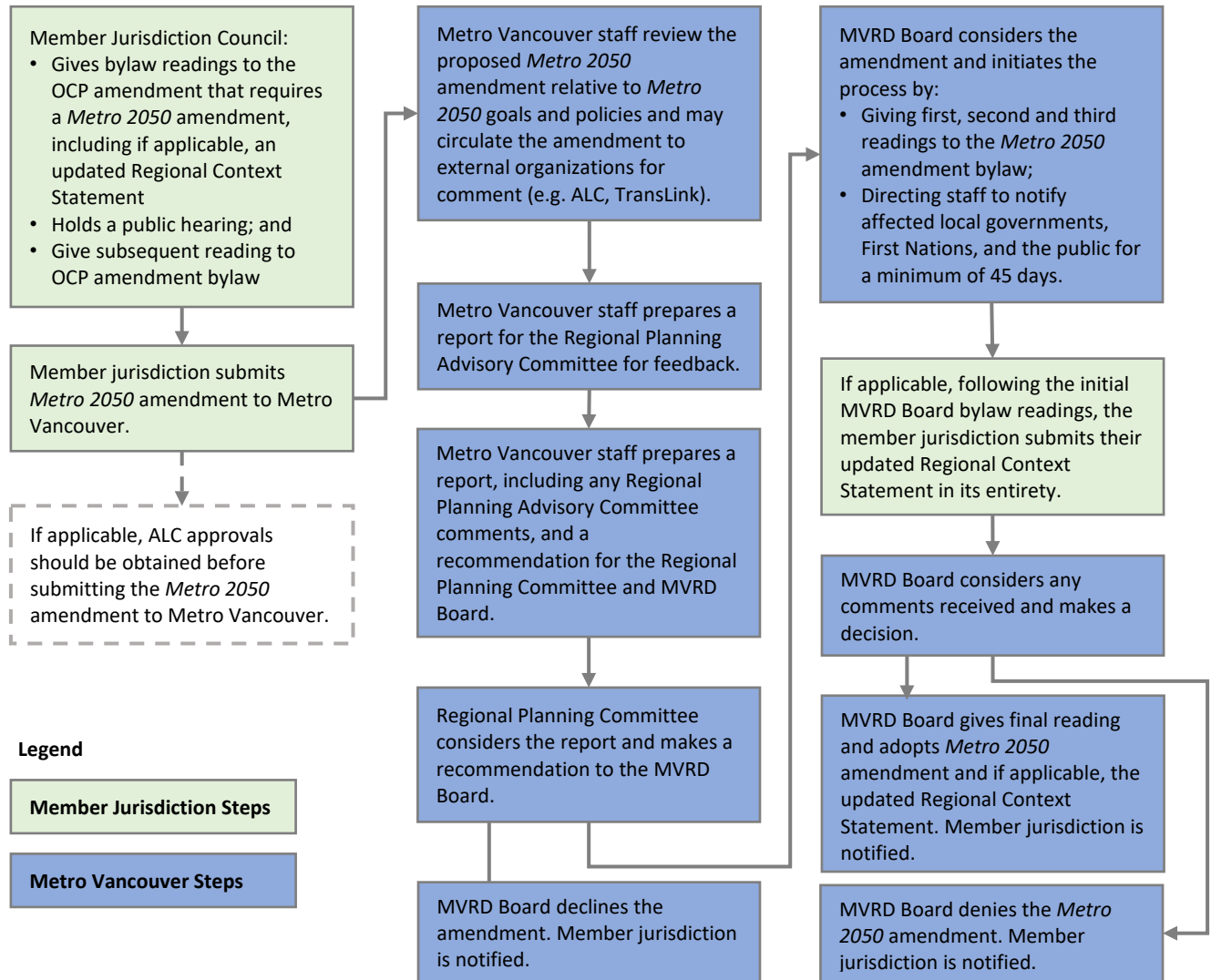
#### If applicable

- *Agricultural Land Commission Confirmation*: Written confirmation of the ALC's decision to exclude the affected site(s) from the ALR must be included with the *Metro 2050* amendment request.
- *Public Hearing Summary*: The member jurisdiction's agenda and minutes for the public hearing on the OCP amendment, including the Regional Context Statement.

## 4.0 REGIONAL GROWTH STRATEGY AMENDMENT PROCESS

The submission and Committee/Board consideration process for *Metro 2050* amendments are provided below.

**Figure 1: Regional Growth Strategy Amendment Process**



### MEMBER JURISDICTION PRESENTATIONS

As the applicant, member jurisdictions are expected to provide presentations / briefings on the proposed *Metro 2050* amendment to both the Regional Planning Advisory Committee and Regional Planning Committee. Member jurisdictions should also be present when an amendment is considered by the MVRD Board, and be available to answer questions. Member jurisdictions must apply to be a delegation to the Regional Planning Committee. The property owners or their representatives can apply as a separate delegation should they wish to speak to the application as can any member of the public. The presentation and delegation guidelines for *Metro 2050* amendments are provided as followed.

**Table 2: Member Jurisdiction Presentations**

<b>Regional Planning Advisory Committee (RPAC)</b>	
The purpose of the Regional Planning Advisory Committee is to provide a forum for senior representatives of municipal planning departments, Tsawwassen First Nation, Electoral Area A and agencies with an interest in regional planning to discuss and advise on planning issues of regional or inter-municipal significance; provide advice and comments on Metro Vancouver research and projects; and provide an opportunity for capacity building and shared learning for members.	
<b>Attendance</b>	Member jurisdiction staff should attend the meeting and present their application. Metro Vancouver staff will provide meeting details.
<b>Presentation</b>	Yes
<b>Hybrid or In Person</b>	Online or In Person
<b>Regional Planning Committee (RPL)</b>	
The Regional Planning Committee is the standing committee of the MVRD Board that provides advice and recommendations on plans, policies, programs, budgets and issues related to Metro Vancouver’s Regional Planning service.	
<b>Attendance</b>	Member jurisdiction staff should attend the meeting and present their application by <a href="#">applying as a delegation</a> to the Regional Planning Committee 7 working days prior to the scheduled meeting. Late applications within 7 days of the meeting are also accepted. Metro Vancouver staff will provide meeting details.
<b>Presentation</b>	Yes
<b>Hybrid or In Person</b>	In Person
<b>Metro Vancouver Regional District Board (MVRD)</b> <i>Consideration of initial bylaw readings and referral for comments</i>	
The MVRD Board is comprised of elected officials from member jurisdictions. The MVRD Board approves or declines any proposed amendment to <i>Metro 2050</i> and accepts or refuses to accept Regional Context Statements.	
<b>Attendance</b>	Member jurisdiction staff should attend the meeting and can present their application by <a href="#">applying as a delegation</a> to the Board no later than 48 hours prior to the scheduled meeting. Metro Vancouver staff will provide meeting details.
<b>Presentation</b>	Encouraged
<b>Hybrid or In Person</b>	In-Person
<b>Metro Vancouver Regional District Board (MVRD)</b> <i>Consideration of referral comments and bylaw adoption</i>	
The MVRD Board is comprised of elected officials from member jurisdictions. The MVRD Board approves or declines any proposed amendment to <i>Metro 2050</i> and accepts or refuses to accept Regional Context Statements.	
<b>Attendance</b>	Member jurisdiction staff should attend the meeting to answer questions that may arise. Metro Vancouver staff will provide meeting details.
<b>Presentation</b>	No
<b>Hybrid or In Person</b>	In-Person



## NOTIFICATION PROCESS AND PUBLIC ENGAGEMENT OPPORTUNITIES

Should the MVRD Board resolve to proceed with the amendment process, it will provide written notice to all affected local governments with a minimum comment period of 45 days from date of notice, in accordance with [section 6.4.2](#) of *Metro 2050*.

If the proposed amendment involves redesignating a site from Industrial or Employment to General Urban, the MVRD Board will also notify the Port of Vancouver, the Vancouver International Airport Authority, and the Ministry of Transportation and Infrastructure, as appropriate.

Additionally, the MVRD Board will notify the public of any proposed *Metro 2050* amendment by posting it on the Metro Vancouver [website](#), with a minimum comment period of 45 days from the date of notice. Members of the public can comment on proposed amendments either in writing, or by requesting to speak as a delegation to the Regional Planning Committee or the MVRD Board.

Enhanced public engagement opportunities are required for Type 2 amendments. Examples of these public engagement opportunities are outlined in [section 6.4.4 \(c\)](#) of *Metro 2050*, and include:

- Notification of the proposed amendments on the Metro Vancouver website;
- Requesting written comments by way of a comment form on the Metro Vancouver website;
- Opportunities for the public to appear as a delegation to the Regional Planning Committee or the MVRD Board when the amendment is being considered;
- Conveyance of comments submitted from the respective local public hearing to the MVRD Board; and
- Hosting a public information meeting (digitally or in person).

Public engagement opportunities for Type 3 amendments may also be required by the MVRD Board. These opportunities may include those listed above for Type 2 amendments, and will be determined during the application process.

All comments received on the proposed *Metro 2050* amendment will be provided to the MVRD Board prior to final reading of the amendment bylaw. For all Type 1 amendments, notification will also be sent to the Regional Growth Strategy Intergovernmental Advisory Committee, which will be established in accordance with [section 450](#) of the *Local Government Act*.

## AVOIDING TWO-STEP AMENDMENTS

The MVRD Board discourages the use of multiple Type 3 amendments to achieve what is intended to be a Type 2 amendment to avoid the higher voting threshold and other requirements under a Type 2 amendment.

**Example:** *Changing the regional land use designation of a site from Conservation and Recreation to Agricultural would be classified as a Type 3 amendment. A subsequent change of the regional land use designation for the site from Agricultural to Industrial would be another Type 3 amendment in circumstances where the site is contiguous with, or within, the UCB. A direct change of the regional land use designation from Conservation and Recreation to Industrial would be a Type 2 amendment, with more stringent amendment procedures.*

To prevent such two-step amendments from occurring, Metro Vancouver staff will investigate the evolution of the subject property's land use designation and include the history of the regional land use designations as part of the staff report to the Regional Planning Committee and the MVRD Board. If

there is evidence indicating a two-step amendment is being utilized to achieve a specific regional land use designation and procedurally avoid a Type 2 amendment, Metro Vancouver staff will generally recommend the MVRD board decline the proposed amendment.

## APPENDIX A: SAMPLE COVER LETTER FOR A REGIONAL GROWTH STRATEGY LAND USE DESIGNATION AMENDMENT AND CORRESPONDING REGIONAL CONTEXT STATEMENT AMENDMENT

This Sample Cover Letter is provided for general reference only.

Corporate Officer  
Metro Vancouver  
Metrotower III, 4515 Central Boulevard  
Burnaby, BC V5H 0C6

Dear Corporate Officer,

**RE: [Member Jurisdiction] Metro 2050 Regional Growth Strategy Amendment Request for [Site]**

### Introduction (Heading not required)

[Member Jurisdiction] is processing an application for [site address] to permit [proposed land use and development information]. The proposal includes an amendment to *Metro 2050*, to amend the regional land use designation for the subject site from [current regional land use designation] to [proposed regional land use designation]. The proposed regional growth strategy amendment also requires an amendment to the [Member Jurisdiction's] Regional Context Statement. The [Member Jurisdiction] Council is requesting the Metro Vancouver Regional District (MVRD) Board consider an amendment to *Metro 2050*, and an amendment to the [Member Jurisdiction's] Regional Context Statement.

### Summary of the Council Resolutions (Heading not required)

On [Date], at the Regular Council Meeting, [Member Jurisdiction] Council passed [Resolution or Bylaw name or number] to refer the [development application] to the MVRD Board for consideration and approval of a [Amendment Type] regional growth strategy amendment, to re-designate the site from [current regional land use designation] to [proposed regional land use designation]. Council is also requesting the MVRD Board consider acceptance of an amendment to the [Member Jurisdiction] Regional Context Statement at the same time as third and final reading of the *Metro 2050* amendment bylaw reading, should the MVRD Board give initial readings to the amendment. The [development application] received Third Reading on [date] and a Public Hearing was held on [date].

### Summary (Heading not required)

[Member Jurisdiction] requests that the MVRD Board amend the regional growth strategy for the affected property from [current regional land use designation] to [proposed regional land use designation] and receive an amendment to the [Member Jurisdiction] Regional Context Statement for consideration at the time as final reading of the MVRD regional growth strategy amendment bylaw.

Should Metro Vancouver staff require any additional information regarding this matter, please contact [Member Jurisdiction Contact Name, Title], at [Phone Number] or at [Email Address].

Yours,  
*Signature*  
[Name]  
[Title] [Department]

### Attachments

[Title of Attachment, Date]



## Metro 2050 Implementation Guideline: Regional Growth Strategy Amendments

Jessica Jiang

Regional Planner, Regional Planning and Housing Services

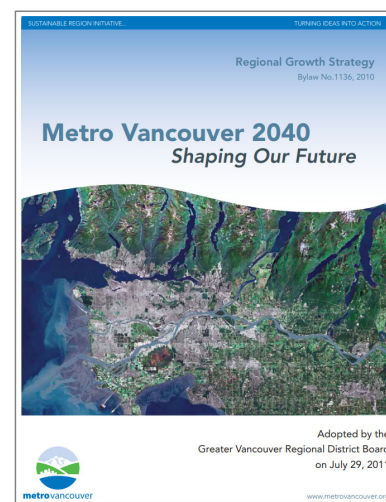
Regional Planning Committee, November 3, 2023

**metrovancover**

## PREVIOUS AMENDMENTS UNDER *METRO 2040*

Over 11 years, 37 proposed amendments were brought forward under *Metro 2040*, the previous regional growth strategy.

- 8 amendments initiated by MVRD (e.g. housekeeping, re-designating park land, revising GHG emissions targets);
- 29 amendments initiated by member jurisdictions (17 adopted, 8 declined, 4 not-completed);
- Majority Type 3 Amendments to re-designate regional land use for a site.



## METRO 2050 AMENDMENTS

Member jurisdiction or Metro Vancouver can seek an amendment to *Metro 2050* under several circumstances, including to:

- Add or delete a *Metro 2050* goal or strategy;
- Re-designate a regional land use or adjust the Urban Containment Boundary;
- Add or amend an Urban Centre or Frequent Transit Development Area; or
- Add, delete, or change a specific policy, policy area, or performance measure.



## METRO 2050 AMENDMENT TYPES

There are three types of *Metro 2050* amendments. The more regionally significant an issue, the higher the voting threshold required to pass the amendment type.

### Type 1 Amendment

Requires an affirmative **50% + 1 weighted vote** of the MVRD Board and **acceptance by all affected local governments**.

### Type 2 Amendment

Requires an affirmative **two-thirds weighted vote** of the MVRD Board. Enhanced public engagement is expected for Type 2 amendments.

### Type 3 Amendment

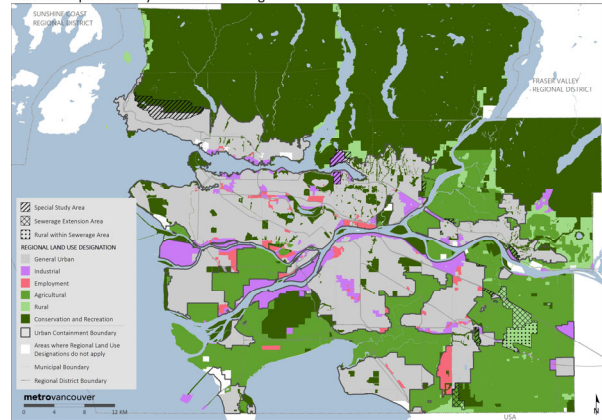
Requires an **affirmative 50% + 1 weighted vote** of the MVRD Board.

## METRO 2050 SPECIAL STUDY AREAS

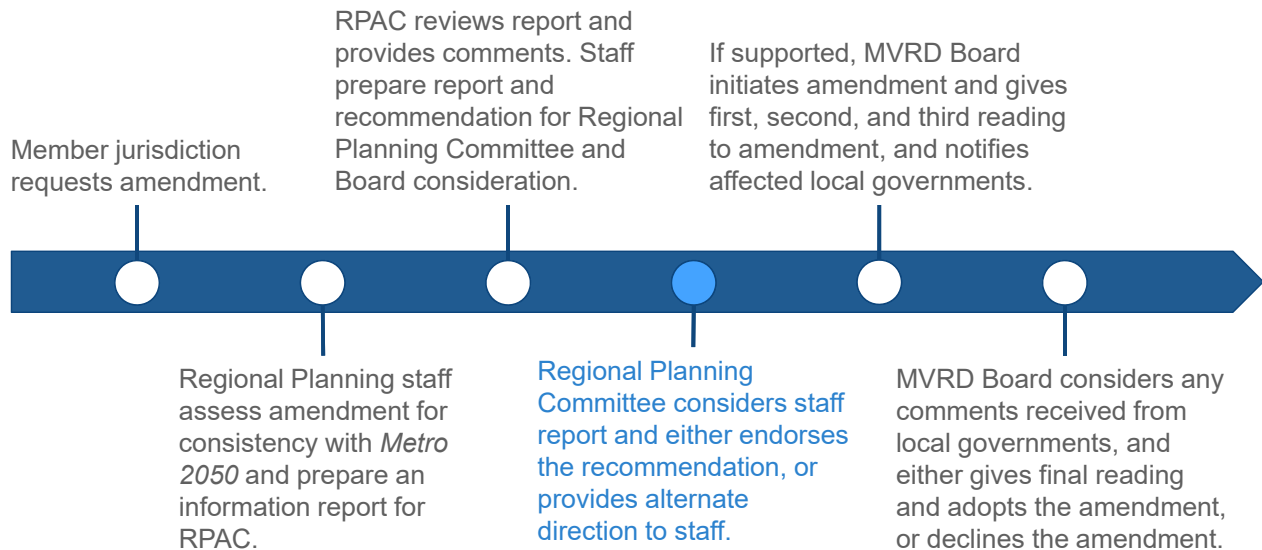
Special Study Areas were identified prior to the adoption of *Metro 2040*.

- Intent to alter existing land use, but have not yet completed the planning process;
- Anticipated Type 3 Amendment, which has a lower voting threshold for re-designating Agricultural, Rural, or Con Rec land to an urban designation, or adjusting the UCB;
- No new Special Study Areas are to be created, or boundaries expanded.

MAP 12 Special Study Area and Sewerage Extension Areas



## METRO 2050 AMENDMENT PROCESS



## METRO 2050 IMPLEMENTATION GUIDELINES

A suite of implementation guidelines to support member jurisdictions with the interpretation and implementation of *Metro 2050* are under development.

<i>Metro 2050</i> Implementation Guidelines	Type	Status
Drafting Regional Context Statements	Update	Complete
<b>Regional Growth Strategy Amendments</b>	<b>Update</b>	<b>Nov RPL</b>
Sewerage Area Amendments	Update	Early 2024 RPL
Industrial and Employment Lands	Update	Early 2024 RPL
Regional Liquid Waste Services Planning	New	Early 2024 RPL
Regional Affordable Rental Housing Target	New	Pending
Identifying Frequent Transit Development Areas	Update	Pending
Regional Green Infrastructure Network	New	Pending

Outlines amendment request procedure, amendment types, submission requirements, and Regional Planning review process



To: Regional Planning Committee

From: Victor Cheung, Senior Policy and Planning Analyst,  
Regional Planning and Housing Services

Date: October 11, 2023 Meeting Date: November 3, 2023

Subject: **Request for Sanitary Service Connection at 14500 Silver Valley Road, Maple Ridge**

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### RECOMMENDATION

That the MVRD Board:

- a) resolve that sewer service for the property at 14500 Silver Valley Road, City of Maple Ridge is generally consistent with the provisions of *Metro 2050*; and
  - b) forward the requested Fraser Sewerage Area amendment application for the property at 14500 Silver Valley Road in the City of Maple Ridge to the GVS&DD Board for consideration.
- 

### EXECUTIVE SUMMARY

The City of Maple Ridge submitted an application to the Greater Vancouver Sewerage and Drainage District to amend the Fraser Sewerage Area (FSA) boundary to include four building footprints at 14500 Silver Valley Road to service the expansion of an existing UBC forestry research facility and accessory uses. In line with the requirements set out in *Metro 2050*, the request is being presented to the MVRD Board to consider consistency with the regional growth strategy prior to consideration by the Greater Vancouver Sewerage and Drainage District Board.

The application is seen to be generally consistent with *Metro 2050* given that:

- The application is related to an existing institutional facility and does not involve new residential or commercial development;
- The subject property is designated Conservation and Recreation and is included in the Natural Resource Overlay. It is currently in use as a forest research facility with institutional and recreation land uses. No further land use changes are proposed;
- A sanitary sewer analysis report indicates that on-site treatment is not justified due to varying and insufficient flow rates as well as potential impacts on nearby groundwater wells; and
- This is a single non-strata property and the proposed sanitary connection occurs from within the property to an existing maintenance hole that cannot facilitate additional connections from outside of the Fraser Sewerage Area. The City's staff report and Design Guideline further notes protections for Coho Creek through setbacks and storm water management.

### PURPOSE

This report seeks MVRD Board concurrence that regional sewerage service for four buildings located at 14500 Silver Valley Road is generally consistent with *Metro 2050*.



**BACKGROUND**

In August 2023, the City of Maple Ridge submitted an application to the Greater Vancouver Sewerage and Drainage District (GVS&DD) to amend the FSA to include four building footprints at 14500 Silver Valley Road (Attachment 1).

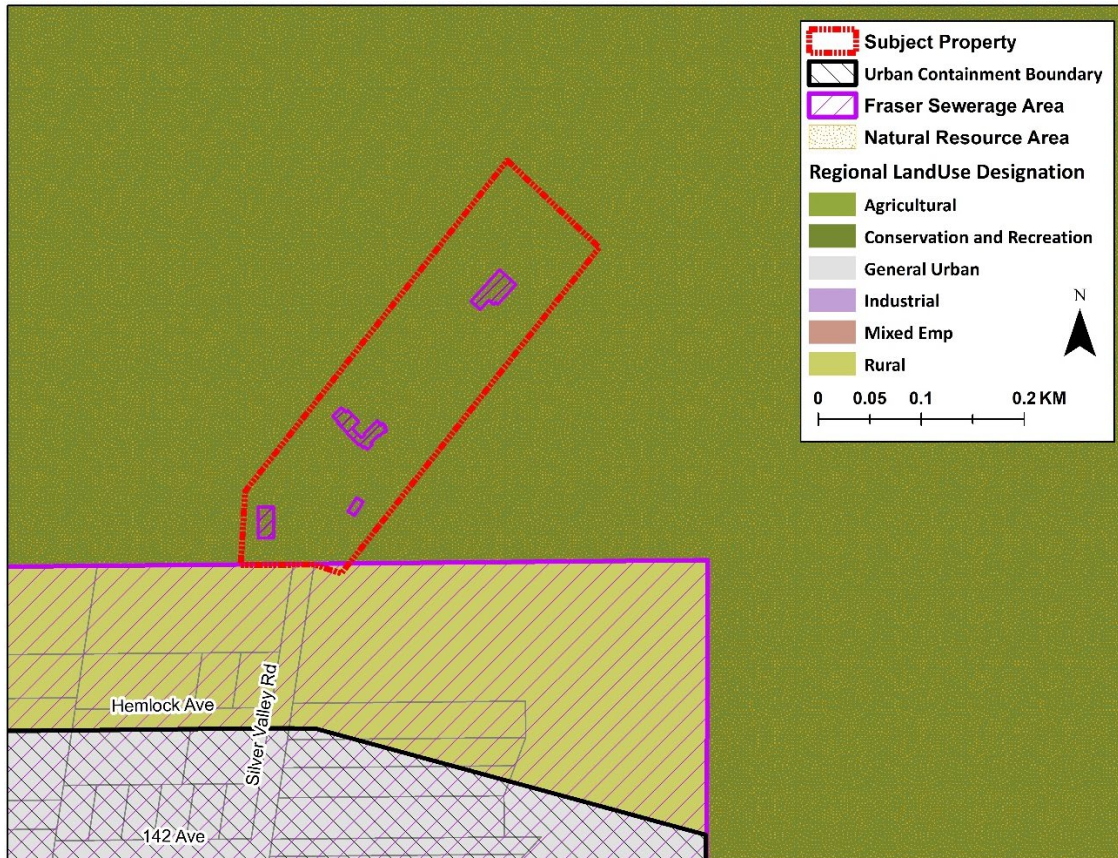
Consistent with the requirements in the *Local Government Act* and *Metro 2050*, the request is being presented to the MVRD Board for consideration of consistency with the regional growth strategy prior to it being considered by the GVS&DD Board.

**SITE DESCRIPTION**

The subject property is part of UBC’s Malcolm Knapp Research Forest. As noted in the City’s staff report (Attachment 2), it was established in 1949 by a Crown Grant and is a 5,157 ha “working forest” for research, demonstration, and education in the field of forestry and allied sciences. UBC is proposing to construct works and improvements to the site that consist of a relocated caretaker’s residence, a new workshop and office building, and a Katzie longhouse.

The property is on land with a regional Conservation and Recreation land use designation and is included in the Natural Resource Overlay in *Metro 2050*. It is outside of the Urban Containment Boundary (Map 1).

**Map 1: Map of Subject Property, Regional Land Use Designations, and Fraser Sewerage Area**



**METRO 2050 AND SEWERAGE AREA EXTENSION REQUESTS**

Section 6.8 of *Metro 2050* includes provisions for coordination amongst the Metro Vancouver Boards to ensure alignment between the policies of *Metro 2050*, as governed by the MVRD Board, and the works and services governed by the GVS&DD and Greater Vancouver Water District Boards. The intention of limiting the extension of sewerage services from a regional growth management perspective is to support: urban containment; the protection of agricultural, rural, and conservation and recreation lands; and the efficient provision of regional infrastructure services, which are all key tenets of *Metro 2050*. In accordance with section 445 of the *Local Government Act*, *Metro 2050* requires that all services undertaken by the GVS&DD be consistent with *Metro 2050*. Specifically, Section 6.8.1 of *Metro 2050* states that:

*The Greater Vancouver Sewerage and Drainage District and the Greater Vancouver Water District will not directly or indirectly supply, agree to supply, or authorize connections that enable the supply of services to a site that is developed or proposed to be developed after the date of adoption of the regional growth strategy where the nature of that development is, in the sole judgment of the Metro Vancouver Regional District Board, inconsistent with the provisions of the regional growth strategy.*

While *Metro 2050* establishes the extent of urban development within the region, the provision of regional sewerage services is administered by the GVS&DD. Any requests from member jurisdictions to amend the GVS&DD sewerage area or to provide sewer services onto lands designated Agricultural, Rural, or Conservation and Recreation in *Metro 2050* must be presented to the MVRD Board for consideration prior to be considered by the GVS&DD Board.

Section 3.1.1 of *Metro 2050* states that the GVS&DD Board will not allow connections to regional sewerage services from lands with a Conservation and Recreation regional land use designation except where the MVRD Board determines that the new development is consistent with the provisions of that designation and where it has been determined:

- a) *that the connection to regional sewerage services is the only reasonable means of preventing or alleviating a public health or environmental contamination risk;*  
*or*
- b) *that the connection to regional sewerage services would have no significant impact on the strategy to protect lands with a Conservation and Recreation regional land use designation.*

The GVS&DD regional sewerage area boundaries were drawn prior to the adoption of *Metro 2050*. As a result, there are some locations where the FSA and regional land use designations do not align. For properties designated Agricultural, Rural, or Conservation and Recreation located outside of the FSA, as is the case with this application, the MVRD Board must determine whether servicing is appropriate and consistent with the intent of the respective land use designations of *Metro 2050*, after which the final decision to amend the GVS&DD sewerage area boundary rests with the GVS&DD Board. For properties within the FSA that are designated Agricultural, Rural or Conservation and Recreation, MVRD Board approval is required as well as technical analysis from GVS&DD. In both cases, where the MVRD Board determines the sewerage area boundary amendment is not consistent with *Metro 2050*, the GVS&DD is obligated to deny the application.

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## REGIONAL PLANNING ANALYSIS

The subject property is designated Conservation and Recreation in *Metro 2050*. Additionally, the site is included in the regional Natural Resource Overlay, indicating it is a working forest, not protected solely for ecological value, but rather for long term intent. Extending sewer services to the property's building footprints would service an existing forestry research facility with institutional (research) and recreational land uses. UBC is proposing to construct works and improvements to the site that consist of a relocated caretaker's residence, a new workshop and office building, and a Katzie longhouse. It will not include commercial or residential growth beyond existing (relocated) caretaker facilities.

There is no treatment plant currently on the subject property, and due to the varying flow rates caused by event-based and seasonal fluctuations in site occupancy, it is not justifiable to construct one for the site. In addition, there are concerns regarding the effluent receiving environment and proximity to groundwater wells. The land owner, University of British Columbia, has included a sanitary sewer analysis report by their consultant (Attachment 3) which stipulates compliance with Guideline #7 for which is summarized as part of Metro Vancouver's analysis.

The application is seen to be generally consistent with *Metro 2050* given that:

- The application is related to an existing institutional facility and does not involve new residential or commercial development;
- The subject property is designated Conservation and Recreation and is included in the Natural Resource Overlay. It is currently in use as a forest research facility with institutional and recreation land uses. No further land use changes are proposed;
- A sanitary sewer analysis report indicates that on-site treatment is not justified due to varying and insufficient flow rates as well as potential impacts on nearby groundwater wells; and
- This is a single non-strata property and the proposed sanitary connection occurs from within the property to an existing maintenance hole that cannot facilitate additional connections from outside of the Fraser Sewerage Area.

In preparing the above rationale, staff considered the criteria identified in Implementation Guideline #7: Extension of Regional Sewerage Services, which outlines the application process and review criteria for member jurisdictions requesting a connection to regional sewerage services. The implementation guideline also indicates a requirement that applications for connection to regional sewerage services must be initiated by a resolution of the respective municipal council. The City of Maple Ridge passed a resolution at its meeting on July 18, 2023 which was forwarded by letter to Metro Vancouver Liquid Waste Services Staff (Attachment 1).

Should sewer service to this property's building footprints be supported by the MVRD Board, staff do not anticipate a significant impact to the *Metro 2050* objectives for urban containment or related regional land use designations, goals and strategies. Approval is not anticipated to lead to a proliferation of future applications for extension of regional sewerage service outside the Urban Containment Boundary.

## ALTERNATIVES

1. That the MVRD Board:
  - a) resolve that sewer service for the property at 14500 Silver Valley Road, City of Maple Ridge is generally consistent with the provisions of *Metro 2050*; and
  - b) forward the requested Fraser Sewerage Area amendment application for the property at 14500 Silver Valley Road in the City of Maple Ridge to the GVS&DD Board for consideration.
2. That the MVRD Board resolve that the amendment application for the property at 14500 Silver Valley Road, City of Maple Ridge is not consistent with the provisions of *Metro 2050* and direct staff to notify both the City of Maple Ridge and the GVS&DD Board.

## FINANCIAL IMPLICATIONS

There are no financial implications to this report from a Regional Planning perspective. Any financial implications related to the covenant discharge will be considered within the GVS&DD application review process.

## CONCLUSION

The GVS&DD has received an application from the City of Maple Ridge to extend sanitary service connections to four building footprints at 14500 Silver Valley Road. If approved, the extension would service an existing forestry research facility in a rural area, with institutional (research) and recreational land use. It would also permit a relocated caretaker's residence, a new workshop and office building, and a Katzie longhouse. It will not include commercial or residential growth beyond existing (relocated) caretaker facilities. Should sewer service to this property be supported by the MVRD Board, staff do not anticipate a significant impact to the *Metro 2050* objectives for urban containment or related regional land use designations, goals and strategies.

As the subject property is designated Conservation and Recreation in *Metro 2050*, the MVRD Board must first determine if the proposed sewerage area amendment is consistent with the provisions of *Metro 2050* and the Conservation and Recreation regional land use designation. Based on the information contained in this report, the application is seen to be generally consistent with *Metro 2050*.

Staff recommend Alternative 1, that the MVRD Board confirm that the provision of regional sewerage services to the property is generally consistent with *Metro 2050* and forward the application for a sewerage area amendment to the GVS&DD Board for consideration.

## ATTACHMENTS

1. Letter from the City of Maple Ridge dated August 18, 2023 to Metro Vancouver requesting the sanitary sewer service connection to 14500 Silver Valley Road
2. City of Maple Ridge Staff report dated July 18, 2023 for 14500 Silver Valley Road
3. Letter from Wedler Engineering dated April 13, 2023 for 14500 Silver Valley Road

## REFERENCES

1. [Implementation Guideline #7: Extension of Regional Sewerage Services](#)

August 18, 2023

Bryan Shoji  
Director, Policy Planning and Analysis  
Metro Vancouver  
4730 Kingsway  
Burnaby BC V5H 0C6

Dear Mr. Shoji:

**Re: Urban Containment Boundary – Request for Sanitary Sewer Service Connection  
14500 Silver Valley Road, Maple Ridge  
Our File: 11-5340-01 & 11-5245-20-B612**

On July 25, 2023, City of Maple Ridge staff presented a report to Council for the request to provide a sanitary sewer service connection to 14500 Silver Valley Road. The identified area is defined and described in the attached Council report.

Maple Ridge Council adopted the following resolution on July 25, 2023 (ref. attached):

***That the request to provide a sanitary sewer service connection to 14500 Silver Valley Road be supported and forwarded to the Greater Vancouver Sewerage and Drainage District Board for consideration and approval.***

Supporting documentation also includes the Extension Rationale Report prepared by Wedler Engineering (ref. attached).

As such, this letter is our formal request to allow the subject property connection to the sanitary sewer system.

We would appreciate if you could acknowledge receipt of this request. Should you have any questions or require further information, please contact the undersigned at [rollenberger@mapleridge.ca](mailto:rollenberger@mapleridge.ca) or 604-467-7326.

Yours truly,



Rachel Ollenberger, ASCT.  
Manager of Infrastructure Development

/mi

Att.


Doc#3463798

I hereby certify this to be a true and correct copy of a resolution passed by the Council of the City of Maple Ridge at its Regular Council meeting held on July 25, 2023:

R/2023-CM-184

**That the request to provide a sanitary sewer service connection to 14500 Silver Valley Road be supported and forwarded to the Greater Vancouver Sewerage and Drainage District Board for consideration and approval.**

Dated this 27<sup>th</sup> day of July, 2023



---

Patrick Hlavac-Winsor  
Acting Corporate Officer



## City of Maple Ridge

**TO:** His Worship Mayor Dan Ruimy  
and Members of Council

**MEETING DATE:** July 18, 2023

**FILE NO:** 11-5340-01

**FROM:** Chief Administrative Officer

**MEETING:** CoW

**SUBJECT:** 14500 Silver Valley Road – Request for Sanitary Sewer Service Connection Outside the Urban Containment Boundary

**EXECUTIVE SUMMARY:**

The University of British Columbia (UBC) Malcolm Knapp Research Forest (MKRF) is located at 14500 Silver Valley Road. UBC is proposing to construct works that requires connection to the municipal sanitary sewer system. The subject property lies outside Metro Vancouver's Urban Containment Boundary (UCB) and the Fraser Sewage Area (FSA).

Under the current Metro Vancouver regulations, any extension or amendment of sanitary sewer servicing (including on-site changes in use or capacity) to properties outside of the UCB and/or the FSA requires approval of the Greater Vancouver Sewerage and Drainage District (GVS&DD) Board. Applications require a municipal Council resolution prior to consideration by the Board, as identified in the Metro Vancouver Implementation Guideline #7.

Under Guideline #7, the applicant has proposed that the additional connection to the municipal sanitary sewer system does not represent a significant change in the sanitary sewer capacity requirement and does not increase the pressure to provide sanitary sewer services for development properties outside of the UCB.

It is recommended that Council support the request to seek approval from Metro Vancouver to provide a sanitary sewer service connection to the property.

**RECOMMENDATION:**

That the request to provide a sanitary sewer service connection to 14500 Silver Valley Road be supported and forwarded to the Greater Vancouver Sewerage and Drainage District Board for consideration and approval.

**DISCUSSION:****a) Background Context:**

The UBC MKRF was established in 1949 by a Crown Grant to UBC and is located at 14500 Silver Valley Road. This "working" forest of 5,157 hectares is designed to be a facility for research, demonstration, and education in the field of forestry and allied sciences. UBC is proposing to construct works and improvements to the site that consist of a new office building, a new and relocated workshop, improvements to the parking lot, and a potential First Nations longhouse. To support these improvements, the applicant is requesting connection to the municipal sanitary sewer system. The subject property lies outside Metro Vancouver's Urban Containment Boundary (UCB) and the Fraser Sewage Area (FSA).

A primary goal of Metro Vancouver's long-range plan (Metro 2050) is to focus growth within Urban Containment Boundaries. In support of this initiative, Metro Vancouver adopted a number of strategies including Implementation Guideline #7. Implementation Guideline #7 outlines situations where Metro Vancouver may consider expansion of the sewer system outside of the Urban Containment Boundary. Applicants wishing to use or expand the sewer system must demonstrate their compliance with Guideline #7 and include all relevant documentation.

All applications under Implementation Guideline #7 must be endorsed by municipal Council prior to consideration by the GVS&DD Board.

UBC's consultant has provided a sanitary sewer analysis report that indicates the addition of the proposed works qualifies for consideration under Section 2.3.2 of Implementation Guideline #7, in that the connection will have no significant impact on the municipal sanitary sewer system

If approved by Metro Vancouver for connection, the future building permit application will be subject to all applicable bylaws and policies, and provide verification the water and sewer has capacity to support the proposed development. If improvements are triggered by this redevelopment, the applicant would be responsible for constructing those improvements.

**b) Desired Outcome:**

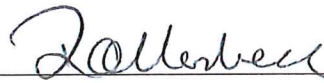
That Metro Vancouver approve the property owner's request for a sanitary sewer service connection to the municipal sanitary sewer system. The service connection shall be sized to accommodate a capacity no greater than necessary to service the proposed building.

**c) Alternatives:**

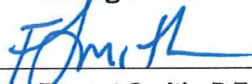
Not supporting the request would require the property owner to explore the use of an on-site septic system which may pose challenges that could impact the scope of redevelopment.

**CONCLUSION:**

The application to seek Metro Vancouver approval to connect to the municipal sanitary sewer system is consistent with Section 2.3.2 of Metro Vancouver's Implementation Guideline #7, represents minimal increase to the sanitary sewer flows, and does not result in any decrease in the service levels of the existing sanitary sewer system. As such, it is recommended that Council support the request and that the application be forwarded to Metro Vancouver for consideration and approval.



Prepared by: Rachel Ollenberger, ASCT.  
Manager of Infrastructure Development



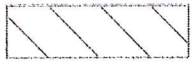
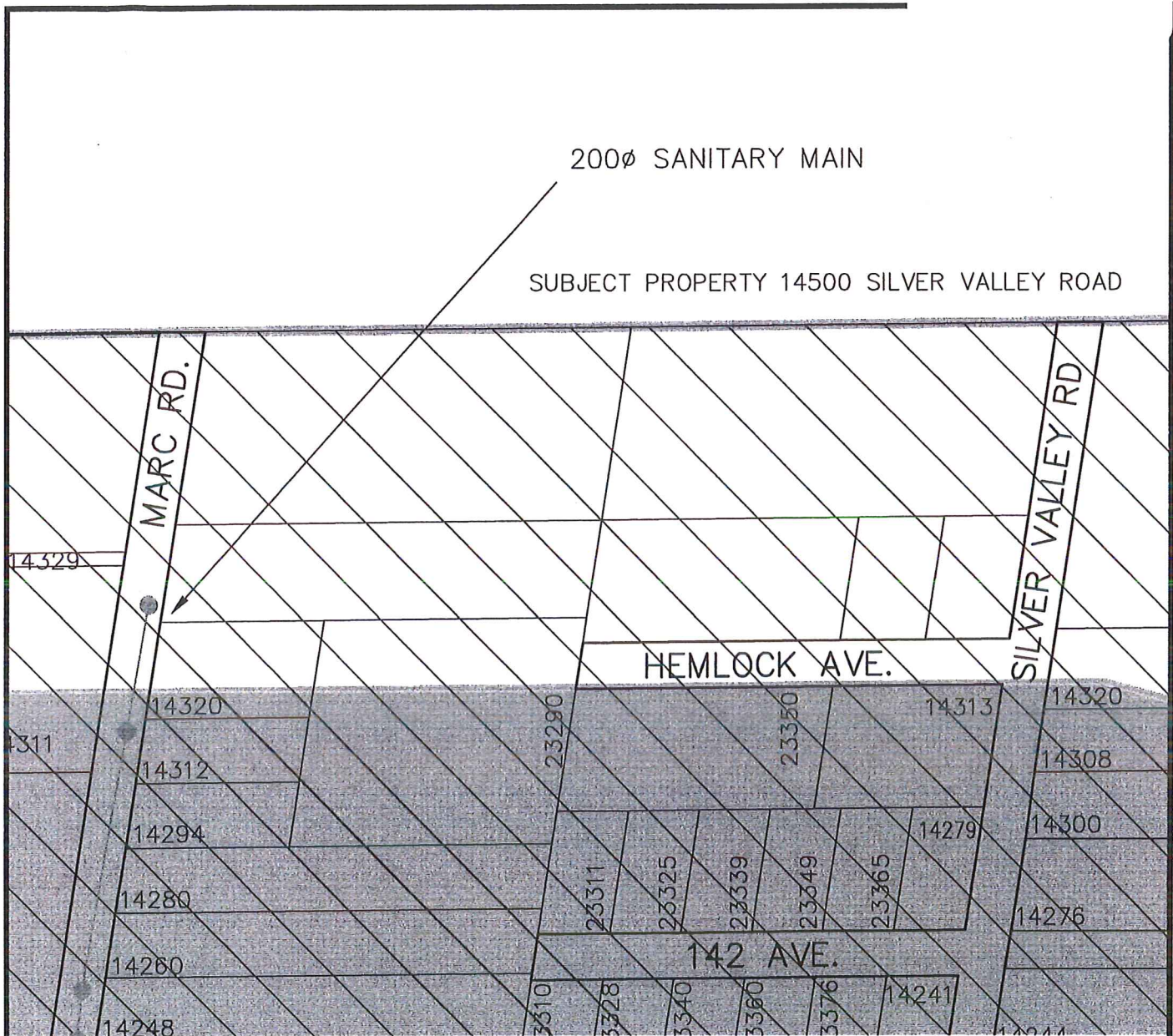
Approved by: Forrest Smith, P.Eng.  
Director of Engineering



Concurrence: Scott Hartman  
Chief Administrative Officer

Attachments:  
(A) Map

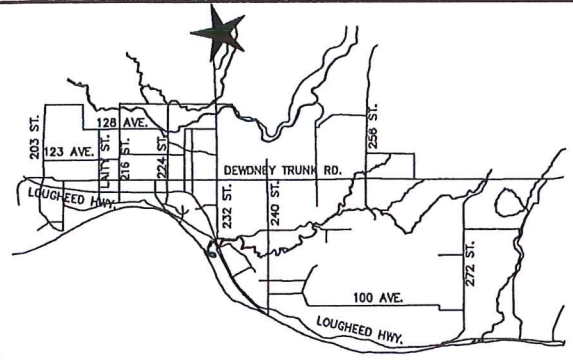




Fraser Sewage Area Boundary



Metro Vancouver Urban Containment Boundary



N

SCALE:  
N. T. S.



**CITY OF MAPLE RIDGE  
ENGINEERING  
DEPARTMENT**

**PROPOSED SANITARY CONNECTION  
AND FSA INCLUSION  
14500 SILVER VALLEY ROAD**

DATE:	JUN 2023	FILE/DWG No	SK0473
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Wedler Engineering LLP  
202-10216 128th Street  
Surrey, BC V3T 2Z3



**WEDLER**  
ENGINEERING

April 13, 2023  
Metro Vancouver Regional District  
4515 Central Boulevard, Burnaby  
V5H 0C6

File Ref: S22-0423/A

To whom it may concern,

**Reference: Request Extension of GVS&DD to Allow Sanitary Service Connections  
UBC Malcolm Knapp Research Forest - 14500 Silver Valley Rd, Maple Ridge**

### Introduction

Wedler Engineering LLP (Wedler) has been retained by the University of British Columbia (UBC) to review servicing options available for their proposed development at the Malcolm Knapp Research Forest (MKRF). Referred to as the Gateway Project by UBC, the proposed development consists of a new front entry/office building, a new and relocated workshop area, a new and relocated caretaker residence, relocating the parking lot to improve traffic flow and, a potential Katzie First Nation longhouse. There is also an option to facilitate growth of the research facilities and event space over the next 10 years. The site is located on the south end of the research forest grounds, north of the Silver Valley Road terminus.

The purpose of this memo is to apply for an extension to the Greater Vancouver Sewerage & Drainage District (GVS&DD), under the guidelines posed by “Metro 2040: Shaping our future, Implementation Guideline #7, Extension of Regional Sewerage services”.

### Application

UBC is an extension to the GVS&DD to allow a sanitary sewer connection to the existing sanitary sewer system on Marc, in the City of Maple Ridge (CMR). Due to the topography of the site, sanitary flows will be collected pumped on-site to this off-site MH. The existing CMR gravity sewer would be extended approximately 114 m north to the end of Marc Road where it would meet the on-site force main. Refer to sanitary catchment analysis plan (Appendix A) for details on catchment areas, estimated equivalent population, and calculated sewer flows.

This memo is based on the requirements listed on Metro Vancouver 2040: Shaping our future, Implementation Guideline #7, Extension of Regional Sewerage services. Adopted by the Metro Vancouver Regional Board April 28, 2017.

As per the section 2.3.2, UBC is specifically seeking a “Connection Exception for Limited Development Determined to Have No Significant Impact on Metro 2040 Provisions”

a) “the nature of development, existing or proposed, does not conflict with, or negatively impact, Metro 2040 Goal 1 urban containment provisions or related regional land use designations, goals and strategies”

1.1 “Contain urban development within the Urban Containment Boundary”

1.2 “Focus growth in Urban Centres and Frequent Transit Development Areas”

1.3 “Protect Rural areas from urban development”

This development is servicing a forestry research facility in rural area, with institutional and recreational land use, and will not include commercial or residential growth beyond existing (relocated) caretaker facilities. Therefore, urban development is contained within the Urban Containment Boundary.

b) “Extension of GVS&DD sewage services is provided to a single, non-strata, property, with service access to be contained within a specified GVS&DD sewerage boundary footprint comprising the structures proposed for sewerage connection within that property”

This development is a single non-strata property and connection from the site is within the property and connects to the existing MH at the boundary at Marc Road.

c) “The service connection is designed to accommodate a sewage flow capacity no greater than the capacity necessary to service the existing structures and activity located within the specified GVS&DD Sewerage Area footprint on the date of approval”

d) “The distance and routing of extended sewerage infrastructure to the subject property is proximate and located such that there is limited potential for prompting additional regional sewerage connection requests in the surrounding area. Proximity to an existing sewer main does not alone establish rationale for a sewerage connection.”

The proposed service connection is a 100mm on-site force main, pumped from a proposed on-site lift station. It will only facilitate the planned growth described within this memo and the attached Appendix A figure, which is within the research forest facility and will never be available to off-site connection. Therefore, the proposed service cannot facilitate additional connections from outside of the GVS&DD. There would be a 100m off-site extension to the existing gravity sewer on Marc Road that could potentially grant service to one existing lot that is already within the GVS&DD boundary, and is not a good candidate for development as it is outside of the practical limit of water service from the City of Maple Ridge.

“To be considered under this exception, applications must include documentation specifying:

a) The existing use of the property, the structures proposed for connection and any anticipated changes to the use or structures on the property”

## Supporting Information

The proposed development of this property is an extension to the existing institutional (research) and recreational land uses, and will include a new administration building, gallery, relocated caretaker's residence, relocated workshop area, and (in the future) a possible Katzie First Nation Longhouse.

"The rationale for connecting to the GVS&DD sewage treatment system versus an on-site sewage treatment system"

There is no existing treatment plant on-site, and not enough flow (and very inconsistent flows given the event-based and seasonal fluctuations in site occupancy) to justify creating one for the facility. Also, there are concerns regarding the effluent receiving environment and proximity to groundwater wells.

"The location of the existing GVS&DD or municipal sewer pipes and the proposed routing of the new sewer pipes required for connection to the subject site"

Proposed routing of new sewer pipes connects the subject site to the CMR sewer system, as shown on the plan attached with this memo (Appendix A). We propose to extend the existing CMR gravity system approximately 225m to the north of its current terminus to a new gravity manhole, which UBC will connect to via 100mm force main.

"the site plan showing the proposed GVS&DD sewerage boundary footprint containing only the structure(s) to be connected within the property"

We are proposing a 5.3 ha extension to the GVS&DD sewerage boundary, covering the structures within the property that will be connected to the proposed private lift station. See attached plan for details.

"The servicing plan indicating the connection is designed to accommodate a flow capacity no greater than the capacity necessary to service the specified structures and activity to be located within the proposed GVS&DD Sewerage Area footprint"

a)

The proposed 100mm force main will have a design discharge rate of approximately 7 L/s. Our design flow rate into the pump station for the proposed equivalent population is approximately 1.6 L/s (short-term) and 2.3 L/s (long term after 10 years). The force main is selected to accommodate the design flow for the current and future planned growth of the site (i.e., future Katzie First Nation Longhouse, for hosting event-based groups), but without significant spare capacity for other unplanned growth, and without the capability to support other off-site flows.

f) "the applicant and property owner acknowledge that Metro Vancouver consideration for exemption is specific to the information contained in the application, and that any works to extend capacity for collection of liquid waste generated outside of the GVS&DD sewerage boundary footprint, within or outside of the subject property, will require a new sewerage extension application to the GVS&DD"

Yes, applicant and property owner acknowledge and understand this requirement.

## Closure

Should you have any questions or inquiries regarding this letter, please don't hesitate to contact me.

Yours truly,  
Wedler Engineering LLP

Per:



Leena Jayasekara, M.Eng., P.Eng.  
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Reviewed by:

A handwritten signature in cursive script that reads "Jonathan Funk".

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\*Wedler Engineering LLP is a partnership of corporations.  
Permit to Practice number: 1000196

Endorsed by:

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cc:

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Maple Ridge, BC V2X 6H9  
p. 604-377-3719

## Appendix A: Site Plan



To: Regional Planning Committee

From: Jessica Hayes, Acting Program Manager, Housing Policy and Planning,  
Regional Planning and Housing Services

Date: October 16, 2023 Meeting Date: November 3, 2023

Subject: **Support for The National Housing Accord: A Multi-Sector Approach to Ending  
Canada's Rental Housing Crisis**

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### RECOMMENDATION

That the MVRD Board endorse the National Housing Accord, a national campaign and policy proposal with recommendations to restore housing affordability, and to build at least two million new affordable and market rental units by 2030.

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### EXECUTIVE SUMMARY

The National Housing Accord is a national campaign and policy proposal put forward by various housing sector organizations. It outlines ten recommendations to the federal government to address the shortage of rental housing in Canada, with the aim of building over two million new affordable and market rental units by 2030. The National Housing Accord includes ten recommendations that align strongly with the housing policy in *Metro 2050* policies and advocacy actions, as well as with other regional housing policy initiatives underway in the region. These are:

1. Create a coordinated housing plan involving all three orders of government
2. Create a national workforce and immigration strategy on housing
3. Reform CMHC fees and the federal tax system
4. Provide low-cost, long-term fixed-rate financing for constructing purpose-built rental housing
5. Develop a robust innovation strategy for housing
6. Reform the National Building Code for innovation and productivity
7. Streamline the CMHC approvals process
8. Create property acquisition programs for non-profit housing providers
9. Create a Homelessness Prevention and Housing Benefit (HPHB)
10. Reform the Canada Housing Benefit.

### PURPOSE

To seek Regional Planning Committee and MVRD Board endorsement of the National Housing Accord, a national campaign and policy proposal put forward by various housing sector organizations with recommendations to restore housing affordability and build at least two million new affordable and market rental units by 2030.

### BACKGROUND



The Regional Planning Committee's Terms of Reference outline specific Committee responsibilities, including facilitating dialogue between Metro Vancouver and other agencies around actions to encourage complete communities, and housing planning and policy as it relates to the objectives of *Metro 2050*, the regional growth strategy.

In August 2023, the National Housing Accord, led by the Canadian Alliance to End Homelessness (CAEH), the PLACE Centre at the Smart Property Institute and the Real Property Association of Canada (REALPAC), released ten recommendations to the federal government, specifically to address the shortage of rental housing in Canada. The report and its recommendations (Reference 1) are intended to act as a blueprint for a national action plan, for which the authors have put out a call for endorsement. This policy proposal aligns with and support the strategies outlined in Goal 4 of *Metro 2050*, particularly given the regional growth strategy's strong focus on rental housing, and the provision of non-market housing.

### **NATIONAL HOUSING ACCORD RECOMMENDATIONS**

The National Housing Accord acknowledges that purpose-built rental housing is a critical component of the housing continuum, essential to meeting the needs of a growing population and lower income households. Yet, high land and construction costs have made the delivery of new rental units challenging, particularly those that are near transit, and that are affordable to low and moderate income households. At the same time, rents for existing and new rental units in many parts of the country have been increasing rapidly, as a result of the limited supply of both affordable and market-rate purpose-built rental units.

According to the Canada Mortgage and Housing Corporation (CMHC), restoring affordability will require the construction of 5.8 million new homes by 2030, and even with current projections, the overall housing supply gap would remain close to 3.5 million units. Around two million of these homes will need to be purpose-built rentals (including at least 655,000 deeply affordable and supportive housing units).

To address these challenges, the National Housing Accord lays out a blueprint for a national "Industrial Strategy" to build over 2 million purpose-built rental units, in collaboration with all levels of government and participants in the housing sector, including developers, investors, owners, non-profits, and the labour market.

The National Housing Accord includes ten recommendations, summarized below:

1. **Create a coordinated plan with all three orders of government.** This federal plan should take the form of an Industrial Strategy led by a roundtable of public and private builders, the non-profit housing sector, Indigenous housing experts, investors and labour, and include targets and accountability measures. The plan should include enhanced data collection, more robust and frequent population forecasts and better research to understand Canada's housing system. It should also include a blueprint to fund deeply affordable housing, co-operative housing and supportive housing, housing for seniors and students, and double the relative share of non-market community housing.

2. **Create a national workforce and immigration strategy on housing.** Led by the federal government, in collaboration with other orders of government, the higher education sector, trades unions, and builders, this strategy should include actions to support construction trades and other employment classes related to housing production, and co-develop a detailed workforce and immigration strategy on housing.
3. **Reform CMHC fees and the federal tax system.** The federal government should consider changes to capital cost provisions and eliminating the GST/HST on purpose-built rental housing to incentivize the construction of purpose-built rental housing.
4. **Provide low-cost, long-term fixed-rate financing for constructing purpose-built rental housing.** This should also include financing to upgrade existing purpose-built rentals to make them more accessible, climate-friendly and energy efficient.
5. **Develop a robust innovation strategy for housing.** To ensure innovations achieve scale, the federal government should create innovation centres for housing construction and procurement policy guidance.
6. **Reform the National Building Code for innovation and productivity.** The federal government should help to drive innovation and productivity in the homebuilding sector by making changes to the building code to enable purposed-built rental projects to be less labour intensive to build. This can include modular housing construction, mass timber and single egress for multi-unit residential buildings up to six storeys. The federal government could also develop a National Zoning Code, incorporating global best practices in creating density, particularly around transit lines.
7. **Streamline the CMHC approvals process.** This could include a Code of Conduct for developer and builders to qualify for government programs and borrowing, and a catalogue of pre-approved designs, including mid-rise purpose-built rentals, that use innovative methods such as modular housing and mass-timber, requiring less skilled labour than traditional forms. Developments that use these designs would then be fast-tracked for CMHC and other approvals.
8. **Create property acquisition programs for non-profit housing providers.** These programs would assist with purchasing existing rental housing projects and hotels and facilitate office-to-residential conversions. These programs could include capital grants, provision of pre-approved debt financing, funds that provide secondary debt and equity financing, or other innovative levers that help with the initial costs without saddling the providers with operating and significant debt servicing costs.
9. **Create a Homelessness Prevention and Housing Benefit (HPHB).** This benefit would provide immediate rental relief to up to 385,000 households at imminent risk of homelessness, help over 50,000 people leave homelessness, and reduce pressure on Canada's overwhelmed homeless systems. The benefit would have two streams: the first provide financial support of an average of \$600-\$700 per month to reduce the flow into chronic homelessness and accelerate exits from chronic homelessness, and the second to prevent "at risk" populations from becoming homeless by providing financial support to those paying 40 per cent or more of their income on rent.

**10. Reform the Canada Housing Benefit.** Ensuring that it will better target individuals and families with the greatest housing needs by replacing it with a Portable Housing Benefit (PHB)

**ALIGNMENT WITH METRO 2050 AND REGIONAL HOUSING POLICY INITIATIVES**

The actions outlined within the National Housing Accord are aligned with several of the strategies and actions of Metro 2050, including those outlined in Table 1.

Metro 2050 Policy		Related National Housing Accord recommendation
<b>4.2.5</b>	Advocate to the Federal Government and the Province to provide measures and incentives to stimulate private sector investment in rental housing to help achieve the current and anticipated need for rental housing units, as determined by housing needs reports or assessments.	Recommendation #3 Recommendation #6
<b>4.3.3</b>	Advocate to the Federal Government and the Province for measures and incentives to stimulate non-market rental supply and capital and operating funding to support the construction of permanent, affordable, and supportive housing across the region.	Recommendation #1 Recommendation #7
<b>4.3.4</b>	Advocate to the Federal Government and the Province to provide capital and operating funding to meet the current and anticipated housing needs of lower income households and populations experiencing or at risk of homelessness, as determined by housing needs reports or assessments.	Recommendation #3 Recommendation #7 Recommendation #8
<b>4.3.5</b>	Advocate to the Federal Government and the Province for portfolio-based, long-term funding sources for non-profit housing providers that shift away from short-term, project-based funding models as a means of ensuring the sustainability of the non-profit housing sector.	Recommendation #7
<b>4.3.6</b>	Advocate to the Federal Government and the Province to provide and expand ongoing rent supplements and housing benefits in a way that takes into account geographic and cost of living considerations, and to increase the shelter portion of income assistance to ensure that lower income households and populations experiencing or at risk of homelessness can afford suitable and adequate housing.	Recommendation #9 Recommendation #10

As well, several of the National Housing Accord recommendations support ongoing regional housing policy initiatives, and the objectives Metro Vancouver Housing under the *Metro Vancouver Housing 10-Year Plan*. For example, recent efforts to explore the use of standardized zones and guidelines, pre-reviewed designs for rental apartment development, and off-site construction through a forthcoming collaborative project led by the Province (related to Recommendation #2), and MVH’s intent to explore the acquisition of existing purpose-built rental housing units under the BC Rental Protection Fund (related to Recommendation #8).

Metro Vancouver staff will further evaluate the potential impact of several of the policy actions recommended as part of the National Housing Accord policy proposal through the planned update of the 2016 “What Works: Municipal Measures for Sustaining and Expanding the Supply of Purpose-Built Rental Housing” Metro Vancouver resource guide (Reference 3).

### ALTERNATIVES

1. That the MVRD Board endorse the National Housing Accord, a national campaign and policy proposal with recommendations to restore housing affordability and to build at least two million new affordable and market rental units by 2030, as it aligns strongly with *Metro 2050's* housing strategies and advocacy actions.
2. That the MVRD Board receive for information the report dated October 16, 2023, titled “Support for The National Housing Accord: A Multi-Sector Approach to Ending Canada's Rental Housing Crisis”, and provide alternate direction to staff.

### FINANCIAL IMPLICATIONS

There are no direct financial implications related to this report. A number of the recommendations outlined in the National Housing Accord have the potential to have positive financial impacts on the delivery of new rental housing supply. For example, as recommended in the National Housing Accord, the Federal government recently announced that it will waive the Goods and Services Tax (GST) on new purpose-built rental housing, to incentivize the construction of rental housing, which is expected to lead to more rental housing being delivered by the private sector.

Should the MVRD Board endorse the National Housing Accord, staff will add Metro Vancouver's endorsement and corporate logo to the National Housing Accord website (Reference 2), becoming one of the first governmental organizations to do so. Metro Vancouver has previously lent its endorsement to strategies and policy proposals advanced by other organizations and coalitions, for example, earlier this year, Metro Vancouver endorsed the Aboriginal Housing Management Society's provincial “Urban Rural and Northern Indigenous Housing Strategy”.

### CONCLUSION

The National Housing Accord lays out a blueprint for a national “Industrial Strategy” to build over 2 million purpose-built rental units, in collaboration with all levels of government and participants in the housing sector, including developers, investors, owners, non-profits, and the labour market. Given the strong alignment between the National Housing Accord, *Metro 2050* policies and advocacy actions, and regional housing policy initiatives underway in the region, staff recommend Alternative 1, to endorse the National Housing Accord.

### REFERENCES

1. [Full Report: The National Housing Accord: A Multi-Sector Approach to Ending Canada's Rental Housing Crisis](#)
2. [The National Housing Accord](#)
3. [Metro Vancouver What Works : Municipal Measures for Sustaining and Expanding the Supply of Purpose-Built Rental Housing \(2016\)](#)

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To: Regional Planning Committee

From: Jessica Jiang, Regional Planner, Regional Planning and Housing Services

Date: October 5, 2023 Meeting Date: November 3, 2023

Subject: **Regional Context Statement from the University of British Columbia**

---

### **RECOMMENDATION**

That MVRD Board receive for information the report dated October 5, 2023, titled “Regional Context Statement from the University of British Columbia”.

---

### **EXECUTIVE SUMMARY**

As part of the Campus Vision 2050 process, the University of British Columbia (UBC) has developed a land use plan and updated its Regional Context Statement, which has been submitted to Metro Vancouver. Unlike the typical local government process for submitting Regional Context Statements, the *Municipalities Enabling and Validating Act* requires the UBC Board to forward any new or amended Regional Context Statement to Metro Vancouver’s Chief Planning Officer for written comments on the relationship between the Regional Context Statement and the regional growth strategy. UBC then submits these comments to the provincial Minister responsible for UBC for review and consideration of adoption.

Regional Planning staff have reviewed UBC’s Regional Context Statement relative to *Metro 2050*’s goals and policy actions, provided feedback to UBC, and UBC has revised its Regional Context Statement accordingly. Metro Vancouver staff, including the Chief Planning Officer, have reviewed the updated UBC Regional Context Statement and consider it to be generally consistent with *Metro 2050*. Therefore, a letter from Metro Vancouver’s Chief Planning Officer will be sent to UBC noting that the submitted Regional Context Statement is generally consistent with the regional growth strategy. This report is provided for information to the Regional Planning Committee and Board.

### **PURPOSE**

To provide the Regional Planning Committee and the MVRD Board with the opportunity to review the Chief Planning Officer’s comments on UBC’s Regional Context Statement.

### **BACKGROUND**

UBC is undertaking a public planning process called Campus Vision 2050 (Reference 1) that includes an update to its land use plan and Regional Context Statement. In accordance with provincial requirements, UBC has submitted its Regional Context Statement to Metro Vancouver for comments, which are provided in this report for Committee and Board review.

## LEGISLATIVE REQUIREMENTS

The *Municipalities Enabling and Validating Act* (No. 3), Part 10-2010, sections 38 and 39 (Reference 2) sets out that the UBC land use plan must contain a Regional Context Statement, and that:

- 1) *A Regional Context Statement in a land use plan for the Point Grey campus lands must describe the relationship between the land use plan and the regional growth strategy of the Greater Vancouver Regional District.*
- 2) *A Regional Context Statement and the rest of the land use plan must be consistent.*

It should be noted that unlike Section 866 of the *Local Government Act* (Reference 3), the legislation for UBC does not specify a deadline for submitting the Regional Context Statement, nor does it specify a 120-day deadline by which Metro Vancouver must respond.

For Regional Context Statements submitted by local governments, the MVRD Board's role is to consider acceptance. For UBC, Ministerial Order No. 229 (Reference 4) mandates that:

*"Prior to submitting a new Land Use Plan or an amendment to the Land Use Plan to the Minister, the [UBC] Board is required to forward any new or amended Regional Context Statement to the Chief Planning Officer of the Greater Vancouver Regional District (GVRD) for written comments on the relationship between the new or amended Regional Context Statement and the GVRD's Regional Growth Strategy. The comments received from the Chief Planning Officer must be included in the package provided to the Minister."*

In this case, Metro Vancouver's Chief Planning Officer is the Deputy General Manager, Regional Planning and Housing Development, Regional Planning and Housing Services.

## REGIONAL CONTEXT STATEMENT ANALYSIS

Staff have reviewed UBC's Regional Context Statement relative to *Metro 2050's* goals and policy actions, and have provided comments to UBC staff. A summary of the analysis for UBC's Regional Context Statement relating to each *Metro 2050* goal area is provided below. UBC has incorporated Metro Vancouver staff comments, and has submitted an updated Regional Context Statement, provided as Attachment 1. Metro Vancouver staff, including the Chief Planning Officer, have reviewed the updated UBC Regional Context Statement and consider it to be generally consistent with *Metro 2050*. The comments below will be provided to the Province as Metro Vancouver's Chief Planning Officer's written comments on the relationship between the amended Regional Context Statement and the regional growth strategy.

### ***Metro 2050 Targets***

UBC's Regional Context Statement outlines relevant Land Use Plan policies and supplementary information that demonstrates how the UBC plan will meet the regional targets set out in *Metro 2050*. Specifically:

- 100% of UBC's projected growth is within the Urban Containment Boundary (UCB).

- 100% of UBC’s projected residential growth is within a Frequent Transit Development Area (FTDA). 96% of UBC’s projected employment growth is within a FTDA.
- UBC’s Land Use Plan includes policies on providing open space, greenways, and managing biodiversity. Detailed strategies and targets for tree canopy cover and biodiversity will be included in future Neighbourhood Plans, subsequent to the adoption of the Campus Vision and Land Use Plan. These strategies and targets will contribute to *Metro 2050* targets for increasing the area of lands protected for nature from 40% to 50% of the region’s land use, and increasing the total regional tree canopy cover within the UCB from 32% to 40% by 2050.
- UBC’s Land Use Plan commits to net zero operational and community greenhouse gas (GHG) emission reductions by 2050. UBC’s Climate Action Plan include additional policies that detail how GHG emissions reductions are to be achieved. These policies will contribute to the *Metro 2050* regional target of reducing GHG emissions to 45% below 2010 levels by 2030, and achieving a carbon neutral region by 2050.
- Over 80% of UBC’s campus housing is non-market rental housing, including student housing and below-market faculty/staff rental housing. UBC’s Land Use Plan, in concert with their Housing Action Plan commits to ensuring rental housing is available on campus. The Land Use Plan includes policies to ensure at least 30% of total neighbourhood housing is rental, of which half is to be non-market housing. UBC’s Housing Action Plan commits to increasing student housing and campus rental by committing to up to 40% of new campus neighbourhood housing as rental. These policies will contribute towards the regional target of having at least 15% of newly completed housing units built within Urban Centres and FTDA’s combined, to the year 2050 be affordable rental housing.

### **Goal 1: Create a Compact Urban Area**

*Metro 2050* Goal 1 is intended to direct growth in the region to Urban Centres, and along transit corridors, within which are a variety of complete communities with access to a range of housing choices, employment opportunities, amenities and services. The UBC Campus is a part of Electoral Area A and located within the Urban Containment Boundary. A significant portion of the campus is also located within a Frequent Transit Development Area, which is an additional priority location for accommodating concentrated growth in higher density forms of development. UBC’s Regional Context Statement outlines UBC’s commitment to meeting the targets and regional aspirations set out in *Metro 2050*. Specifically, UBC’s Regional Context Statement:

- Indicates that 100% of UBC’s projected growth is located within the UCB.
- Estimates that the population within UBC Point Grey Campus lands neighbourhoods will reach 35,700 people by 2050, up from 14,900 people in 2023.
- Estimates that the number of units within UBC Point Grey Campus lands neighbourhoods will reach 16,300 units by 2050, up from 6,800 in 2023.
- States that the Land Use Plan, Campus Vision, and subsequent 10-year Campus Plan, Transportation Plan and Neighbourhood Plans will continue the evolution of the campus lands into a year-round complete community.
- References Land Use Plan policies that increase housing choice and affordability, provide green infrastructure and neighbourhood amenities, and prioritize sustainable and active transportation modes.

- Includes a map denoting the UCB that is generally consistent with the Regional Land Use Designations map in *Metro 2050*.
- Includes a commitment to coordinating with external infrastructure and service providers, including the Metro Vancouver Regional District, the Greater Vancouver Sewerage and Drainage District, and the Greater Vancouver Water District.
- Supports Metro Vancouver's economic development initiatives, including focusing projected employment growth with FTDA's.

UBC is expecting to see significant population and employment growth over the two decades. As the estimated population is expected to double by 2050, UBC is contemplating significant housing development to support growth. A significant driver of, and support for, this growth is the anticipated SkyTrain extension to UBC. UBC's Campus Vision 2050 and Land Use Plan explore integrating the campus environment with opportunities to enable a sustainable, transit-oriented community. Specifically, the UBC Extension will improve access to education and employment on campus and housing off campus and help the university meet its GHG reduction targets. It will also provide additional opportunities for UBC's FTDA, as it will open up new options for students, faculty, staff and residents for better connectivity with the region and attracting new amenities to campus.

### **Goal 2: Support a Sustainable Economy**

*Metro 2050* Goal 2 is intended to protect and optimize the land use and transportation systems required to ensure the viability of business sectors by supporting regional employment and economic growth. In this context, *Metro 2050* is committed to the long-term protection of Industrial, Employment, and Agricultural land. As one of Canada's largest academic institutions and the third-largest employer in the BC, UBC is a generator of significant economic activity. Thousands of people travel from across the region each day to learn, work and play on UBC Point Grey Campus lands, which contributes to an estimated daytime population of more than 80,000 people, and a nighttime population of around 29,000 people. UBC's Regional Context Statement references Land Use Policies that supports UBC's role as a major employment centre in the region. These references include:

- Indicates 96% of employment targets for UBC will be concentrated in the UBC Frequent Transit Development Area.
- Estimates employment within UBC Point Grey Campus lands will reach 27,100 employees by 2050, up from 21,400 employees in 2023.

UBC does not have any industrial land on campus; and with the exception of the UBC Farm, there is no agricultural land on site. Therefore, the majority of the industrial and agricultural strategies outlined within *Metro 2050* do not apply.

### **GOAL 3: Protect the Environment, Address Climate Change, and Respond to Natural Hazards**

*Metro 2050* Goal 3 recognizes that the region's vital ecosystems provide essential services for all life. Goal 3 includes strategies that promote a connected network of protected Conservation and Recreation lands and other green spaces to enhance physical and mental health, supports biodiversity, and increases community resilience. *Metro 2050* does not identify Conservation and Recreation lands on the UBC Point Grey campus lands. Therefore, the Conservation and Recreation strategies outlined within *Metro 2050* do not apply.



To support the climate and environment strategies outlined in *Metro 2050* Goal 3, UBC's Regional Context Statement indicates that several plans will work together to advance its climate action strategy. Future Campus and Neighbourhood Plans will include detailed strategies and targets to achieve *Metro 2050*'s shared goals, such as for tree canopy cover. UBC's Climate Action Plan and Neighbourhood Climate Action Plan include policies for achieving greenhouse gas emissions reduction targets. UBC's Regional Context Statement also references Land Use Plan policies that:

- Link green spaces on campus, establish greenways and green edges, provide open spaces that strengthen connectivity, and provide ecological buffer areas adjacent to sensitive ecosystems, which advance *Metro 2050* strategies related to the protection, enhancement, restoration and connection of ecosystem.
- Commit to net zero operation and community GHG emissions reductions by 2050, develop a compact campus that prioritize active transportation, and design for a human-scaled, compact, pedestrian friendly community, which advance *Metro 2050* strategies related to advancing land use, infrastructure, and human settlement patterns that reduce energy consumption and GHG emissions.
- Strategically renew, retrofit, and replace buildings, use natural systems and nature based solutions for future infrastructure, and work towards the targets and policies of an updated Rainwater Management Plan to address future climate impacts and green infrastructure strategies, which advance *Metro 2050* strategies related to advancing land use, infrastructure, and human settlement patterns that improve resilience to climate change impacts and natural hazards

#### **Goal 4: Provide Diverse and Affordable Housing Choices**

*Metro 2050* Goal 4 envisions a region with a diverse and affordable range of housing choices suitable for residents at any stage of their lives, including a variety of unit types, sizes, tenures prices, and locations, with a focus on increasing the supply of purpose-built rental housing in proximity to transit. UBC provides significant non-market housing for students, faculty and staff, and market housing for UBC and the broader community. The University's Housing Action Plan describes how UBC uses its land and financial resources to improve housing choice and affordability. The Land Use Plan, Campus Vision 2050, and Housing Action Plan work in concert to advance this work and provides additional details on housing tenure, type and size. UBC's Regional Context Statement also references Land Use Plan policies that:

- Encourage different housing types and tenures, provide significant non-market housing for students, faculty and staff, and market housing for the UBC and broader community, and commit to housing at least 25% of the full-time student population in different types of on-campus student and neighbourhood housing, with an ambition to increase to up to 33%, which advance *Metro 2050* strategies related to expanding the supply and diversity of housing to meet a variety of needs.
- Ensure at least 30% of total neighbourhood housing is rental, of which half is non-market housing, uphold the student housing targets outlined in the Housing Action Plan, including replacement strategies for redeveloped sites, which advance *Metro 2050* strategies related to protecting tenants and expanding, retaining, and renewing the rental housing supply.

- Increase housing choice and affordability through UBC’s Housing Action Plan, which includes commitments to partner with groups such as BC Housing on innovative housing programs, which advance *Metro 2050* strategies related to meeting the housing needs of lower income households and populations experiencing or at risk of homelessness. UBC also has existing financial support and emergency housing programs in place for at-risk populations, including students.

### **Goal 5: Support Sustainable Transportation Choices**

*Metro 2050* Goal 5 promotes compact, transit-oriented urban forms supported by a range of sustainable transportation choices. This pattern of development expands the opportunities for active transportation, GHG emissions reduction, and improving air quality. UBC’s Regional Context Statement anticipates the future arrival of SkyTrain to campus and includes policies that supports compact campus development that prioritizes transit, walking and rolling, and cycling. The Regional Context Statement also references land use policies that support multi-modal transportation and that promote alternatives to single occupancy vehicles. UBC’s Regional Context Statement also references Land Use Plan policies that:

- Prioritize transportation modes in the following order, walking and rolling, cycling and micro-mobility, public transit, carpool/shared use vehicles, ride-hailing and taxi, single occupancy vehicles, which advance *Metro 2050* strategies related to coordinating land use and transportation to encourage transit, multiple-occupancy vehicles, cycling and walking.
- Implement a network of multimodal street types, support mobility infrastructure and services, including service and delivery, and transit priority measures, which advance *Metro 2050* strategies related to coordinating land use and transportation to support the safe and efficient movement of vehicles for passengers, goods and services.

### **ALTERNATIVES**

This is an information report. No alternatives are presented.

### **FINANCIAL IMPLICATIONS**

There are no financial implications related to this report.

### **CONCLUSION**

UBC has incorporated Metro Vancouver staff comments into their updated Regional Context Statement, and staff recommend that it is generally consistent with *Metro 2050*. Metro Vancouver’s Chief Planning Officer will forward a letter communicating this and the comments in this report to UBC, and UBC will include the letter as a part of its updated land use plan package submission to the Minister.

### **ATTACHMENT**

1. The University of British Columbia’s Regional Context Statement

### **REFERENCES**

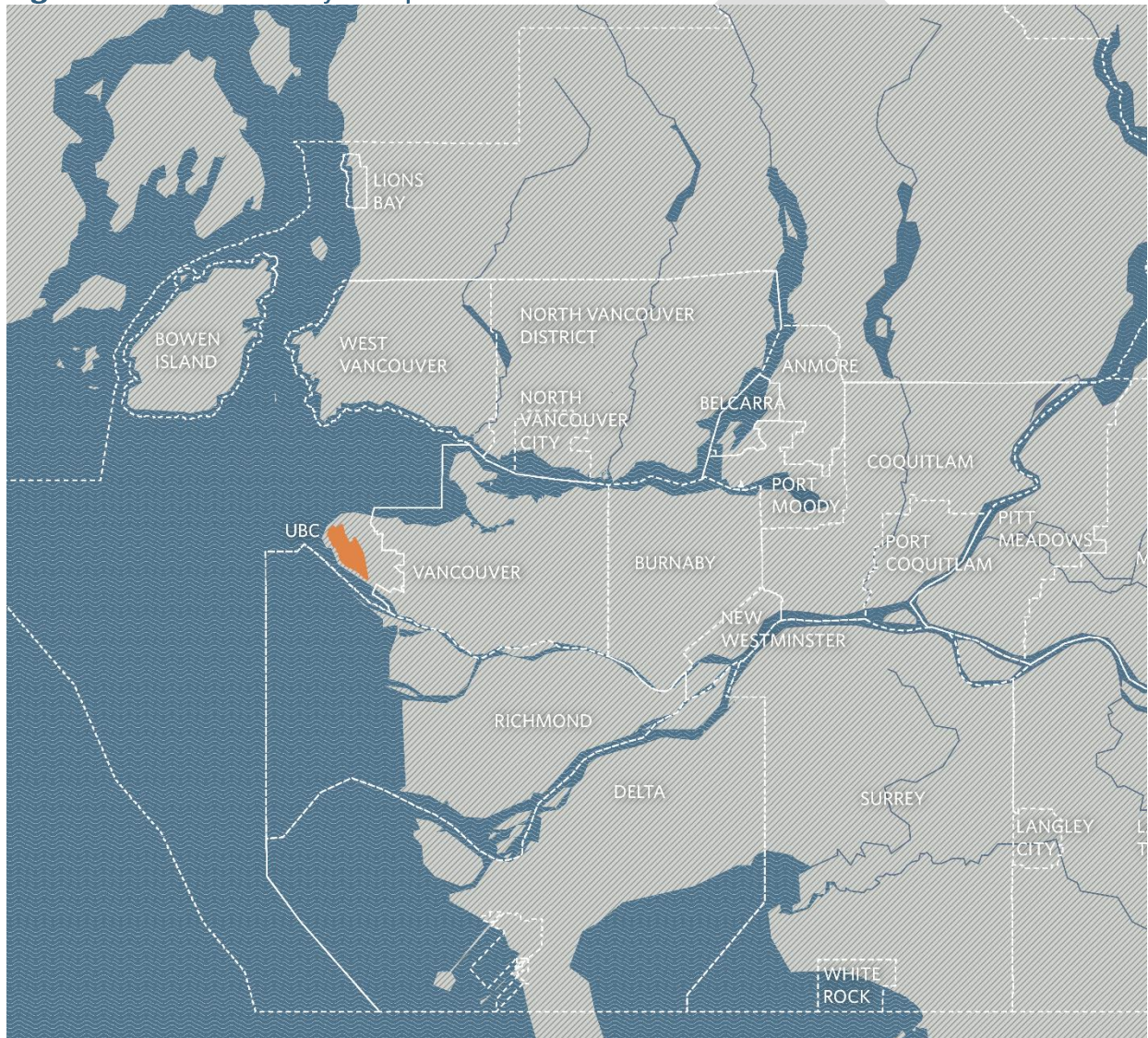
1. [UBC Campus Vision 2050](#)
2. [The Municipalities Enabling and Validating Act](#)
3. [Local Government Act, section 866](#)
4. [Ministerial Order No. 229, dated August 18, 2010, section 16](#)

# UBC Point Grey Campus Lands Draft Regional Context Statement

September 2023

This Regional Context Statement (RCS) describes the relationship between the University of British Columbia (UBC)'s Land Use Plan (LUP) and Metro Vancouver Regional District's Metro 2050: Regional Growth Strategy (Metro 2050). The *Municipalities Enabling and Validating Act (No.3) Part 10-2010* requires UBC to include a Regional Context Statement in a Land Use Plan.

**Figure A: UBC Point Grey Campus Lands in Metro Vancouver**



UBC Point Grey Campus Lands
  Municipal Boundaries

Metro 2050 sets out a series of strategies and actions for Metro Vancouver Regional District and member jurisdictions, including UBC, to guide growth and respond to challenges facing our region. The strategies and actions are arranged under five interrelated goals:

### **1. Create a Compact Urban Area**

Metro Vancouver's growth is focused inside an Urban Containment Boundary, within which are a variety of complete communities with access to a range of housing choices, employment opportunities, amenities, and services.

Concentrating growth in a network of transit-oriented centres and corridors helps reduce greenhouse gas emissions and pollution, while supporting an efficient transportation network and the efficient use of land.

### **2. Support a Sustainable Economy**

The objective of this goal is to protect and optimize the land base and transportation systems required to ensure the viability of business sectors. This means supporting regional employment and economic growth, including the established and new emerging sectors and businesses. This is best achieved through the long-term protection of Industrial, Employment, and Agricultural lands, and ensuring that supports are in place to allow commerce to flourish in Urban Centres throughout the region, and heavy and light industrial activities on Industrial lands, connected by a diverse and reliable transportation system.

### **3. Protect the Environment, Address Climate Change, and Respond to Natural Hazards**

The region's vital ecosystems provide essential services for all life. A connected network of protected Conservation and Recreation lands and other green spaces throughout the region provides opportunities to enhance physical and mental health, supports biodiversity, and increases community resilience. The strategies in this goal also help Metro Vancouver and its member jurisdictions contribute to meeting the regional greenhouse gas emission reduction targets, and prepare for the impacts of climate change and natural hazards.

### **4. Provide Diverse and Affordable Housing Choices**

Metro Vancouver is a region of communities with a diverse and affordable range of housing choices suitable for residents at any stage of their lives, including a variety of unit types, sizes, tenures, prices, and locations. There is an increased supply of purpose-built rental housing, particularly in proximity to transit, and there are robust tenant protections in place to mitigate the impacts of renovation and redevelopment on renters. Residents experiencing or at risk of homelessness and those with lower incomes or special needs can access permanent, affordable, and supportive housing in neighbourhoods across the region.

### **5. Support Sustainable Transportation Choices**

Metro Vancouver's compact, transit-oriented urban form supports a range of sustainable transportation choices. This pattern of development expands the opportunities for transit, walking, cycling, and multiple occupancy vehicles, which reduces greenhouse gas emissions and household expenditures on transportation, and improves air quality. The region's road, transit, rail, and waterway networks play vital roles in serving and shaping regional development, providing linkages among the region's communities, and providing important goods movement networks.

#### **How UBC Supports Metro 2050**

UBC is an important part of the region as an educator, innovator, employer, and provider of affordable housing. UBC's Land Use Plan reflects this role, supporting the region's collaborative approach to growth and all five Metro 2050 goals with the following approaches:

## Regional Growth Strategy Targets

Metro 2050 Regional Targets		
Goal 1 Create a Compact Urban Area Targets		
Policy with Target	Applicable LUP Policies	Supplementary Information
1.1.9 b) Provide member jurisdiction population, dwelling unit, and employment projections, with reference to guidelines contained in Table 1, and demonstrate how local plans will work towards accommodating the projected growth within the Urban Containment Boundary in accordance with the regional target of <b>focusing 98% of residential growth inside the Urban Containment Boundary</b>	See RCS Table A.  100% of UBC's projected growth is within the Urban Containment Boundary.	The future Campus Plan, academic planning, and UBC Neighbourhood Plans will include more detailed population projections as UBC implements the Land Use Plan.

**Table A: Population, dwelling unit, employment projections**

	2023	2030	2040	2050
POPULATION				
Estimated population within UBC Point Grey Campus lands Neighbourhoods*	14,900 people	24,600 people	29,500 people	35,700 people
DWELLING UNITS				
Estimated number of units within UBC Point Grey Campus lands Neighbourhoods*	6,800 units	11,300 units	13,500 units	16,300 units
EMPLOYMENT				
Estimated employment within UBC Point Grey Campus lands.	21,400 employees	23,400 employees	25,200 employees	27,100 employees

\*Residents living in Student Housing are not included in population projections or housing unit counts. Student Housing residences are included in population and household projections in Metro 2050: Regional Growth Strategy. Estimates of Student Housing and student enrolment are provided to Metro Vancouver and TransLink for associated regional growth/infrastructure demand modelling (e.g. transit).

Policy with Target	Applicable LUP Policies	Supplementary Information
<p>1.2.24 a) provide dwelling unit and employment projections that indicate the member jurisdiction's share of planned growth and contribute to achieving the regional share of growth for Urban Centres and Frequent Transit Development Areas as set out in Table 2 (Dwelling Unit and Employment Growth Targets for Urban Centres and Frequent Transit Development Areas)</p> <p>Regional Targets for Residential Growth by Location:</p> <ul style="list-style-type: none"> <li>▪ All Urban Centre Types: 40%</li> <li>▪ Frequent Transit Development Areas: 28%</li> </ul> <p>Regional Targets for Employment Growth by Location:</p> <ul style="list-style-type: none"> <li>▪ All Urban Centre Types: 50%</li> <li>▪ Frequent Transit Development Areas: 27%</li> </ul>	<p>See RCS Table B, which reflects the concentration of UBC's projected growth in the Frequent Transit Development Area.</p>	<p>The future Campus Plan, academic planning, and UBC Neighbourhood Plans will include more detailed population projections as UBC implements the Land Use Plan.</p>
<p>1.2.24 b) ii) include policies and actions for Urban Centres and Frequent Transit Development Areas that: focus and manage growth and development in Urban Centres and Frequent Transit Development Areas consistent with guidelines set out in Table 3 (Guidelines for Urban Centres and Frequent Transit Development Areas) and demonstrate how that growth will contribute to the Urban Centre and Frequent Transit Development Area targets set out in Table 2 and Action 1.2.13</p> <p>1.2.13 Implement the strategies and actions of the regional growth strategy that contribute to regional targets as shown on Table 2 to:</p> <p>a) focus 98% of the region's dwelling unit growth to areas within the Urban Containment Boundary;</p>	<p>See RCS Table B, which reflects the concentration of UBC's projected growth in the Frequent Transit Development Area;</p> <p>Schedule A: Land Uses;</p> <p>LUP 4.1.1.6 develop a compact campus that prioritizes sustainable transport; and,</p> <p>LUP 4.1.1.8 develop mixed use communities.</p>	<p>The future Campus Plan, academic planning, and UBC Neighbourhood Plans will include more detailed population projections as UBC implements the Land Use Plan.</p>

<p>b) focus 40% of the region's dwelling unit growth and 50% of the region's employment growth to Urban Centres; and</p> <p>c) focus 28% of the region's dwelling unit growth and 27% of the region's employment growth to Frequent Transit Development Areas.</p>		
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**Table B: Dwelling unit and employment growth targets for Frequent Transit Development Areas**

Location	Percentage of growth 2023-2050
TARGETS FOR RESIDENTIAL GROWTH BY LOCATION	
Frequent Transit Development Areas	100%
TARGETS FOR EMPLOYMENT GROWTH BY LOCATION	
Frequent Transit Development Areas	96%

Goal 3 Protect the Environment, Address Climate Change, and Respond to Natural Hazards Targets		
Policy with Target	Applicable LUP Policies	Supplementary Information
<p>3.2.7 a) identify local ecosystem protection and tree canopy cover targets, and demonstrate how these targets will contribute to the regional targets in Action 3.2.1:</p> <ul style="list-style-type: none"> <li>increase the area of lands protected for nature <b>from 40% to 50% of the region's land base by the year 2050</b>; and</li> <li>increase the total regional tree canopy cover within the Urban Containment Boundary <b>from 32% to 40% by the year 2050</b>.</li> </ul>	<p>LUP 4.4.1.3 provide open space;</p> <p>LUP 4.4.1.4 provide campus greenways;</p> <p>LUP 4.4.1.5 provide campus green edges;</p> <p>LUP 4.4.3.1 identify, enhance and manage important areas of biodiversity;</p> <p>LUP 4.4.3.3 develop biodiversity strategies as part of Campus Plan and Neighbourhood Plans, including tree canopy targets; and</p> <p>LUP Schedule C Greenways and Green Edges.</p>	<p>Detailed strategies and targets (e.g. tree canopy cover and biodiversity) to be part of the subsequent Campus Plan and Neighbourhood Plans to implement the Land Use Plan.</p>
<p>3.3.7 a) identify how local land use and transportation policies will contribute to meeting the <b>regional</b></p>	<p>LUP 4.6.1.1 commit to net zero operational and community greenhouse gas emission</p>	<p>UBC's Climate Action Plan and updated Neighbourhood Climate Action Plan (finalized in 2024)</p>

<p>greenhouse gas emission reduction target of 45% below 2010 levels by the year 2030 and achieving a carbon neutral region by the year 2050;</p>	<p>reductions by 2050, while committing to faster reductions through UBC's Climate Action Plan and Neighbourhood Climate Action Plan.</p>	<p>include detailed policies to achieve greenhouse gas emissions reduction targets that will contribute to Metro Vancouver targets.</p>
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Goal 4 Provide Diverse and Affordable Housing Choices Targets		
Policy with Target	Applicable LUP Policies	Supplementary Information
<p>4.2.7 a) indicate how they will, within their local context, contribute toward the regional target of having <b>at least 15% of newly completed housing units built within all Urban Centres and Frequent Transit Development Areas combined, to the year 2050, be affordable rental housing units</b> (recognizing that developing affordable rental housing units in transit-oriented locations throughout the urban area is supported)</p>	<p>LUP 4.2.1.1 uphold UBC’s Housing Action Plan commitments to increase housing choice and affordability for students, faculty, staff and community. UBC’s Housing Action Plan includes: commitments to a portion of non-market and market rental housing as a percentage of all new Neighbourhood growth;</p> <p>LUP 4.2.1.2 ensure at least 30% of total Neighbourhood Housing is rental—at least half of which is non-market housing including faculty/staff, social, or other housing needs—and enable higher targets for rental in new Neighbourhood Housing through UBC’s Housing Action Plan;</p> <p>LUP 4.2.1.4 uphold the Student Housing targets (all of which is non-market rental housing) in the Housing Action Plan;</p> <p>LUP 4.2.1.5 commit to housing at least 25% of the full-time student population in different types of on-campus Student Housing and Neighbourhood Housing, with an ambition to increase to up to 33% depending on available funding, sites, and demand; and,</p> <p>RCS Figure B and Table B reflect the concentration of UBC’s projected growth in the Frequent Transit Development Area.</p>	<p>More than 80% of UBC’s campus housing is non-market rental, including Student Housing and below-market faculty/staff rental Neighbourhood Housing. UBC’s Housing Action Plan, which guides Land Use Plan implementation, commits to increasing student housing and campus rental. This includes a commitment to up to 40% of new campus Neighbourhood Housing as rental. UBC updates the Housing Action Plan at least every five years.</p>

## Regional Growth Strategy Goals 1

### Metro 2050 Goal 1: Create a Compact Urban Area

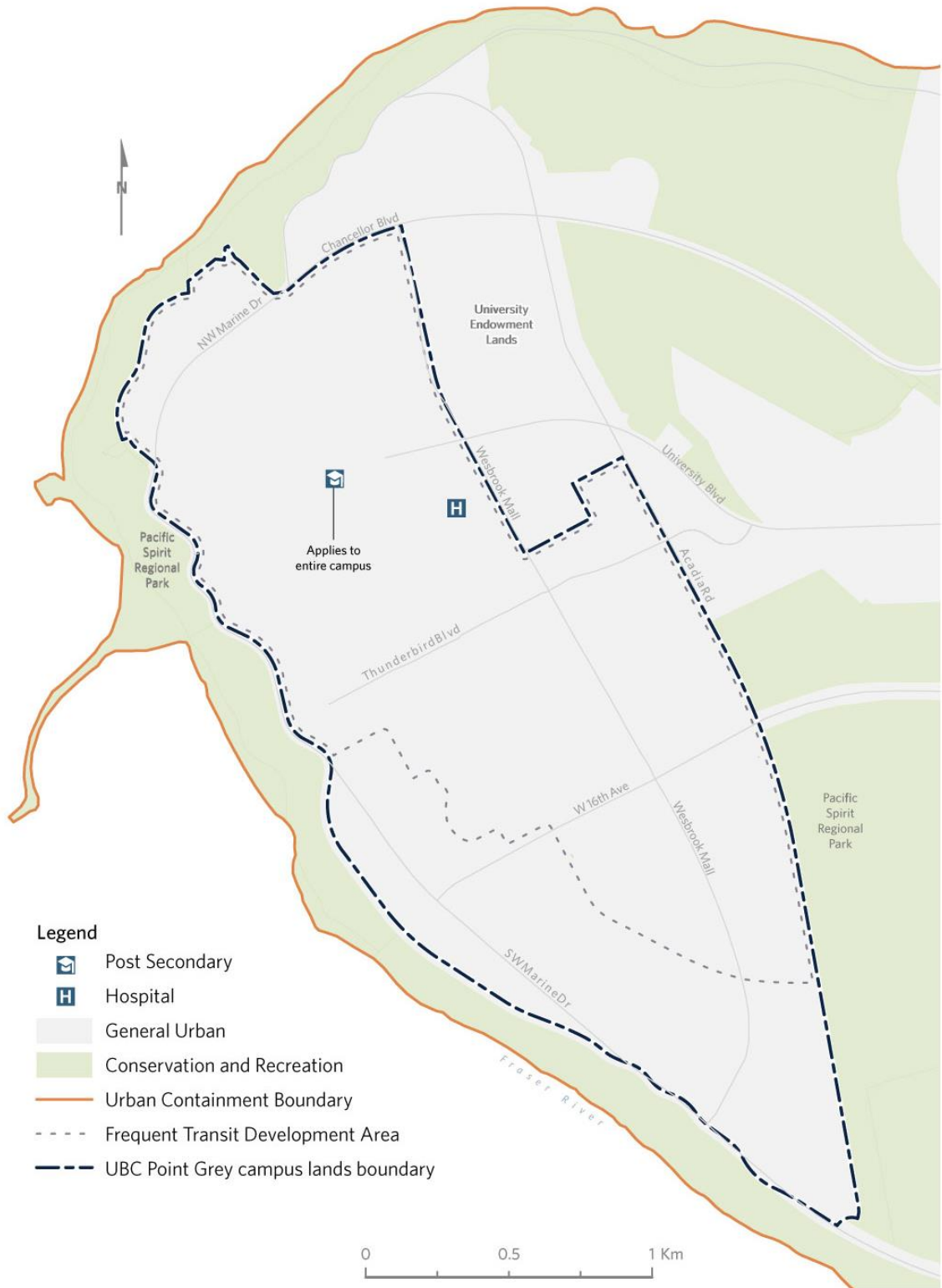
*Describe how the LUP and other supporting plans and policies contribute to this Goal:*

The Land Use Plan, Campus Vision 2050 and subsequent 10-Year Campus Plan, Transportation Plan and Neighbourhoods Plans continue the evolution of the UBC Point Grey campus lands into a year-round complete community. UBC's Campus Vision 2050 includes 7 guiding principles: Support UBC's academic mission; Take bold action to address climate change and enhance campus ecology; Confront the affordability crisis; Strengthen connectivity; Strengthen UBC's relationship with Musqueam and campus Indigenous communities; Make campus more inclusive, accessible and welcoming; Ensure the campus lands benefit the UBC community today and for generations to come. These guiding principles, supported by the policies outlined in the Land Use Plan work toward advancing Metro 2050's goal for creating a compact urban area.

### Strategy 1.1: Contain urban development within the Urban Containment Boundary

	Section	Policy	Supplementary Information
<b>Policy 1.1.9</b>	Adopt Regional Context Statements that:		
	a)	Depict the Urban Containment Boundary on a map, generally consistent with the Regional Land Use Designations map (Map 2)	UBC's Point Grey Campus lands fall within the Urban Containment Boundary, with "General Urban" Land Use Designation, as shown on RCS Figure B.
	b)	Provide member jurisdiction population, dwelling unit, and employment projections, with reference to guidelines contained in Table 1, and demonstrate how local plans will work towards accommodating the projected growth within the Urban Containment Boundary in accordance with the regional target of focusing 98% of residential growth inside the Urban Containment Boundary	<i>See Targets Section above</i>
	c)	Include a commitment to liaise regularly with Metro Vancouver Liquid Waste Services and Metro Vancouver Water Services to keep them apprised of the scale and timeframe of major development plans as well as specific plans to separate combined sewers	LUP 4.7.1.4 coordinate with external infrastructure and service providers, including Metro Vancouver Regional District, the Greater Vancouver Sewerage and Drainage District and the Greater Vancouver Water District.
	d)	Integrate land use planning policies with local and regional economic development strategies, particularly in the vicinity of the port and airports, to minimize potential exposure of residents to environmental noise and other harmful impacts	The Land Use Plan supports Metro Vancouver's economic development initiatives, including focusing projected employment growth within the Frequent Transit Development Area.

**Figure B: UBC Point Grey Campus Lands Regional Context Statement Map**



Strategy 1.2: Focus growth in Urban Centres and Frequent Transit Development Areas		
Section	Policy	Supplementary Information
Adopt Regional Context Statements that:		
a)	provide dwelling unit and employment projections that indicate the member jurisdiction's share of planned growth and contribute to achieving the regional share of growth for Urban Centres and Frequent Transit Development Areas as set out in Table 2 (Dwelling Unit and Employment Growth Targets for Urban Centres and Frequent Transit Development Areas)	<i>See Targets Section above</i>
b)	include policies and actions for Urban Centres and Frequent Transit Development Areas that:	
i)	identify the location, boundaries, and types of Urban Centres and Frequent Transit Development Areas on a map that is consistent with the guidelines set out in Table 3 (Guidelines for Urban Centres and Frequent Transit Development Areas) and Map 4	RCS Figure B, shows the developed and growth areas of UBC's campus as a Frequent Transit Development Area, consistent with Metro 2050 guidelines.
ii)	include policies and actions for Urban Centres and Frequent Transit Development Areas that: focus and manage growth and development in Urban Centres and Frequent Transit Development Areas consistent with guidelines set out in Table 3 (Guidelines for Urban Centres and Frequent Transit Development Areas) and demonstrate how that growth will contribute to the Urban Centre and Frequent Transit Development Area targets set out in Table 2 and Action 1.2.13	<i>See Targets Section above</i>
iii)	encourage office development to locate in Urban Centres through policies, economic development programs, or other financial incentives	LUP 4.1.2.1 and 4.1.4.1 include office as a permitted use in Academic and Neighbourhood areas.
iv)	support modal shift by establishing or maintaining reduced residential and commercial parking requirements in Urban Centres and FTDA's and consider the use of parking maximums	LUP 4.5.4.4 and 4.5.4.5 reduce commuter parking, remove structured parking on academic campus; LUP 4.1.4.8 manage parking supply in neighbourhoods; and, UBC currently uses parking maximums to regulate residential development (UBC's Development Handbook).

Policy 1.2.24

v)	consider the identification of appropriate measures and neighbourhood plans to accommodate urban densification and infill development in Urban Centres, Frequent Transit Development Areas, and, where appropriate, Major Transit Growth Corridors in a resilient and equitable way (e.g. through community vulnerability assessments, emergency services planning, tenant protection policies, and strategies to enhance community social connectedness and adaptive capacity)	Land Use Plan guiding principles: “Make campus more inclusive, accessible and welcoming”; LUP 4.1.1.1, Schedule A: Land Uses concentrates Neighbourhood growth in re-developed areas; LUP 4.2.1.1 increase housing choice and affordability through UBC’s Housing Action Plan; and, LUP 5.1.1.6, 5.1.1.7, 5.1.1.8 identify processes for future Neighbourhood Plans for residential areas.
vi)	consider support for the provision of child care spaces in Urban Centres and Frequent Transit Development Areas	LUP 4.3.1.7 provide child care spaces in UBC’s Child Care Expansion Plan, all within the Frequent Transit Development Area.
vii)	consider the implementation of green infrastructure	LUP 4.4.3.4 provide green infrastructure in open spaces; and, LUP 4.6.1.2 work towards the targets and policies of UBC’s updated Rainwater Management Plan including green infrastructure strategies.
viii)	focus infrastructure and amenity investments (such as public works and civic and recreation facilities) in Urban Centres and Frequent Transit Development Areas, and at appropriate locations within Major Transit Growth Corridors	LUP 4.3.1.1 provide amenities in neighbourhoods that support future populations; and, LUP 4.7.1.3 update UBC’s infrastructure Master Servicing Plans to reflect projected growth.
ix)	support the provision of community services and spaces for non-profit organizations	LUP 4.3.1.1 provide amenities in Neighbourhoods; and, LUP 4.3.1.5 provide a minimum per capita size of future community spaces, including varied community services.
x)	consider, where Urban Centres and Frequent Transit Development Areas overlap with Employment lands, higher density forms and intensification of commercial and light industrial	Not applicable. Metro 2050 does not identify Employment lands on the UBC Point Grey campus lands.
xi)	take appropriate steps to avoid or mitigate the negative health impacts of busy roadways on new or redeveloped residential areas	LUP 4.5.1.2, 4.5.5.3 prioritize sustainable transportation modes; LUP 4.5.5.1 implement a network of multimodal street types; LUP 4.5.5.4 manage traffic and enhancing safety in Academic and Neighbourhood areas; LUP 5.1.1.6, 5.1.1.7, 5.1.1.8 identify processes for future Neighbourhood Plans for residential areas.

c)	Include policies for General Urban lands that:	
i)	identify General Urban lands and their boundaries on a map generally consistent with Map 2	RCS Figure B.
ii)	exclude new non-residential Major Trip-Generating uses, as defined in the Regional Context Statement, from those portions of General Urban lands outside of Urban Centres and Frequent Transit Development Areas and direct new non-residential Major Trip-Generating uses to Urban Centres and Frequent Transit Development Areas	RCS Figure B and Table B reflect the concentration of UBC's projected growth in the Frequent Transit Development Area.
iii)	encourage infill and intensification (e.g. row houses, townhouses, mid-rise apartments, laneway houses) in appropriate locations within walking distance of the Frequent Transit Network;	RCS Figure B and Table B reflect the concentration of UBC's projected growth in the Frequent Transit Development Area; LUP 4.1.4.2 building heights in Neighbourhoods will be predominantly mid-rise (approximately 6 storeys) with some taller buildings up to a maximum of 14-39 storeys (maximum varies by Neighbourhood); and, LUP Table 2: Neighbourhood Housing Development, including Neighbourhood Housing Gross Buildable Area and maximum building height per neighbourhood.
iv)	encourage neighbourhood-serving commercial uses	LUP 4.1.2.1 Academic land use including retail, food, restaurant, and groceries; LUP 4.1.4.1 Neighbourhood land use including commercial and retail; LUP 4.1.5.1 Village Centre Academic land use, including shops, restaurants, food outlets, and groceries; and, LUP 4.3.1.2 encourage a hierarchy of commercial uses including local-serving are encouraged across the campus.
d)	with regards to Actions 1.2.16 and 1.2.24 c) ii), include a definition of "non-residential Major Trip- Generating uses" that includes, but is not limited to, the following uses: office or business parks, outlet shopping malls, post-secondary institutions, and large-format entertainment venues	As the province's largest post-secondary institution, UBC Vancouver is one of Metro Vancouver's most significant "non-residential Major Trip-Generators"; and, RCS Figure B and Table B reflect the concentration of UBC Vancouver's projected growth in the Frequent Transit Development Area.
e)	consider the identification of new Frequent Transit Development Areas in appropriate locations within Major Transit Growth	RCS Figure B shows the boundary of the campus Frequent Transit Development Area,

	Corridors, as part of the development of new or amended area or neighbourhood plans, or other community planning initiatives	reflecting projected campus growth in RCS Table A.
f)	consider long-term growth and transportation planning coordination with adjacent municipalities, First Nations, TransLink, and Metro Vancouver for transit corridors that run through or along two or more adjacent jurisdictions	LUP 4.5.1.3 coordinate transportation planning activities; LUP 4.7.1.4 coordinate with external infrastructure and service providers, including Metro Vancouver Regional District and TransLink; LUP 5.1.1.1 continue regular and ongoing engagement with Musqueam through a deeper, formal co-developed engagement process, including coordinating with external engagement; and LUP 5.1.1.3 work with regional service providers and neighbouring jurisdictions on Land Use Plan implementation.

**Strategy 1.3: Develop resilient, healthy, connected, and complete communities with a range of services and amenities**

	Section	Policy	Supplementary Information
<b>Policy 1.3.7</b>	<b>Adopt Regional Context Statements that:</b>		
	a)	support compact, mixed use, transit, walking, cycling and rolling-oriented communities	LUP 4.1.1.6 develop a compact campus that prioritizes walking and rolling, cycling, transit; and, LUP 4.1.1.8 develop mixed use communities.
	b)	locate and support community, arts, cultural, recreational, institutional, medical/health, social service, education and child care facilities, and local serving retail uses in Urban Centres or areas with good access to transit	LUP 4.3 Amenities, describes the approach to on-campus amenities including commercial, community space, child care, health services, schools, and partnership space; and, RCS Figure B and Table B reflect the concentration of UBC's projected growth in the Frequent Transit Development Area.
	c)	provide and encourage public spaces and other place-making amenities and facilities (e.g. community gardens, playgrounds, gathering places, etc.) in new and established neighbourhoods, for all ages, abilities, and seasons, to support social connections and engagement	LUP 4.1.4.10 design Neighbourhoods for social connection, interaction, health, wellbeing, and accessibility; LUP 4.4.1.3 provide open space including playgrounds and community gardens; and, LUP 4.4.2.2 requirements for Usable Neighbourhood Open Space.
	d)	respond to health and climate change-related risks by providing equitable access to:	
	i)	recreation facilities	LUP 4.3.1.5 provide a minimum per capita size of future community spaces (at least 0.15 square metres per neighbourhood resident), including recreation facilities; LUP 4.4.1.3 provide open space; and,

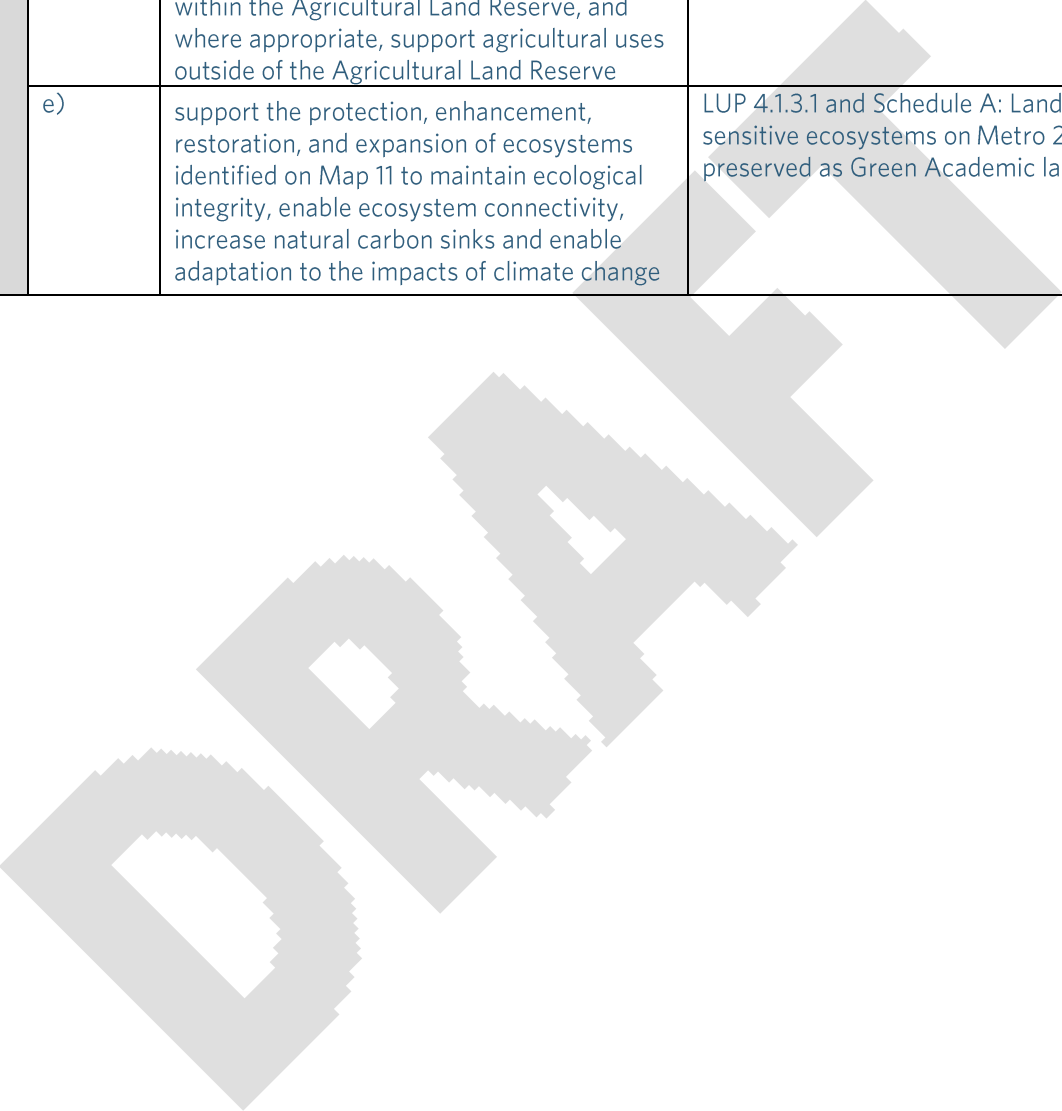
			LUP 4.4.2.2 requirements for Usable Neighbourhood Open Space.
	ii)	green spaces and public spaces (e.g. parks, trails, urban forests, public squares, etc.)	LUP 4.4.1.2 everyone on campus is within 400 metres (5-minute walk) of open space; LUP 4.4.1.3 provide open space; LUP 4.4.1.4 establish campus greenways; LUP 4.4.1.5 establish campus green edges; and, LUP 4.4.2.2 requirements for Usable Neighbourhood Open Space.
	iii)	safe and inviting walking, cycling, and rolling environments, including resting spaces with tree canopy coverage, for all ages and abilities	LUP 4.1.1.6 develop a compact campus that prioritizes walking and rolling, cycling, transit; LUP 4.4.1.4 establish campus greenways; and, LUP 4.5.5.1 multimodal street network that outlines how street types prioritize walking, cycling and rolling.
	e)	support the inclusion of community gardens (at-grade, rooftop, or on balconies), grocery stores and farmers' markets to support food security, and local production, distribution and consumption of healthy food, in particular where they are easily accessible to housing and transit services	LUP 4.1.3.1 and Schedule A: Land Uses, UBC Farm preserved as Green Academic land; LUP 4.4.2.2 requirements for Usable Neighbourhood Open Space, including community gardens; and, LUP 4.3.1.1, 4.3.1.2 provide amenities and encourage a hierarchy of commercial uses including grocery stores.
	f)	consider, when preparing new neighbourhood and area plans, the mitigation of significant negative social and health impacts, such as through the use of formal health and social impact assessment methods in neighbourhood design and major infrastructure investments	For consideration in future Neighbourhood Plans; and, LUP 5.1.1.6, 5.1.1.7, 5.1.1.8 identify processes for future Neighbourhood Plans for residential areas.
	g)	provide design guidance for existing and new neighbourhoods to promote social connections, universal accessibility, crime prevention through environmental design, and inclusivity while considering the impacts of these strategies on identified marginalized members of the community	LUP 4.1.1.12 plan for vibrancy, activity, safety day and night; LUP 4.5.7.1 design for safety and personal security; and, LUP 4.5.7.2 plan for active uses and improve night-time safety.
	h)	consider where appropriate, opportunities to incorporate recognition of Indigenous and other cultures into the planning of Urban Centres, FTDA's, and other local centres	LUP 4.1.1.3 enrich UBC with strong Musqueam welcome and presence; LUP 4.1.1.4 create spaces welcoming to and inclusive of Musqueam and all Indigenous peoples; and, LUP 4.4.1.1 increase Musqueam presence in the landscape.

**Strategy 1.4: Protect Rural lands from urban development**

Policy	Section	Policy	Supplementary Information
		Adopt Regional Context Statements that:	
	a)	identify Rural lands and their boundaries on a map generally consistent with Map 2	



	b)	limit development to a scale, form, and density consistent with the intent for the Rural land use designation, and that is compatible with on-site sewer servicing	Not applicable. Metro 2050 does not identify Rural lands on the UBC Point Grey campus lands.
	c)	specify the allowable density and form, consistent with Action 1.4.1, for land uses within the Rural regional land use designation	
	d)	prioritize and support agricultural uses within the Agricultural Land Reserve, and where appropriate, support agricultural uses outside of the Agricultural Land Reserve	
	e)	support the protection, enhancement, restoration, and expansion of ecosystems identified on Map 11 to maintain ecological integrity, enable ecosystem connectivity, increase natural carbon sinks and enable adaptation to the impacts of climate change	LUP 4.1.3.1 and Schedule A: Land Uses, sensitive ecosystems on Metro 2050 Map 11 preserved as Green Academic land.



## Regional Growth Strategy Goals 2

Metro 2050 Goal 2: Support a Sustainable Economy			
<p><i>Describe how the LUP and other supporting plans and policies contribute to this Goal:</i></p> <p>As one of Canada's largest academic institutions and the third-largest employer in the Province of British Columbia, thousands of people travel from all over Metro Vancouver each day to learn, work and play on the UBC Point Grey Campus lands, contributing to an estimated daytime population of more than 80,000 people and a nighttime population of around 29,000 people in 2023. The Land Use Plan, Campus Vision 2050 and subsequent 10-Year Campus Plan, Transportation Plan and Neighbourhoods Plans continue the UBC Point Grey Campus lands' evolution to support UBC's role in the region.</p>			
Strategy 2.1 Promote land development patterns that support a diverse regional economy and employment opportunities close to where people live			
Policy 2.1.10	Section	Policy	Supplementary Information
	Adopt Regional Context Statements that:		
	a)	include policies to support appropriate economic activities, as well as context-appropriate built form for Urban Centres, Frequent Transit Development Areas, Industrial lands, and Employment lands	UBC is one of the region's largest employers and a generator of significant economic activity. RCS Figure B and Table B reflect the concentration of UBC's projected growth in the Frequent Transit Development Area.
	b)	support the development and expansion of large-scale office and retail uses in Urban Centres, and lower-scale uses in Frequent Transit Development Areas through policies such as: zoning that reserves land for commercial uses, density bonus provisions to encourage office development, variable development cost charges, and/or other incentives	LUP 4.1.2.1, 4.1.4.1, 4.1.5.1, Schedule A: Land Uses, reflect the concentration of UBC's projected growth in the Frequent Transit Development Area.
c)	discourage the development and expansion of major commercial uses outside of Urban Centres and Frequent Transit Development Areas and that discourage the development of institutional land uses outside of Urban Centres and Frequent Transit Development Areas	RCS Figure B and Table B reflect the concentration of UBC's projected growth in the Frequent Transit Development Area.	
Strategy 2.2 Protect the supply and enhance the efficient use of industrial land			
Policy 2.2.9	Section	Policy Text	Supplementary Information
	Adopt Regional Context Statements that:		
	a)	identify the Industrial and Employment lands and their boundaries on a map generally consistent with Map 7	Not applicable. Metro 2050 does not identify Industrial lands on the UBC Point Grey campus lands.
b)	identify Trade-Oriented lands, if applicable, with a defined set of permitted uses that support inter-regional, provincial, national, and international trade (e.g. logistics, warehouses, distribution centres, transportation and intermodal terminals)		

	and location needs (e.g. large and flat sites, proximity to highway, port, or rail infrastructure) on a map consistent with the goals in the regional growth strategy. Strata and/or small lot subdivisions on these lands should not be permitted
c)	include policies for Industrial lands that:
i)	consistently define, support, and protect industrial uses, as defined in <i>Metro 2050</i> , in municipal plans and bylaws, and ensure that non-industrial uses are not permitted
ii)	support appropriate and related accessory uses, such as limited-scale ancillary commercial spaces, and caretaker units
iii)	exclude uses that are not consistent with the intent of Industrial lands and not supportive of industrial activities, such as medium and large format retail uses, residential uses, and stand-alone office uses, other than ancillary uses, where deemed necessary
iv)	encourage improved utilization and increased intensification/densification of Industrial lands for industrial activities, including the removal of any unnecessary municipal policies or regulatory barriers related to development form and density
v)	review and update parking and loading requirements to reflect changes in industrial forms and activities, ensure better integration with the surrounding character, and reflect improvements to transit service, in an effort to avoid the over-supply of parking
vi)	explore municipal industrial strategies or initiatives that support economic growth objectives with linkages to land use planning
vii)	provide infrastructure and services in support of existing and expanding industrial activities
viii)	support the unique locational and infrastructure needs of rail-oriented, waterfront, and trade-oriented industrial uses
ix)	consider the preparation of urban design guidelines for Industrial land edge planning, such as interface designs, buffering standards, or tree planting, to minimize potential land use conflicts between

	industrial and sensitive land uses, and to improve resilience to the impacts of climate change
x)	do not permit strata and/or small lot subdivisions on identified Trade-Oriented lands
d)	include policies for Employment lands that:
i)	support a mix of industrial, small scale commercial and office, and other related employment uses, while maintaining support for the light industrial capacity of the area, including opportunities for the potential densification/intensification of industrial activities, where appropriate
ii)	allow large and medium format retail, where appropriate, provided that such development will not undermine the broad objectives of the regional growth strategy
iii)	support the objective of concentrating larger- scale commercial, higher density forms of employment, and other Major Trip-Generating uses in Urban Centres, and local-scale uses in Frequent Transit Development Areas
iv)	support higher density forms of commercial and light industrial development where Employment lands are located within Urban Centres or Frequent Transit Development Areas, and permit employment and service activities consistent with the intent of Urban Centres or Frequent Transit Development Areas, while low employment density and low transit generating uses, possibly with goods movement needs and impacts, are located elsewhere
v)	do not permit residential uses, except for: <ul style="list-style-type: none"> <li>- an accessory caretaker unit; or</li> <li>- limited residential uses (with an emphasis on affordable, rental units) on lands within 200 metres of a rapid transit station and located within Urban Centres or Frequent Transit Development Areas, provided that the residential uses are located only on the upper floors of buildings with commercial and light industrial uses, where appropriate and subject to the</li> </ul>

		consideration of municipal objectives and local context.	
	e)	include policies to assist existing and new businesses in reducing their greenhouse gas emissions, maximizing energy efficiency, and mitigating impacts on ecosystems	
	f)	include policies that assist existing and new businesses to adapt to the impacts of climate change and reduce their exposure to natural hazards risks, such as those identified within the regional growth strategy (Table 5)	

**Strategy 2.3 Protect the supply of agricultural land and strengthen agricultural viability**

Policy 2.3.12	Section	Policy	Supplementary Information	
	Adopt Regional Context Statements that:			
	a)	specify the Agricultural lands within their jurisdiction, denoting those within the Agricultural Land Reserve, on a map generally consistent with Map 8	Not applicable. Metro 2050 does not identify Agricultural lands on the UBC Point Grey campus lands.	
	b)	consider policies and programs that increase markets and the distribution of local food in urban areas to strengthen the viability of agriculture and increase availability of local food for all residents	LUP 4.1.2.1, 4.1.3.1, 4.1.4.1 include “farmer’s markets and stalls” as permitted uses in Academic, Green Academic and Neighbourhood areas respectively.	
	c)	include policies that protect the supply of agricultural land and strengthen agriculture viability including those that:		
	i)	assign appropriate land use designations to protect agricultural land for future generations and discourage land uses on Agricultural lands that do not directly support and strengthen agricultural viability	LUP 4.1.1.1 and Schedule A maintains a “Green Academic” designation for the UBC Farm, a facility where agriculture and plant research, teaching, education and growing occurs.	
	ii)	encourage the consolidation of small parcels and discourage the subdivision and fragmentation of agricultural land	Not applicable.	
	iii)	support climate change adaptation including: <ul style="list-style-type: none"> <li>- monitoring storm water, flooding, and sea level rise impacts on agricultural land,</li> <li>- implementing flood construction requirements for residential uses, and</li> <li>- maintaining and improving drainage and irrigation infrastructure that support agricultural production, where appropriate and in collabo-</li> </ul>	<ul style="list-style-type: none"> <li>- Not applicable</li> <li>- LUP 4.6.1.2 work towards the policies and targets of UBC’s updated Rainwater Management Plan that addresses future climate impacts.</li> <li>- Not applicable</li> </ul>	

		ration with other governments and agencies	
	iv)	protect the integrity of agricultural land by requiring edge planning along the Urban Containment Boundary and adjacent to agricultural operations through activities such as screening, physical buffers, roads, or Development Permit area requirements	Not applicable.
	v)	demonstrate support for economic development opportunities for agricultural operations that are farm related uses, benefit from close proximity to farms, and enhance primary agricultural production as defined by the <i>Agricultural Land Commission Act</i>	
	vi)	align policies and regulations, where applicable, with the Minister's Bylaw Standards and Agricultural Land Commission legislation and regulations	
<b>Policy 2.3.13</b>	<b>Section</b>	<b>Policy</b>	<b>Supplementary Information</b>
		In partnership with other agencies and organizations, support agricultural awareness and promote the importance of the agricultural industry, the importance of protecting agricultural land, and the value of local agricultural products and experiences.	Not applicable.

## Regional Growth Strategy Goals 3

### Metro 2050 Goal 3: Protect the Environment, Address Climate Change, and Respond to Natural Hazards

*Describe how the LUP and other supporting plans and policies contribute to this Goal:*

The Land Use Plan, Campus Vision 2050, subsequent 10-Year Campus Plan and Neighbourhoods Plans, and UBC's climate action plans, support UBC's globally-leading climate action and prepare for climate change and resilience to future shocks and hazards. The Land Use Plan also preserves open space, forested and natural areas on the UBC Point Grey Campus lands, supporting ecological connectivity. The Land Use Plan also supports developing biodiversity strategies as part of the future Campus Plan and Neighbourhood Plan updates to advance Metro 2050 goals.

#### Strategy 3.1: Protect and enhance Conservation and Recreation lands

	Section	Policy	Supplementary Information
<b>Policy 3.1.9</b>	Adopt Regional Context Statements that:		
	a)	identify Conservation and Recreation lands and their boundaries on a map generally consistent with Map 2	Not applicable. Metro 2050 does not identify Conservation and Recreation lands on the UBC Point Grey campus lands.
	b)	include policies that support the protection and enhancement of lands with a Conservation and Recreation land use designation, which may include the following uses:	
	i)	drinking water supply areas	
	ii)	environmental conservation areas	
	iii)	wildlife management areas and ecological reserves	
	iv)	forests	
	v)	wetlands (e.g. freshwater lakes, ponds, bogs, fens, estuarine, marine, freshwater, and intertidal ecosystems)	
	vi)	riparian areas (i.e. the areas and vegetation surrounding wetlands, lakes, streams, and rivers)	
	vii)	ecosystems not covered above that may be vulnerable to climate change and natural hazard impacts, or that provide buffers to climate change impacts or natural hazard impacts for communities	
viii)	uses within those lands that are appropriately located, scaled, and consistent with the intent of the designation, including: <ul style="list-style-type: none"> <li>major parks and outdoor recreation areas;</li> <li>education, research and training facilities, and associated uses that serve conservation and/or recreation users;</li> <li>commercial uses, tourism activities, and public, cultural, or community amenities;</li> </ul>		

		<ul style="list-style-type: none"> <li>limited agricultural use, primarily soil-based; and</li> <li>land management activities needed to minimize vulnerability / risk to climate change impacts</li> </ul>	
	c)	Include policies that:	
	i)	protect the integrity of lands with a Conservation and Recreation regional land use designation from activities in adjacent areas by considering wildland interface planning, and introducing measures such as physical buffers or development permit requirements	LUP 4.4.3.6 encourage public access to UBC areas to minimize impacts on Pacific Spirit Regional Park (identified in Metro 2050 as Conservation and Recreation lands); and, LUP 4.4.3.7 provide an ecological buffer area adjacent to sensitive ecosystems, including Pacific Spirit Regional Park.
	ii)	encourage the consolidation of small parcels, and discourage subdivision and fragmentation of lands with a Conservation and Recreation regional land use designation.	Not applicable.
<b>Policy 3.2.7</b>	<b>Section</b>	<b>Policy Text</b>	<b>Supplementary Information</b>
	<b>Adopt Regional Context Statements that:</b>		
	a)	identify local ecosystem protection and tree canopy cover targets, and demonstrate how these targets will contribute to the regional targets in Action 3.2.1	<i>See Targets Section above</i>
	b)	refer to Map 11 or more detailed local ecological and cultural datasets and include policies that:	
	i)	support the protection, enhancement, and restoration of ecosystems through measures such as land acquisition, density bonusing, development permit requirements, subdivision design, conservation covenants, land trusts, and tax exemptions	LUP 4.1.3.1 and Schedule A: Land Uses. Sensitive ecosystems on Metro 2050 Map 11 preserved as Green Academic land.
	ii)	seek to acquire, restore, enhance, and protect lands, in collaboration with adjacent member jurisdictions and other partners, that will enable ecosystem connectivity in a regional green infrastructure network	LUP 4.4.3.5 link green spaces on campus and wider peninsula to enhance ecological connectivity.
	iii)	discourage or minimize the fragmentation of ecosystems through low impact development practices that enable ecosystem connectivity	LUP 4.4.1.3 provide open spaces that strengthen connectivity; LUP 4.1.2.3 uphold UBC's North Campus Neighbourhood Plan, including low impact development north of NW Marine due to susceptibility to cliff erosion; and, LUP 4.4.3.5 link green spaces on campus and wider peninsula to enhance ecological connectivity.



iv)	indicate how the interface between ecosystems and other land uses will be managed to maintain ecological integrity using edge planning, and measures such as physical buffers, or development permit requirements.	LUP 4.4.3.7 provide an ecological buffer area adjacent to sensitive ecosystems, including Pacific Spirit Regional Park.
c)	Include policies that:	
i)	support the consideration of natural assets and ecosystem services in land use decision-making and land management practices	LUP 4.4.1.3 provide open space; LUP 4.4.1.4 establish campus greenways; LUP 4.4.1.5 establish campus green edges; LUP 4.4.2.3 develop neighbourhood tree and soil management plans; LUP 4.4.3.1 Identify, enhance and manage important areas of biodiversity on campus; LUP 4.4.3.3 develop biodiversity strategies as part of the Campus Plan and Neighbourhood Plans, including tree canopy targets; and, Schedule C Greenways and Green Edges.
ii)	enable the retention and expansion of urban forests using various tools, such as local tree canopy cover targets, urban forest management strategies, tree regulations, development permit requirements, land acquisition, street tree planting, and reforestation or restoration policies, with consideration of resilience	LUP 4.4.1.3 provide open space; LUP 4.4.1.4 establish campus greenways; LUP 4.4.1.4 establish campus green edges; LUP 4.4.2.3 develop neighbourhood tree and soil management plans; LUP 4.4.2.4 tree replacement requirements; Schedule C Greenways and Green Edges; LUP 4.4.3.1 Identify, enhance and manage important areas of biodiversity on campus; LUP 4.4.3.3 develop biodiversity strategies as part of the Campus Plan and Neighbourhood Plans, including tree canopy targets; and, LUP 4.5.5.3 design streets to provide tree canopy cover.
iii)	reduce the spread of invasive species by employing best practices, such as the implementation of soil removal and deposit bylaws, development permit requirements, and invasive species management plans	LUP 4.4.2.3 develop neighbourhood tree and soil management plans.
iv)	increase green infrastructure along the Regional Greenway Network, the Major Transit Network, community greenways, and other locations, where appropriate, and in collaboration with Metro Vancouver, TransLink, and other partners	LUP 4.4.3.4 provide green infrastructure in open spaces; LUP 4.4.1.4 establish campus greenways; LUP 4.4.1.5 establish campus green edges; LUP 4.5.5.1 implement a network of multimodal street types; LUP Schedule D: Multimodal Street Network; and, LUP 4.5.5.3 design streets to provide rainwater management.
v)	support watershed and ecosystem planning, the development and implementation of Integrated Stormwater Management Plans, and water conservation objectives.	LUP 4.4.3.4 provide green infrastructure in open spaces; LUP 4.6.1.2 work towards the targets and policies of UBC's updated Rainwater

			Management Plan including green infrastructure strategies; and, LUP 4.6.1.5 work towards the targets and policies of UBC’s Water Action Plan. Water Action Plan included water conservation.
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**Strategy 3.3: Advance land use, infrastructure, and human settlement patterns that reduce energy consumption and greenhouse gas emissions, create carbon storage opportunities, and improve air quality.**

	Section	Policy	Supplementary Information
<b>Policy 3.3.7</b>	Adopt Regional Context Statements that:		
	a)	identify how local land use and transportation policies will contribute to meeting the regional greenhouse gas emission reduction target of 45% below 2010 levels by the year 2030 and achieving a carbon neutral region by the year 2050	See Targets Section above
	b)	identify policies, actions, incentives, and / or strategies that reduce energy consumption and greenhouse gas emissions, create carbon storage opportunities, and improve air quality from land use, infrastructure, and settlement patterns, such as:	
	i)	existing building retrofits and construction of new buildings to meet energy and greenhouse gas performance guidelines or standards (e.g. BC Energy Step Code, passive design), the electrification of building heating systems, green demolition requirements, embodied emissions policies, zero-carbon district energy systems, and energy recovery and renewable energy generation technologies, such as solar panels and geexchange systems, and zero emission vehicle charging infrastructure.	LUP 4.6.1.1 commit to net zero operational and community greenhouse gas emission reductions by 2050, while committing to faster reductions through UBC’s Climate Action Plan and Neighbourhood Climate Action Plan; and, LUP 4.6.1.4 work towards the targets and policies of UBC’s Green Building Action Plan in support of the vision for UBC’s buildings to make net positive contributions to human and natural systems by 2035.
	ii)	community design, infrastructure, and programs that encourage transit, cycling, rolling and walking	LUP 4.1.1.5 plan for the arrival of SkyTrain to campus; LUP 4.1.1.6 develop a compact campus that prioritizes walking and rolling, cycling, transit; LUP 4.1.1.8 develop mixed use communities; and, LUP 4.1.4.7 design for a human-scaled, compact, pedestrian-friendly community.
	c)	focus infrastructure and amenity investments in Urban Centres and Frequent Transit Development Areas, and at appropriate locations along Major Transit Growth Corridors	RCS Figure B and Table B reflect the concentration of UBC’s projected growth in the Frequent Transit Development Area.

**Strategy 3.4 Advance land use, infrastructure, and human settlement patterns that improve resilience to climate change impacts and natural hazards**

Policy 3.4.5	Section	Policy	Supplementary Information
	Adopt Regional Context Statements that:		
a)	include policies that minimize risks associated with climate change and natural hazards in existing communities through tools such as heat and air quality response plans, seismic retrofit policies, and flood-proofing policies	LUP 4.1.1.13 strategically renew, retrofit, and replace buildings, balancing factors such as climate performance, seismic safety, and building condition; LUP 4.6.1.1 commit to net zero operational and community greenhouse gas emission reductions by 2050, while committing to faster reductions through UBC’s Climate Action Plan and Neighbourhood Climate Action Plan; LUP 4.6.1.2 work towards the targets and policies of UBC’s updated Rainwater Management Plan to reflect current knowledge around climate change and risks; LUP 4.6.1.3 work with Metro Vancouver Regional District and the Ministry of Transportation and Infrastructure to address slope stability; LUP 4.6.1.4 work towards the targets and policies of UBC’s Green Building Action Plan; LUP 4.7.1.8 coordinate new infrastructure projects to improve resiliency; and, LUP 4.7.1.9 use natural systems and nature-based solutions for future infrastructure.	
b)	include policies that discourage new development in current and future hazardous areas to the extent possible through tools such as land use plans, hazard-specific Development Permit Areas, and managed retreat policies, and where development in hazardous areas is unavoidable, mitigate risks	LUP 4.1.1.13 strategically renew, retrofit, and replace buildings, balancing factors such as climate performance, seismic safety, and building condition; LUP 4.1.2.3 uphold UBC’s North Campus Neighbourhood Plan, including low impact development north of NW Marine due to susceptibility to cliff erosion; and, LUP 4.6.1.3 work with Metro Vancouver Regional District, the BC Ministry of Transportation and Infrastructure and the BC Ministry of Municipal Affairs to jointly address slope stability and erosion.	

<b>Policy 3.4.6</b>	<b>Section</b>	<b>Policy</b>	<b>Supplementary Information</b>
		Incorporate climate change and natural hazard risk assessments into planning and location decisions for new municipal utilities, assets, operations, and community services.	LUP 4.1.1.13 strategically renew, retrofit, and replace buildings, balancing factors such as climate performance, seismic safety, and building condition; LUP 4.1.2.3 uphold UBC's North Campus Neighbourhood Plan, including low impact development north of NW Marine due to susceptibility to cliff erosion; LUP 4.6.1.1 commit to net zero operational and community greenhouse gas emission reductions by 2050, while committing to faster reductions through UBC's Climate Action Plan and Neighbourhood Climate Action Plan; LUP 4.6.1.2 work towards the targets and policies of an updated Rainwater Management Plan to address future climate impacts and green infrastructure strategies; LUP 4.6.1.3 work with Metro Vancouver Regional District, the BC Ministry of Transportation and Infrastructure and the BC Ministry of Municipal Affairs to jointly address slope stability and erosion; LUP 4.6.1.4 work towards the targets and policies of UBC's Green Building Action Plan; and, LUP 4.7.1.8 coordinate new infrastructure projects to improve resiliency, and minimize disruptions.
<b>Policy 3.4.7</b>	<b>Section</b>	<b>Policy</b>	<b>Supplementary Information</b>
		Integrate emergency management, utility planning, and climate change adaptation principles when preparing land use plans, transportation plans, and growth management policies.	LUP 4.1.1.13 strategically renew, retrofit, and replace buildings, balancing factors such as climate performance, seismic safety, and building condition; and, LUP 4.7.1.8 coordinate new infrastructure projects to improve resiliency, and minimize disruptions.
<b>Policy 3.4.8</b>	<b>Section</b>	<b>Policy</b>	<b>Supplementary Information</b>
		Adopt appropriate planning standards, guidelines, and best practices related to climate change and natural hazards, such as flood hazard management guidelines and wildland urban interface fire risk reduction principles.	LUP 4.6.1.2 work towards the targets and policies of UBC's updated Rainwater Management Plan to reflect current knowledge around climate change and risks; LUP 4.6.1.3 work with Metro Vancouver Regional District, the BC Ministry of Transportation and Infrastructure and the BC Ministry of Municipal Affairs to jointly address slope stability and erosion; LUP 4.7.1.8 coordinate new infrastructure projects to improve resiliency, minimize disruptions, and improve resiliency; and, LUP 4.7.1.9 use natural systems and nature-based solutions for future infrastructure.

## Regional Growth Strategy Goals 4

### Metro 2050 Goal 4: Provide Diverse and Affordable Housing Choices

*Describe how the LUP and other supporting plans and policies contribute to this Goal:*

UBC plays an important role in addressing the region and UBC's affordability crisis by increasing housing choice and affordability for faculty, staff, students and other campus residents. The Land Use Plan, Campus Vision 2050, Housing Action Plan and subsequent 10-Year Campus Plan and Neighbourhoods Plans continue this work. The Housing Action Plan includes additional information on housing tenure, type and size.

#### Strategy 4.1 Expand the supply and diversity of housing to meet a variety of needs

	Section	Policy	Supplementary Information
<b>Policy 4.1.8</b>	Adopt Regional Context Statements that:		
	a)	indicate how they will work towards meeting estimated future housing needs and demand, as determined in their housing needs report or assessment	<p>UBC provides significant non-market housing for students, faculty and staff, and market housing for the UBC and broader community. UBC's Housing Action Plan describes how UBC uses its land and financial resources to improve housing choice and affordability. This includes undertaking housing needs studies for faculty, staff and students. The Housing Action Plan is approved by UBC's Board of Governors and updated at least every five years in response to housing needs.</p> <p>LUP 4.2.1.1 increase housing choice and affordability through UBC's Housing Action Plan;</p> <p>LUP 4.2.1.4 uphold the Student Housing targets in the Housing Action Plan; and,</p> <p>LUP 4.2.1.5 commit to house at least 25% of the full-time student population in different types of on-campus Student Housing and Neighbourhood Housing, with an ambition to increase to up to 33% depending on available funding, sites, and demand.</p> <p>Note: Under the Housing Needs Report Regulation, Metro Vancouver Regional District is not required to prepare a housing needs report for Electoral Area A, which includes the UBC Point Grey campus lands.</p>
	b)	articulate how local plans and policies will meet the need for diverse (in tenure, size, and type) and affordable housing options	<p>LUP 4.2.1.1 uphold UBC's Housing Action Plan commitments to increase housing choice and affordability, which includes: commitments to a portion of non-market and market rental housing as a percentage of all new Neighbourhood growth; affordable options for students and moderate-income faculty and staff; and a range of unit types and sizes to meet different needs;</p> <p>LUP 4.2.1.2 ensure at least 30% of total Neighbourhood Housing is rental—at least half of which is non-market housing including</p>

		<p>faculty/staff, social, or other housing needs—and enable higher targets for rental in new Neighbourhood Housing through UBC’s Housing Action Plan;</p> <p>LUP 4.2.1.3 aspire to have at least 50% of Neighbourhood Housing occupied by those who work or study on campus;</p> <p>LUP 4.2.1.4 uphold the Student Housing targets in the Housing Action Plan; and,</p> <p>LUP 4.2.1.5 commit to house at least 25% of the full-time student population in different types of on-campus Student Housing and Neighbourhood Housing, with an ambition to increase to up to 33% depending on available funding, sites, and demand.</p>
c)	identify policies and actions that contribute to the following outcomes	
i)	increased supply of adequate, suitable, and affordable housing to meet a variety of needs along the housing continuum	<p>LUP 4.1.4.3, Table 2 and Schedule B describe amounts of Neighbourhood Housing development for each area of the UBC Point Grey campus lands;</p> <p>LUP 4.1.4.6 provide a range of housing types and tenures in Neighbourhood areas;</p> <p>LUP 4.2.1.1 uphold UBC’s Housing Action Plan commitments to increase housing choice and affordability for students, faculty, staff and community, which includes: commitments to a portion of non-market and market rental housing as a percentage of all new Neighbourhood growth; affordable options for students and moderate-income faculty and staff; and a range of unit types and sizes to meet different needs;</p> <p>LUP 4.2.1.2 ensure at least 30% of total Neighbourhood Housing is rental—at least half of which is non-market housing including faculty/staff, social, or other housing needs—and enable higher targets for rental in new Neighbourhood Housing through UBC’s Housing Action Plan;</p> <p>LUP 4.2.1.4 uphold the Student Housing targets in the Housing Action Plan; and,</p> <p>LUP 4.2.1.5 commit to house at least 25% of the full-time student population in different types of on-campus Student Housing and Neighbourhood Housing, with an ambition to increase to up to 33% depending on available funding, sites, and demand.</p>
ii)	increased supply of family-friendly, age-friendly, and accessible housing	<p>LUP 4.1.1.8 develop mixed use communities;</p> <p>LUP 4.1.1.11 develop a range of housing on campus;</p> <p>LUP 4.1.4.6 provide a range of housing types and tenures in Neighbourhood areas;</p>

		LUP 4.1.4.7 design for a human-scaled, compact, and accessible community; and, LUP 4.2.1.1 uphold UBC's Housing Action Plan commitments to increase housing choice and affordability for students, faculty, staff and community, which includes: commitments to a portion of family-friendly units in rental buildings; demand studies including for student family housing growth; accessibility improvements.
iii)	increased diversity of housing tenure options, such as attainable homeownership, rental, co-op housing, rent-to-own models, and cohousing	LUP 4.1.1.11 develop a range of housing on campus; LUP 4.1.4.6 provide a range of housing types and tenures in Neighbourhood areas; and, LUP 4.2.1.1 uphold UBC's Housing Action Plan commitments to increase housing choice and affordability for students, faculty, staff and community, which includes: attainable ownership programs; innovative tenure options.
iv)	increased density and supply of diverse ground-oriented and infill housing forms in low-density neighbourhoods, such as duplex, four-plex, townhouse, laneway/coach houses, and apartments, particularly in proximity to transit	LUP 4.1.1.1, Schedule A: Land Uses concentrates Neighbourhood growth in undeveloped areas; LUP 4.1.1.11 develop a range of housing on campus; LUP Table 2 and Schedule B describe amounts of Neighbourhood residential development for each area of the UBC Point Grey campus lands; LUP 4.1.4.6 provide a range of housing types and tenures in Neighbourhood areas; LUP 4.1.4.7 design for a human-scaled, compact, and accessible community; and, RCS Figure B and Table B reflect the concentration of UBC's projected growth in the Frequent Transit Development Area.
v)	integration of land use and transportation planning such that households can reduce their combined housing and transportation costs	RCS Figure B and Table B reflect the concentration of UBC's projected growth in the Frequent Transit Development Area; LUP Schedule A: Land Uses; LUP 4.1.1.6 develop a compact campus that prioritizes sustainable transport; LUP 4.1.1.8 develop mixed use communities; and, LUP 4.1.4.7 design for a human-scaled, compact, and accessible community.
vi)	increased social connectedness in multi-unit housing	LUP 4.1.4.1 identifies land uses to complement Neighbourhood growth, including amenities and services like community centres and playgrounds; and,

			LUP 4.1.4.10 design neighbourhoods for social connection, interaction, health, wellbeing, and accessibility.
	vii)	integrated housing within neighbourhood contexts and high quality urban design	LUP 4.1.1.8 develop mixed use communities; LUP 4.1.4.7 design for a human-scaled, compact, and accessible community; LUP 4.1.4.10 design neighbourhoods for social connection, interaction, health, wellbeing, and accessibility; and, LUP 5.1.1.6, 5.1.1.7, 5.1.1.8 processes for future Neighbourhood Plans for residential areas, including urban design.
	viii)	existing and future housing stock that is low carbon and resilient to climate change impacts and natural hazards	LUP 4.6.1.1 commit to net zero operational and community greenhouse gas emission reductions by 2050, while committing to faster reductions through UBC's Climate Action Plan and Neighbourhood Climate Action Plan; and, LUP 4.6.1.4 work towards the targets and policies of UBC's Green Building Action Plan in support of the vision for UBC's buildings to make net positive contributions to human and natural systems by 2035.
	<b>Section</b>	<b>Policy</b>	<b>Supplementary Information</b>
<b>Policy 4.1.9</b>	<b>Prepare and implement housing strategies or action plans that:</b>		
	a)	are aligned with housing needs reports or assessments, and reviewed or updated every 5-10 years to ensure that housing strategies or action plans are based on recent evidence and responsive to current and future housing needs	UBC's Housing Action Plan describes how UBC uses its land and financial resources to improve housing choice and affordability. This includes undertaking housing needs studies for faculty, staff and students and determining actions to support UBC's housing priorities. The Housing Action Plan is approved by UBC's Board of Governors and updated at least every five years in response to housing needs.
	b)	are based on an assessment of local housing market conditions, by tenure, including assessing housing supply, demand, and affordability	LUP 4.2.1.1 uphold UBC's Housing Action Plan commitments to increase housing choice and affordability for students, faculty, staff and community. Note: Under the Housing Needs Report Regulation, Metro Vancouver Regional District is not required to prepare a housing needs report for Electoral Area A, which includes the UBC Point Grey campus lands.
	c)	identify housing priorities, based on the assessment of local housing market conditions, household incomes, changing population and household demographics, climate change and natural hazards resilience, and key categories of local housing need, including specific statements about special needs housing and the housing needs of equity-seeking groups;	
	d)	identify implementation measures within their jurisdiction and financial capabilities, including actions set out in Action 4.1.8	



Strategy 4.2 Protect tenants and expand, retain, and renew rental housing supply			
Section	Policy	Supplementary Information	
Policy 4.2.7	Adopt Regional Context Statements that:		
	a)	<p>indicate how they will, within their local context, contribute toward the regional target of having at least 15% of newly completed housing units built within all Urban Centres and Frequent Transit Development Areas combined, to the year 2050, be affordable rental housing units (recognizing that developing affordable rental housing units in transit-oriented locations throughout the urban area is supported)</p>	<p><i>See Targets Section above</i></p>
	b)	<p>articulate how local plans and policies will mitigate impacts on renter households, particularly during redevelopment or densification of Urban Centres and Frequent Transit Development Areas</p>	<p>LUP 4.1.1.1 Schedule A: Land Uses concentrates Neighbourhood growth in undeveloped areas, resulting in no impact on existing renter households; and, LUP 4.2.1.1 uphold UBC’s Housing Action Plan commitments to increase housing choice and affordability for students, faculty, staff and community, including programs to support moderate-income rental households.</p>
	c)	<p>identify the use of regulatory tools that protect and preserve rental housing</p>	<p>LUP 4.1.1.1 Schedule A: Land Uses concentrates Neighbourhood growth in undeveloped areas, resulting in no impact on existing renter households; LUP 4.2.1.1 increase housing choice and affordability through UBC’s Housing Action Plan, which includes: commitments to a portion of non-market and market rental housing as a percentage of all new Neighbourhood growth; LUP 4.2.1.2 ensure at least 30% of total Neighbourhood Housing is rental—at least half of which is non-market housing including faculty/staff, social, or other housing needs—and enable higher targets for rental in new Neighbourhood Housing through UBC’s Housing Action Plan; LUP 4.2.1.4 uphold the Student Housing targets (all of which is non-market rental housing) in the Housing Action Plan; and, LUP 4.2.1.5 commit to house at least 25% of the full-time student population in different types of on-campus Student Housing and Neighbourhood Housing, with an ambition to</p>

			increase to up to 33% depending on available funding, sites, and demand.
d)	identify policies and actions that contribute to the following outcomes:		
i)	increased supply of affordable rental housing in proximity to transit and on publicly-owned land		LUP 4.2.1.1 increase housing choice and affordability through UBC's Housing Action Plan; LUP 4.2.1.2 ensure at least 30% of total Neighbourhood Housing is rental—at least half of which is non-market housing including faculty/staff, social, or other housing needs—and enable higher targets for rental in new Neighbourhood Housing through UBC's Housing Action Plan; LUP 4.2.1.4 uphold the Student Housing targets (all of which is non-market rental housing) in the Housing Action Plan; LUP 4.2.1.5 commit to house at least 25% of the full-time student population in different types of on-campus Student Housing and Neighbourhood Housing, with an ambition to increase to up to 33% depending on available funding, sites, and demand; and, RCS Figure A and Table B reflect the concentration of UBC's projected growth in the Frequent Transit Development Area.
ii)	increased supply of market and below-market rental housing through the renewal of aging purpose-built rental housing and prevention of net rental unit loss		LUP 4.1.1.1 Schedule A: Land Uses concentrates Neighbourhood growth in undeveloped areas; and, LUP 4.2.1.1 increase housing choice and affordability through UBC's Housing Action Plan, which includes: commitments to a portion of non-market and market rental housing as a percentage of all new Neighbourhood growth.
iii)	protection and renewal of existing non-market rental housing		LUP 4.1.1.1 Schedule A: Land Uses concentrates Neighbourhood growth in undeveloped areas; LUP 4.2.1.2 ensure at least 30% of total Neighbourhood Housing is rental—at least half of which is non-market housing including faculty/staff, social, or other housing needs—and enable higher targets for rental in new Neighbourhood Housing through UBC's Housing Action Plan; LUP 4.2.1.4 uphold the Student Housing targets (all of which is non-market rental housing) in the Housing Action Plan, including

			replacement strategies for redeveloped sites; and, LUP 4.2.1.5 commit to house at least 25% of the full-time student population in different types of on-campus Student Housing and Neighbourhood Housing, with an ambition to increase to up to 33% depending on available funding, sites, and demand.
	iv)	mitigated impacts on renter households due to renovation or redevelopment, and strengthened protections for tenants	LUP 4.1.1.1 Schedule A: Land Uses concentrates Neighbourhood growth in undeveloped areas; and, LUP 4.2.1.4 uphold the Student Housing targets (all of which is non-market rental housing) in the Housing Action Plan, including replacement strategies for redeveloped sites.
	v)	reduced energy use and greenhouse gas emissions from existing and future rental housing stock, while considering impacts on tenants and affordability	LUP 4.6.1.1 commit to net zero operational and community greenhouse gas emission reductions by 2050, while committing to faster reductions through UBC's Climate Action Plan and Neighbourhood Climate Action Plan; and, LUP 4.6.1.4 implement UBC's Green Building Action Plan, which includes policies and commitments to academic and neighbourhood district energy systems as well as green building standards as part of academic and neighbourhood growth.
	<b>Section</b>	<b>Policy</b>	<b>Supplementary Information</b>
<b>Policy 4.2.8</b>	Prepare and implement housing strategies or action plans that:		
	a)	encourage the supply of new rental housing and mitigate or limit the loss of existing rental housing stock;	LUP 4.1.1.1 Schedule A: Land Uses concentrates Neighbourhood growth in undeveloped areas; and, LUP 4.2.1.4 uphold the Student Housing targets (all of which is non-market rental housing) in the Housing Action Plan, including replacement strategies for redeveloped sites.
	b)	encourage tenant protections and assistance for renter households impacted by renovation or redevelopment of existing purpose-built rental housing	LUP 4.1.1.1 Schedule A: Land Uses concentrates Neighbourhood growth in undeveloped areas; and, LUP 4.2.1.4 uphold the Student Housing targets (all of which is non-market rental housing) in the Housing Action Plan, including replacement strategies for redeveloped sites.
	c)	cooperate with and facilitate the activities of Metro Vancouver Housing under Action 4.2.2.	LUP 5.1.1.3 work with Metro Vancouver Regional District on Land Use Plan implementation.

**Strategy 4.3 Meet the housing needs of lower income households and populations experiencing or at risk of homelessness**

	Section	Policy	Supplementary Information
<b>Policy 4.3.7</b>	Adopt Regional Context Statements that:		
	a)	indicate how they will collaborate with the Federal Government, the Province, and other partners, to assist in increasing the supply of permanent, affordable, and supportive housing units	LUP 4.2.1.1 increase housing choice and affordability through UBC's Housing Action Plan, which includes: commitments to advocate to the Province for housing affordability measures, and to collaborate with other partners on innovative housing programs on the UBC Point Grey campus lands. UBC collaborates regularly with the Province on Student Housing opportunities, including financial support and innovative building technologies.
	b)	identify policies and actions to partner with other levels of government and non-profit organizations in order to create pathways out of homelessness and contribute to meeting the housing and support needs of populations experiencing or at risk of homelessness	LUP 4.2.1.1 increase housing choice and affordability through UBC's Housing Action Plan, which includes commitments to affordable options for students and moderate-income faculty and staff. UBC also has existing financial support as well as emergency housing programs in place for at-risk populations, including students.
	Section	Policy	Supplementary Information
<b>Policy 4.3.8</b>	Prepare and implement housing strategies or action plans that:		
	a)	identify opportunities to participate in programs with other levels of government to secure additional housing units to meet the housing needs of lower income households	LUP 4.2.1.1 increase housing choice and affordability through UBC's Housing Action Plan, which includes commitments to partner with groups such as BC Housing on innovative housing programs. UBC collaborates regularly with the Province on Student Housing opportunities, including financial support and innovative building technologies.
	b)	identify strategies to increase community acceptance and communicate the benefits of affordable and supportive housing development	LUP 4.2.1.1 increase housing choice and affordability through UBC's Housing Action Plan, which includes commitments to developing communications strategies including on the benefits of affordable housing.
	c)	are aligned with or integrate plans to address homelessness, and identify strategies to reduce the total number of households that are in core housing need and populations experiencing or at risk of homelessness	LUP 4.2.1.1 increase housing choice and affordability through UBC's Housing Action Plan, which focuses on housing measures for UBC's faculty, staff, students and community. UBC also has existing financial support as well as

			emergency housing programs in place for at-risk populations, including students.
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## Regional Growth Strategy Goals 5

### Metro 2050 Goal 5: Support Sustainable Transportation Choices

*Describe how the LUP and other supporting plans and policies contribute to this Goal:*

UBC promotes the use of active and sustainable modes of transportation and the continued development of a more equitable and accessible transportation system for all via both transportation and land use plans. The Land Use Plan, Campus Vision 2050 and subsequent 10-Year Campus Plan, Neighbourhood Plans and Transportation Plan continue this development. UBC's Campus Vision 2050 includes key strategies to expand the pedestrian priority zone in the campus core, creating a safe legible and efficient cycling and micro mobility network, and building a network of zero-emission local transit/shuttle routes that integrate with regional services.

#### Strategy 5.1 Coordinate land use and transportation to encourage transit, multiple-occupancy vehicles, cycling and walking

	Section	Policy	Supplementary Information
<b>Policy 5.1.14</b>	Adopt Regional Context Statements that:		
	a)	identify land use and transportation policies and actions to encourage a greater share of trips made by transit, shared mobility options, cycling, walking, and rolling	LUP 4.1.1.5 plan for the arrival of SkyTrain to campus; LUP 4.1.1.6 develop a compact campus that prioritizes walking and rolling, cycling, transit; LUP 4.5.1.2 prioritize transportation modes in the following order: 1. walking and rolling; 2. cycling & micromobility; 3. public transit; 4. carpool/shared use vehicles; 5. ride-hailing and taxi vehicles; 6. single occupancy vehicles; LUP 4.5.2.1 provide dedicated space for active transportation, including protected cycling facilities; and, RCS Figure B and Table B reflect the concentration of UBC's projected growth in the Frequent Transit Development Area.
	b)	support the development and implementation of transportation demand management strategies, such as: parking pricing and supply measures, transit priority measures, end-of-trip facilities for active transportation and micro-mobility, and shared mobility services	LUP 4.1.2.1, 4.1.3.1, 4.1.4.1, 4.1.5.1 all land uses support mobility infrastructure and services; LUP 4.1.4.8 manage Neighbourhood parking supply; LUP 4.5.1.1 work towards UBC's Transportation Plan, which includes commitments to end-of-trip facilities; LUP 4.5.1.2 prioritize transportation modes, including shared use vehicles; LUP 4.5.4.1 promote alternatives to single occupancy vehicles; LUP 4.5.4.2 continue to support the U-Pass BC program for students; LUP 4.5.4.3 pursue a discounted transit pass program for faculty, staff and residents; LUP 4.5.4.4 reduce commuter parking; and,

		LUP 4.5.5.6 support transit priority measures.
c)	manage and enhance municipal infrastructure in support of transit, multiple-occupancy vehicles, cycling, walking, and rolling	LUP 4.1.1.6 develop a compact campus that prioritizes walking and rolling, cycling, transit; LUP 4.5.1.2 prioritize transportation modes in the following order: 1. walking and rolling; 2. cycling & micromobility; 3. public transit; 4. carpool/shared use vehicles; 5. ride-hailing and taxi vehicles; 6. single occupancy vehicles; LUP 4.5.2.1 provide dedicated space for active transportation; LUP 4.5.5.1 implement a network of multimodal street types; LUP 4.5.5.6 support transit priority measures, and, Schedule D: Multimodal Street Network.
d)	support the transition to zero-emission vehicles	LUP 4.1.2.1, 4.1.3.1, 4.1.4.1, 4.1.5.1 all land uses support mobility infrastructure and services, including electric vehicle charging facilities; LUP 4.6.1.1 commit to faster reductions through UBC's Climate Action Plan and Neighbourhood Climate Action Plan, which includes measures for electric vehicles; and, LUP 4.6.1.4 implement UBC's Green Building Action Plan, which includes policies that support the transition to zero-emission vehicles as part of academic and neighbourhood growth; and, LUP 4.7.1.4 coordinate with external infrastructure and service providers, including transition to zero emission vehicles and transit.
e)	support implementation of the Regional Greenway Network and Major Bikeway Network, as identified in Map 10	LUP 4.5.5.1 implement a network of multimodal street types; LUP 4.5.5.5 integrate with regional greenway, bikeway, and open space networks; and, LUP Schedule D: Multimodal Street Network.
f)	support implementation of local active transportation and micro-mobility facilities that provide direct, comfortable, all ages and abilities connections to the Regional Greenway Network, Major Bikeway Network, transit services, and everyday destinations	LUP 4.1.2.1, 4.1.3.1, 4.1.4.1, 4.1.5.1 all land uses support mobility infrastructure and services; LUP 4.5.2.1 provide space for active transportation; LUP 4.5.5.1 implement a network of multimodal street types; LUP 4.5.5.5 integrate with regional greenway, bikeway, and open space networks; LUP 4.5.6.1 design a barrier-free, universally accessible campus, including buildings, Open Spaces and active transportation facilities; and, Schedule D: Multimodal Street Network.

**Strategy 5.2 Coordinate land use and transportation to support the safe and efficient movement of vehicles for passengers, goods, and services**

	Section	Policy	Supplementary Information
<b>Policy 5.2.6</b>	<b>Adopt Regional Context Statements that:</b>		
	a)	identify routes on a map for the safe and efficient movement of goods and service vehicles to, from, and within Urban Centres; Frequent Transit Development Areas; Major Transit Growth Corridors; Industrial, Employment, and Agricultural lands; ports; airports; and international border crossings	LUP 4.5.5.1 implement a network of multimodal street types; and, LUP Schedule D: Multimodal Street Network. RCS Figure B and Table B reflect the concentration of UBC's projected growth in the Frequent Transit Development Area.
	b)	identify land use and related policies and actions that support the optimization and safety of goods movement via roads, highways, railways, aviation, short sea shipping, and active transportation	LUP 4.1.2.1, 4.1.3.1, 4.1.4.1, 4.1.5.1 all land uses support mobility infrastructure and services, including service and delivery; LUP 4.5.5.1 implement a network of multimodal street types; and, LUP Schedule D: Multimodal Street Network.
	c)	support the development of local and regional transportation system management strategies, such as the provision of information to operators of goods and service vehicles for efficient travel decisions, management of traffic flow using transit priority measures, coordinated traffic signalization, and lane management	LUP 4.5.1.3 coordinate transportation planning activities with local partners; LUP 4.5.5.1 implement a network of multimodal street types in collaboration with the Ministry of Transportation and Infrastructure; LUP 4.5.5.6 support implementation of transit priority measures; and, LUP 5.1.1.3 work with regional service providers and neighbours on Land Use Plan implementation.
	d)	identify policies and actions that support the protection of rail rights-of-way, truck routes, and access points to navigable waterways in order to reserve the potential for goods movement	RCS Figure C: Regional Truck Routes below. Note: UBC does not have designated truck routes. Roads on UBC Point Grey campus lands can be used between City of Vancouver truck routes or Provincial Highways, and the final destination at UBC.
	e)	identify policies and actions to mitigate public exposure to unhealthy levels of noise, vibration, and air pollution associated with the Major Road Network, Major Transit Network, railways, truck routes, and Federal / Provincial Highways	LUP 4.1.1.6 develop a compact campus that prioritizes walking and rolling, cycling, transit; LUP 4.5.5.1 implement a network of multimodal street types in collaboration with the Ministry of Transportation and Infrastructure (for the Major Road Network); and, LUP Schedule D: Multimodal Street Network.
	f)	identify policies and actions that anticipate the land and infrastructure requirements for goods movement and drayage, such as truck parking, zero-emission vehicle charging infrastructure, and e-commerce distribution centres, and mitigate any negative impacts of these uses on neighbourhoods	LUP 4.1.2.1, 4.1.3.1, 4.1.4.1, 4.1.5.1 all land uses support mobility infrastructure and services, including service and delivery; LUP 4.5.5.1 implement a network of multimodal street types; and, LUP Schedule D: Multimodal Street Network.

**Figure C:** Regional Truck Routes



*Note: UBC does not have designated truck routes. All roads on UBC Point Grey campus lands can be used between City of Vancouver truck routes or Provincial Highways, and the final destination at UBC.*



To: Regional Planning Committee

From: Eric Aderneck, Senior Planner, Regional Planning and Housing Services

Date: October 16, 2023 Meeting Date: November 3, 2023

Subject: **Costs of Providing Infrastructure and Services to Different Residential Densities Study**

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### **RECOMMENDATION**

That the MVRD Board receive for information the report dated October 16, 2023, titled “Costs of Providing Infrastructure and Services to Different Residential Densities Study”.

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### **EXECUTIVE SUMMARY**

The Costs of Providing Infrastructure and Services to Different Residential Densities Study was completed as an initiative to support the implementation of *Metro 2050*. The study aims to better understand the costs and revenues associated with different types of housing by exploring the associated municipal infrastructure capital and operating costs, property taxation and utility fees. Similar analyses have been completed in other jurisdictions around the world, but not in the Metro Vancouver region. Drawing from available sources, this study provides data specific to this region to inform the discussion about the possible costs, benefits, and implications of development within the existing urban / high density (infill) areas of the region vs. expansion into new suburban / low density (greenfield) areas.

Consistent with the findings of studies completed in other jurisdictions, the data confirms that low density ‘urban sprawl’ is more costly to build and maintain than redevelopment and intensification in established urban areas. Some of the study’s notable findings include:

- Higher density forms of development are more cost-effective in urban / developed areas, where public infrastructure investments can be best utilized.
- Achieving compact, complete communities does not necessarily require extremely high density development forms. For example, moving from low density to medium densities in urban centres and along transit corridors can provide significant improvements in infrastructure servicing cost outcomes.
- The costs of infrastructure and utility fees should be set to better reflect actual service costs.
- Applying Development Cost Charges that vary by residential unit type / size / density as well as sub-area geography, better reflects the actual costs of servicing demand.
- Closely coordinating and integrating land use planning, engineered infrastructure, asset management, and municipal financial decision-making including full lifecycle costing, leads to improved land use and financial outcomes.

### **PURPOSE**

To provide the Regional Planning Committee and MVRD Board with the findings of the Costs of Providing Infrastructure and Services to Different Residential Densities Study (Attachment 1).

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## BACKGROUND

A foundational principle of *Metro 2050* is directing growth within the Urban Containment Boundary and, in particular, to Urban Centres and Frequent Transit Development Areas. This overarching tenet advances a number of objectives, including the efficient provision and use of infrastructure, increased transit ridership, supporting the building of compact, complete, mixed-use, and walkable communities, protecting natural and agricultural areas, and reducing the need for driving and the consequent reduction in energy consumption and GHG emissions.

To better understand the costs and revenues associated with 'urban' vs. 'sprawl' residential development in the Metro Vancouver region, this study explores the municipal infrastructure capital and operating costs for different residential forms and densities, and property taxation and utility fees, on a per unit and per capita basis.

## PROJECT OBJECTIVES AND COMPLEXITIES

Various research into this matter has been completed in a number of American, Australian, and other Canadian geographies, but not in the Metro Vancouver region. This study summarizes that research as well as other available references, provides a literature review of related publications, case studies, and best practices, and is supplemented with informational interviews with leading practitioners and academics, focused on the findings most relevant to this region.

This study provides an accessible, current, and a comprehensive informational resource to inform municipal planning initiatives and the implementation of regional growth policies pertaining to different densities and forms of residential development in different contexts. The results will also inform the *Metro 2050* Urban Centres and Frequent Transit Development Area target review and update which is planned for 2024.

## Methodological Complexities and Assumptions

Defining, calculating, and attributing costs and revenues for services by different asset classes or unit types is a data and methodological challenge. For the purposes of this study, the categories used include both infrastructure (capital) costs and revenues, and service (operating) costs and revenues. Some of these costs may be paid for by a developer as one-time charges during initial construction, by either directly providing the infrastructure or by paying Development Cost Charges (DCCs), while some are paid by owners / residents in the form of ongoing property taxes and utility user fees.

Based on a review of current municipal budgets in the region, it was found that approximately one-third of expenditures (i.e., both capital and operating costs) are related to utilities / engineering services that could be impacted to some degree by land uses, development forms / densities, and associated infrastructure requirements, with the balance (approximately two-thirds) being unrelated.

Some practical challenges for such calculations including defining 'urban' or 'sprawl' development forms / densities for data collection and reporting purposes, and the attribution of a portion of costs and revenues to other non-residential land uses, such as commercial and industrial uses. Furthermore, many municipal services and associated costs are a function of residential population

rather than housing density, and some services, such as capital-intensive infrastructure, can benefit from economies of scale, while labour-intensive services generally do not.

There are also significant local and contextual considerations. Some municipal costs may be higher on an absolute basis in a high-density, established urban location because of ‘urban harshness’ and increased construction complexities, but lower on a per unit or per capita basis because of the greater development densities. Given these and other complexities and limitations, the study’s calculations should be considered as high-level estimates for guidance.

### **Project Timeline**

A scope of work report for the study was presented to the Regional Planning Committee on April 14, 2023 (Reference 1). The final draft of the study was presented to the Regional Planning Advisory Committee at its meeting on October 13, 2023. Committee members expressed interest in the topic and about how the study could be used to inform regional and municipal land use planning initiatives and decision making that are both financially and environmentally sustainable and better communicate the trade-offs.

### **KEY FINDINGS**

‘Urban sprawl’ refers to dispersed, segregated (single-use), automobile-oriented, urban-fringe development, while ‘smart growth’ comprises more compact, mixed-use, multi-modal forms of development. Some, but not all, public services are sensitive to a city’s development patterns and residential densities. From a high level review of total budget expenditures of the larger municipalities in the Metro Vancouver region (i.e., Vancouver, Surrey, Burnaby, Richmond), the majority of costs are associated with providing services of various types that do not generally have a direct relationship with development densities or forms. For example, costs like community parks, recreational facility, library, licensing / permitting, police, fire, and general government are largely a function of the number of residents (or per capita), rather than density of development.

The study confirms that more compact development forms tend to reduce infrastructure costs on a per capita basis, support a more efficient use of resources, and encourage more cost-effective forms of transportation. For the cities in the Metro Vancouver region that were analyzed, it appears that in the range of 27-37% of municipal expenditures are associated with these types of utilities / engineering services (i.e., both capital and operating costs).

Higher density development forms are associated with lower per capita municipal expenditures in the areas of:

- Operational costs for: fire protection, streets and highways, parks and recreation, sanitary sewer, solid waste management, and water servicing;
- Construction costs for: streets and highways, parks and recreation, sewer, and water; and
- Facility costs for: police, sanitary sewer, and water servicing.

The relationships between residential densities and public costs are complex. Costs are typically dependent on the specific services (their age and conditions), service levels, and local context.

**Costs by Development Type**

For this study, three residential density typologies (i.e., houses, townhouses, apartments) were used as the basis to prepare the simplified infrastructure / servicing cost estimates, each with a ‘low’ and ‘high’ density variant, resulting in a total of six typologies. For each typology, the servicing costs to construct the public roadway with infrastructure and lot utility connections were estimated using the same amount of land and road areas for each. The road and servicing requirements vary slightly depending on the development scenario, and the size and number of utility connections for each scenario may differ as well.

**Key Findings**

The following are the study’s key findings for the Metro Vancouver region:

*Cost of infrastructure*

- The costs for onsite infrastructure / servicing for house vs. apartment developments in the Metro Vancouver region are approximately five to nine times more expensive on a per capita basis (\$13,000 vs. \$2,400) and on a per unit basis (\$40,000 vs. \$4,500), respectively.

*Development Cost Charges (DCC)*

- In Metro Vancouver, the municipal DCC rates per unit are almost always highest for single-detached houses (up to \$40,000 to \$60,000), lowest for apartment units (approximately \$10,000), and in between for townhouses.
- However, when adjusted for the typical number of residents in a household, which varies by unit type, the range of per capita DCC rates vary only by a few thousand dollars, averaging: \$9,000 per apartment resident, \$10,000 per townhouse resident, and \$11,000 per house resident.

*Property Taxes*

- On average in Metro Vancouver, detached houses pay \$5,600 in property taxes; the amounts are lower for townhouses (\$3,000) and apartments (\$2,100). These amounts vary by municipality.

Table 1 shows the resulting unit yields and costs per unit and per capita for each of the six residential typologies. The results illustrate the greater cost effectiveness of higher density and multi-unit residential development forms can be as compared to lower density, single-detached development, because the infrastructure costs can be apportioned to more units.

**Table 1 – Servicing Cost by Residential Typology**

	Scenario	Unit Yield	Servicing Costs	Cost Per Unit	Persons per Household	Cost Per Capita
1	House (Low)	16	\$ 640,000	<b>\$ 40,000</b>	3.10	<b>\$ 12,903</b>
2	House (High)	24	\$ 880,000	<b>\$ 36,667</b>	3.10	<b>\$ 11,828</b>
3	Townhouse (Low)	40	\$ 680,000	<b>\$ 17,000</b>	2.75	<b>\$ 6,182</b>
4	Townhouse (High)	60	\$ 700,000	<b>\$ 11,667</b>	2.75	<b>\$ 4,242</b>
5	Apartment (Low)	100	\$ 800,000	<b>\$ 8,000</b>	1.85	<b>\$ 4,324</b>
6	Apartment (High)	200	\$ 900,000	<b>\$ 4,500</b>	1.85	<b>\$ 2,432</b>

As most of these infrastructure costs are initially borne by a developer and ultimately the purchaser or resident, lower infrastructure costs can help contribute to lower housing costs. Furthermore,

after construction and development, the cost of maintaining the infrastructure is typically the responsibility of the municipality and ultimately taxpayers, therefore more efficient infrastructure systems can reduce public operating costs and fees / taxes over the long term.

## CONSIDERATIONS

Municipalities routinely make land use decisions that can impact livability, affordability, and sustainability over the long term. The results of this study and others that were reviewed as part of this work indicate that those decisions can also inadvertently encourage inefficient growth patterns and work against policy objectives. These growth patterns can be costly not only from an environmental and social perspective, but also on long-term municipal finances. This can result in rising servicing costs, mounting infrastructure deficits, reduced service levels, declining quality of life, and a loss of economic competitiveness.

The following should be considered when making land use and urban form decisions, public infrastructure investments to support desired forms of residential land uses and densities, and when reviewing property tax and utility fee policies:

- It is critical to permit and facilitate higher density and more cost-effective forms of development in urban / developed areas (i.e., infill, intensification, redevelopment), where public infrastructure investments can be best utilized. Where regulatory barriers exist to urban densification in such locations, consider a review of policies and regulations, and discourage developments that are not compact form, mixed-use, and that cannot be cost-efficiently serviced.
- Achieving compact, complete communities does not necessarily require extremely high density development forms. Optimum densities are a factor of context, and are often a combination of densities and uses that result in more livable, sustainable, and balanced communities. For example, moving from low density to medium densities in urban centres and along transit corridors can provide significant improvements in infrastructure servicing cost outcomes, while meeting other policy objectives pertaining to neighbourhood design and GHG reductions.
- The costs of infrastructure and utility provision should be set to better reflect actual service costs and charge those who directly benefit:
  - The use of metering for utilities should be considered, where possible, such as for water and sewer. With new and emerging technologies, such as improved metering, user fees can be more precise and effective, and managed electronically.
  - Utility fees should not be focused simply on raising revenues, but also on changing behaviours and outcomes. Fees and incentives can be set and adjusted to encourage desired actions and choices to meet community building and climate action objectives.
- Applying Development Cost Charges that vary by residential unit type / size / density as well as sub-area geography, better reflects the actual costs of servicing demand.
- Closely coordinating and integrating land use planning, engineered infrastructure, asset management, and municipal financial decision-making including full lifecycle costing, leads to improved land use and financial outcomes.

## ALTERNATIVES

This is an information report. No alternatives are presented.

## FINANCIAL IMPLICATIONS

This work was completed in by Regional Planning staff. There were no financial costs associated with this project.

## CONCLUSION

To better understand the costs and revenues associated with different residential development forms and densities in the Metro Vancouver region, this study explores the municipal infrastructure capital and operating costs for different types of housing, and property taxation / utility fees.

Compact development forms tend to reduce infrastructure costs on a per unit and per capita basis, provide residents with broader housing and transportation choices, support a more efficient use of resources, and encourage more sustainable forms of transportation. The case studies completed as part of the study generally indicate that the infrastructure servicing costs per dwelling unit declines as residential densities increase. It is critical to permit and facilitate higher densities and more cost-effective forms of development in urban areas (i.e., infill, intensification, redevelopment), where public infrastructure investments can be most-efficiently utilized over the long-term. Achieving compact, complete communities does not necessarily require extremely high density development; optimum densities are based on context, and are often a mix of densities and uses that result in more livable, sustainable, and vibrant communities.

There are opportunities through land use planning decisions, property taxation, setting utility fees, and applying Development Cost Charges that vary by residential unit type / size / density as well as sub-area geography, to better advance municipal and community interests relative to development patterns and housing forms. Understanding the trade-offs associated with the costs and revenues of different land use types and residential densities is critical to long-term financial sustainability and changing outcomes and resident behaviours to meet community building and climate action objectives.

Along with being shared with member jurisdictions, stakeholders and the public, the study will be used to inform further regional policy work in support of *Metro 2050*, municipal land use policy planning and development initiatives, and communicating the importance of cost-effective and coordinated land use and infrastructure planning. The findings of this study will be foundational to supporting the *Metro 2050* Urban Centre and Frequent Transit Development Area target review project which is on the Regional Planning work plan for 2024.

## ATTACHMENTS

1. 'Costs of Providing Infrastructure and Services to Different Residential Densities Study', Metro Vancouver Regional Planning, September 2023.
2. Presentation re: Costs of Providing Infrastructure and Services to Different Residential Densities.

## REFERENCES

1. [Report titled "Costs of Providing Infrastructure and Services to Different Forms and Densities of Housing – Scope of Work" presented to the Regional Planning Committee on April 14, 2023](#)



# **Costs of Providing Infrastructure and Services to Different Residential Densities**

**September 2023**

**Prepared by:  
Metro Vancouver  
Regional Planning**



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# 1 Executive Summary

This study documents the costs of providing infrastructure and services to different residential densities. It is an accessible, informational resource to inform municipal planning initiatives and regional growth policies pertaining to different densities and forms of residential development, such as ‘infill’ and ‘greenfield’.

This study summarizes available references, case studies, best practices, and informational interviews, and is focused on findings and implications most relevant to the Metro Vancouver region. It is based on a literature review of available publications and informational interviews with leading practitioners and academics.

## KEY CONSIDERATIONS

The following should be considered when making land use and urban form decisions, as well as those associated with public infrastructure investments to support desired forms of residential land uses and densities, and when reviewing property tax and utility fee policies:

- It is critical to permit and facilitate higher density and more cost-effective forms of development in urban / developed areas (i.e., infill, intensification, redevelopment), where public infrastructure investments can be best utilized. Where regulatory barriers exist to urban densification in such locations, consider a review of policies and regulations and discourage developments that are not compact form, mixed-use, and that cannot be cost-efficiently serviced.
- Achieving compact, complete communities does not necessarily require extremely high density development forms. Optimum densities are a factor of context, and are often a combination of densities and uses that result in more livable, sustainable, and balanced communities. For example, moving from low density to medium densities in urban centres and along transit corridors can provide significant improvements in infrastructure servicing cost outcomes.
- The costs of infrastructure and utility provision should be set to better reflect actual service costs and charge those who directly benefit:
  - The use of metering for utilities should be considered, where possible, such as for water and sewerage; with new and emerging technologies, such as improved metering, user fees can be more precise and effective, and managed electronically.
  - Utility fees should not be focused simply on raising revenues, but also on changing behaviours and outcomes. Fees and incentives can be set and adjusted to encourage desired actions and choices and meet community buildings objectives.
- Applying Development Cost Charges that vary by residential unit type / size / density as well as sub-area geography, better reflects the actual costs of servicing demand.
- Closely coordinating and integrating land use planning, engineered infrastructure, asset management, and municipal financial decision-making including full lifecycle costing, leads to improved land use and financial outcomes.

## SUMMARY FINDINGS OF THE STUDY

### Literature Review

- ‘Urban sprawl’ refers to dispersed, segregated (single-use), automobile-oriented, urban-fringe development, while ‘Smart Growth’ comprises more compact, mixed-use, multi-modal forms of development. Some, but not all, public services are sensitive to a city’s development patterns and residential densities.
- More compact development forms tend to reduce infrastructure costs on a per capita basis, support more efficient use of resources, and encourage more sustainable forms of transportation. However, the relationships between residential densities and public costs are complex; actual costs depend on the specific services and conditions, and local context.
- Higher density development forms are associated with lower per capita municipal expenditures for streets and highways, sewer, water, and solid waste.
- While property taxes are for general municipal services and are calculated on assessed property values, a user fee, such as for utilities, is a charge for consuming a municipally provided good or service.
- User fees are a ‘cost-recovery revenue tool’ and must be set based on the costs of providing the good or service to the user.

### Case Studies

- The case studies generally indicate that the infrastructure servicing costs per dwelling unit declines as residential densities increase.
- This is largely associated with reduced linear infrastructure (i.e., roads, water pipes, sewer lines) per capita for higher density, compact design and development forms, as compared to lower density forms.
- However, large urban infill projects still require significant infrastructure investments. Other costs, such as labour-intensive services (rather than capital-intensive infrastructure), are more directly related to population levels and incurred on a per capita basis.
- Thus, the relationship between residential density and municipal costs is nuanced, and also can be impacted by local matters, such as the condition (age, capacity) of infrastructure and other physical elements such as geography and topography.

### Infrastructure Servicing Costs

- The costs for onsite infrastructure / servicing for house vs. apartment developments are approximately five to nine times more expensive on a per capita basis (\$13,000 vs. \$2,000) and on a per unit basis (\$40,000 vs. \$5,000), respectively.
- This illustrates the greater cost effectiveness of higher density and multi-unit residential development forms can be as compared to lower density, single-detached development, because the infrastructure costs can be apportioned to more units.
- As most of these infrastructure costs are initially borne by a developer and ultimately the resident, lower infrastructure costs can help contribute to lower housing costs.

- Furthermore, after construction and development, the cost of maintaining the infrastructure is typically the responsibility of the municipality and ultimately taxpayers, therefore more efficient infrastructure systems can reduce public operating costs and fees / taxes over the long term.

### **Development Cost Charges**

- Development Cost Charges (DCCs) in British Columbia are enabled under provincial legislation to pay for new or expanded infrastructure (sewer, water, drainage, parks, and roads) necessary to adequately service the demands of new development.
- In Metro Vancouver, the municipal DCC rates per unit are almost always highest for single-detached houses (up to \$40,000 to \$60,000), lowest for apartment units (approximately \$10,000), and in between for townhouses.
- However, when adjusted for the typical number of residents in a household, which varies by unit type, the range of per capita DCC rates vary only by a few thousand dollars, averaging: \$9,000 per apartment resident, \$10,000 per townhouse resident, and \$11,000 per house resident.
- The DCC rates by unit type can vary considerably by municipality, yet within individual municipalities generally do not vary. While allowable under provincial legislation, most municipalities do not charge different DCC rates for different sub-areas or catchment areas.

### **Municipal Expenditures Analysis**

- Based on a review of current municipal budgets in the region, approximately one-third of expenditures (i.e., both capital and operating costs) are related to utilities / engineering services that could be impacted to some degree by land uses, development forms, and densities, and associated infrastructure requirements with the balance (approximately two-thirds), being unrelated.
- The balance of municipal costs (operating and capital) are for various types of ‘soft’ services that are generally labour-intensive and more a function of population than density.
- While there are potential municipal cost savings associated with more compact forms of development, the scale of this possible amount should be considered within the overall municipal context.

### **Property Taxes and Utility Fees**

- Property taxes are a function of the assessed value of a property, with municipal tax rates set by the host municipality. Nearly half of the property taxes collected go to other levels of government than the local municipality, such as to the provincial government and other agencies.
- Municipal utility fees for such services as water, sewage, and garbage, may also apply.
- On average in Metro Vancouver, detached houses pay \$5,600 in property taxes; the amounts are lower for townhouses (\$3,000) and apartments (\$2,100).
- These amounts vary by municipality as the mill rates vary by jurisdiction, and also vary within municipalities depending on the assessed values of properties. Of the total taxes and fees paid by typical households, a quarter to a third of that amount goes to utility fees.

## Methodological Complexities

- Defining, calculating, and attributing costs and revenues for different services by different asset classes or unit types can be a data and methodological challenge.
- Conceptually, there are four categories: infrastructure (capital) costs and revenues, and service (operating) costs and revenues.
- Some of these may be paid for by a developer as one-time charges during construction, be it through providing the infrastructure and / or paying DCCs, and some by residents in the form of ongoing property taxes and utility fees.
- Some practical challenges for such calculations are defining 'urban' or 'suburban' development forms / densities for data collection and reporting purposes, and potentially attributing some costs and revenues to other non-residential land uses (such as commercial and industrial).
- Many municipal services and associated costs are more a function of residential population level rather than housing density, and some services, such as capital-intensive infrastructure can benefit from economies of scale, while labour-intensive services do not.
- There are also significant local considerations and contextual issues. Some municipal costs may be higher on an absolute basis in a high-density, established urban location because of 'urban harshness' and increased complexities, but lower on a per unit or per capita basis because of the greater development densities.
- Given these complexities and limitations, the expectations about the resulting values should be understood as high-level or estimates.

## 2 Introduction and Context

The Metro Vancouver region is home to 2.8 million residents and 1.6 million jobs. With a limited land base and continued growth, development patterns and housing forms should be guided by cost-effectively using existing and new infrastructure investments and services. The region is also well-known as having high housing costs and strong demand for additional housing supply which can be addressed, in part, by reducing infrastructure costs through efficient land use and infrastructure planning.

Various research into this matter has already been completed in Canadian (mostly Ontario), American, and Australian geographies, but no similar study has been undertaken in the Metro Vancouver region to date. This study provides an analysis that goes beyond ‘business as usual’ planning and development to elevate the conversation, and address possible some prevailing misconceptions about municipal costs and revenues based on residential forms and densities in the Metro Vancouver region.

Documenting the costs of providing infrastructure and services to different residential densities, this study summarizes available references, case studies, best practices, and informational interviews with leading practitioners and academics, focusing on findings and implications most relevant to the region. It is based on a literature review of available publications and provides an accessible, current, central, informational resource to inform municipal planning initiatives and regional growth policies pertaining to different densities and forms of residential development, such as ‘smart growth’ (infill and intensification) and ‘urban sprawl’ (greenfield development). The results are summarized in the following sections, and supplemented with detailed data in appendices.

### 2.1 Study Objectives

*Metro 2050*, the Regional Growth Strategy, directs, supports, and encourages growth within the Urban Containment Boundary and specifically to the region’s Urban Centres and Frequent Transit Development Areas. This overarching goal advances a number of objectives, including the efficient provision and use of infrastructure, increased transit ridership, building complete, mixed, and walkable communities, protecting environmental areas, and reduced driving, energy consumption, and GHG emissions. This principle has been a long-standing growth management objective for the region, and is still relevant as the population continues to grow.

To better understand the costs and revenues associated with different residential unit types in the region this study explores the municipal infrastructure / servicing capital and operating costs for different residential forms / densities of housing (e.g., typologies). This study helps inform the discussion about the possible financial benefits and drawbacks of housing development within existing urban / high density (infill) areas vs. expanding housing development to new suburban / low density (greenfield) areas.

This study defines six residential typologies, each with different attributes, including density and form, and estimates the associated infrastructure servicing costs, typical DCCs, and average property taxes and utility fees. Specifically, this study documents the municipal servicing costs and property taxes / utility fees for different forms / densities of residential housing, on a per unit and/or per capita basis. This illustrates the differences between them and outlines the considerations that can inform effective land use planning and infrastructure investments at the regional and local scales. A series of case studies were created representing the characteristics and densities of the various geographies and residential forms to further illustrate these costs.

While there are many environmental, economic, and social benefits of compact residential development forms (i.e., more efficient use of resources, protection of important lands, supporting walkable and transit-oriented communities, etc.), the focus of this study is on municipal financial considerations, specifically related to public infrastructure and services.

## 2.2 Scope of Work

The following is the study scope of work:

- Compile and complete research / literature review on the topic:
  - Review of the urban form and infrastructure cost analysis completed in other jurisdictions;
  - Review the latest research, focused on relevant sources and examples.
  - Complete informational interviews with key informants, such as academics and subject matter experts.
  - Analyze local government services provided in the Metro Vancouver region, and consider both capital costs and operating costs, and property taxes / utility fees.
  - Summarize existing publications and associated costing / financial estimates.
- Identify a series of case study locations using land uses / densities and residential form characteristics to determine costs per unit.
- Profile findings that are most relevant to the Metro Vancouver context.

The study did not intend to:

- Address non-residential forms of development, such as commercial or industrial land uses.
- Make recommendations about possible changes in levels of municipal services or amenities, property taxation, or Development Cost Charges / Community Amenity Contributions.
- Compare costs / revenues of services for housing by municipality within the region.
- Consider housing supply and demand implications or the recommendations of completed Housing Needs Reports.
- Address the impacts of land use regulations on housing costs, or the development approval / review process.
- Explore other indirect advantages or disadvantages of different housing forms / densities.

## 2.3 Development Forms

Compact development forms are often nearly synonymous with the term ‘smart growth’ or sustainable, complete communities, the key principles of which include:

- Efficient use of land and infrastructure.
- A greater mix of uses and housing choices.
- Complete neighbourhoods and communities focused around human-scale, walkable, mixed-use centres.
- A balanced, multi-modal transportation system providing increased transportation choice.
- Well-defined community edges, such as agricultural areas, natural corridors, or open spaces.

‘Urban sprawl’ is a term generally defined as homogenous low density residential development, typically in the form of single-detached housing, a separation of land uses, spread out development patterns, and auto-oriented transportation modes.



In terms of servicing costs for such different forms or densities of residential development:<sup>1</sup>

- The longer distance water and wastewater facilities are from the property they service, the costlier it is to serve, holding density constant.
- The farther away properties are from fire stations, the greater the risk of loss from fire and the higher the fire insurance costs.
- As the distance between origin and destination increases, the road costs per trip increases as do the road costs per vehicle kilometres travelled.
- For many facilities: as distance increases between the service and those who are served, the cost of service increases per person and the amount or quality of service decreases.
- More spread out and lower density development requires more infrastructure to support it.

## 2.4 Defining the Issue

Research shows that as residential density increases, municipal costs per residential unit decreases for roads and other transportation, linear infrastructure like water and sewage pipes, as well as some services. Density can be measured as units per hectare, and reflected in different building forms, be it large single-detached house lots, townhouse units, and high rise apartment buildings.

Costs associated with development and growth can be separated into two categories: infrastructure / capital costs, and service / operating costs. Over the lifecycle of the infrastructure, which can span 30-100 years, the operation, maintenance, and repair costs of public facilities is often comparable to their initial capital costs.

Typically, most of the infrastructure costs are initially paid for by the developer in the form of installing on-site engineering civil works and paying DCCs for off-site works as part of the initial development. The perpetual ongoing operating and maintenance costs are the responsibility of the municipality, funded by property taxes / utility fees. However, it is not always the case in that some 'local' services may be provided by other agencies, such as transit, hospitals, and schools, and some infrastructure costs may be funded by senior levels of government, such as capital grants for rapid transit lines and treatment plants. Furthermore, there is also necessary large scale regional infrastructure provided by Metro Vancouver to municipalities (e.g., treatment facilities, major trunk lines) which convey services via local infrastructure to properties within their geography.

## 2.5 Study Structure

This study explores the relevant costs and revenues of different housing forms and densities, extracting highlights from a review of available publications and studies completed in other jurisdictions, with some calculations provided as examples for typical typologies in the Metro Vancouver region.

Notably, there are considerable methodological and practical challenges to calculating and allocating costs and revenues. The results of this study are profiled and summarized in each of the sections, with additional materials included in the appendices. The final section identifies considerations for policy actions associated with the noted challenges and opportunities.

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<sup>1</sup> Rationale for Smart Growth Fiscal Impact Analysis and Model, Smart Growth America, Arthur Nelson, 2022.

## 3 Literature Review

This section summarizes results from a review of available relevant literature (see Appendix A for greater detail).

### 3.1 Sprawl and Compact Development Forms

This section defines ‘urban sprawl’ or low-density development forms, and ‘smart growth’ or compact development forms, and explains the difference between them.

Urban Sprawl – Sprawl is defined as excessive or inefficient suburbanization<sup>2</sup>. Research suggests this excessive spatial growth is the result of market failures to consider: the social value of open space; the social costs of commuting patterns by individuals; and the public, social, economic, and environmental costs of development projects. This leads to excessive commuting, homogenous land uses, cities that are geographically too large, and artificially inexpensive developments on the urban fringe.

Urban sprawl refers to dispersed, segregated, single-use, automobile-oriented, urban-fringe forms of development. The alternative, often referred to as smart growth, involves more compact, mixed-use, multi-modal forms of development. Figure 3.1 compares these two development patterns<sup>3</sup>.

Smart Growth – Compact, complete communities is a general set of planning principles that can be applied in many different ways. In rural areas, it creates compact, walkable villages with a mix of single- and multi-unit housing oriented around a commercial centre. In large cities, smart growth creates dense, mixed-use, walkable, and transit-oriented neighbourhoods. Between these is a wide range of neighbourhood types, a common theme of which is being compact and multi-modal. In mature cities, smart growth consists primarily of incremental infill and redevelopment in existing neighbourhoods, but in growing cities it often consists of outward urban expansion.<sup>4</sup> Smart growth does not necessarily require all residents to live in high-rise apartments and forego automobile travel, nor does it preclude outward expansion.

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<sup>2</sup> The Fiscal Impacts of Urban Sprawl: Evidence from US County Areas, Christopher B. Goodman, 2019.

<sup>3</sup> Analysis of Public Policies that Unintentionally Encourage and Subsidize Urban Sprawl, Victoria Transport Policy Institute, Todd Litman, 2015.

<sup>4</sup> Analysis of Public Policies that Unintentionally Encourage and Subsidize Urban Sprawl, Victoria Transport Policy Institute, Todd Litman, 2015.

**Figure 3.1: Urban Sprawl and Smart Growth Comparison**

	<b>Sprawl</b>	<b>Smart Growth</b>
<b>Density</b>	Lower-density, dispersed activities.	Higher-density, clustered activities.
<b>Land use mix</b>	Single use, segregated.	Mixed.
<b>Growth pattern</b>	Urban periphery (greenfield) development.	Infill (brownfield) development.
<b>Scale</b>	Large scale. Larger blocks and wide roads. Less detail, since people experience the landscape at a distance, as motorists.	Human scale. Smaller blocks and roads. Attention to detail, since people experience the landscape up close.
<b>Services (shops, schools, parks, etc.)</b>	Regional, consolidated, larger. Requires automobile access.	Local, distributed, smaller. Accommodates walking access.
<b>Transport</b>	Automobile-oriented. Poorly suited for walking, cycling and transit.	Multi-modal. Supports walking, cycling and public transit.
<b>Connectivity</b>	Hierarchical road network with many unconnected roads and walkways.	Highly connected roads, sidewalks and paths, allowing direct travel.
<b>Street design</b>	Streets designed to maximize motor vehicle traffic volume and speed.	Reflects <i>complete streets</i> principles that accommodate diverse modes and activities.
<b>Planning process</b>	Unplanned, with little coordination between jurisdictions and stakeholders.	Planned and coordinated between jurisdictions and stakeholders.
<b>Public space</b>	Emphasis on private realms (yards, shopping malls, gated communities, private clubs).	Emphasis on public realms (shopping streets, parks, and other public facilities).

### 3.2 Municipal Infrastructure

The most common factors influencing infrastructure project costs and service delivery costs include<sup>5</sup>:

- Urban form: population size, density, lot size and shape, location of development, dispersion of development, housing typology, and street network pattern.
- Site conditions / topography: geographical location, space availability, transportation access, slope.
- Utility capacity utilization: catchment of existing infrastructure and the level of augmentation required is an important location specific factor affecting costs, especially in infill areas.
- Proximity to service areas: distance of the new development from existing utility plants and trunk infrastructure.

Many public services are sensitive to a community’s pattern of development because the configuration of a community and the way the community is connected geographically can profoundly affect service delivery. A compact development pattern will, at the very least, save operating costs simply because service vehicles are required to drive fewer kilometres. In some cases, the actual number of vehicles and facilities can be decreased, along with the personnel required to provide those services.<sup>6</sup>

The relationship between density and public costs is complex. Actual costs depend on the specific services and conditions. There can be costs associated with development density including increased congestion and friction between activities, special costs for infill development, and higher design standards. One study concludes that costs are<sup>7</sup>:

- Lowest in rural areas where most households provide more of their own services.
- Increase in suburban areas where services are provided to dispersed development forms.
- Lowest for infill redevelopment in areas with adequate infrastructure capacity.
- Increase at very high densities due to congestion and high land and construction costs.

<sup>5</sup> Literature Review of the Costs of Infrastructure Provision for Different Development Forms, Shivani Ragha, and Dena Kasraian, Eric J. Millers, 2019.

<sup>6</sup> Building Better Budgets: A National Examination of the Fiscal Benefits of Smart Growth Development, Smart Growth America, 2013.

<sup>7</sup> Evaluating Transportation Land Use Impacts, Victoria Transport Policy Institute, Todd Litman, 2022.

### 3.3 Housing Density and Infrastructure Costs

Development density was found to be negatively associated with per capita municipal expenditures for the following cost categories:

- Operational costs for: fire protection, streets and highways, parks and recreation, sanitary sewer, solid waste management, and water servicing.
- Construction costs for: streets and highways, parks and recreation, sewer, and water.
- Facility costs for: police, sanitary sewer, and water servicing.

Results tend to be insignificant for other cost categories. In general, results support the conclusion that increased development density is associated with reduced per capita municipal spending for several cost categories.<sup>8</sup>

Lower density, auto-oriented developments tend to require more infrastructure per capita than do more compact developments. Sprawling cities tend to have a greater length of streets and water and sewer pipes per person to maintain, and services such as trash collection and fire and police protection have a larger area to service per resident. This can result in an increase in per capita infrastructure, maintenance, and service costs for cities. More compact developments can lead to cost savings through economies of scale and economies of geographic scope. Economies of scale are exhibited when the marginal cost of providing services per person decreases as more residents cluster within an area. Economies of geography are found when the marginal cost decreases as each person locates more closely to existing major public facilities.<sup>9</sup>

Dispersed development tends to increase the per capita length of roads and utility lines (e.g., water, sewage, power, etc.), and the travel distances needed to provide public services (e.g., garbage collection, policing, emergency response, etc.). While rural residents tend to accept lower service quality (unpaved roads, slower emergency response times, lack of water and sewer servicing, etc.) and provide many of their own services (well water, septic systems, garbage disposal, etc.), suburban developments tend to attract residents who often expect urban levels of services in dispersed, low density locations, which greatly increases public costs.<sup>10</sup>

### 3.4 Property Taxes

Property taxes are the largest source of revenue for local governments and fund local services. Their application can in some cases be considered unfair as they are unrelated to ability to pay or to the benefits received, unsuitable as they support services that are not related to the property, and inadequate as they do not provide sufficient public revenues to meet local expenditure needs.<sup>11</sup>

Benefits from services are more closely reflected in property values than in the size of the property. For example, properties close to transit or parks tend to see higher property values. Moreover, market value

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<sup>8</sup> Relationships between Density and per Capita Municipal Spending in the United States, Upper Great Plains Transportation Institute, Jeremy Mattson, 2021.

<sup>9</sup> Relationships between Density and per Capita Municipal Spending in the United States, Upper Great Plains Transportation Institute, Jeremy Mattson, 2021.

<sup>10</sup> Analysis of Public Policies That Unintentionally Encourage and Subsidize Urban Sprawl, Victoria Transport Policy Institute, Todd Litman, 2015.

<sup>11</sup> How to Reform the Property Tax: Lessons from around the World, IMFG Papers on Municipal Finance and Governance, Enid Slack and Richard M. Bird, 2015.

also has the advantage of capturing the value added by neighbourhood amenities created by government expenditures and policies.<sup>12</sup>

There is less economic rationale for higher taxation of non-residential property. Differentially higher taxation can distort land use decisions and favour residential use over commercial and industrial uses.

### 3.5 User Fees

A user fee is a charge for a publicly provided good or service. The revenues from such a fee must be used solely to fund the provision of that good or service, and the amount of the fee is dictated by the cost of providing the good or service. Furthermore, payment of the fee is a necessary condition for consuming the good or service. User fees, therefore, are valuable tools when it comes to covering the operating costs of municipal services. There are many examples of user fees at the municipal level, such as: public transit fares, recreation fees, electric and natural gas provision, and utility and garbage collection payments.<sup>13</sup>

These features of user fees have several implications for their design, implementation, and use. First, user fees are a 'cost-recovery revenue tool' (i.e., the fees must be used to recoup the actual costs incurred). The revenues from the fees must be used solely to offset the costs of providing the good or service, and a link must exist between the activity being charged and the activity funded by the revenue from the user fee. That is to say, user fees involve a need to track: (1) the money collected and (2) how the money is spent.

Second, the user fee must be designed in such a way that it does not intentionally generate a surplus of public revenues. Ongoing surpluses are a clear indication that the fee charged exceeds the costs incurred and thus violates the cost-recovery nature of the revenue tool. At the same time, there is no requirement that the revenue from the user fee fully offset costs (although any shortfall must be made up from other revenues, typically property taxation).

Third, the fee charged to the user must be reasonably connected to the costs of providing the good or service to that user. If the costs of providing the service are fixed (i.e., if it costs the same amount to provide each unit, or if it costs the same amount to provide the service to every user) the fee charged cannot vary by unit or user.<sup>14</sup>

### 3.6 Setting User Fees<sup>15</sup>

User fees should be set and designed by considering the cost differentials attributed to economies of scale, capacity constraints, and differential demand in peak and non-peak periods, when second-best circumstances are prevalent and when externalities exist. Ultimately, the objective in setting fees should be the establishment of a clear link between services received and the charges for these services.

Current practice in setting user fees, however, is often to set fees to generate revenue rather than to allocate resources to their most efficient use. As an example, the tendency to charge a fixed price for water, regardless of the quantity consumed can be considered unfair, on the premise that lower income

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<sup>12</sup> How to Reform the Property Tax: Lessons from around the World, IMFG Papers on Municipal Finance and Governance, Enid Slack and Richard M. Bird, 2015.

<sup>13</sup> Non-Tax Revenue for Funding Municipal Governments, Funding the Canadian City, Lindsay M. Tedds, 2019.

<sup>14</sup> Non-Tax Revenue for Funding Municipal Governments, Funding the Canadian City, Lindsay M. Tedds, 2019.

<sup>15</sup> Municipal Taxes and User Fees, Tax Policy in Canada, H.M. Kitchen and A. Tassonyi, 2012.

earners cannot afford to pay, provides an implicit subsidy for higher-income households with more bathroom fixtures, and larger lawns to water.

Failure to set prices efficiently can lead to a demand for more services and subsequently a demand for infrastructure that is not efficiently or optimally allocated. Inefficiently set user fees have led to overinvestment and larger facilities than would otherwise be justified if more efficient pricing practices were adopted.

### 3.7 Fees vs. Taxes

User fees are not only efficient but also can be more equitable than taxes, depending on how they are implemented. They satisfy the benefits-received principle of equity, which prescribes a clear link between the good, service, or right being provided and the benefit that the consumer receives.<sup>16</sup>

Opponents of user fees often discount them as a means for raising revenues on the basis that they are regressive -- that is to say, they take up more of the income of a lower-income household than of a higher-income one. This argument ignores the fact that the relative regressivity of a revenue tool depends not on the fee itself but on how it is designed and implemented. The potential regressivity of a user fee can often be offset by careful implementation, such as discounts, increased service provision, and cash transfers.<sup>17</sup>

### 3.8 Summary

'Urban Sprawl' refers to dispersed, segregated (single-use), automobile-oriented, urban-fringe development, while 'Smart Growth' comprises more compact, mixed-use, multi-modal forms of development. Some, but not all, public services are sensitive to a city's development patterns and residential densities. More compact development forms tend to reduce infrastructure costs on a per capita basis, support more efficient use of resources, and encourage more sustainable forms of transportation. However, the relationships between residential densities and public costs are complex; actual costs depend on the specific services and conditions, and local context. Higher density development forms are associated with lower per capita municipal expenditures for streets and highways, sewer, water, and solid waste. While property taxes are for general municipal services and calculated on assessed property values, a user fee, such as for utilities, is a charge for consuming a municipally-provided good or service. User fees are a 'cost-recovery revenue tool' and must be set based on the costs of providing the good or service to the user.

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<sup>16</sup> Non-Tax Revenue for Funding Municipal Governments, Funding the Canadian City, Lindsay M. Tedds, 2019.

<sup>17</sup> Non-Tax Revenue for Funding Municipal Governments, Funding the Canadian City, Lindsay M. Tedds, 2019.

## 4 Case Studies

The literature review completed as part of this study included identifying and reviewing published studies from other jurisdictions relating to infrastructure servicing and municipal finance.

These studies are varied but generally address in whole or in part the infrastructure expenditures associated with different residential forms / densities, developer contributions towards infrastructure, operating costs of services, and / or property tax and utility fee revenues.

The summaries profile ten cities / regions as case studies, presenting key points in table format, for the following jurisdictions:

- Ottawa; Ottawa-Carleton; Kingston; Calgary; Edmonton; Halifax (Canada)
- Portland (USA)
- Perth, Adelaide (Australia)

Each profile contains a summary of the study purpose, geography covered, scenarios and typologies documented, results and key findings (see Appendix B for greater detail).

The purpose / objective of the profiled studies varied, as well as the methodology. In some cases, fiscal analysis was for existing developed areas, while in other cases evaluating multiple possible development scenarios for a large, new greenfield site (sometimes referred to as 'sprawl' or 'suburban development' vs. 'compact' or 'infill development'). In some cases, the costs were calculated on a per unit or per capita basis, and in other cases only totals were provided. Furthermore, some studies considered the entire lifecycle costs of infrastructure and services, and others only parts of it. The costs that were included in the analyses varied and are not consistent, thus direct comparison between results is not feasible. The site / area specific factors and geographies can greatly influence required infrastructure improvements and costs, and introducing mixed-use development forms with commercial components can also affect the attribution of costs.

Some of the case studies note other matters, such as development costs for developers which can be higher in an urban location due to additional complexities, and personal transportation costs which are not borne by the municipality, etc. Furthermore, the case studies note, but do not quantify, other considerations, such as land uses and environmental impacts.

### 4.1 Summary

The case studies generally indicate that the infrastructure servicing costs per dwelling unit declines as residential densities increase. This is largely associated with reduced linear infrastructure (i.e., roads, water pipes, sewer lines) per capita for higher density, compact design and development forms, as compared to lower density forms. However, large urban infill projects still require significant infrastructure investments. Other costs, such as labour-intensive services (rather than capital-intensive infrastructure), are more directly related to population levels and incurred on a per capita basis. Thus, the relationship between residential density and municipal costs is nuanced, and also can be impacted by local matters, such as the condition (age, capacity) of infrastructure and other physical elements such as geography and topography.

## 5 Infrastructure Servicing Cost Estimates by Residential Typology

### 5.1 Residential Housing Typologies Defined - Densities, Forms, Types

Residential housing ‘types’ or ‘typologies’ can be classified and organized in many ways, including along a spectrum or continuum. This definitional analysis can be based on tenure (from below market rental to luxury ownership), or density / form (from low rural density to high urban density) (see Appendix C for greater detail).

The measure of density changes (e.g., Floor Area Ratio (FAR) or Units per Hectare (UPH)), as other attributes are also affected by and part of the typology. This can include building size, height, and site coverage, etc. This influences the built form, be it ground oriented housing with yards or stairs and elevators for upper levels. For example, lower density forms can have surface level parking and be constructed out of wood frame, whereas higher densities are likely to have underground or structured parking facilities and concrete construction, which can vary widely in terms of construction costs.

The ratio of the neighbourhood lands devoted for roads and parks may also vary, as well as area amenities and transit service. This all contributes to the amount of population, required infrastructure, transportation patterns, commercial activities, etc., for the area. A community can include multiple typologies, and these land uses / densities can change over time and intensify to more urban forms through redevelopment.

### 5.2 Typologies for Study and Servicing Cost Estimates

For this study, the following residential density typologies were used as the basis to prepare the simplified infrastructure / servicing cost estimates. Three residential types were established (i.e., houses, townhouses, apartments), each with a ‘low’ and ‘high’ density variant, creating a total of six typologies. See Figures 5.1, 5.2, and 5.3 for representative images for these typologies.<sup>18</sup>

**Figure 5.1: House Typologies (Low and High)**



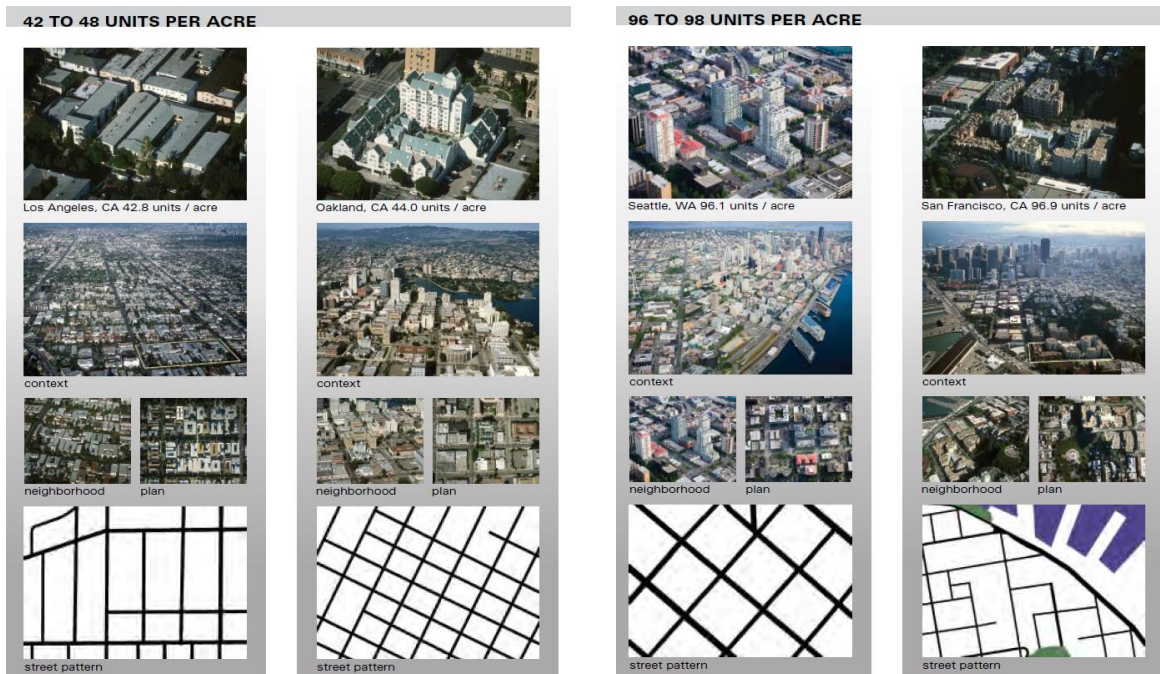
<sup>18</sup> Visualizing Density, Lincoln Institute of Land Policy, Julie Campoli and Alex S. MacLean, 2007.



**Figure 5.2: Townhouse Typologies (Low and High)**



**Figure 5.3: Apartment Typologies (Low and High)**



While these typologies are simplistic and with limitations, for consistency and comparability the development scenarios and costing estimates prepared for the six scenarios all use the same amount of land and road areas, i.e.,:

- Road: 100 metres length, 18 metres wide, though the centre of the site (with developable land on both sides).
- Land: 100 metres strip of land on both sides of the road, 40 metres deep.
- Site: 8,000 m<sup>2</sup> (0.8 hectare / approx. 2 acres) of net developable land (plus the road in-between).

With this assumed constant amount of land and road, the development scenarios by residential form and density are as follows:

1. HOUSE (Low) – 100 metre road length, with 8 lots / houses on each site (Lots: 12.5 m wide x 40 m deep; 500 m<sup>2</sup> lot size) = 16 lot utility connections (16 houses), plus the road with services.
2. HOUSE (High) – 100 metre road length, with 12 lots / houses on each site (Lots: 8.33 m wide x 40 m deep; 333 m<sup>2</sup> lot size) = 24 lot utility connections (24 houses), plus the road with services.
3. TOWNHOUSE (Low) – 100 metre road length, with 2 townhouse strata lots on each side (each 50 m wide x 40 m deep; 200 m<sup>2</sup> lot size) = 4 lot utility connections (40 townhouse units total), plus the road with services.
4. TOWNHOUSE (High) – 100 metre road length, with 2 townhouse strata lots on each side (each 50 m wide x 40 m deep; 200 m<sup>2</sup> lot size) = 4 lot utility connections (60 townhouse units total), plus the road with services.
5. APARTMENT (Low) – 100 metre road length, with 2 apartment strata lots on each side (each 50 m wide x 40 m deep; 200 m<sup>2</sup> lot size) = 4 lot utility connections (100 apartment units total), plus the road with services.
6. APARTMENT (High) – 100 metre road length, with 2 apartment strata lots on each side (each 50 m wide x 40 m deep; 200 m<sup>2</sup> lot size) = 4 lot utility connections (200 apartment units total), plus the road with services.

For each of the six scenarios, the servicing costs to construct the public road with infrastructure and lot utility connections were estimated using the same amount of land and road areas for each. The road and servicing requirements vary slightly depending on the development scenario, such as assuming that for single-detached (house) lots a local road standard would be adequate, and for multiple units (townhouses and apartments) the road standard would be higher at three lanes instead of two, and larger pipes sizes. Furthermore, the size and number of utility connections for each scenario may differ as well. Table 5.1 shows the resulting unit yields and densities.

**Table 5.1: Residential Typologies and Densities**

<b>NET LAND AREA (excluding public road)</b>						
	<b>Scenario</b>	<b>Unit Yield</b>	<b>Land Area Ha</b>	<b>Land Area Ac</b>	<b>Net UPH</b>	<b>Net UPA</b>
1	House (Low)	16	0.80	1.98	20.0	8.1
2	House (High)	24	0.80	1.98	30.0	12.1
3	Townhouse (Low)	40	0.80	1.98	50.0	20.2
4	Townhouse (High)	60	0.80	1.98	75.0	30.4
5	Apartment (Low)	100	0.80	1.98	125.0	50.6
6	Apartment (High)	200	0.80	1.98	250.0	101.2
<b>GROSS LAND AREA (including public road)</b>						
	<b>Scenario</b>	<b>Unit Yield</b>	<b>Land Area Ha</b>	<b>Land Area Ac</b>	<b>Gross UPH</b>	<b>Gross UPA</b>
1	House (Low)	16	0.98	2.42	16.3	6.6
2	House (High)	24	0.98	2.42	24.5	9.9
3	Townhouse (Low)	40	0.98	2.42	40.8	16.5
4	Townhouse (High)	60	0.98	2.42	61.2	24.8
5	Apartment (Low)	100	0.98	2.42	102.0	41.3
6	Apartment (High)	200	0.98	2.42	204.1	82.6

The total infrastructure costs, irrespective of if installed or funded by a developer or a municipality, were estimated, and divided by unit yield to calculate cost per residential unit. It is again noted that this is an estimate, using simple industry averages for construction, and does not take into account any local considerations, off-site infrastructure, etc.

The resulting cost estimates are shown below in Table 5.2. The cost of constructing the road to a higher standard for multiple units is slightly higher than for single-detached use. With single-detached developments, each lot has a utility connection to the public system, whereas for multiple-unit developments, each complex has a connection.

As the densities / yields are much higher for the apartment scenarios, dividing the total servicing costs by the number of residential units provides for significantly lower infrastructure costs per unit. When adjusted for the number of persons per household which varies by unit type (1.85 per apartment, 2.75 per townhouse, and 3.10 per house based on 2021 Census data), the cost per capita is also seen to be lower as densities increase, but not to the same degree.

**Table 5.2: Residential Typologies - Servicing Costs**

	<b>Scenario</b>	<b>Unit Yield</b>	<b>Servicing Costs</b>	<b>Cost Per Unit</b>	<b>Persons per Household</b>	<b>Cost Per Capita</b>
1	House (Low)	16	\$ 640,000	<b>\$ 40,000</b>	3.10	<b>\$ 12,903</b>
2	House (High)	24	\$ 880,000	<b>\$ 36,667</b>	3.10	<b>\$ 11,828</b>
3	Townhouse (Low)	40	\$ 680,000	<b>\$ 17,000</b>	2.75	<b>\$ 6,182</b>
4	Townhouse (High)	60	\$ 700,000	<b>\$ 11,667</b>	2.75	<b>\$ 4,242</b>
5	Apartment (Low)	100	\$ 800,000	<b>\$ 8,000</b>	1.85	<b>\$ 4,324</b>
6	Apartment (High)	200	\$ 900,000	<b>\$ 4,500</b>	1.85	<b>\$ 2,432</b>

### 5.3 Summary

The costs for onsite infrastructure / servicing for house vs. apartment developments are approximately five to nine times more expensive 1) on a per capita basis (\$13,000 vs. \$2,000) and 2) on a per unit basis (\$40,000 vs \$5,000), respectively. This illustrates the greater cost effectiveness of higher density and multi-unit residential development forms can be as compared to lower density, single-detached development, because the infrastructure costs can be apportioned to more units. As most of these infrastructure costs are initially borne by a developer and ultimately the resident, lower infrastructure costs can help contribute to lower housing costs. Furthermore, after construction and development, the cost of maintaining the infrastructure is typically the responsibility of the municipality and ultimately taxpayers, therefore more efficient infrastructure systems can reduce public operating costs and fees / taxes over the long term.

## 6 Calculating Typical Development Cost Charges in the Region

### 6.1 Development Cost Charges<sup>19</sup>

Local governments in British Columbia can levy development cost charges (DCCs) on new development to pay for new or expanded infrastructure such as sewer, water, drainage, parks, and roads necessary to adequately service the demands of that development.

DCCs are established by bylaw with the approval of the provincial Inspector of Municipalities. A DCC bylaw may establish charges over the entire local government or just a portion of it.

DCCs are calculated separately for each category of infrastructure: water, sewer, drainage, parks, and roads. The amount of a DCC for each infrastructure category is determined by dividing the expected infrastructure costs (required to service new development over the DCC timeframe) by the number of new development units that will be served.

Separate DCCs may be established for different classes of development, for example, residential, commercial, industrial, and institutional. Charges may then be collected from developers either at the time of subdivision approval (for single-detached lots) or at the issuance of a building permit (for multi-unit residential and commercial buildings). Area specific charges can also be imposed to defined benefiting areas.

### 6.2 Community Amenity Contributions<sup>20</sup>

Beyond DCCs, municipalities may charge Community Amenity Contributions (CACs) or density bonusing fees. As defined by the Province:

*Community amenity contributions are negotiated amenity contributions agreed to by the developer and local government as part of a rezoning process initiated by the developer. Community amenity contributions typically include the provision of amenities, affordable housing and/or financial contributions towards amenities. The agreed-to contribution is obtained by the local government, if the local government decides to adopt the rezoning bylaw.*

*As an additional approach, local governments sometimes negotiate CACs from those seeking a change in zoning. A change in use or an increase in density generally boosts the value of land, and provides the possibility of a financial benefit to the land owner, developer or local government. Increasingly, local governments and residents see this as a reasonable opportunity to help fund community amenities.*

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<sup>19</sup> Province of British Columbia, Development Cost Charges, Website: [www2.gov.bc.ca/gov/content/governments/local-governments/finance/local-government-development-financing/development-cost-charges](http://www2.gov.bc.ca/gov/content/governments/local-governments/finance/local-government-development-financing/development-cost-charges)

<sup>20</sup> Province of British Columbia, Density Bonusing and Amenities, Website: [www2.gov.bc.ca/gov/content/governments/local-governments/planning-land-use/land-use-regulation/zoning-bylaws/density-bonusing-amenities](http://www2.gov.bc.ca/gov/content/governments/local-governments/planning-land-use/land-use-regulation/zoning-bylaws/density-bonusing-amenities)

### 6.3 Regional Development Cost Charges

In this region, Metro Vancouver and TransLink also charge DCCs, noted as follows in Tables 6.1, 6.2 and 6.3:

**Table 6.1: Metro Vancouver Water DCC Rates**

Residential	Townhouse	Apartment	Non-Residential
\$6,692 / unit	\$5,696 / unit	\$4,261 / unit	\$3.39 / ft <sup>2</sup> of floor area

**Table 6.2: Metro Vancouver Liquid Waste DCC Rates**

Sewerage Area	Residential	Townhouse	Apartment	Non-Residential
Fraser	\$6,254 / unit	\$5,390 / unit	\$4,269 / unit	\$3.30 / ft <sup>2</sup> of floor area
Lulu Island West	\$3,313 / unit	\$2,756 / unit	\$2,042 / unit	\$1.54 / ft <sup>2</sup> of floor area
North Shore	\$3,300 / unit	\$2,786 / unit	\$2,030 / unit	\$1.67 / ft <sup>2</sup> of floor area
Vancouver	\$3,335 / unit	\$2,983 / unit	\$1,988 / unit	\$1.63 / ft <sup>2</sup> of floor area

**Table 6.3: TransLink Transportation DCC Rates**

Type of Development	Rates effective January 1, 2022
Single Family Dwelling	\$2,993 per Dwelling Unit
Duplex	\$2,485 per Dwelling Unit
Townhouse Dwelling Unit	\$2,485 per Dwelling Unit
Apartment Dwelling Unit	\$1,554 per Dwelling Unit
Retail/Service	\$1.26 per sq. ft. of Floor Area*
Office	\$1.01 per sq. ft. of Floor Area*
Institutional	\$0.50 per sq. ft. of Floor Area*
Industrial	\$0.30 per sq. ft. of Floor Area*

Depending on the unit type and location, these regional DCCs can total approximately \$8,000 to \$16,000 per housing unit.

### 6.4 Municipal Development Cost Charges in Metro Vancouver

Using eight representative municipalities in the Metro Vancouver region, the applicable municipal DCCs were calculated for each of the six residential typologies studied. This reporting excludes other DCCs, such as those levied by Metro Vancouver and TransLink, as well as other possible municipal fees or charges such as Community Amenity Contributions or special area charges. Furthermore, developers may be expected to pay for infrastructure servicing costs for both on-site and off-site works associated with development, depending on a site's location or context.

The results are shown in Table 6.4. DCC rates by unit type can vary considerably by municipality within the region, yet within individual municipalities generally do not vary. Municipal DCCs range up to \$40,000 to \$60,000 for a single-detached house, to as low as approximately \$10,000 for an apartment.



## 6.5 Summary

The municipal Development Cost Charges (DCCs) in British Columbia are enabled under provincial legislation to pay for new or expanded infrastructure (sewer, water, drainage, parks, and roads) necessary to adequately service the demands of new development. In the Metro Vancouver region, the municipal DCC rates per unit are almost always highest for single-detached houses (up to \$40,000 to \$60,000), lowest for apartment units (approximately \$10,000), and in between for townhouses. However, when adjusted for the typical number of residents in a household, which varies by unit type, the range of per capita DCC rates vary only by a few thousand dollars, averaging: \$9,000 per apartment resident, \$10,000 per townhouse resident, and \$11,000 per house resident. That noted, the DCC rates by unit type can vary considerably by municipality within the region, yet within individual municipalities generally do not vary. While allowable under provincial legislation, most municipalities do not charge different DCC rates for different sub-areas or catchment areas.



## 7 Municipal Budgets Expenditures Analysis

Municipal budgets typically comprise revenue from various sources (e.g., property taxes, user fees, and grants) and expenditures of various types for operating or capital matters. Some municipal functions tend to be very capital intensive like infrastructure, whereas others are very labour-intensive like services or amenities. Thus, possible efficiencies of scale and efficiencies of geography will vary by the function (see Appendix D for greater detail).

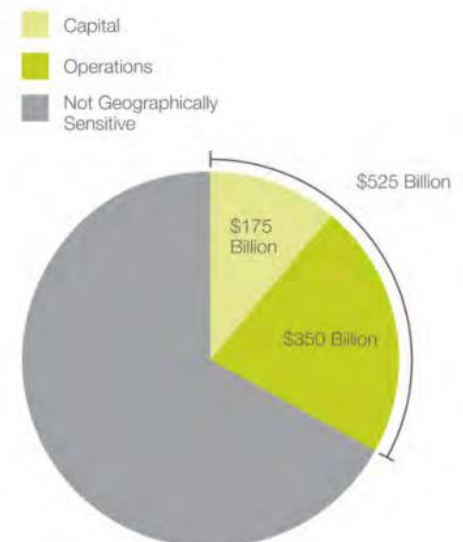
In British Columbia, municipalities are not generally responsible for services and associated costs for transit, school, and social or health provision, unlike in some other jurisdictions in Canada and the United States.

### 7.1 Budgets of American Cities

According to one American study completed in 2010, and as illustrated in Figure 7.1<sup>21</sup>:

- The cost of infrastructure like roads and sewers, as well as services like fire departments, ambulances and police are major budget items for any municipality, and decisions about development patterns can raise or lower the cost of these services.
- Local governments in the United States raised and spent \$1.6 trillion USD, representing more than 10% of the U.S. Gross Domestic Product. Of that, approximately one-third (\$525 billion) was expended on projects and activities that are heavily affected by local development patterns. That means future decisions about where to build will have implications for one-third of a typical municipality's budget.
- Of the \$525 billion, \$175 billion was spent on capital projects such as school buildings, roads and highways, water and sewer facilities, libraries and utilities. The remainder (about \$350 billion) was spent on operations for the provision of public services such as police and fire service, utility service, highways and water and sewer service.

**Figure 7.1: Part of Local Budgets Influenced by Land Use Choices**



### 7.2 Metro Vancouver Municipal Budgets

From a high level review of the larger municipalities in the Metro Vancouver region (i.e., Vancouver, Surrey, Burnaby, Richmond), of their total budget expenditures, the majority of costs are associated with providing services of various types that do not generally have a direct relationship with development densities or forms. For example, costs like community parks, recreational facility, library, licencing / permitting, police, fire, general government / administration, are largely services required for the population, thus a function of the number of residents or per capita, rather than density of development.

<sup>21</sup> Building Better Budgets: A National Examination of the Fiscal Benefits of Smart Growth Development, Smart Growth America, 2013.

Municipal services that have a more direct relationship to land use patterns and densities are utilities / engineering relating to roads, water, sanitary, and garbage services.

For the cities in the Metro Vancouver region that were analyzed, it appears that in the range of 27-37% of municipal expenditures are associated with these types of utilities / engineering services (i.e., both capital and operating costs).

This suggests that approximately one-third of municipal budgets could be impacted to some degree by land uses, densities, development patterns, and associated services required. Furthermore, some of these utilities / engineering services may not have a direct relationship between costs and development densities. For example, the costs of a water or sewage treatment plant may be fixed and largely a function of number of residents in the catchment area, while the pipes to connect the plant to the service area are a function of the development pattern / density.

Thus, while there are potential municipal cost savings associated with more compact forms of development, the scale of it should be considered within an overall municipal context. It is important to note that some of these costs are related to commercial and industrial land uses, which are not the focus of this study.

Separate from this analysis are other 'local' services such as transit, hospitals, and schools, which are the responsibility of different levels of government in British Columbia.

### 7.3 Summary

Based on a review of current municipal budgets in the region, approximately one-third of expenditures (i.e., both capital and operating costs) are related to utilities / engineering services that could be impacted to some degree by land uses, development forms, and densities, and associated infrastructure requirements. The balance of municipal costs (operating and capital) are for various types of 'soft' services that are generally labour-intensive and more a function of population than density. Thus, while there are potential municipal cost savings associated with more compact forms of development, the scale of this possible amount should be considered within the overall municipal context.

## 8 Calculating Typical Property Taxes and Utility Fees in the Region

### 8.1 Property Taxes in British Columbia Explained<sup>22</sup>

Municipal property taxes must be paid annually for each property (Figure 8.1). The money collected from property taxes funds local programs and services, such as:

- Police and fire protection
- Emergency rescue services
- Road construction and maintenance
- Garbage collection services
- Recreation and community centres
- Parks
- Libraries
- Local government administration
- Schools
- Hospitals

In addition to annual property taxes there may be a separate bill for utilities or services in the area. This may be an additional bill from an improvement district, municipality or private company for services, such as:

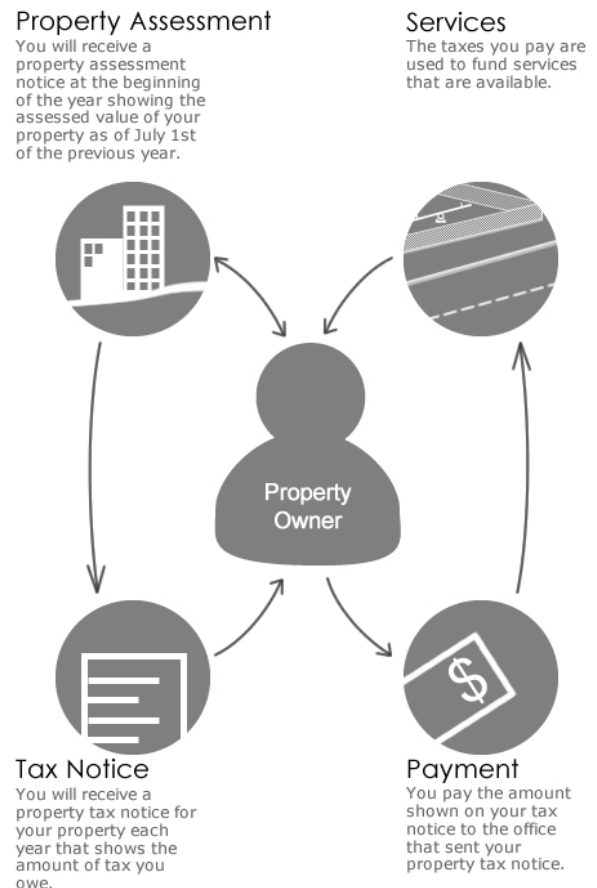
- Water
- Fire protection
- Street lighting
- Sewage
- Parks

### 8.2 Property Classes and Exemptions<sup>23</sup>

In BC, there are nine classes for property taxation purposes. These classes are listed below, with the definition for Class 1 Residential. The property tax rate varies by class; notably for most municipalities the tax rate is much higher for utilities, industry, and businesses than it is for residential uses.

BC Assessment completes an annual value assessment of every property and categorizes them in one or more of the nine classes, typically based on a property's type or use. Municipal zoning does not determine the property class, though it may be a factor in some cases.

**Figure 8.1: BC Property Tax System**



<sup>22</sup> Province of British Columbia, Annual Property Tax, Website: [www2.gov.bc.ca/gov/content/taxes/property-taxes/annual-property-tax](http://www2.gov.bc.ca/gov/content/taxes/property-taxes/annual-property-tax)

<sup>23</sup> BC Assessment Authority, Understanding property classes and exemptions, Website: <https://info.bcaassessment.ca/Services-products/property-classes-and-exemptions/understanding-property-classes-and-exemptions>

### BC Assessment Property Classes:

- **Class 1, Residential** – single-family residences, multi-family residences, duplexes, apartments, condominiums, nursing homes, seasonal dwellings, manufactured homes, some vacant land, farm buildings and daycare facilities.
- **Class 2, Utilities**
- **Class 3, Supportive Housing**
- **Class 4, Major Industry**
- **Class 5, Light Industry**
- **Class 6, Business and Other**
- **Class 7, Managed Forest Land**
- **Class 8, Recreational Property, Non-profit Organization**
- **Class 9, Farm**
- **Split Classification** – Properties with several distinct uses can fall into more than one class. For example, commercial and residential space might be combined in one building, or a property combines residential, farm and forest land. In these cases, BC Assessment determines the share of the value of the property attributable to each class.

### 8.3 Calculations for Typical Housing Units in the Region

Using a sample of seven representative municipalities in the Metro Vancouver region (i.e., Vancouver, Burnaby, Richmond, Surrey, Langley Township, Coquitlam, North Vancouver District), the average or typical property taxes and utility fees were calculated based on available information for the three different unit typologies used in this study (i.e., house, townhouse, apartment). This was based on the benchmark or index market price from local real estate board publications (April 2023 values), the 2022 property tax mill rates, and the utility charges for different services, such as for water, sewage, and garbage by municipality.

The results in Table 8.1 show that, on average, in the Metro Vancouver region houses pay \$5,600 in property taxes and \$1,700 in utility fees, totalling approximately \$7,400 per year. The amounts are lower for townhouses and apartments. These amounts vary by municipality as the mill rates vary by jurisdiction, and furthermore would also vary within individual municipalities depending on assessed value of the representative properties. For multi-unit complexes (i.e., townhouses and apartments) there may be a strata organization responsible for some private on-site utilities and services, which would be charged to the owner as a strata amenity fee rather than a municipal fee or property tax.

**Table 8.1: Average Property Taxes and Utility Fees by Unit Type**

House	Unit Value	General Municipal	School	Regional District	Hospital	BCA, MFA and Other	Total Taxes	Total Charges	Total Taxes and Charges	Taxes as % of Total Tax & Charge	% of Total Taxes to City
<i>Average</i>	\$1,953,852	\$3,192	\$1,860	\$100	\$0	\$510	\$5,663	\$1,718	\$7,381	77%	56%
Townhouse	Unit Value	General Municipal	School	Regional District	Hospital	BCA, MFA and Other	Total Taxes	Total Charges	Total Taxes and Charges	Taxes as % of Total Tax & Charge	% of Total Taxes to City
<i>Average</i>	\$1,050,133	\$1,721	\$999	\$54	\$0	\$274	\$3,048	\$1,285	\$4,333	71%	56%
Apartment	Unit Value	General Municipal	School	Regional District	Hospital	BCA, MFA and Other	Total Taxes	Total Charges	Total Taxes and Charges	Taxes as % of Total Tax & Charge	% of Total Taxes to City
<i>Average</i>	\$737,119	\$1,204	\$700	\$38	\$0	\$192	\$2,135	\$1,201	\$3,336	64%	56%

Of the property taxes only, slightly over half (56%) of the amount is for the local / host municipality, and the rest to other authorities such as Metro Vancouver, TransLink, and the Province (via school taxes). Furthermore, of the total taxes and fees paid by typical households, a quarter to a third of that amount goes towards utility fees. Table 8.2 shows these results for the sample municipalities in the Metro Vancouver region.

**Table 8.2: Average Property Taxes and Utility Fees by Unit Type for Select Municipalities**

City / House	Unit Value	General Municipal	School	Regional District	Hospital	BCA, MFA and Other	Total Taxes	Res Parcel Taxes	Res User Fees	Total Charges	Total Taxes and Charges	Taxes as % of Total Tax & Charge	% of Total Taxes to City
Vancouver	Mill Rate	1.53131	0.84770	0.05042	0.00000	0.26100	2.69043						
	\$2,535,200	\$3,882	\$2,149	\$128	\$0	\$662	\$6,821		\$2,264	\$2,264	\$9,085	75%	57%
Burnaby	Mill Rate	1.54710	0.98440	0.05030	0.00000	0.26100	2.84280						
	\$1,943,067	\$3,006	\$1,913	\$98	\$0	\$507	\$5,524		\$782	\$782	\$6,306	88%	54%
Richmond	Mill Rate	1.65745	0.99580	0.05127	0.00000	0.26100	2.96552						
	\$2,137,600	\$3,543	\$2,129	\$110	\$0	\$558	\$6,339		\$2,011	\$2,011	\$8,350	76%	56%
Surrey	Mill Rate	1.50005	0.99140	0.05079	0.00000	0.26100	2.80324						
	\$1,579,100	\$2,369	\$1,566	\$80	\$0	\$412	\$4,427		\$2,088	\$2,088	\$6,515	68%	54%
Langley Twp	Mill Rate	1.75720	1.02420	0.05158	0.00000	0.26100	3.09398						
	\$1,541,200	\$2,708	\$1,578	\$79	\$0	\$402	\$4,768		\$1,434	\$1,434	\$6,202	77%	57%
Coquitlam	Mill Rate	1.94270	1.00730	0.05270	0.00000	0.26100	3.26370						
	\$1,747,900	\$3,396	\$1,761	\$92	\$0	\$456	\$5,705		\$1,526	\$1,526	\$7,231	79%	60%
DNV	Mill Rate	1.57023	0.87870	0.05225	0.00000	0.26100	2.76218						
	\$2,192,900	\$3,443	\$1,927	\$115	\$0	\$572	\$6,057		\$1,919	\$1,919	\$7,976	76%	57%
<b>Average</b>	<b>\$1,953,852</b>	<b>\$3,192</b>	<b>\$1,860</b>	<b>\$100</b>	<b>\$0</b>	<b>\$510</b>	<b>\$5,663</b>		<b>\$1,718</b>	<b>\$1,718</b>	<b>\$7,381</b>	<b>77%</b>	<b>56%</b>
<b>City / Townhouse</b>	<b>Unit Value</b>	<b>General Municipal</b>	<b>School</b>	<b>Regional District</b>	<b>Hospital</b>	<b>BCA, MFA and Other</b>	<b>Total Taxes</b>	<b>Res Parcel Taxes</b>	<b>Res User Fees</b>	<b>Total Charges</b>	<b>Total Taxes and Charges</b>	<b>Taxes as % of Total Tax &amp; Charge</b>	<b>% of Total Taxes to City</b>
Vancouver	Mill Rate	1.53131	0.84770	0.05042	0.00000	0.26100	2.69043						
	\$1,296,300	\$1,985	\$1,099	\$65	\$0	\$338	\$3,488		\$1,777	\$1,777	\$5,265	66%	57%
Burnaby	Mill Rate	1.54710	0.98440	0.05030	0.00000	0.26100	2.84280						
	\$925,833	\$1,432	\$911	\$47	\$0	\$242	\$2,632		\$708	\$708	\$3,340	79%	54%
Richmond	Mill Rate	1.65745	0.99580	0.05127	0.00000	0.26100	2.96552						
	\$1,116,400	\$1,850	\$1,112	\$57	\$0	\$291	\$3,311		\$1,590	\$1,590	\$4,901	68%	56%
Surrey	Mill Rate	1.50005	0.99140	0.05079	0.00000	0.26100	2.80324						
	\$849,200	\$1,274	\$842	\$43	\$0	\$222	\$2,381		\$762	\$762	\$3,143	76%	54%
Langley Twp	Mill Rate	1.75720	1.02420	0.05158	0.00000	0.26100	3.09398						
	\$811,200	\$1,425	\$831	\$42	\$0	\$212	\$2,510		\$1,354	\$1,354	\$3,864	65%	57%
Coquitlam	Mill Rate	1.94270	1.00730	0.05270	0.00000	0.26100	3.26370						
	\$1,037,600	\$2,016	\$1,045	\$55	\$0	\$271	\$3,386		\$1,181	\$1,181	\$4,567	74%	60%
DNV	Mill Rate	1.57023	0.87870	0.05225	0.00000	0.26100	2.76218						
	\$1,314,400	\$2,064	\$1,155	\$69	\$0	\$343	\$3,631		\$1,624	\$1,624	\$5,255	69%	57%
<b>Average</b>	<b>\$1,050,133</b>	<b>\$1,721</b>	<b>\$999</b>	<b>\$54</b>	<b>\$0</b>	<b>\$274</b>	<b>\$3,048</b>		<b>\$1,285</b>	<b>\$1,285</b>	<b>\$4,333</b>	<b>71%</b>	<b>56%</b>
<b>City / Apartment</b>	<b>Unit Value</b>	<b>General Municipal</b>	<b>School</b>	<b>Regional District</b>	<b>Hospital</b>	<b>BCA, MFA and Other</b>	<b>Total Taxes</b>	<b>Res Parcel Taxes</b>	<b>Res User Fees</b>	<b>Total Charges</b>	<b>Total Taxes and Charges</b>	<b>Taxes as % of Total Tax &amp; Charge</b>	<b>% of Total Taxes to City</b>
Vancouver	Mill Rate	1.53131	0.84770	0.05042	0.00000	0.26100	2.69043						
	\$1,043,900	\$1,599	\$885	\$53	\$0	\$272	\$2,809		\$1,777	\$1,777	\$4,586	61%	57%
Burnaby	Mill Rate	1.54710	0.98440	0.05030	0.00000	0.26100	2.84280						
	\$774,333	\$1,198	\$762	\$39	\$0	\$202	\$2,201		\$708	\$708	\$2,909	76%	54%
Richmond	Mill Rate	1.65745	0.99580	0.05127	0.00000	0.26100	2.96552						
	\$751,200	\$1,245	\$748	\$39	\$0	\$196	\$2,228		\$1,271	\$1,271	\$3,499	64%	56%
Surrey	Mill Rate	1.50005	0.99140	0.05079	0.00000	0.26100	2.80324						
	\$537,000	\$806	\$532	\$27	\$0	\$140	\$1,505		\$762	\$762	\$2,267	66%	54%
Langley Twp	Mill Rate	1.75720	1.02420	0.05158	0.00000	0.26100	3.09398						
	\$575,500	\$1,011	\$589	\$30	\$0	\$150	\$1,781		\$1,354	\$1,354	\$3,135	57%	57%
Coquitlam	Mill Rate	1.94270	1.00730	0.05270	0.00000	0.26100	3.26370						
	\$675,300	\$1,312	\$680	\$36	\$0	\$176	\$2,204		\$1,181	\$1,181	\$3,385	65%	60%
DNV	Mill Rate	1.57023	0.87870	0.05225	0.00000	0.26100	2.76218						
	\$802,600	\$1,260	\$705	\$42	\$0	\$209	\$2,217		\$1,354	\$1,354	\$3,571	62%	57%
<b>Average</b>	<b>\$737,119</b>	<b>\$1,204</b>	<b>\$700</b>	<b>\$38</b>	<b>\$0</b>	<b>\$192</b>	<b>\$2,135</b>		<b>\$1,201</b>	<b>\$1,201</b>	<b>\$3,336</b>	<b>64%</b>	<b>56%</b>

## 8.4 Summary

Property taxes are a function of the assessed value of a property, with municipal tax rates set by the host municipality. Nearly half of the property taxes collected go to other levels of government than the local municipality, such as to the provincial government and other agencies. Municipal utility fees for such services as water, sewage, and garbage, may also apply. On average in the Metro Vancouver region, detached houses pay \$5,600 in property taxes and \$1,700 in utility fees, totalling approximately \$7,400 per year; the amounts are lower for townhouses and apartments. These amounts vary by municipality as the mill rates vary by jurisdiction, and furthermore also vary within individual municipalities depending on the assessed values of properties. Of the total taxes and fees paid by typical households, a quarter to a third of that amount goes to utility fees.

## 9 Methodological Complexities

Based on the literature review and informational interviews undertaken, the following is a summary of methodological considerations and complexities with the calculation and attribution of municipal costs and revenues and related matters (see Appendix E for greater detail).

### 9.1 Overview of Considerations

It is difficult to compare findings between locations and jurisdictions, such as different provinces, as there are many different variables, in terms of services, costs, revenues, allocation, governance, etc. For example, BC and Alberta municipalities tend to spend less on social services compared to Ontario; transit service is the responsibility of the Province in BC but of the municipalities in Alberta and regions in Ontario. Ambulance services are provided by regions in Ontario, but are the responsibility of the province in BC.

A range of uses and facilities are required for a community, and must be provided, regardless of cost and revenue distributions, even if not all are revenue neutral from a municipal finance perspective. In a metropolitan context like in the Metro Vancouver region, people and economic activities tend to move around during the day from home (residential) to work (industrial), and to shops (commercial) and services (institutional), each with their own attributes, contributing to and impacting the municipal and regional economies and services.

The definitions used for low and high development densities and areas can vary widely and thus associated boundaries and measures may not be consistent, resulting in different calculations and values.

Separating and allocating costs is not simple or consistent. There are theoretical and ideal policies on one hand, and on the other hand what typically occurs in practice. The difference (and similarities) between a tax and a fee, noting some items may not be properly classified, can confuse the matter.

### 9.2 Allocating Costs

Total costs by service are generally tracked and reported by municipalities for their entire jurisdiction, but it is difficult to disaggregate and allocate by sub-area and by unit types and forms of development. There are different catchment areas for different service types and different cost profiles. The results can be heavily influenced by the assumed attribution of costs to non-residential uses and taxpayers, such as commercial and industrial uses.

There are challenges with apportioning costs, be it by land use type, housing unit type, location / geography, components of services, and infrastructure amortization periods. For example, crime may occur in one area by a resident or victim from another area, and traffic flows between and through communities.

How municipal governments decide to value an asset and the associated amortization / depreciation schedule affects assigned costs per year. Some infrastructure may last longer or shorter than initially estimated. Reserve allowances for replacement costs can vary, and may be fully funded, or not, in municipal budgets.



In some cases, a service can have both a fixed and variable aspect, each with different cost profiles. The cost of producing and delivering a service can be very different, with only the delivery varying by its location within a municipality (e.g., a water treatment plant for the city, with service mains to local properties). Regional infrastructure facilities may be less impacted by development density than municipal / local service infrastructure connections. Therefore, the cost implications of different densities may vary by function and authority.

Some services and infrastructure with economies of scale can best be provided regionally, whereas others can be done more effectively and efficiently at the local level.

### 9.3 Municipal Revenues

Municipal services in Canada are largely funded by property taxes generally based on a system of the assessed value of property, rather than on a 'services consumed' basis. More expensive properties generally pay more towards city services.

User fees are applied only for some services. Some utilities / services are metered (such as water, or garbage) vs. others are not (and funded via general taxation). User fees are charged for products / services consumed that can be readily allocated to the user / benefiter, and the other municipal services are funded through general property taxation.

Some major infrastructure may be funded through grants by senior levels of government rather than local government. Maintenance of this infrastructure may later become a long-term operating cost for the municipality.

Municipal DCCs are typically applied at a municipal-wide rate as it is administratively simpler and provides more flexibility, rather than having to limit infrastructure expenditures to within the individual revenue generating geographies. Note this is a one-time charge for construction only and does not fund operation, maintenance, or replacement costs.

Municipal capital infrastructure costs are one-time costs and, unlike variable user fees, do not influence consumption / usage decisions in the same way as metered charges for water, electricity, natural gas, etc.

### 9.4 Local Considerations / Contexts

Some municipal and related services and costs are a function of per capita demand, and others a function of geography or development density. There is an overlap between economies of scale and efficiencies of geography. Higher population municipalities, not necessarily high development densities, tend to achieve economies of scale to a certain point before becoming less efficient thereafter.

Servicing costs in many cases are generally heavily impacted by local context-specific matters, such as the condition of existing infrastructure (i.e., capacity, age), geography, topography, etc. Infrastructure capacity available vs. incremental threshold reached can result in very different costs to provide additional services for new development.

Beyond residential densities and types, level of service decisions, as well as the delivery costs, may vary by location and circumstances due to such things as topography, geography, street pattern, condition, and the capacity of existing infrastructure, sharing with non-residential uses, etc. Residential densities

and neighbourhood ages are also factors that may impact servicing and infrastructure costs in other ways.

Historic downtown cores tend to have older infrastructure, and thus more expensive to maintain, whereas the suburban fringe areas that were developed more recently have newer infrastructure that does not require as much short-term maintenance.

Major infrastructure facilities that are large and expensive are generally constructed and financed all at once (referred to as 'lumpy' investments). Given the indivisible nature of major infrastructure capital assets / projects, municipal service capacity cannot easily be expanded incrementally to match the gradual increase in demand that comes from new development. In some cases, creating excess capacity may have been done intentionally for future planned development that has not yet occurred. Initial overbuild typically needs to be publicly funded upfront for future users / beneficiaries.

The redevelopment of areas that were not planned for higher densities, such as identified urban infill / intensification areas, can be a challenge and more expensive to service if the needed infrastructure capacity is not present. This may necessitate extensively replacing and expanding existing infrastructure before it would otherwise need to be replaced due to age.

## 9.5 Relationship Between Costs and Development Densities

Some costs are more or less sensitive to development density and form than others. The relationship between residential density and infrastructure demand is intuitive for some items, e.g., larger house lots require more linear distance of pipes and pavement per household resulting in higher costs. Yet parks and recreation costs are generally based on the demand associated with population. Stormwater management costs are most directly relevant to building site coverage / impervious surface, than development density or population.

Most of the municipal operating budgets are for labour costs and therefore do not vary much due to geography or development densities / forms as compared to other costs such as linear infrastructure. Often there are economies of scale associated with capital intensive infrastructure (e.g., water and sewage treatment plants) that can vary by type of infrastructure, but not for labour-intensive services. There are natural economies of scale for some types of infrastructure, which work at different levels and vary by type of infrastructure / service. Thus there is no single optimum level for all combined municipal services.

Some costs increase with higher densities in established urban areas associated with 'urban harshness', such as higher land costs and more complex and time consuming construction works. While absolute project costs may be higher in urban areas, it tends to support more intense development accommodating a greater population, thus resulting in lower per unit and per capita costs.

Although charges / fees may vary by residential unit types, often that variance is mostly due to the differences in the number of occupants in each unit, not significantly by other attributes; thus per capita rates are similar when adjusted for the number of persons per household.

Even though the per capita infrastructure costs in dense urban sites may be lower, the land development and construction costs tend to be higher. This can result in higher housing costs in city centres, pushing some residents to seek out lower density suburban locations in search of lower housing

costs. The Housing and Transportation Cost Burden Study <sup>24</sup> has shown that in those cases, often the associated household increases in transportation costs offset much of the perceived savings.

While infill and intensification development may have lower infrastructure costs, they generally do not have lower municipal DCCs. This may indicate that DCCs may not be set correctly if they are the same for the entire municipality despite variances in infrastructure costs, and as a result may unintentionally incent lower density urban fringe developments which are most costly to service.

## 9.6 Community Preferences

Public residential preferences are a major determinate of urban form, and housing choices are important. Different communities have different population profiles and resident behaviours that can be influenced by where they currently live and their associated environment or other self-selecting location decisions and preferences. Different demographics desire or consume different amounts and types of services, which is often impacted by income levels and ability to pay for certain services, demographics, and household composition.

Different municipalities may choose to provide different levels of services in terms of quantity or quality, which are difficult to consider and estimate in any financial analysis. The presence of a large industrial or commercial property tax base in a municipality compared to its residential areas will result in a different distribution of municipal costs and revenues as well as the services demanded and provided.

## 9.7 Other Considerations

Based on the literature review, below are some of the common findings and suggestions when considering costs and revenues related to residential development:

- Wherever reasonably possible, utility fees could be considered rather than property taxes as a cost recovery tool, as they are more reflective of the actual cost of service delivery. This would move closer to linking revenues and expenditures to the party benefiting and paying, via transparent user fees that are based on the actual consumption of services.
- Transparently illustrate and explain infrastructure / servicing costs and trade-offs when multiple scenarios are being considered for a proposed development or redevelopment, such as when preparing a master plan for greenfield lands (e.g., using different development and density options with resulting cost per unit and per capita calculations to reflect the trade-offs being considered).
- Direct efforts towards items that matter the most with the greatest opportunity for improvement. The capital and operating costs that are most impacted by spatial and development density factors should be the principal focus rather than the population-based costs apportioned on a per capita basis.
- Given the many possible methodological complexities and challenges, expectations about precision should be adjusted when completing any cost / revenue analysis. Noting the degree to which any such analysis can be influenced by context, modelling assumptions and data, the results should be treated more as indicators or estimates for consideration as a means to better understand the trade-offs of service levels and short- and long-term implications.

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<sup>24</sup> Housing and Transportation Cost Burden Study, Metro Vancouver, 2015.

## 9.8 Summary

Defining, calculating, and attributing costs and revenues for different services by different asset classes or unit types can be a data and methodological challenge. Conceptually, there are four categories: infrastructure (capital) costs and revenues, and service (operating) costs and revenues. Some of these may be paid for by a developer as one-time charges during construction, be it through providing the infrastructure and / or paying DCCs, and some by residents in the form of ongoing property taxes and utility fees. Some practical challenges for such calculations are defining 'urban' or 'suburban' development forms / densities for data collection and reporting purposes, and potentially attributing some costs and revenues to other non-residential land uses (such as commercial and industrial). Furthermore, many municipal services and associated costs are more a function of residential population level rather than housing density, and some services, such as capital intensive infrastructure, can benefit from economies of scale, while labour-intensive services do not. There are also significant local considerations and contextual issues. Some municipal costs may be higher on an absolute basis in a high-density, established urban location because of 'urban harshness' and increased complexities, but lower on a per unit or per capita basis because of the greater development densities. Given these complexities and limitations, the expectations about the resulting values should be understood as high-level or estimates.

## 10 Summary of Findings and Considerations

The study's findings and considerations are not meant to be definitive, and should be further explored and discussed with stakeholders and decision-makers to better understand the trade-offs inherent in all land use plans and development approvals, and to support more financially-sustainable and cost-effective forms of residential development.

### 10.1 Key Considerations

The following should be considered when making land use and urban form decisions, as well as those associated with public infrastructure investments to support desired forms of residential land uses and densities, and when reviewing property tax and utility fee policies:

- It is critical to permit and facilitate higher density and more cost-effective forms of development in urban / developed areas (i.e., infill, intensification, redevelopment), where public infrastructure investments can be best utilized. Where regulatory barriers exist to urban densification in such locations, consider a review of policies and regulations and discourage developments that are not compact form, mixed-use, and that cannot be cost-efficiently serviced.
- Achieving compact, complete communities does not necessarily require extremely high density development forms. Optimum densities are a factor of context, and are often a combination of densities and uses that result in more livable, sustainable, and balanced communities. For example, moving from low density to medium densities in urban centres and along transit corridors can provide significant improvements in infrastructure servicing cost outcomes.
- The costs of infrastructure and utility provision should be set to better reflect actual service costs and charge those who directly benefit:
  - The use of metering for utilities should be considered, where possible, such as for water and sewerage; with new and emerging technologies, such as improved metering, user fees can be more precise and effective, and managed electronically.
  - Utility fees should not be focused simply on raising revenues, but also on changing behaviours and outcomes. Fees and incentives can be set and adjusted to encourage desired actions and choices and meet community buildings objectives.
- Applying Development Cost Charges that vary by residential unit type / size / density as well as sub-area geography, better reflects the actual costs of servicing demand.
- Closely coordinating and integrating land use planning, engineered infrastructure, asset management, and municipal financial decision-making including full lifecycle costing, leads to improved land use and financial outcomes.

### 10.2 Summary

The result of such shortcomings is that municipalities may be inadvertently encouraging inefficient growth patterns. These patterns are costly not only from an environmental and social point of view, but also from a municipal finance perspective. The symptoms include mounting infrastructure deficits, reduced service levels, growing threats to quality of life, and a loss of economic competitiveness.

There are many opportunities through planning and taxation / fee setting policy adjustments to better advance municipal and community interests relative to land use patterns and housing forms. This can include: better aligning the parties who receive services with those who pay for them via enhanced

utility user fees, where appropriate; fully understanding the short and long-term costs and revenues associated with different land use types and development densities; applying Development Cost Charges based on smaller geographies to more accurately reflect the different local marginal servicing costs; and encouraging, including through reducing barriers and costs, and through public education programs, higher density and mixed-use development in urban locations already served by infrastructure, where possible. Utility user fees and charges can be an incentive to achieve the desired development forms and encourage more compact and cost-effective forms of growth.

## 11 Bibliography

- Visualizing Density, Lincoln Institute of Land Policy, Julie Campoli and Alex S. MacLean, 2007.
- The Fiscal Impacts of Urban Sprawl: Evidence from US County Areas, Christopher B. Goodman, 2019.
- Municipal Taxes and User Fees, Tax Policy in Canada, H.M. Kitchen and A. Tassonyi, 2012.
- Analysis of Public Policies that Unintentionally Encourage and Subsidize Urban Sprawl, Victoria Transport Policy Institute, Todd Litman, 2015.
- Evaluating Transportation Land Use Impacts, Victoria Transport Policy Institute, Todd Litman, 2022.
- Relationships between Density and per Capita Municipal Spending in the United States, Upper Great Plains Transportation Institute, Jeremy Mattson, 2021.
- Housing and Transportation Cost Burden Study, Metro Vancouver, 2015.
- Rationale for Smart Growth Fiscal Impact Analysis and Model, Smart Growth America, Arthur Nelson, 2022.
- Literature Review of the Costs of Infrastructure Provision for Different Development Forms, Shivani Raha, Dena Kasraian, and Eric J. Millers, 2019.
- How to Reform the Property Tax: Lessons from around the World, IMFG Papers on Municipal Finance and Governance, Enid Slack and Richard M. Bird, 2015.
- Non-Tax Revenue for Funding Municipal Governments, Funding the Canadian City, Lindsay M. Tedds, 2019.
- Building Better Budgets: A National Examination of the Fiscal Benefits of Smart Growth Development, Smart Growth America, 2013.
- BC Assessment Authority, Understanding property classes and exemptions, Website:  
<https://info.bcassessment.ca/Services-products/property-classes-and-exemptions/understanding-property-classes-and-exemptions>
- Province of British Columbia, Annual Property Tax, Website:  
[www2.gov.bc.ca/gov/content/taxes/property-taxes/annual-property-tax](http://www2.gov.bc.ca/gov/content/taxes/property-taxes/annual-property-tax)
- Province of British Columbia, Development Cost Charges, Website:  
[www2.gov.bc.ca/gov/content/governments/local-governments/finance/local-government-development-financing/development-cost-charges](http://www2.gov.bc.ca/gov/content/governments/local-governments/finance/local-government-development-financing/development-cost-charges)
- Province of British Columbia, Density Bonusing and Amenities, Website:  
[www2.gov.bc.ca/gov/content/governments/local-governments/planning-land-use/land-use-regulation/zoning-bylaws/density-bonusing-amenities](http://www2.gov.bc.ca/gov/content/governments/local-governments/planning-land-use/land-use-regulation/zoning-bylaws/density-bonusing-amenities)

## Appendix A: Literature Review – Concept and Theory

The following is text extracted from the referenced publications, providing key points from the literature review. These publications and research were used to inform the study.

### **Urban Sprawl: Do its Financial and Economic Benefits Outweigh its Costs for Local Governments?<sup>25</sup>**

In general, the growth of urban sprawl has a significant effect on local costs. The nature of “sprawl communities” creates a greater demand for costly new investments (roads, sewage systems, as well as, for example, kindergartens). In addition, local authorities in suburban municipalities are under pressure from “new residents” (who previously lived in central cities and were accustomed to higher levels of municipal services) due to the need for new investments. Urban sprawl is associated with large infrastructure investments such as roads for new residents on the outskirts of the city.

Many of the adjustments for urban sprawl are tolerated by the upper levels of the government through the financing of grants (mainly capital transfers) along with its role related to the property cycle (taxes and fees on land use improvement, building permits, construction tax, public land sales, etc.). However, municipalities’ reliance on grants and fees to adjust their budgets highlights a potential problem. The additional infrastructure needs associated with large-scale spatial growth are met mainly by the upper levels of government and can encourage municipalities to expedite urban expansion without considering the full financial implications of such policies.

On the other hand, urban sprawl has immediate consequences for political institutions because construction, land development, fees, and sale of building materials and structures, once completed, mean taxes and revenue for municipal and other governments. Local government incentives to slow down or change the direction of urban sprawl are limited. Initially, it is a significant source of employment, contract opportunities, and tax revenue for your constituency. This new model of urban development is also a potential source of revenue for municipalities. Land development has not only served as a passive result of urbanization but has also been actively pursued by local governments as a means of generating revenue to finance local economic growth. Due to the budget constraints of municipalities, revenues from urban sprawl quickly become local government expenditures.

### **Municipal Finances and Growth Planning in the Greater Golden Horseshoe: Opportunities for Better Integration to Support Smart Growth<sup>26</sup>**

These are complex matters and some of the connections between growth patterns and fiscal costs are still being debated in the academic literature, but the general picture that has emerged is clear: low-density, auto-dependent growth requires more infrastructure that is more expensive to operate and maintain over its life-cycle. Despite this finding, municipalities in Canada have an uneven record when it comes to integrating the management of growth and financial decisions. There are three key weaknesses:

- Municipalities tend to perform well when it comes to assessing the immediate costs of planned growth, but not so well when it comes to assessing long-term financial sustainability of that growth. In other words, municipalities are geared towards the immediate problem of financing anticipated

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<sup>25</sup> Urban Sprawl: Do its Financial and Economic Benefits Outweigh its Costs for Local Governments?, GeoJournal, Mehran Hajilou, Abolfazl Meshkini, Mohammad Mirehei, Safar Ghaedrahmati, 2022.

<sup>26</sup> Municipal Finances and Growth Planning in the Greater Golden Horseshoe: Opportunities for Better Integration to Support Smart Growth, Greenbelt Foundation, Ray Tomalty, 2022.



growth in terms of the up-front capital costs. They tend to pay less attention to assessing the long-term costs of growth in terms of operating, maintaining, refurbishing, and ultimately replacing the infrastructure that growth entails. This is a serious issue because much of the infrastructure needed to support growth have long lifetimes and therefore imply long-term (typically permanent) commitments in both operating and capital dimensions. These so-called life-cycle costs often exceed the original cost of installing the infrastructure, sometimes by several fold. Some municipalities seem to believe that property taxes and user fees arising from growth will cover these long-term costs, but this often turns out not to be the case. A failure to adequately foresee and budget for long-term commitments could distort decision-making concerning the amount and pattern of growth that is desirable in a community.

- Municipalities routinely shape growth to help achieve political, economic, social, and environmental goals, but they pay far less attention to the potential for shaping growth to achieve financial objectives. Municipalities seldom look at growth parameters such as greenfield density, concentration around transit, and intensification as tools for reducing the long-term financial costs associated with growth. They may also be driven by the desire to attract investment that will create new jobs and attract new residents, provide housing to a growing population, or expand the assessment base. In some cases, growth is managed to preserve agricultural lands and natural heritage features. However, it's less common for municipalities to consider shaping growth as a way of ensuring the optimum use of infrastructure dollars and reducing long-term costs to the municipality. As a result, accommodating population and employment growth may be unnecessarily expensive in the short- and long-term.
- Municipalities are very good at shaping their revenue tools to ensure they generate the needed funds to cover upcoming capital and operating costs (minus debt and grants from other governments) but not as good at thinking through how those design choices might impact growth patterns. The rules that govern the way taxes and user fees are collected from residents and businesses and the way development cost charges are exacted from developers have the potential to generate a system of subsidies from some property types or locations to others, generating impacts on decisions that affect the shape of growth. For example, property taxes that charge more to the owners of high-density residential buildings than those of low-density buildings are effectively subsidizing low-density housing (unless it can be shown that such housing is cheaper to service than high-density buildings, which it is generally agreed it is not). There are many such subsidies that are operating in communities. While the impacts of each subsidy may be small, on a cumulative basis, they may be contributing to inefficient growth patterns and higher financial costs for everyone.

The result of such shortcomings is that municipalities may be inadvertently encouraging inefficient growth patterns. These patterns are costly not only from an environmental and social point of view, but also from a municipal finance perspective. The symptoms include mounting infrastructure deficits, reduced service levels, growing threats to quality of life, and a loss of economic competitiveness.

This state of affairs can be partly attributed to the oft-noted silos through which municipal governments organize their work. Typically, the task of managing growth falls to professional planners in the planning department, while infrastructure decisions are made by engineers in the transportation and public works departments, and financial decisions are taken by officials trained in public finance, economics and accounting in the finance department. Bringing together these diverse professionals into a system of integrated decision-making can be a challenge. Another reason is the inertia that is built into growth planning and financial management systems.

Based on best practices an ideal “Integrated Growth Planning Program” would look like:

- Growth scenario assessment: In the context of an official plan review, the municipality develops a growth management strategy that describes the anticipated location, structure, density, and housing mix of development needed to accommodate the forecasted growth. The strategy includes an assessment of several possible growth scenarios based on a range of parameters that reflect public priorities, including fiscal long-term sustainability. In two-tiered regions (with a regional [upper-tier] and municipal [lower-tier] governments), the process is led by staff from the upper-tier, but local municipalities are fully involved throughout the process. The growth management strategy includes a phasing plan that concentrates growth in a limited number of areas at any one time and coordinates major infrastructure projects to take advantage of potential economies.
- Master plans: The growth management strategy is carried out concurrently and iteratively with master plans for the key infrastructure classes, including water, wastewater, stormwater, roads, and transit. Staff responsible for preparing the master plans feed high-level (“order of magnitude”) cost, revenue, and fiscal impact data related to the infrastructure needed to support the different scenarios into the scenario assessment process. Master plans identify spare capacity in the system and ensure it is filled before taking on new liabilities. Once the preferred growth scenario is selected, the master planning process moves on to detailed costing and revenue projections for the preferred scenario.
- Development cost charges background study: A development cost charges background study is prepared concurrently with the above processes, itemizing the prioritized capital projects and showing how the up-front costs of the infrastructure projects proposed in the various master plans will be funded (primarily through development cost charges). The study analyzes the associated long-term, life-cycle costs and revenues associated with the contemplated projects, identifying potential shortfalls and other financial risks. The results of the analysis are fed back into the growth management process to help mitigate any identified financial risks.
- Asset management plans and long-term financial planning: The results of the development cost charge background studies are also fed forward into Asset Management Plans and Long-Term Financial Plans, which are designed to flag any serious financial risk to the municipality. Risks that can be mitigated through better growth planning are taken into account in the next growth planning cycle.

Occasionally, municipalities review individual revenue tools to assess whether they are achieving the goals that are set for them or if they are having negative effects on some public priority issue. For example, a higher property tax rate on commercial or industrial buildings compared to residential buildings may be reviewed to see if it is inadvertently chasing away new business investment. A fiscal alignment audit does that for all the fiscal instruments that the municipality uses but takes a growth management lens instead of an economic development one.

Following is a list of items that could be considered for inclusion in an audit, phrased as measures that could improve alignment with Smart Growth objectives:

#### Development cost charges:

- differentiate charges by area instead of using municipality-wide charges,
- differentiate charges applied to larger vs. smaller dwelling units (e.g., by floor area or number of bedrooms) within the various dwelling-type categories,
- differentiate residential charges applied to larger vs. smaller lots,
- differentiate among non-residential uses to avoid favouring uses that generate more vehicular traffic,

- discount/exempt development above a target density in targeted locations,
- discount/exempt intensification or redevelopment to a higher density of a residential or non-residential parcel in targeted locations,
- discount/exempt charges on agricultural land,
- discount/exempt charges on higher-density affordable housing,
- use accurate assumptions (e.g., for population, housing mix, intensification rates, greenfield densities) as inputs into development cost charge background studies.

#### Property taxes:

- avoid applying a higher tax rate on multi-residential properties than on other residential properties,
- avoid taxing parking lots and commercial properties that generate car traffic, such as shopping centres, at a lower rate than other properties in that class,
- avoid taxing vacant non-residential (commercial and industrial) properties at a lower rate than other properties in that class,
- discount/rebate property taxes in specific areas (e.g., along frequent bus routes) or on specific types of sites (e.g., brownfields) to encourage development that is consistent with Smart Growth principles.

#### User fees:

- charge for parking on residential streets, in municipal parking lots, in commercial areas (e.g., metres), and at municipal facilities,
- incorporate lot size and/or location into the calculation of water and sanitary sewer charges,
- charge a stormwater user fee based on lot (or non-pervious surface) size and/or location,
- discount planning fees for development that supports Smart Growth objectives in targeted locations,
- set transit fares at a level low enough to achieve the modal share targets in the municipality's official plan or transportation master plan.

### **Development Charges and City Planning Objectives<sup>27</sup>**

Hardly anywhere is there an attempt to structure development cost charges so as to achieve planning goals. There has been a gradual shift in municipal infrastructure financing practices from a marginal cost or “site-specific” approach, favoured by developers, to an average cost or “municipal-wide” approach, favoured by municipalities.

In designing a local development cost charge regime, municipalities must choose between an average cost and a marginal cost approach. An average cost approach would see the charges assigned on a municipal-wide basis according to specific criteria, such as number and type of dwelling units, so that all projects meeting the criteria pay the same charge, regardless of the actual costs they create. In contrast, a marginal cost approach tries to estimate the actual costs created by specific projects. A site-specific regime estimates the impact that the development is likely to have on the need for public infrastructure provision. In this approach, sites that are more expensive to service because of their topography, their distance relative to existing infrastructure, or their location outside areas targeted for intensification would pay higher fees. Sites that are within the existing urban envelope or within designated sub-

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<sup>27</sup> Development Charges and City Planning Objectives: The Ontario Disconnect, Canadian Journal of Urban Research, Ray Tomalty, Andrejs Skaburskis, 2003.

centres, where infrastructure could be more efficiently provided, would have lower development cost charges.

Moreover, the argument that infill development using existing capacity should pay charges seems to contradict the notion that development cost charges are meant to pay for development that increases the need for services. This suggests that the equity principles used to justify the municipal-wide approach - that growth must pay for itself and users should pay for benefits received - may be contradictory.

Because the area-specific approach levies different amounts on different areas of the municipality depending on the cost of servicing that area, it can approximate a marginal cost approach. For instance, an area-specific development cost charge may reflect cost differences attributable to the distance of the development area from major facilities.

The area-specific approach is described by advocates of the municipal-wide system as administratively cumbersome because it requires more elaborate studies to forecast population growth and capital needs for a variety of smaller areas. It also requires a more complicated accounting system to separate the reserve funds for the various development cost charge areas. The area-specific approach is also frowned upon by advocates of the municipal-wide approach for equity reasons: i.e., it unfairly burdens the population in some areas of the municipality that happen to have high growth-related costs.

This reflects the widespread belief that development cost charges are meant to raise funds for growth-related infrastructure, not to influence development patterns or the production of different housing types. The overall conclusion is that development cost charges are geared almost exclusively to their revenue-raising role and are disconnected from planning goals. This emphasis on the revenue raising aspect of development cost charges reflects an underlying political reality: the municipal decision-makers who preside over the design of development cost charges tend to be more concerned with reducing the impacts of growth on existing tax payers (voters) and not so much motivated by a desire to achieve other social objectives.

### **Understanding Smart Growth Savings: Evaluating Economic Savings and Benefits of Compact Development<sup>28</sup>**

*Smart Growth* is a general term for policies that result in more compact, accessible, multimodal development, in contrast to *urban sprawl*, which refers to dispersed, urban fringe, automobile-dependent development. Comprehensive Smart Growth policies create transit-oriented communities, neighbourhoods where high quality walking, cycling, public transit and carsharing services allow households to minimize their vehicle ownership and use. The following table compares the attributes of Smart Growth and urban sprawl, and the figure map illustrates these different land use patterns.

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<sup>28</sup> Understanding Smart Growth Savings: Evaluating Economic Savings and Benefits of Compact Development, Victoria Transport Policy Institute, Todd Litman, 2023.

**Table 1 Comparing Smart Growth and Sprawl** (“Smart Growth.” VTPI 2006)

	Smart Growth	Sprawl
Growth pattern	Mostly infill (brownfield) development.	Mostly urban fringe (greenfield) development.
Density	Higher-density, clustered activities.	Lower-density, dispersed activities.
Land use mix	Mixed land use.	Homogeneous (single-use, segregated) land uses.
Scale	Human scale. Smaller blocks and roads, more local services, for pedestrian access	Large scale. Larger blocks, wider roads, more regional services, assuming automobile access.
Services (shops, schools, parks)	Local, distributed, smaller. Accommodates walking access.	Regional, consolidated, larger. Requires automobile access.
Housing types	Diverse, including compact housing types such as townhouses and apartments.	Primarily single-family housing.
Transport	Multi-modal. Supports walking, cycling and public transit.	Automobile-oriented. Poorly suited for walking, cycling and transit.
Transport connectivity	Highly connected roads, sidewalks and paths, and good connections between modes.	Poorly connected networks with numerous dead-end streets, few paths, and inadequate intermodal connections.
Parking supply	Lower parking supply, higher parking prices	Parking facilities are abundant and usually unpriced
Street design	Complete streets that accommodate diverse modes and activities.	Streets designed to maximize motor vehicle traffic volume and speed.
Planning process	Planned and coordinated between jurisdictions and stakeholders.	Poorly planned, with little coordination between jurisdictions and stakeholders.
Public space	Emphasis on the public realm (streets, sidewalks and public parks).	Emphasis on the private realm (yards, shopping malls, gated communities, private clubs).

Smart Growth is a set of general principles that can be applied in many ways. In rural areas, it creates compact, walkable villages with a mix of single- and multi-family housing organized around a commercial centre. In large cities, Smart Growth may create dense, urban neighbourhoods with high-rise buildings organized around transit stations. Between these is a wide range of neighbourhood types, their common theme is compact and multi-modal development. In mature cities, Smart Growth consists primarily of incremental infill in existing neighbourhoods, but in growing cities it can consist of urban expansion. Smart Growth does not require that all residents live in high-rise apartments and forego automobile travel; excepting cities with severe geographic constraints, the approach focuses more on providing a variety of ground-oriented and other housing forms, with an overall higher density. See examples in the following figure.

**Figure 3 Sprawl and Smart Growth Illustrated**



## **Analysis of Public Policies That Unintentionally Encourage and Subsidize Urban Sprawl<sup>29</sup>**

Although urban sprawl and Smart Growth differ in many ways, they are often measured based only on density (residents or employees per acre or hectare) or its inverse land consumption (e.g., square feet or metres per resident or employee). Density is a useful indicator because it is widely available and easy to understand, and because it tends to be positively correlated with other Smart Growth factors including development mix (the proximity of residential, commercial and institutional buildings), transport network connectivity (density of sidewalks, paths and roads), centrality (the degree that employment is concentrated into commercial centres), and transport diversity (quality of walking, cycling and public transport).

However, by itself, density is an imperfect indicator since it is possible to have dense sprawl (high-rise buildings in isolated, automobile-dependent areas), and rural Smart Growth (such as compact, walkable villages linked by high quality public transit). If possible, Smart Growth should be analyzed using an index which reflects various land use factors including density, mix, and connectivity.

Density analysis can be confusing because it is measured in many different ways:

- What is measured: residents, residents plus employees, dwelling units (du) and motor vehicles.
- Land area units: acre, hectare, square mile / kilometre.
- Geographic scale: parcel (just the land that is developed), neighbourhood (including local streets, schools, parks, etc.), or region (including industrial areas and regional open space).
- Weighting: Population-weighted density, which measures the density that residents actually experience, is a better indicator than simple average densities for evaluating land use economic and livability impacts, but is more difficult to compute.

A common justification for urban sprawl is that it increases residents' access to "nature" (open space). Sprawl advocates sometimes argue that urban living results in "nature deficit disorder." However, Smart Growth does include open space, including public parks, street trees, and preserved farmlands. Although sprawl residents may have more private open space, they displace more total open space per capita, so sprawl residents can be considered to consume nature while Smart Growth residents preserve nature, resulting in more open space overall.

Open space external benefits are well recognized, including agricultural productivity, wildlife habitat, stormwater percolation, and support for tourism. The loss of these benefits can sometimes be quantified and monetized based on direct economic costs, such as reduced agricultural production or tourism activity, or increased stormwater management costs, or based on the value that nearby residents place on greenspace.

## **Fiscal Impact Analysis: Methodologies for Planners<sup>30</sup>**

There are two basic approaches to fiscal evaluations: using average costs and using marginal costs. Average-cost approaches are simpler and more popular; costs and revenues are calculated based on the average cost per unit of service multiplied by the demand for that unit. Average-cost approaches assume a linear relationship and do not consider excess or deficient capacity of facilities or services.

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<sup>29</sup> Analysis of Public Policies That Unintentionally Encourage and Subsidize Urban Sprawl, Victoria Transport Policy Institute, Todd Litman, 2015.

<sup>30</sup> Fiscal Impact Analysis: Methodologies for Planners, American Planning Association, L. Carson Bise II, 2010.

## DEFINING FISCAL IMPACT ANALYSIS

A Financial Impact Analysis (FIA) projects the net cash flow to the public sector (the local government and, in many cases, the school district) resulting from new development, whether residential, commercial, industrial, or other. An FIA is similar to the cash-flow analysis a developer conducts in order to project costs and revenues likely to result from a proposed development over multiple years. Just as a household benefits by forecasting its long-term cash-flow needs (e.g., incorporating anticipated expenses for higher education and other expensive items) and setting money aside to pay for future outlays, local governments are better prepared to manage community needs during changing financial circumstances if they anticipate and plan for future costs and revenues.

Fiscal analysis enables local governments to estimate the difference between the costs of providing services for new development and the taxes, user fees, and other revenues that will be collected as a result of new development. FIA can be used to evaluate the fiscal effect of an individual development project (e.g., a request for rezoning), a change in land use policy (e.g., increasing allowable densities for development), or a proposed annexation.

It is important to keep in mind that the fiscal impact of development policies, programs, and activities is only one of the issues that local government officials should consider when evaluating policy or program changes related to land use and development. Land uses that are a financial drain or are less beneficial financially than other alternatives should not necessarily be excluded, since they may be necessary to the community's goals related to affordable housing, economic diversity, quality of life, and so on. Moreover, localities have a responsibility to consider other impacts, too, such as the need to evaluate environmental impacts, needs for housing and employment, and other concerns. Nevertheless, fiscal impact data can be used as part of a larger cost-benefit analysis to craft a land use plan that incorporates the appropriate mix of land uses necessary to achieve fiscal sustainability or, at a minimum, fiscal neutrality.

Marginal-cost approaches describe the unique characteristics of a jurisdiction's capital facilities. Although over the long term, average- and marginal-cost techniques will produce similar results, the real value of fiscal analysis is in the longer term period, when a community can incur costs. Marginal-cost analysis is most useful in this time frame. However, average-cost techniques are generally simpler to use, so for relatively small development projects with modest impacts or impacts that are realized over a long time frame, they may be preferred. Some local governments may find it worthwhile to use more than one analysis approach and compare the assumptions and results as part of the decision-making process.

In communities where facilities in geographic sub-areas already are insufficient, the average-cost approach will underestimate costs, whereas the marginal-cost approach will more accurately project the short- to mid-term costs of infrastructure required to accommodate new development. For instance, if an analysis examined school services costs, the average-cost approach would divide the expenditure for school services by the number of students to arrive at a figure per student. This analysis would not consider any spatial distribution of new homes and the resulting schoolchildren. The marginal-cost approach would consider both current school enrollment as well as capacity in each school. If new residential growth were to occur in areas where schools have excess capacity, the only real cost increase will be for operating expenses, whereas if new residential development was to locate in an area with no school capacity, costs would be incurred for additional school capacity (i.e., capital costs) as well as the associated operating expenses.

## **AVERAGE-COST TECHNIQUES**

### **Per Capita Multiplier**

The most popular average-cost technique is the per capita multiplier. This is obtained by dividing the budget for a particular service, such as parks, by the current population, yielding an estimated service cost per person. Under the per capita approach, it is assumed that each service level will be maintained into the future and that each additional resident will generate the same level of costs to the jurisdiction as each existing resident currently generates. This figure is then used to estimate additional costs resulting from new development.

The per capita approach is easy to use but has the disadvantage of being less accurate than other approaches if local officials want to look beyond broad levels of overall costs and expenditures.

### **Service Standard**

A second average-cost approach is the service-standard method. This approach estimates the future costs of development based on average staffing and capital facility service levels for municipalities of similar size and geographic location. This methodology assumes that service levels for both personnel and capital facilities are, to a large extent, a function of a jurisdiction's total population, and that communities of a similar size will therefore have similar service levels, especially within a geographic region.

Since a fundamental assumption is that personnel growth within one community is equivalent to average personnel growth in the region, to the extent that a community is dissimilar to the "average" in terms of services, costs, or demographics, the figures will be in error.

### **Proportional Valuation**

The third average-cost approach is the proportional valuation method; it is typically used for evaluating the fiscal impacts of non-residential growth. This methodology assumes that assessed property values are directly related to public services costs.

Also included as part of the analysis are refinement coefficients, which are intended to prevent significant differences in the value of residential and non-residential property from skewing cost relationships. The total number of non-residential land parcels is divided by the total number of land parcels, and this figure is used to select the area of a refinement coefficient curve.

The proportional-valuation approach is used infrequently because most analyses include a residential component and because selecting a refinement coefficient for each public service is a fairly subjective process. Additionally, this method assumes that costs increase with land use intensity. This may or may not be the case.

## **MARGINAL-COST TECHNIQUES**

### **Local Case Study**

The most thorough of the FIA approaches uses locally based case information. This case-study approach assumes that every community is unique and that the assumptions regarding levels of service and cost and revenue factors should reflect what is occurring in that community. Department representatives are interviewed about existing public facilities and service capacities. Local information on excess park



capacity, for example, makes it possible to predict when new facilities, programs, or personnel may be needed.

In cases where it is difficult to obtain marginal-cost information, communities might use average-cost data in place of local data. For example, estimating the increase over time in general government operating expenses may be done most efficiently using the per capita average-cost approach. On the other hand, local interviews could indicate that the cost for a particular local government service is fixed (i.e., not affected by growth) or semi-variable by population (i.e., affected by growth but not fully variable on a per capita basis).

The primary drawbacks of the case-study approach are that it can require a significant amount of time and that the accuracy of the data depends on the accuracy of each department's estimates. It is not uncommon for departments to estimate that the marginal impacts from new development will require more resources than are currently provided, resulting in new development being charged for a higher level of service than is currently provided.

### **Comparable City**

The second marginal-cost approach looks at costs in comparable jurisdictions. The data are organized by population and by growth rate. This approach assumes that growth will affect expenditure patterns and includes that effect in projecting future costs. Without the rate of population increase or decrease reflected in the tables, this methodology would be very similar to the service-standard approach. This methodology is used infrequently.

## **BENEFITS OF FISCAL IMPACT ANALYSIS**

### **Encourages Anticipation of Change**

One of the major benefits of FIA is that it describes what is likely to happen due to change within a jurisdiction. A fiscal analysis measures the impact of growth or decline on a local government's services, including capital facilities, and the resulting costs and revenues. This is different from the preparation of the next year's budget. In most cases, a fiscal analysis does not replicate the budget; it projects marginal changes in the budget given possible land use, demographic, and employment changes. Fiscal analysis enables local officials to ask "what if" something happens and to consider the effects beyond the next fiscal year. While the resulting data are not necessarily completely accurate, they do provide a clear sense of the likely effects of various policies, which can be crucial to local officials making policy decisions.

### **Helps Define Achievable Levels of Service**

The level of service the local government will provide is an important factor in calculating impact fees and other user fees. To quantify levels of service, department managers must choose an indicator as a basis: the number of residents or jobs in the community, the number of average daily trips on local roads, or some other appropriate denominator. Defining the level of service promotes discussion about the adequacy of services and enables the local government to determine through fiscal analysis whether the community can afford various levels of service, both in terms of the costs of new or expanded capital facilities and annual operating costs.

## **Projects Capital Facility Needs**

A fiscal impact analysis can incorporate information on the available capacity of current capital facilities and project when additions or new facilities will be needed for each development alternative being evaluated. Fiscal analysis also can be used to help allocate new capital facilities to geographic subareas of the community.

The evaluation of capital facilities needs can be helpful in developing or revising the local government's capital improvement program (CIP). The costs and staging of facilities included in the CIP are often based on the independent best estimates of the departments that have activities or programs affected by the proposed capital improvements. Fiscal analysis can add an additional perspective.

Fiscal analysis can help the local government forecast capital-facilities needs over a longer period of time and in a more thorough fashion, giving decision makers more information to make better investment decisions.

## **Clarifies Development Policy Impacts**

In most cases, fiscal impact analysis focuses on the effects of growth or development, usually defined in a development scenario. Development scenarios must be defined for each year of the forecast period in terms of population, employment, housing by type, and non-residential square footage.

Defining development scenarios can be useful. The process of describing in narrative form how and why the numbers were developed is a very important aspect of a fiscal impact analysis, which provides local officials with information to evaluate the logic of the assumptions underlying policies or proposals.

The development scenario and fiscal impact analysis can be used to project how providing the various types of housing that could accommodate this growth (e.g., garden apartments, townhouses, single-detached homes, and condominiums) would affect the need for services over time. Since this scenario projects job growth as well, the fiscal analysis could also assess the fiscal impact of alternative job-growth pictures (e.g., mostly offices with some retail versus industrial growth with some office and retail). Using this process, local officials can review existing and proposed policies from a more informed perspective. Fiscal impact analysis can help not only local officials but also developers take realistic looks at the viability of proposed development.

## **Calculates Capital Costs and Operating Expenses**

The calculation of capital costs and operating expenses is an obvious benefit of a fiscal impact analysis. If the FIA focuses on the marginal costs associated with growth, rather than using an average-cost approach, the results are more likely to accurately reflect annual needs and therefore will be more useful. The calculation of capital costs and operating expenses associated with service changes clearly shows decision makers how the local government's budget will be affected by growth or redevelopment.

## **Calculates Revenues; Helps in the Development of Revenue Strategies**

A fiscal analysis calculates the additional local government revenues resulting from new development, assuming existing rates and fee structures. A fiscal analysis can show the magnitude of the revenues that would be collected under different development scenarios and can show whether there would be a surplus or deficit of revenues over expenditures on an annual as well as a cumulative basis for each alternative considered. This enables local officials to consider alternative sources of revenues.

The first area to evaluate is the structure of rates for various revenue sources. Revenue formulas used to set user fees, utility rates, and property taxes should be reviewed as part of developing a revenue strategy. Possible new revenue sources can also be evaluated.

Even if the fiscal analysis projects a surplus of revenues over expenditures as a result of new development, rate structures for revenues such as user fees should be evaluated regularly so that appropriate fees can be applied to new growth.

### **Encourages “What If” Questions**

A good fiscal impact analysis with a narrative explaining all assumptions and inputs encourages managers to ask a number of “what if” questions. Alternative scenarios can be described for service levels, for the cost and revenue factors, for growth itself, or for almost any other aspect of the analysis. Decision-makers find that some of the major benefits of fiscal analysis are the explicit defining of all the different service level and cost and revenue factors, as well as the ability to change assumptions and quickly see the impact of the changes. This makes fiscal analysis a very effective policy tool.

## Appendix B: Case Study Profiles

Name / Area	<b>City of Ottawa, Ontario</b>																																																																
Study Purpose	<p>The Update to Comparative Municipal Financial Analysis examines the comparative operating and capital costs and revenues attributable to four categories of development in the City of Ottawa: higher-density urban; lower-density urban greenfield; low-density villages; scattered estate and low-density rural.</p> <p>The analysis of local services and development charges employs a marginal cost approach derived from 13 representative developments. The capital analysis considers one-time and long-term replacement costs of growth-related capital.</p>																																																																
Scope / Year	<p>City-wide analysis. Operating and capital costs and revenues. Four different residential categories. Study completed in 2013.</p>																																																																
Scenarios / Typologies	<p>To account for differences at a more detailed level, a marginal cost approach was employed in regard to growth-related capital. The marginal approach was also used to estimate the revenue (one-time and ongoing taxation and utility rates) that could be anticipated from new development.</p> <p>The marginal cost and revenue estimates developed were based on a sample of recently built developments. The unit composition for the four scenarios is shown in the following table, ranging from exclusively single-detached housing form in the two rural scenarios, to 41% townhouses in the lower density greenfield scenario, and 30% townhouses and 46% apartments in the higher density urban scenarios.</p> <table border="1"> <thead> <tr> <th colspan="4">Urban</th> <th colspan="4">Rural</th> </tr> <tr> <th colspan="2">Higher-Density</th> <th colspan="2">Lower-Density Greenfield</th> <th colspan="2">Low-Density Village</th> <th colspan="2">Scattered Estate and Low-Density</th> </tr> <tr> <th colspan="2">Unit Composition</th> <th colspan="2">Unit Composition</th> <th colspan="2">Unit Composition</th> <th colspan="2">Unit Composition</th> </tr> </thead> <tbody> <tr> <td>Singles</td> <td>125 20%</td> <td>Singles</td> <td>1,251 57%</td> <td>Singles</td> <td>545 100%</td> <td>Singles</td> <td>558 100%</td> </tr> <tr> <td>Semis</td> <td>28 4%</td> <td>Semis</td> <td>46 2%</td> <td>Semis</td> <td>0 0%</td> <td>Semis</td> <td>0 0%</td> </tr> <tr> <td>Towns</td> <td>189 30%</td> <td>Towns</td> <td>894 41%</td> <td>Towns</td> <td>0 0%</td> <td>Towns</td> <td>0 0%</td> </tr> <tr> <td>Apts.</td> <td>290 46%</td> <td>Apts.</td> <td>0 0%</td> <td>Apts.</td> <td>0 0%</td> <td>Apts.</td> <td>0 0%</td> </tr> <tr> <td>Total</td> <td>632</td> <td>Total</td> <td>2,191</td> <td>Total</td> <td>545</td> <td>Total</td> <td>558</td> </tr> </tbody> </table>	Urban				Rural				Higher-Density		Lower-Density Greenfield		Low-Density Village		Scattered Estate and Low-Density		Unit Composition		Unit Composition		Unit Composition		Unit Composition		Singles	125 20%	Singles	1,251 57%	Singles	545 100%	Singles	558 100%	Semis	28 4%	Semis	46 2%	Semis	0 0%	Semis	0 0%	Towns	189 30%	Towns	894 41%	Towns	0 0%	Towns	0 0%	Apts.	290 46%	Apts.	0 0%	Apts.	0 0%	Apts.	0 0%	Total	632	Total	2,191	Total	545	Total	558
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Annual Tax Levy and Rate Supported Services (per capita)	<p>Costs:</p> <ul style="list-style-type: none"> <li>Higher Density Urban - \$1,220</li> <li>Lower Density Urban Greenfield - \$1,627</li> <li>Low Density Rural Village - \$1,823</li> <li>Scattered Estate and Low Density Rural - \$1,734</li> </ul> <p>Revenues:</p> <ul style="list-style-type: none"> <li>Higher Density Urban - \$1,811</li> <li>Lower Density Urban Greenfield - \$1,358</li> <li>Low Density Rural Village - \$1,757</li> <li>Scattered Estate and Low Density Rural - \$1,490</li> </ul>																																																																
Net Annual Variance	<ul style="list-style-type: none"> <li>Development in the higher density urban category produces a surplus of \$590/capita (\$1,124 per household) when levy and rate services are combined.</li> </ul>																																																																

(per capita / household)	<ul style="list-style-type: none"> <li>• Lower-density urban greenfield category has a negative variance of \$269/capita (\$770 per household).</li> <li>• Low-density rural categories have a negative variance of \$66/capita (\$188 per household).</li> <li>• Scattered estate have a negative variance of \$244/capita (\$623 per household).</li> </ul>
Key Findings	<p>A significant infrastructure funding gap can be observed when comparing the City's current capital spending to that required, according to ideal asset replacement schedules. As growth occurs the gap will continue to grow.</p> <p>The City should encourage development in higher-density urban areas as it is generally the most cost-efficient. Practically, however, not all future growth can be accommodated by this form of development. One of the primary reasons why the higher-density urban category is preferable in the analysis is due to the higher proportion of apartments and other multiple dwellings in the representative developments. The City should encourage the development of these units throughout the City which would reduce cost disparities.</p> <p>Although the initial capital costs of local services infrastructure are borne by the developer, the long-term replacement of the assets is an important consideration in the analysis. The lower the amount of local infrastructure required by new development, the lower the annual replacement provisions. This is a major reason why apartment developments are preferable from a fiscal standpoint.</p> <p>The City should encourage the development of larger apartment units suitable for families as the municipal cost and revenue per capita values are favourable. However, from a homebuyer's standpoint, the cost per floor area of these units is often higher than of comparatively sized ground-oriented units.</p> <p>When feasible, the City should make use of existing facilities to accommodate growth while looking for opportunities to combine facilities across departments to reduce future upfront capital costs and replacement provision.</p>
Source	<p>'Update to Comparative Municipal Financial Analysis', City of Ottawa. Completed by HEMSON Consulting Ltd. Revised August 2013.</p>

Name / Area	<b>Regional Municipality of Ottawa-Carleton, Ontario</b>
Study Purpose	The Infrastructure Costs Associated with Conventional and Alternative Development Patterns study compares the cost effectiveness of two patterns of development: a conventional suburban development and a mixed-use compact development pattern. The analysis considers the long-term life-cycle costs of various linear infrastructure and community services, and differentiates between public and private costs.
Scope / Year	An existing development site (338 ha gross) within the Ottawa-Carleton region. Operating and capital costs and revenues. Two different development scenarios. Study completed in 1995.
Scenarios / Typologies	<p>The studied conventional site exhibits all of the characteristics of a conventional post-war suburban development pattern, including a curvilinear street pattern, relatively low residential densities, homogeneity and separation of land uses, and an emphasis on the private automobile over other modes of travel. An alternative development, planned according to the principles of New Urbanism (with a finer mix of land uses, higher residential densities, narrower rights-of-way and pavement widths, a modified grid system of streets, transit supportive design), was overlaid onto the existing site, and the life-cycle infrastructure costs of the two plans, including emplacement, replacement, and operating and maintenance costs, were calculated and compared.</p> <p>The conventional plan includes 184 ha of residential land, which yields 4,005 dwellings and a population of 13,045. By comparison, the alternative plan includes 158 ha of residential land, yielding 6,857 dwellings and a population of 20,949. The net residential density of the conventional plan was 21.7 units per hectare, with a gross density of 12.2 uph, while the corresponding residential densities for the alternative plan was a net 43.3 uph and gross 20.9 uph.</p> <p>There are some significant differences between the two plans:</p> <ul style="list-style-type: none"> <li>• The alternative plan has more than twice as much land devoted to commercial uses, and 20% more recreation and open space lands.</li> <li>• The alternative plan contains 71% more dwelling units than the conventional plan, due, in part, to smaller lot sizes.</li> <li>• There are over 500 more apartments in the alternative plan, mixed in with commercial, retail and office uses along the main street.</li> <li>• The alternative plan has a 16% greater length of roads, and almost 15% more asphalt road surface area, not including the rear lanes.</li> </ul>
Capital Costs (per unit)	<p>The initial capital cost of emplacing the infrastructure is approximately \$5,300 per unit less in the alternative plan (i.e., 16% cheaper) than in the conventional plan. Savings for road construction are a result of: (1) the increase in residential density spreading the cost of roads over more dwelling units; and (2) the higher proportion of non-residential land uses (7.5% more) lowering the percentage of total road costs apportioned to the residential sector.</p> <p>Significant cost savings in the areas of storm and sanitary sewers, water distribution, and other services which parallel the road network arise for the same reasons.</p>

Comparison of Per Unit Emplacement Costs (\$)				
Service Component	Conventional Site	Alternative Plan	Difference	%
1. Roads (inc. utilities & service connections)	5,272	3,311	-1,961	-37
2. Sidewalks & Streetlighting	498	636	+138	+28
3. Sanitary Sewer	1,885	1,191	-694	-37
4. Stormwater Management	3,491	2,210	-1,281	-37
5. Water Distribution	1,758	1,258	-500	-28
6. Transit	1,059	881	-178	-17
7. Fire Protection	348	301	-47	-14
8. Police Protection	362	313	-49	-14
9. Parkland	3,591	3,368	-223	-6.2
10. Recreational Facilities	3,335	3,183	-152	-4.6
11. Libraries	522	489	-33	-6.3
12. Works & Parks Department	417	358	-59	-14
13. Garbage Collection	0	0	0	0
14. Hydro-Electric Services	1,992	1,731	-261	-13
15. School Facilities/Transportation	10,034	10,033	-1	0
<b>Total</b>	<b>\$34,564</b>	<b>\$29,263</b>	<b>\$-5,301</b>	<b>-16</b>

**Lifecycle Costs (per unit)**

Infrastructure costs were more economical in the alternative plan; life-cycle savings of approximately \$11,000 per unit over a 75-year period. Expressed as a percentage, the linear infrastructure, including roads, utilities, sewer, water, and stormwater management, represents the greatest per unit cost savings.

A reduction in infrastructure emplacement (i.e., roads, street lights, piped services, parks) costs of approximately \$5,300 per unit represents the largest life-cycle cost savings. Operating and maintenance costs are \$3,700 less per unit in the alternative plan, and infrastructure replacement is \$2,000 less per unit. Construction, replacement, operating, and maintenance costs, as a proportion of total lifecycle costs, remain relatively constant in both plans, at approximately 26%, 7%, and 65-68%, respectively.

Comparison of Per Unit Total Life-Cycle Costs (\$)				
Service Component	Conventional Site	Alternative Plan	Difference	%
1. Roads (inc. utilities & service connections)	10,446	7,392	-3,054	-29
2. Sidewalks & Streetlighting	936	1,225	+289	+31
3. Sanitary Sewer	2,652	1,677	-975	-37
4. Stormwater Management	4,105	2,606	-1,499	-37
5. Water Distribution	3,534	2,446	-1,088	-31
6. Transit	9,104	7,774	-1,330	-15
7. Fire Protection	5,204	4,496	-708	-14
8. Police Protection	7,466	6,450	-1,016	-14
9. Parkland	4,735	4,325	-410	-8.7
10. Recreational Facilities	7,794	7,434	-360	-4.6
11. Libraries	2,934	2,752	-182	-6.2
12. Works & Parks Department	772	663	-109	-14
13. Garbage Collection	2,453	2,301	-152	-6.2
14. Hydro-Electric Services	6,270	5,893	-377	-6.0
15. School Facilities/Transportation	56,804	56,799	-5	0
<b>Total</b>	<b>\$125,209</b>	<b>\$114,233</b>	<b>\$-10,977</b>	<b>-8.8</b>

**Key Findings**

In addition to providing significant public and private cost savings, the alternative development plan accommodates many more units, thereby reducing pressures to find and develop new residential land. The increased density supports mixed-use development, stimulates the provision of a range of housing and transportation options, and a variety of employment, commercial, and community activities.

**Source**

‘Infrastructure Costs Associated with Conventional and Alternative Development Patterns: Final Report and Summary Report’, for CMHC, Regional Municipality of Ottawa-Carleton, prepared by: Essiambre Phillips Desjardins Associates Ltd., in association with J.L. Richards & Associates Limited, C.N. Watson Associates Ltd., A Nelessen Associates Inc., 1995.

‘Infrastructure Costs Associated with Conventional and Alternative Development Patterns’, CMHC Research Highlights, Socio-Economic Series, Issue 26, 1996.

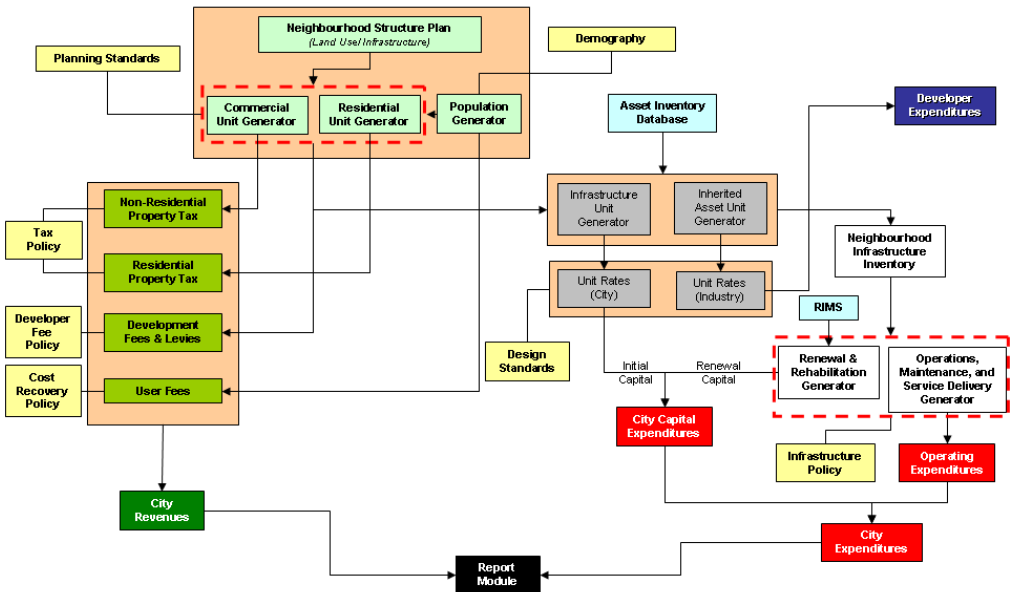
Name / Area	<b>City of Kingston, Ontario</b>																																																																																																																																																																																		
Study Purpose	The intent of the Lifecycle Fiscal Impacts of Development study was to draw observations from the analysis that can be used to inform strategic growth management decisions. The study measures the fiscal impacts of growth as anticipated within the City's Population, Housing and Employment Growth Forecast, 2016 to 2046.																																																																																																																																																																																		
Scope / Year	City of Kingston, 2021																																																																																																																																																																																		
Scenarios / Typologies	The study considered the full cost accounting obligations of new development, including operating and lifecycle capital costs of service on an annualized basis at full development. Residential Development Types: <ul style="list-style-type: none"> <li>• <u>Low Density</u>: Single/Semi-Detached; With Second Residential Units</li> <li>• <u>Medium Density</u>: Townhouse; Row; Duplex, Triplex, Quad, Sixplex</li> <li>• <u>High Density</u>: Condominium; Apartment; Retirement Home</li> </ul>																																																																																																																																																																																		
Fiscal Impacts by Geographic Area	<p>The table below summarizes the fiscal impacts for residential development by geographic area. The first part of the table provides the full cost lifecycle accounting fiscal impacts by dwelling unit type for each of the surveyed developments, and by land area (net hectare) based on the underlying development type and density assumptions of the City's Growth Forecast. The second half of the table aggregates these observations by geographic area, comprising the averages of each surveyed development in the respective geographic area.</p> <p style="text-align: center;"><b>Residential Fiscal Impacts by Geographic Area (2020 dollars per hectare)</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Area</th> <th colspan="5">2020 Surplus/(Deficit) per Dwelling Unit</th> <th colspan="6">2020 Total Surplus/(Deficit) per Hectare</th> </tr> <tr> <th>Low</th> <th>Low (w/ 2nd Unit)</th> <th>Medium</th> <th>Apartment</th> <th>Condo</th> <th>Low</th> <th>Low (w/ 2nd Unit)</th> <th>Medium</th> <th>Apartment</th> <th>Condo</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Cataragui North</td> <td>(1,130)</td> <td>(2,915)</td> <td>(313)</td> <td>(224)</td> <td>1,061</td> <td>(13,301)</td> <td></td> <td>(1,157)</td> <td>(2,003)</td> <td>1,675</td> <td>(14,785)</td> </tr> <tr> <td>Williamsville Main Street</td> <td>(764)</td> <td>(2,584)</td> <td>(964)</td> <td>(220)</td> <td>1,458</td> <td>(324)</td> <td>(13,247)</td> <td>(4,491)</td> <td>(9,227)</td> <td>10,804</td> <td>(16,485)</td> </tr> <tr> <td>Greenwood Park</td> <td>(1,668)</td> <td>(3,776)</td> <td>(732)</td> <td>(80)</td> <td>2,619</td> <td>(21,754)</td> <td></td> <td>(2,482)</td> <td>(195)</td> <td>1,127</td> <td>(23,304)</td> </tr> <tr> <td>Westbrook</td> <td>(1,040)</td> <td>(3,358)</td> <td>(711)</td> <td>(299)</td> <td>2,730</td> <td>(12,243)</td> <td></td> <td>(2,631)</td> <td>(2,674)</td> <td>4,308</td> <td>(13,240)</td> </tr> <tr> <td>Near Queen's Campus</td> <td>2,738</td> <td>(289)</td> <td>(367)</td> <td>(515)</td> <td>7,981</td> <td>1,160</td> <td>(1,480)</td> <td>(1,712)</td> <td>(21,616)</td> <td>59,163</td> <td>35,516</td> </tr> <tr> <td>North King's Town</td> <td>(1,232)</td> <td>(2,584)</td> <td>(1,640)</td> <td>(457)</td> <td>1,503</td> <td>(522)</td> <td>(13,247)</td> <td>(7,644)</td> <td>(19,176)</td> <td>11,139</td> <td>(29,450)</td> </tr> <tr> <td>Bayridge</td> <td>(908)</td> <td>(2,584)</td> <td>(788)</td> <td>(299)</td> <td>2,730</td> <td>(10,684)</td> <td></td> <td>(2,916)</td> <td>(2,674)</td> <td>4,308</td> <td>(11,966)</td> </tr> </tbody> </table> <table border="1" style="width: 100%; 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<p>Fiscal Impacts by Land Area (Net Hectare)</p>	<p>Based on this weighting of development:</p> <ul style="list-style-type: none"> <li>Kingston West would produce an annual fiscal deficit per net hectare of \$13,460 for full cost lifecycle accounting obligations. This would equate to an increase to 2020 tax rates of 15% to fully fund these obligations.</li> <li>Kingston Central would produce an annual fiscal surplus of \$2,309 per ha.</li> <li>Kingston East forecast development would produce an annual fiscal deficit of \$24,464 per ha. or requiring 2020 tax rate increases of 33% to achieve full cost accounting recovery. Incorporating the respective development across the three geographic areas would produce a weighted overall deficit of \$7,701/ha.</li> <li>To achieve full cost lifecycle accounting levels, the 2020 tax rate would be required to increase by 7%.</li> </ul> <p style="text-align: center;"><b>Overall Fiscal Impacts by Geographic Area (2020 dollars per hectare)</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Area</th> <th colspan="2">Residential</th> <th colspan="2">Non Residential</th> <th rowspan="2">Total 2020 Surplus/ (Deficit) per Ha</th> <th rowspan="2">Total 2020 Tax Revenues per Ha</th> <th rowspan="2">Full Lifecycle Cost Tax Impact</th> </tr> <tr> <th>Net Developable Land (Ha)</th> <th>2020 Surplus/ (Deficit) per Ha</th> <th>Net Developable Land (Ha)</th> <th>2020 Surplus/ (Deficit) per Ha</th> </tr> </thead> <tbody> <tr> <td>Kingston West</td> <td>80%</td> <td>(13,330)</td> <td>20%</td> <td>(13,970)</td> <td>(13,460)</td> <td>87,437</td> <td>-15%</td> </tr> <tr> <td>Kingston Central</td> <td>69%</td> <td>(3,473)</td> <td>31%</td> <td>15,335</td> <td>2,309</td> <td>155,001</td> <td>1%</td> </tr> <tr> <td>Kingston East</td> <td>65%</td> <td>(23,304)</td> <td>35%</td> <td>(26,590)</td> <td>(24,464)</td> <td>73,256</td> <td>-33%</td> </tr> <tr> <td><b>Total Kingston</b></td> <td><b>75%</b></td> <td><b>(8,135)</b></td> <td><b>25%</b></td> <td><b>(6,378)</b></td> <td><b>(7,701)</b></td> <td><b>105,817</b></td> <td><b>-7%</b></td> </tr> </tbody> </table>	Area	Residential		Non Residential		Total 2020 Surplus/ (Deficit) per Ha	Total 2020 Tax Revenues per Ha	Full Lifecycle Cost Tax Impact	Net Developable Land (Ha)	2020 Surplus/ (Deficit) per Ha	Net Developable Land (Ha)	2020 Surplus/ (Deficit) per Ha	Kingston West	80%	(13,330)	20%	(13,970)	(13,460)	87,437	-15%	Kingston Central	69%	(3,473)	31%	15,335	2,309	155,001	1%	Kingston East	65%	(23,304)	35%	(26,590)	(24,464)	73,256	-33%	<b>Total Kingston</b>	<b>75%</b>	<b>(8,135)</b>	<b>25%</b>	<b>(6,378)</b>	<b>(7,701)</b>	<b>105,817</b>	<b>-7%</b>
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<p>Key Findings</p>	<p>Based on the current average assessed value per residential unit in the respective geographies, the study found the following:</p> <ul style="list-style-type: none"> <li>Low density residential development (in the Near Queen’s Campus area) would fiscally perform better as compared to the other areas, generating surplus revenues of \$2,738 per unit. Similar development in the Greenwood Park area would fiscally perform worse at an annual deficit of \$1,668 per unit.</li> <li>For second residential units (in the Near Queen’s Campus area) would fiscally perform better as it has a comparative advantage in assessed value to the other surveyed areas of the City.</li> <li>Medium density residential development (in the Cataraqui North area) would fiscally perform better compared to the other areas, generating an annual deficit of \$313 per unit. Similar developments in the North King’s Town area would fiscally perform worse at an annual deficit of \$1,640 per unit.</li> <li>High rise condominiums (in the Near Queen’s Campus area) would fiscally perform better which produces higher than average annual surplus revenues per unit. Comparatively, similar developments within the Cataraqui North area would produce the lowest per unit assessed values for the surveyed geographic areas.</li> <li>High rise apartment residential (in the Greenwood Park area) would fiscally perform better and worse in the Near Queen’s Campus area given the property assessment values across the surveyed geographic areas of the City for these types of residential dwelling units is generally consistent.</li> </ul>																																												
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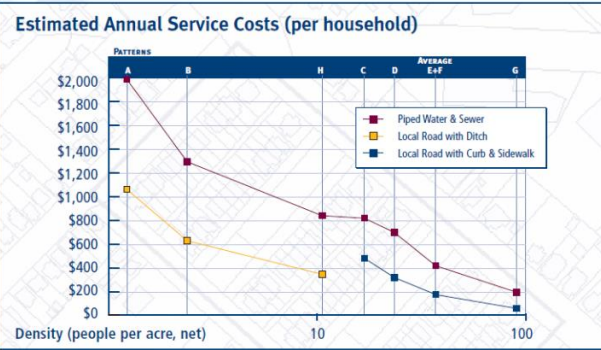
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Study Purpose	<p>The City of Calgary commissioned to study to assist in development of an integrated plan for land use and transportation. Over the projected 60 years the population of Calgary is expected to grow from approximately 1 million to 2.3 million people, with another 0.5 million people in the surrounding region.</p> <p>The types of infrastructure investigated in the report are transportation (i.e., roads and transit), water and sewage service, police, fire, parks, recreation centres in schools.</p>																																													
Scope / Year	<p>City-wide analysis. Capital and operating costs totals (not per capita). Two different growth / development scenarios. Study completed in 2009.</p>																																													
Scenarios / Typologies	<p>The study examines the infrastructure implications of two growth patterns: the dispersed scenario, reflecting current trends and the continuation of current city policy; while the recommended direction intensifies jobs and population in specific areas in the city and links them with high quality transit infrastructure.</p> <p>Comparison of alternative development forms: conventional suburban development or Sprawl vs. traditional neighbourhood development or Smart Growth. The land required for the recommended direction / scenario is 25% smaller than the dispersed scenario.</p>																																													
Infrastructure Costs	<p>As shown in the table below, the cost to build the recommended direction is 33% less expensive than the dispersed scenario.</p> <table border="1"> <thead> <tr> <th colspan="5">Total Cost (\$billion)</th> </tr> <tr> <th></th> <th>Dispersed Scenario</th> <th>Recommended Direction</th> <th>Difference</th> <th>Percent Difference</th> </tr> </thead> <tbody> <tr> <td>Road Capital Cost</td> <td>\$17.6</td> <td>\$11.2</td> <td>\$6.4</td> <td>-36%</td> </tr> <tr> <td>Transit Capital</td> <td>\$6.8</td> <td>\$6.2</td> <td>\$0.6</td> <td>-9%</td> </tr> <tr> <td>Water and Wastewater</td> <td>\$5.5</td> <td>\$2.5</td> <td>\$3.0</td> <td>-54%</td> </tr> <tr> <td>Fire Stations</td> <td>\$0.5</td> <td>\$0.3</td> <td>\$0.2</td> <td>-46%</td> </tr> <tr> <td>Recreation Centres</td> <td>\$1.1</td> <td>\$0.9</td> <td>\$0.2</td> <td>-19%</td> </tr> <tr> <td>Schools</td> <td><u>\$3.0</u></td> <td><u>\$2.1</u></td> <td><u>\$1.0</u></td> <td><u>-32%</u></td> </tr> <tr> <td>Total</td> <td>\$34.5</td> <td>\$23.1</td> <td>\$11.4</td> <td>-33%</td> </tr> </tbody> </table>	Total Cost (\$billion)						Dispersed Scenario	Recommended Direction	Difference	Percent Difference	Road Capital Cost	\$17.6	\$11.2	\$6.4	-36%	Transit Capital	\$6.8	\$6.2	\$0.6	-9%	Water and Wastewater	\$5.5	\$2.5	\$3.0	-54%	Fire Stations	\$0.5	\$0.3	\$0.2	-46%	Recreation Centres	\$1.1	\$0.9	\$0.2	-19%	Schools	<u>\$3.0</u>	<u>\$2.1</u>	<u>\$1.0</u>	<u>-32%</u>	Total	\$34.5	\$23.1	\$11.4	-33%
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Net Variance	The fiscal estimates provide for a relative comparison of the two growth patterns. The compact growth 30-year scenarios (2010 to 2040) identified savings of 33% for the City of Calgary, for the capital cost of roads, transit, water, emergency response, schools and recreation services, and savings of 14% on operational costs.
Key Findings	The primary development settings for urban growth include high-density, clustered infill development (Smart Growth) within inner city areas and low-density, dispersed greenfield developments (Urban Sprawl) in fringe areas. Compact growth through infill instead of fringe development reduces per-capita land consumption and saves on costs of new land development, building new roads and extending underground linear utilities.
Source	'The implications of alternative growth patterns on infrastructure costs', City of Calgary, Report by IBI Group, 2009.

Name / Area	<b>Edmonton, Alberta</b>
Study Purpose	The City of Edmonton encounters infrastructure challenges owing to rapid growth, including issues of sustainability, land use planning, changing service levels, and municipal financing. New developments have a significant impact on the short and long term financial health of the City in terms of revenues and expenditures. To overcome these challenges, the City developed an analytical model to assess neighbourhood growth on a case-by-case basis. The Development Infrastructure Impact Model is a prototype model that was developed to understand the growth and development of new neighbourhoods in Edmonton.
Scope / Year	17 neighbourhoods in the city-region. Study completed in 2012.
Scenarios / Typologies	<p>The model was developed to understand the growth and development of new neighbourhoods in Edmonton. The model provides a high level quantitative analysis of infrastructure, in terms of physical quantities and financial investment in individual neighbourhoods, whose build-out is based on anticipated growth patterns.</p> <p>The model uses neighbourhood-specific information provided by a developer, detailing expected population, land use areas, circulation areas and residential density breakdowns. This information is used by the model to create infrastructure requirements based on three related drivers:</p> <ul style="list-style-type: none"> <li>• <i>Population based requirements</i> and costs for service facilities such as libraries, police stations, fire halls and community recreation facilities.</li> <li>• <i>Area based requirements</i> and costs for infrastructure such as local, collector and arterial roads, storm and sanitary sewers, and parks.</li> <li>• <i>Population and area based requirements</i> such as transit service.</li> </ul> 
Infrastructure Costs	17 neighbourhoods were selected for the analysis and were based on current development status, neighbourhood areas, population demographics, land use patterns (residential vs. commercial), and residential densities. The Neighbourhood Structure Plans that had been created by the development industry served as input for the analysis.

<p>Operating Costs over 30 years (total)</p>	<p>The table below summarizes the revenue and expenditure ratio for each of the analyzed neighbourhoods against its ratio of residential, commercial and other land uses. The revenue and expenditure ratio depicts the amount of expenditure for each dollar of revenue received during the first 30 years (i.e., once the neighbourhood is fully developed). All have greater expenses than revenues, with one exception, i.e., the highest land use mix and residential densities.</p> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; font-size: small;">Expenses over 30 year period based on \$1 revenue received</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <thead> <tr> <th style="text-align: left;">NHBD</th> <th>A</th><th>B</th><th>C</th><th>D</th><th>E</th><th>F</th><th>G</th><th>H</th><th>I</th><th>J</th><th>K</th><th>L</th><th>M</th><th>N</th><th>O</th><th>P</th><th>Q</th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">EXP/REV</td> <td>1.28</td><td>0.33</td><td>1.39</td><td>1.38</td><td>1.43</td><td>1.54</td><td>1.25</td><td>1.26</td><td>2.12</td><td>1.22</td><td>1.26</td><td>1.31</td><td>1.20</td><td>1.81</td><td>1.33</td><td>1.53</td><td>1.55</td> </tr> </tbody> </table> <p style="text-align: center; font-size: x-small;">Table 1 LAND USE BASED ON PERCENTAGE OF GROSS DEVELOPABLE AREA</p> </div>	NHBD	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	EXP/REV	1.28	0.33	1.39	1.38	1.43	1.54	1.25	1.26	2.12	1.22	1.26	1.31	1.20	1.81	1.33	1.53	1.55
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<p>Net Variance</p>	<p>It is worth noting that the renewal values presented within the first 30 years reflect an attempt to depict realistic expenditure. In other words, major renewal expenditures do not occur until later in the lifecycle of an asset, and in some assets little activity would typically occur in the first 30 years. The ongoing expenses and revenues beyond the 30-year period are represented on an annual basis, based on the trend analysis of each of the 17 neighbourhoods.</p>																																				
<p>Key Findings</p>	<p>It is very clear that expenditures incurred far exceed the revenues generated from the neighbourhoods, in all but the one case.</p> <p>Direct revenues (i.e., property taxes and user fees) resulting from residential development are not sufficient to pay for the initial capital, operation, maintenance, and life cycle renewal costs of services and infrastructure. However, these developments have a broader positive effect on the community and economy overall.</p> <p>From the results of the case study, it is evident that neighbourhoods by themselves do not pay for themselves. Rather there are several contributing factors that need to come into play while determining a sustainable neighbourhood, including a dynamic mix of land use patterns, residential density mixes, and various tax patterns. Given the interconnectivity and proximity of neighbourhoods within their vicinity, there is a need to take a holistic approach when dealing with neighbourhood analysis.</p>																																				
<p>Source</p>	<p>'Quantifying Financial Impacts of New Suburban Development: A Case Study', 1st International Specialty Conference on Sustaining Public Infrastructure, Edmonton, 2012.</p>																																				

Name / Area	<b>Halifax Regional Municipality, Nova Scotia</b>	
Study Purpose	<p>The 2005 study analyzes the impact of local densities on servicing costs. Samples of different residential patterns that may be seen in the Halifax Regional Municipality and estimates of service costs were used.</p> <p>The 2013 study assesses four regional growth scenarios for the Halifax region, to determine and compare public, private, and social costs and benefits anticipated from these scenarios over the period from 2011 to 2031.</p>	
Scope / Year	<p>2005 study: eight case studies of densities.</p> <p>2013 study: four growth scenarios.</p>	
Scenarios / Typologies	<p>The first scenario was to reflect Regional Municipal Planning Strategy goals for growth in designated urban (Regional Centre), suburban, and rural portions of the region. The second scenario was to reflect the continuation of recent trends that have fallen short of the Strategy's goals. The third and fourth scenarios were to reflect stronger regional goals emphasizing greater concentration of growth in the core of the region.</p>	
Servicing Costs Per Household by Density	<p>The following public services were considered: Roads, Transit, Water, Wastewater &amp; Stormwater, Solid Waste, Parks &amp; Recreation, Libraries, Police, Fire. The figure shows three services very closely linked to land use (i.e., roads, water and sewer) and illustrates the link between density and costs.</p>	
Operating Costs by unit	<p>The table below shows the costs across different density patterns for comparable levels of service. A summary of the costs for each of the eight sample patterns: from left to right, density increases from lower to higher, as costs decrease.</p> <p>In Pattern A, there are more than 122 metres (400 feet) of total road frontage for each household, while the frontage is less than 1.8 m (6 ft) per household in Pattern G, which includes apartments. Of the services that are commonly available, Pattern A is nearly three times as expensive as Pattern G.</p> <p>From the perspective of public services, the higher levels of service and cost available in more urbanized areas, such as sidewalks and central water and wastewater services, will offset some of this differential. However, this is only true to the extent that: 1) these services are never extended to the low density areas and, 2) the costs of private water and sewage treatment, as well as other private, social, and environmental costs, are excluded.</p>	

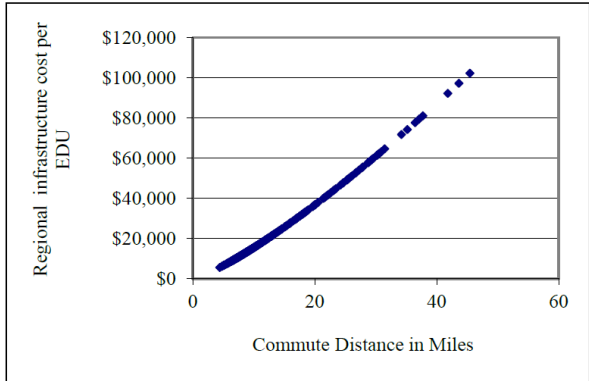


**SUMMARY** ESTIMATED ANNUAL COSTS PER HOUSEHOLD (LISTED ACCORDING TO DENSITY)

	Pattern A <sup>1</sup> Rural Commutershed	Pattern B <sup>1</sup> Rural Commutershed	Pattern H <sup>1</sup> Rural Commutershed	Pattern C <sup>1</sup> Suburban	Pattern D <sup>1</sup> Urban	Pattern E <sup>2</sup> Suburban	Pattern F <sup>2</sup> Urban	Pattern G <sup>2</sup> Urban
	Low Density 1.2 people/acre	Low Density 2.2 people/acre	Low Density 10.4 people/acre	Low Density 16 people/acre	Low Density 22 people/acre	Mid Density 36 people/acre	Mid Density 36 people/acre	High Density 92 people/acre
<b>Common Services:</b>								
Roads (no curbs)	\$1,053	\$621	\$339	\$280	\$184	\$76	\$124	\$26
Solid Waste	\$200	\$200	\$200	\$185	\$185	\$185	\$185	\$185
Libraries <sup>3</sup>	\$72	\$72	\$72	\$72	\$72	\$48	\$48	\$38
Parks/Recreation <sup>4</sup>	\$129	\$129	\$129	\$129	\$129	\$86	\$86	\$69
Police <sup>5</sup>	\$360	\$360	\$360	\$360	\$360	\$240	\$240	\$192
Fire <sup>5</sup>	\$324	\$324	\$324	\$406	\$379	\$231	\$248	\$177
School Bussing	\$186	\$186	\$186	\$87	\$25	\$58	\$17	\$13
Culture/Economy	\$36	\$36	\$36	\$36	\$36	\$24	\$24	\$19
Governance	\$297	\$297	\$297	\$297	\$297	\$198	\$198	\$158
HRM to Province	\$435	\$435	\$435	\$435	\$435	\$290	\$290	\$232
<b>Subtotal</b>	<b>\$3,092</b>	<b>\$2,660</b>	<b>\$2,378</b>	<b>\$2,287</b>	<b>\$2,102</b>	<b>\$1,436</b>	<b>\$1,460</b>	<b>\$1,109</b>
<b>Other Services:</b>								
Curbs&Sidewalks	\$0	\$0	\$0	\$194	\$128	\$52	\$86	\$27
Transit <sup>4</sup>	\$171	\$171	\$171	\$171	\$171	\$114	\$114	\$91
Water	\$425	\$425	\$425	\$197	\$176	\$77	\$146	\$42
Waste/Stormwater	\$625	\$625	\$625	\$613	\$514	\$235	\$364	\$147
<b>Subtotal</b>	<b>\$1,221</b>	<b>\$1,221</b>	<b>\$1,221</b>	<b>\$1,175</b>	<b>\$989</b>	<b>\$479</b>	<b>\$710</b>	<b>\$307</b>
<b>extended<sup>5</sup></b>								
Water/Wastewater	\$927	\$234	\$-219					
<b>Total</b>	<b>\$5,240</b>	<b>\$4,115</b>	<b>\$3,380</b>	<b>\$3,462</b>	<b>\$3,091</b>	<b>\$1,914</b>	<b>\$2,170</b>	<b>\$1,416</b>

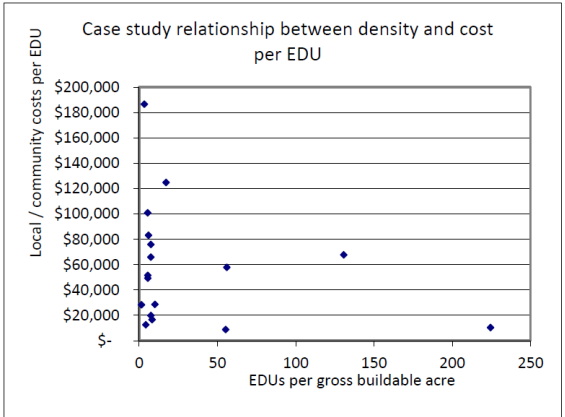
1) Household size estimated at 3 people per household  
2) Household size estimated at 2 people per household  
3) Household size estimated at 1.6 people per household  
4) Costs allocated simply on "per capita" basis  
5) Incremental on-going (annual) costs, only; does not include remediation/installation (capital) costs

<p>Total Costs</p>	<p>The top three cost categories that drive the differences between scenarios are transportation (e.g., travel time, travel costs, road construction, and capital), water and wastewater capital and operation, and health and environment (e.g., GHG emissions, traffic accidents, and other transport-related environmental costs). For the municipality, the main cost drivers are: local / regional road capital, water / wastewater capital, and services for solid waste, police, and fire protection.</p> <p>These differences to the year 2031 shared across the new dwelling units would represent an \$8,845 cost savings (\$385/year); a \$22,841 savings (\$993/year) for Scenario A; and a \$31,645 savings (\$1,376/year) for Scenario B (totals are shown in the table).</p> <table border="1"> <caption>Table 9.4 Summary of Municipal Revenues (\$000s) by Scenario, HRM, 2009-2031</caption> <thead> <tr> <th>Dwelling Unit Type</th> <th>RMPS Goals</th> <th>Post RMPS Trend</th> <th>Scenario A</th> <th>Scenario B</th> </tr> </thead> <tbody> <tr> <td>Singles and Semis</td> <td>\$1,088,552</td> <td>\$1,079,812</td> <td>\$865,955</td> <td>\$714,617</td> </tr> <tr> <td><i>Difference from trend</i></td> <td>\$8,741</td> <td>\$0</td> <td>-\$213,856</td> <td>-\$365,195</td> </tr> <tr> <td>Apartments and Other</td> <td>\$292,795</td> <td>\$287,253</td> <td>\$388,015</td> <td>\$449,175</td> </tr> <tr> <td><i>Difference from trend</i></td> <td>\$5,542</td> <td>\$0</td> <td>\$100,761</td> <td>\$161,922</td> </tr> <tr> <td><b>TOTAL REVENUES</b></td> <td><b>\$1,381,347</b></td> <td><b>\$1,367,065</b></td> <td><b>\$1,253,970</b></td> <td><b>\$1,163,791</b></td> </tr> <tr> <td><i>Difference from trend</i></td> <td>\$14,282</td> <td>\$0</td> <td>-\$113,095</td> <td>-\$203,274</td> </tr> </tbody> </table> <p>Relative to the trend since the adoption of the Strategy, adherence to its goals would yield \$14 million more property tax revenue over the 2009 to 2031 period (\$0.6 million/year); while Scenario A would produce \$113 million less revenue (-\$5 million/year), and Scenario B would yield \$203 million less (-\$9 million/year). The lower revenues found for Scenarios A and B are attributable to the greater number of apartment units.</p> <p>Overall municipal costs estimated to deal with new development substantially exceeded expected revenues by a factor of at least two under all four scenarios. These costs produce net losses (municipal revenues minus costs), ranging from just over \$1 billion for Scenario A to nearly \$2 billion for the Trend Scenario. New residential developments, in other words, do not pay their way and are subsidized by the existing tax base and by new commercial development that they complement and support.</p> <p>The net savings for each scenario relative to the trend over the period is \$66 million for the strategy, \$337 million for Scenario A, and \$715 million for Scenario B.</p> <table border="1"> <caption>Table 9.5 Summary of Net Municipal Impacts (\$000s) by Scenario, HRM, 2009-2031</caption> <thead> <tr> <th>Category</th> <th>RMPS Goals</th> <th>Post RMPS Trend</th> <th>Scenario A</th> <th>Scenario B</th> </tr> </thead> <tbody> <tr> <td>Costs</td> <td>\$3,243,263</td> <td>\$3,294,595</td> <td>\$2,844,354</td> <td>\$2,375,832</td> </tr> <tr> <td>Revenues</td> <td>\$1,381,347</td> <td>\$1,367,065</td> <td>\$1,253,970</td> <td>\$1,163,791</td> </tr> <tr> <td>Revenues - Costs</td> <td>-\$1,861,916</td> <td>-\$1,927,530</td> <td>-\$1,590,384</td> <td>-\$1,212,041</td> </tr> <tr> <td><i>Difference from trend</i></td> <td>\$65,614</td> <td>\$0</td> <td>\$337,146</td> <td>\$715,489</td> </tr> </tbody> </table>	Dwelling Unit Type	RMPS Goals	Post RMPS Trend	Scenario A	Scenario B	Singles and Semis	\$1,088,552	\$1,079,812	\$865,955	\$714,617	<i>Difference from trend</i>	\$8,741	\$0	-\$213,856	-\$365,195	Apartments and Other	\$292,795	\$287,253	\$388,015	\$449,175	<i>Difference from trend</i>	\$5,542	\$0	\$100,761	\$161,922	<b>TOTAL REVENUES</b>	<b>\$1,381,347</b>	<b>\$1,367,065</b>	<b>\$1,253,970</b>	<b>\$1,163,791</b>	<i>Difference from trend</i>	\$14,282	\$0	-\$113,095	-\$203,274	Category	RMPS Goals	Post RMPS Trend	Scenario A	Scenario B	Costs	\$3,243,263	\$3,294,595	\$2,844,354	\$2,375,832	Revenues	\$1,381,347	\$1,367,065	\$1,253,970	\$1,163,791	Revenues - Costs	-\$1,861,916	-\$1,927,530	-\$1,590,384	-\$1,212,041	<i>Difference from trend</i>	\$65,614	\$0	\$337,146	\$715,489
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<p>Key Findings</p>	<p>Densities of residential areas and their distance to commercial areas and large public infrastructure (e.g., treatment plants) have a significant impact on the costs of 'hard' infrastructure-based services such as water, wastewater, and roadways. Some residential patterns may have life-cycle costs ten times that of other patterns. Often, the capital cost of a new road or facility is seen as the main financial barrier to service growth, however most of the service costs occur after it is built.</p>																																																												
<p>Source</p>	<p>'Settlement Pattern and Form with Service Cost Analysis', Halifax Regional Municipality, 2005.  'Quantifying The Costs And Benefits Of Alternative Growth Scenarios', Halifax Regional Municipality, Stantec, 2013.</p>																																																												

Name / Area	<b>Portland Region, Oregon, USA</b>															
Study Purpose	To assist in growth management decisions, the Comparative Infrastructure Costs: Local Case Studies analysis focuses on the infrastructure capital costs for new developments in both urban and newly urbanizing areas from throughout the Portland Region. These developments are each unique, having different benefits, proposed uses, levels of service, surrounding uses, and topography. Nevertheless, these case studies are a useful means of understanding what factors may influence infrastructure costs.															
Scope / Year	17 different case studies in the region. Capital costs only. Study completed in 2008.															
Scenarios / Typologies	<p>The case studies have different sizes, proposed uses (e.g., residential or employment), access to existing facilities and amenities, locations, and topographies. The analysis does not control for all of these differences as these factors all influence infrastructure costs. In the case of land use, however, the analysis standardizes the case studies because employment and residential uses place different demands on infrastructure. Therefore the analysis uses a standardized measurement called an equivalent dwelling unit (EDU).</p> <p>The analysis divides infrastructure into two categories, depending on the infrastructure’s user base: local / community and regional infrastructure, and only documents the public capital costs of providing new infrastructure. It does not include the cost of ongoing maintenance and operations of public facilities.</p>															
Infrastructure	<p>The focus of this analysis is on the following categories of infrastructure:</p> <ul style="list-style-type: none"> <li>• Civic buildings, parking structures, public plazas</li> <li>• Regional facilities, such as marine and air ports</li> <li>• Parks, Schools</li> <li>• Sanitary Sewers, Stormwater, Water</li> <li>• Transportation (Roads, bridges, highways; Transit, bike, pedestrian)</li> </ul> <p>Depending on the type of regional infrastructure, either flat or variable costs were applied for each anticipated household or job. Flat costs were applied for marine, air, and other non-transportation regional facilities. These costs are not for specific facilities but were instead intended to represent the typical regional infrastructure demands that new households and jobs create.</p> <p>To estimate the demand that different case study locations may place on regional transportation facilities (e.g., highways, transit and bridges), variable costs were calculated. As illustrated in the figure, an EDU that makes longer distance trips places greater demands on transportation facilities than an EDU that makes shorter distance trips. An EDU’s demand for regional transportation facilities was assumed to vary according to forecasted commute distance.</p>	 <table border="1"> <caption>Approximate data points from the graph</caption> <thead> <tr> <th>Commute Distance (Miles)</th> <th>Regional Infrastructure Cost per EDU (\$)</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>10</td><td>10,000</td></tr> <tr><td>20</td><td>30,000</td></tr> <tr><td>30</td><td>50,000</td></tr> <tr><td>40</td><td>75,000</td></tr> <tr><td>50</td><td>105,000</td></tr> </tbody> </table>	Commute Distance (Miles)	Regional Infrastructure Cost per EDU (\$)	0	0	10	10,000	20	30,000	30	50,000	40	75,000	50	105,000
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<p>Cost per Unit</p>	<p>This analysis is not a statistical analysis that can definitively determine the effects of any particular factor on infrastructure costs. However, some general lessons can be gleaned. The case studies indicate that some factors that can influence the costs of serving an EDU include:</p> <ul style="list-style-type: none"> <li>• Site topography;</li> <li>• Environmental features;</li> <li>• Land ownership patterns;</li> <li>• Distance from existing infrastructure;</li> <li>• Presence or absence of existing infrastructure capacity;</li> <li>• Development density;</li> <li>• Proposed use;</li> <li>• Level of service or quality of amenities; and</li> <li>• Travel behaviour (of residents or employees).</li> </ul>
<p>Key Findings</p>	<p>As illustrated in the figure, all other things being equal, higher density developments are less expensive to serve (on a per EDU basis) than lower density developments. The relationship between residential density and infrastructure demand is fairly intuitive, i.e., larger lots require more lineal feet of pipes and pavement per household. These increased lengths translate into higher costs. Despite this general rule, however, the lower density case study areas reveal a great deal of variation in the costs per EDU. This variation is attributable to the many other factors that can influence costs. These factors may include level of service or the provision of amenities such as parks and sidewalks and other facilities such as schools.</p> <p>Most of the higher density case studies (e.g., those with 50 or more EDUs per gross buildable acre) do, however, have relatively low local / community infrastructure costs per EDU.</p>
<p>Source</p>	<p>'Comparative Infrastructure Costs: Local Case Studies', Discussion draft, Metro Portland, 2008.</p>





Name / Area	<b>Perth, Australia</b>																																					
Study Purpose	The Costs of Urban Sprawl – Infrastructure and Transportation, Environment Design Guide and Cost Comparison of Infrastructure on Greenfield and Infill Sites examined the implications of two alternative approaches to urban development: i.e., redevelopment in walkable transit-oriented developments, and fringe development in conventional low-density car dependent suburbs.																																					
Scope / Year	Comparing two different theoretical development forms. Papers completed in 2010 and 2017 respectively.																																					
Scenarios / Typologies	<p>As shown below, the research examined the economic costs associated with the two forms of development, first assessing the physical planning costs associated with the different transport and infrastructure requirements.</p> <table border="1"> <thead> <tr> <th></th> <th>Urban Redevelopment</th> <th>Fringe Development</th> </tr> </thead> <tbody> <tr> <td>Daily per capita Greenhouse Gas Emissions from transport (Measured in CO<sub>2</sub>-e)</td> <td>0 to 4 Kg</td> <td>8 up to 10 Kg</td> </tr> <tr> <td>Distance to CBD</td> <td>less than 10 km</td> <td>more than 40 km</td> </tr> <tr> <td>Activity Intensity (measured by population and jobs per hectare)<sup>1</sup></td> <td>&gt; 35</td> <td>&lt; 20</td> </tr> <tr> <td>Transit Accessibility<sup>2</sup></td> <td>more than 80% with &gt;15min service</td> <td>less than 15% with &gt;15min service</td> </tr> </tbody> </table> <p>The challenge in interpreting the assessments is that infrastructure costs are so heavily dependent on area-specific factors. For example: road costs among different prospective development areas may vary based on the necessity for major arterial roads; costs for sewerage and water infrastructure could vary immensely depending on terrain and soil conditions; and many other infrastructure components will differ depending on the level and degree of excess capacity. It is also difficult to determine who bears the costs of new infrastructure developments because of constantly changing government-induced fees, taxes, policies, and building standards.</p>			Urban Redevelopment	Fringe Development	Daily per capita Greenhouse Gas Emissions from transport (Measured in CO <sub>2</sub> -e)	0 to 4 Kg	8 up to 10 Kg	Distance to CBD	less than 10 km	more than 40 km	Activity Intensity (measured by population and jobs per hectare) <sup>1</sup>	> 35	< 20	Transit Accessibility <sup>2</sup>	more than 80% with >15min service	less than 15% with >15min service																					
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Infrastructure Costs (total)	<p>The table displays the economic breakdown of inner city and urban fringe initial capital costs, and represent the higher estimates reported by the studies surveyed by the City of Perth.</p> <p>Despite the area-specific nature of calculating development costs, the evidence suggests that initial capital costs and operating costs of sprawling developments outweigh the costs associated with inner-city redevelopment.</p>	<table border="1"> <thead> <tr> <th></th> <th>Inner</th> <th>Outer</th> </tr> </thead> <tbody> <tr> <td>Roads</td> <td>\$5,086,562</td> <td>\$30,378,881</td> </tr> <tr> <td>Water and Sewerage</td> <td>\$14,747,616</td> <td>\$22,377,459</td> </tr> <tr> <td>Telecommunications</td> <td>\$2,576,106</td> <td>\$3,711,851</td> </tr> <tr> <td>Electricity</td> <td>\$4,082,117</td> <td>\$9,696,505</td> </tr> <tr> <td>Gas</td> <td>\$0</td> <td>\$3,690,843</td> </tr> <tr> <td>Fire and Ambulance</td> <td>\$0</td> <td>\$302,509</td> </tr> <tr> <td>Police</td> <td>\$0</td> <td>\$388,416</td> </tr> <tr> <td>Municipal Services</td> <td>Not Reported</td> <td>Not Reported</td> </tr> <tr> <td>Education</td> <td>\$3,895,458</td> <td>\$33,147,274</td> </tr> <tr> <td>Health</td> <td>\$20,114,867</td> <td>\$32,347,327</td> </tr> <tr> <td><b>Total</b></td> <td><b>\$50,502,726</b></td> <td><b>\$136,041,065</b></td> </tr> </tbody> </table> <p><b>Table 4: Initial capital costs for redevelopment versus fringe development infrastructure</b></p>		Inner	Outer	Roads	\$5,086,562	\$30,378,881	Water and Sewerage	\$14,747,616	\$22,377,459	Telecommunications	\$2,576,106	\$3,711,851	Electricity	\$4,082,117	\$9,696,505	Gas	\$0	\$3,690,843	Fire and Ambulance	\$0	\$302,509	Police	\$0	\$388,416	Municipal Services	Not Reported	Not Reported	Education	\$3,895,458	\$33,147,274	Health	\$20,114,867	\$32,347,327	<b>Total</b>	<b>\$50,502,726</b>	<b>\$136,041,065</b>
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Transportation Costs	The cost of infrastructure for fringe development was determined to be significantly higher (approximately \$136,000 per dwelling) than that for inner suburban development (\$50,500 per dwelling). Of note are the costs of infrastructure for education and roads which were determined to be ten times and six times higher for fringe developments respectively. The analysis assumed that no additional infrastructure for gas, emergency services or police was required in inner suburban locations.																																					

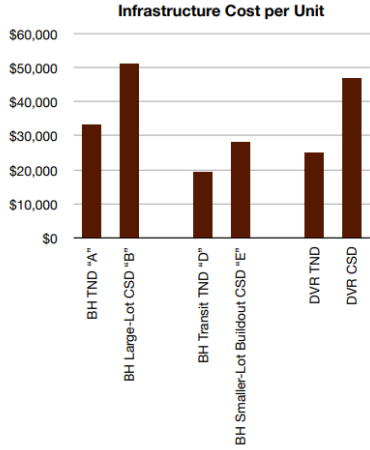
	<p>The estimated transportation costs were calculated as functions of vehicle kilometres travelled and covered all of private, public, and external costs. The table displays a summary of the costs for transportation costs for residents / households, which constitute the recurring annual costs of a development of 1,000 dwellings. 'Outer' can be seen to be approximately twice as expensive as 'Inner'.</p> <p>Data collected is not always directly comparable. Nevertheless, the studies suggest that the infrastructure cost of infill development appears to be significantly less costly for government than greenfield development on the urban fringe across Australian capital cities.</p> <p>The evidence of cost effectiveness for developers is less definitive since diverse factors such as development site size, open space contributions, and final market value complicate the analysis.</p>	<table border="1"> <thead> <tr> <th>Cost For 1000 Dwellings</th> <th>Inner</th> <th>Outer</th> </tr> </thead> <tbody> <tr> <td>Capital cost of car ownership</td> <td>\$2,990,802</td> <td>\$8,628,654</td> </tr> <tr> <td>Fuel costs</td> <td>\$1,203,925</td> <td>\$3,255,349</td> </tr> <tr> <td>Other operating car costs</td> <td>\$1,476,392</td> <td>\$4,259,675</td> </tr> <tr> <td>Time costs (total)*</td> <td>\$6,158,348</td> <td>\$8,210,448</td> </tr> <tr> <td>    Private transport</td> <td>\$3,116,810</td> <td>\$8,210,448</td> </tr> <tr> <td>    Public transport</td> <td>\$3,041,538</td> <td>\$0</td> </tr> <tr> <td>    Walking and cycling</td> <td>\$0</td> <td>\$0</td> </tr> <tr> <td>Road costs</td> <td>\$1,216,597</td> <td>\$3,508,806</td> </tr> <tr> <td>Parking costs</td> <td>\$2,184,489</td> <td>\$7,709,869</td> </tr> <tr> <td>Externalities (total)</td> <td>\$243,731</td> <td>\$703,250</td> </tr> <tr> <td>    Fatalities</td> <td>\$73,368</td> <td>\$211,693</td> </tr> <tr> <td>    Injuries</td> <td>\$23,627</td> <td>\$68,172</td> </tr> <tr> <td>    Property damage</td> <td>\$38,549</td> <td>\$111,228</td> </tr> <tr> <td>    Air pollution</td> <td>\$90,777</td> <td>\$261,925</td> </tr> <tr> <td>    Noise pollution</td> <td>\$17,409</td> <td>\$50,232</td> </tr> <tr> <td>Transit costs (capital, and operating)</td> <td>\$3,136,540</td> <td>\$470,481</td> </tr> <tr> <td><b>Total</b></td> <td><b>\$18,610,824</b></td> <td><b>\$36,746,532</b></td> </tr> </tbody> </table>	Cost For 1000 Dwellings	Inner	Outer	Capital cost of car ownership	\$2,990,802	\$8,628,654	Fuel costs	\$1,203,925	\$3,255,349	Other operating car costs	\$1,476,392	\$4,259,675	Time costs (total)*	\$6,158,348	\$8,210,448	Private transport	\$3,116,810	\$8,210,448	Public transport	\$3,041,538	\$0	Walking and cycling	\$0	\$0	Road costs	\$1,216,597	\$3,508,806	Parking costs	\$2,184,489	\$7,709,869	Externalities (total)	\$243,731	\$703,250	Fatalities	\$73,368	\$211,693	Injuries	\$23,627	\$68,172	Property damage	\$38,549	\$111,228	Air pollution	\$90,777	\$261,925	Noise pollution	\$17,409	\$50,232	Transit costs (capital, and operating)	\$3,136,540	\$470,481	<b>Total</b>	<b>\$18,610,824</b>	<b>\$36,746,532</b>
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Net Variance	Once established, there are many ongoing operational costs of both urban typologies, but the most significant operational costs are associated with transportation. Private and public costs are incurred to ensure people travel more easily to and from these urban areas.																																																							
Key Findings	<p>The cost of both private and public transport operations for greenfield development is around \$18,000 per household per year more than that for urban redevelopment forms. Over a 50-year period this adds up to a difference of \$251 million for 1,000 dwellings, or \$251,000 per household.</p> <p>The savings in transport and infrastructure for 1,000 dwellings are in the order of \$86 million up-front for infrastructure and \$250 million for annualized transportation costs over 50 years.</p>																																																							
Source	'The Costs of Urban Sprawl – Infrastructure and Transportation, Environment Design Guide', Roman Trubka, Peter Newman, Darren Billsborough, 2010.																																																							

**Table 5: Transportation costs for 1000 inner-city and fringe dwellings**

Name / Area	<b>Adelaide, Australia</b>																																																																																
Study Purpose	The Cost Comparison of Infrastructure on Greenfield and Infill Sites paper explores the range of infrastructure provision issues to identify the actual costs of provision in different locations. Three case studies in metropolitan Adelaide were used to explore the cost factors for developers and governments.																																																																																
Scope / Year	Case studies. Completed in 2017.																																																																																
Scenarios / Typologies	Three case studies in Australia were examined: 1) Playford greenfield; 2) Playford Alive (urban renewal); 3) Bowden Urban Village (infill TOD).																																																																																
Infrastructure Costs (total)	<p>Infill TOD developer costs per dwelling were determined to be significantly less than the infill development of urban renewal. The developer was charged less for open space contributions per dwelling in the infill TOD compared to the Urban Renewal project and expended less on roads. While there is a higher cost to the developer to provide energy infrastructure in the infill TOD site compared to the other sites, overall the developer expended less on infrastructure in the infill TOD site, which supports the view that infill development results in reduced need for infrastructure per dwelling.</p> <p>It should be noted that the costs to developers and to governments are different.</p> <p><a href="#">Table 6. Developer infrastructure costs per dwelling—3 cases.</a></p> <table border="1"> <thead> <tr> <th>Infrastructure category</th> <th>Case 1: playford greenfield</th> <th>Case 2: playford urban renewal</th> <th>Case 3: Bowden infill TOD</th> </tr> </thead> <tbody> <tr> <td>Infrastructure design and approvals</td> <td>\$2580</td> <td>\$2775</td> <td>\$749</td> </tr> <tr> <td>Roads</td> <td>\$45,500</td> <td>\$28,400</td> <td>\$10,433</td> </tr> <tr> <td>Water and sewerage</td> <td>\$1650</td> <td>\$7750</td> <td>\$2887</td> </tr> <tr> <td>Telecommunications</td> <td>n.a.</td> <td>n.a.</td> <td>\$105</td> </tr> <tr> <td>Electricity</td> <td>\$3850</td> <td>\$4000</td> <td>\$8188</td> </tr> <tr> <td>Gas</td> <td>n.a.</td> <td>\$250</td> <td>\$963</td> </tr> <tr> <td>Open space (land)</td> <td>(land)</td> <td>\$6488</td> <td>\$3330</td> </tr> <tr> <td>Total per dwelling</td> <td>\$53,580</td> <td>\$49,663</td> <td>\$26,655</td> </tr> </tbody> </table> <p>n.a. = not available. Note: These are costs of provision of the listed infrastructure and do not include maintenance costs.</p> <p><a href="#">Table 7. Summary of government capital costs for infrastructure in the case study areas.</a></p> <table border="1"> <thead> <tr> <th>Infrastructure category</th> <th>Case 1: playford greenfield</th> <th>Case 2: playford urban renewal</th> <th>Case 3: Bowden infill TOD</th> </tr> </thead> <tbody> <tr> <td>Roads</td> <td>\$4,975,000</td> <td>\$10,600,000</td> <td>n.a.</td> </tr> <tr> <td>Public transport system upgrade</td> <td>\$13,000,000</td> <td></td> <td></td> </tr> <tr> <td>Fire and ambulance</td> <td>n.a.</td> <td>n.a.</td> <td>n.a.</td> </tr> <tr> <td>Police</td> <td></td> <td>Police and community working together programme</td> <td></td> </tr> <tr> <td>Open space</td> <td>\$5,000,000</td> <td>\$2,250,000</td> <td>\$4,900,000</td> </tr> <tr> <td>Municipal services</td> <td>\$17,301,000</td> <td>\$8,170,000</td> <td>\$403,000</td> </tr> <tr> <td>Education</td> <td>\$68,400,000 to \$88,400,000</td> <td>\$44,800,000</td> <td>\$579,674</td> </tr> <tr> <td>Health</td> <td>\$7,500,000</td> <td>OPAL programme</td> <td></td> </tr> <tr> <td>Total</td> <td>\$116,176,000 to \$136,176,000</td> <td>\$65,820,000</td> <td>\$5,882,674</td> </tr> <tr> <td>Cost per dwelling</td> <td>\$29,044 to \$34,044 (4000 dwellings)</td> <td>\$36,566 (1800 dwellings)</td> <td>\$2451 (2400 dwellings)</td> </tr> </tbody> </table> <p>(n.a. = not available). Note: These are costs of provision of the listed infrastructure and do not include maintenance costs. Where these relate to items listed in Table 6 these costs are additional. The total development cost to government in each case may be higher than the infrastructure total as total development costs may include land purchase, remediation, marketing and other sundry expenditure.</p>	Infrastructure category	Case 1: playford greenfield	Case 2: playford urban renewal	Case 3: Bowden infill TOD	Infrastructure design and approvals	\$2580	\$2775	\$749	Roads	\$45,500	\$28,400	\$10,433	Water and sewerage	\$1650	\$7750	\$2887	Telecommunications	n.a.	n.a.	\$105	Electricity	\$3850	\$4000	\$8188	Gas	n.a.	\$250	\$963	Open space (land)	(land)	\$6488	\$3330	Total per dwelling	\$53,580	\$49,663	\$26,655	Infrastructure category	Case 1: playford greenfield	Case 2: playford urban renewal	Case 3: Bowden infill TOD	Roads	\$4,975,000	\$10,600,000	n.a.	Public transport system upgrade	\$13,000,000			Fire and ambulance	n.a.	n.a.	n.a.	Police		Police and community working together programme		Open space	\$5,000,000	\$2,250,000	\$4,900,000	Municipal services	\$17,301,000	\$8,170,000	\$403,000	Education	\$68,400,000 to \$88,400,000	\$44,800,000	\$579,674	Health	\$7,500,000	OPAL programme		Total	\$116,176,000 to \$136,176,000	\$65,820,000	\$5,882,674	Cost per dwelling	\$29,044 to \$34,044 (4000 dwellings)	\$36,566 (1800 dwellings)	\$2451 (2400 dwellings)
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Net Variance	The table shows that there is very little difference in total infrastructure costs for government and developer between the greenfield and renewal areas of Playford Alive, while the total cost of infrastructure for infill TOD at Bowden Urban Village is only one-third of that for the Playford project.																																																																																

	<p>Table 8. Combined developer and government infrastructure costs per dwelling.</p> <table border="1"> <thead> <tr> <th>Infrastructure category</th> <th>Case 1: playford greenfield</th> <th>Case 2: playford urban renewal</th> <th>Case 3: Bowden infill TOD</th> </tr> </thead> <tbody> <tr> <td>Developer</td> <td>\$53,580</td> <td>\$49,663</td> <td>\$26,655</td> </tr> <tr> <td>Government</td> <td>\$29,044 to \$34,044</td> <td>\$36,566</td> <td>\$2451</td> </tr> <tr> <td>Total</td> <td>\$82,624 to \$87,624</td> <td>\$86,229</td> <td>\$29,106</td> </tr> </tbody> </table> <p>The estimated cost to the developer to provide infrastructure to the greenfield site (\$53,580 per dwelling) is similar to the renewal area (\$49,663 per dwelling), which is an interesting finding as the latter was previously serviced.</p>	Infrastructure category	Case 1: playford greenfield	Case 2: playford urban renewal	Case 3: Bowden infill TOD	Developer	\$53,580	\$49,663	\$26,655	Government	\$29,044 to \$34,044	\$36,566	\$2451	Total	\$82,624 to \$87,624	\$86,229	\$29,106
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Total	\$82,624 to \$87,624	\$86,229	\$29,106														
<p>Key Findings</p>	<p>The infrastructure required in delivering new residential development is site-specific and is influenced by the type of housing being delivered. This in turn is driven by the market demographics of household type, age, income and employment. In established areas, the increased density of planned development implies the need for a review of the capacity of existing infrastructure.</p> <p>While some absolute costs were determined from the review of budget documents and annual reports of state and local government agencies, the analysis demonstrates the difficulty of obtaining detailed information about government infrastructure costs for specific projects. Some data could not be provided or apportioned to either local government or state government, so were aggregated and presented as government cost since details of cost-sharing for open space and street infrastructure upgrades were not available.</p> <p>In general, the evidence suggests that it is less costly in infrastructure terms to develop on infill sites rather than greenfield sites. However, there is some evidence to suggest that developer’s construction costs can be higher in infill situations, which may go some way to explaining the resistance on the part of the development industry to current urban growth policy.</p> <p>Planning policies need to recognize the variety ownership patterns that can have an impact on development costs for both government and the development industry. In addition, the analysis confirms the importance of understanding the capacity of the existing infrastructure to cope with growth and the extent to which infill development renews established areas. As governments plan for increased density in established areas, they should ensure they understand and direct development toward areas where there is spare existing infrastructure capacity. In addition, government should develop mechanisms to fund infrastructure shortfalls that may limit infill development. Where government proposes mechanisms to spread the cost burden of new infrastructure, the standards for such infrastructure should be agreed beforehand so developers may make informed decisions about where and what they build.</p>																
<p>Source</p>	<p>‘Cost Comparison of Infrastructure on Greenfield and Infill Sites’, Cathryn Hamilton, Jon Kellett, 2017.</p>																

Name / Area	<b>Smart Growth and Conventional Development, U.S.A.</b>
Study Purpose	<p>Several Conventional Suburban Development (CSD) and Traditional Neighbourhood Development (TND) alternatives were prepared for two case study sites, and then the total infrastructure costs were calculated. Variables that drive infrastructure cost including lot size, product type, residential density, thoroughfare cross section, and thoroughfare network pattern, which were studied to quantify and compare the impact on the total infrastructure cost.</p> <p>The following figure illustrates the different density, form, and design attributes between conventional suburban development and Smart Growth development.</p> <div style="border: 1px solid black; padding: 10px;"> <div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> <p style="text-align: center;"><b>Conventional Suburban Development (CSD)</b></p>  <p style="font-size: small; text-align: right;">Dover Kohl &amp; Associates</p> <p>CSD development usually reflects the following characteristics:</p> <ol style="list-style-type: none"> <li>1. Dispersed form with no distinct edge, disturbing the majority of the site's buildable land;</li> <li>2. Single-use pods, containing one kind of lot and building type in each (e.g. office parks, residential subdivisions, and strip shopping centers);</li> <li>3. One way in and out of each pod;</li> <li>4. Garage doors and garbage pickup facing the street;</li> <li>5. Large blocks with irregular shapes and cul-de-sacs;</li> <li>6. Open space in the residual "left-over" land between pods and around regulated wetlands; and</li> <li>7. Strip shopping centers with big box retail and large parking lots between buildings and the street.</li> </ol> <p style="font-size: small;">CSD &amp; TND characteristics adapted from Dover Kohl &amp; Associates</p> </div> <div style="width: 45%;"> <p style="text-align: center;"><b>Smart Growth &amp; Traditional Neighborhood Development (TND)</b></p>  <p style="font-size: small; text-align: right;">Dover Kohl &amp; Associates</p> <p>New Urbanism and TND take advantage of Smart Growth regional development principles by implementing specific urban design techniques including:</p> <ol style="list-style-type: none"> <li>1. Compact form with a distinct edge yielding large contiguous preserved open space;</li> <li>2. Mixing of land uses;</li> <li>3. Complete neighborhoods proportioned generally according to 5 minutes walking distance;</li> <li>4. Grid network of interconnected streets with short, walkable blocks and multiple route choices;</li> <li>5. Alleys with garage access and rear garbage pickup;</li> <li>6. On street parking &amp; shared parking strategies to reduce parking lot size; and</li> <li>7. Community parks, squares, and open spaces faced by the fronts of buildings and located within walking distance of residential homes.</li> </ol> </div> </div> </div>
Scope / Year	Two scenario case studies. Completed in 2010.
Scenarios / Typologies	<p>Each development scenario was engineered at a schematic level including thoroughfare typology analysis, streetscape design, parking analysis, and utility design. The engineering design ended at the building footprints; building foundations and cost of vertical construction were not part of the study. Once an estimate of infrastructure quantities was compiled for each development scenario, material quantities were multiplied by industry standard unit cost data and adjusted to account for regional cost variations.</p> <p>TND scenarios designed according to Smart Growth and New Urbanist principles with smaller lot sizes, compact urban form, a variety of multi-unit housing types, and a mix of land uses results in infrastructure systems that serve more development in proportion to their cost to construct. In comparison, typical lower density Conventional Suburban Development (CSD) alternatives require far-reaching infrastructure systems to serve lower-density development, with higher costs to build. The case studies showed a clear reduction in infrastructure costs for scenarios with higher density.</p>

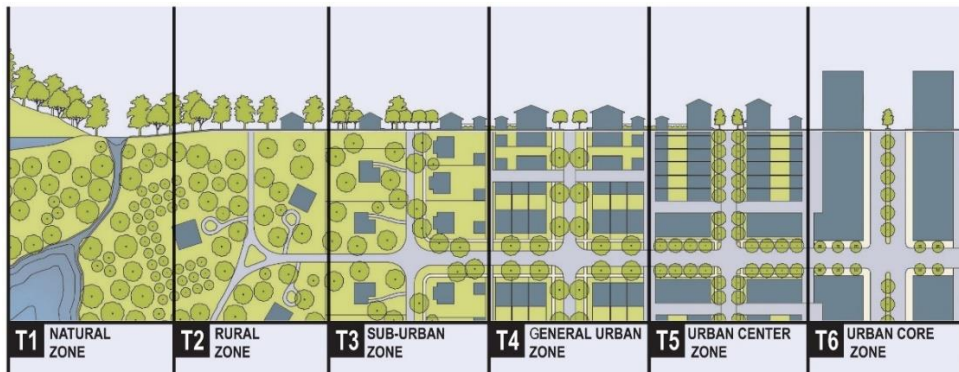
<p>Servicing Programs</p>	<p>Although numerous TND (high density) and CSD (low density) case study examples were evaluated, the following three direct comparisons were selected for presentation in the report to isolate the effects of specific development variables:</p> <ul style="list-style-type: none"> <li>• Belle Hall TND A vs. Belle Hall Large-Lot CSD B Using the same development program, a comparison of TND vs. Large-Lot sprawl.</li> <li>• Belle Hall TND D vs. Belle Hall Smaller Lot Buildout CSD E Using the same development program, a comparison of transit supportive TND vs. CSD using smaller residential lot sizes comparable to that of TND.</li> <li>• Dove Valley Ranch TND vs. Dove Valley Ranch CSD A comparison of built CSD single-family residential with a hypothetical TND demonstrating the land’s potential.</li> </ul> <p>To directly compare development scenarios with different development build-out, the results were divided by the scenario’s number of residential units to provide per-unit metrics. Infrastructure serving mixed-use areas of the Belle Hall and Dove Valley Ranch TND scenarios was counted as residential infrastructure so as not to unfairly benefit TND scenarios in the comparisons. Therefore, commercial development above residential can be considered a TND ‘bonus’ where the same infrastructure serves multiple uses.</p>														
<p>Costs per Unit</p>	<p>The bottom line results of the comparative infrastructure cost study are illustrated in the table. The variables discussed in the report including density, urban form, and impervious area led to a clear cost savings for TND infrastructure when compared with that of CSD.</p>  <table border="1"> <caption>Infrastructure Cost per Unit</caption> <thead> <tr> <th>Scenario</th> <th>Cost per Unit (\$)</th> </tr> </thead> <tbody> <tr> <td>BH TND "A"</td> <td>33,000</td> </tr> <tr> <td>BH Large-Lot CSD "B"</td> <td>51,000</td> </tr> <tr> <td>BH Transit TND "D"</td> <td>20,000</td> </tr> <tr> <td>BH Smaller-Lot Buildout CSD "E"</td> <td>28,000</td> </tr> <tr> <td>DVR TND</td> <td>25,000</td> </tr> <tr> <td>DVR CSD</td> <td>48,000</td> </tr> </tbody> </table>	Scenario	Cost per Unit (\$)	BH TND "A"	33,000	BH Large-Lot CSD "B"	51,000	BH Transit TND "D"	20,000	BH Smaller-Lot Buildout CSD "E"	28,000	DVR TND	25,000	DVR CSD	48,000
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DVR TND	25,000														
DVR CSD	48,000														
<p>Key Findings</p>	<p>When comparing CSD (low density) scenarios to alternative TND (high density) designs, the study found that infrastructure costs for the TND scenarios were consistently less than CSD. Reductions in infrastructure costs due to TND development patterns ranged from 32% to 47%, with the extent of TND cost savings based principally on density.</p>														
<p>Source</p>	<p>‘Smart Growth &amp; Conventional Suburban Development: An infrastructure case study’, completed for the EPA, 2010.</p>														

## Appendix C: Residential Typologies and Attributes

### Rural to Urban Transect 'Zones'

The rural to urban 'transect' is a tool used to analyze and categorize community form and character. The transect is divided into six 'zones' based on intensity of the built environment and physical characteristics and other attributes. Certain forms and elements belong in certain environments. As transect zones become more urban, they also increase in complexity, density, and intensity.

This transect is illustrated in the below figure<sup>31</sup>, from T2 Rural Zone (with very low density residential, in the form of single-detached houses on large estate lots), to T5 Urban Centre Zone (with multi-unit residential ranging from stacked townhouses to apartment towers). As depicted, the road network, amount of green space, and other infrastructure and amenity attributes also vary along this spectrum.



These six transects / zones are described in greater detail as follows<sup>32</sup>. For the purpose of this servicing cost study, the residential typologies used for analysis are in the T3 to T5 range<sup>33</sup>.

- **T-1: The natural zone**, is an area with little or no human impact consisting of lands approximating or reverting to a wilderness condition. This includes lands unsuitable for development due to hydrology, topography, vegetation, or special and unique areas such as protected areas like a park, environmentally-sensitive areas, etc.
- **T-2: The rural zone**, comprises sparsely settled lands in a cultivated or open state. Often they are made up of woodlands, agricultural lands and grasslands. The typical building located in this zone would be farmhouses, agricultural buildings, large estate style homes, and cabins or other isolated housing types.
- **T-3: The sub-urban zone**, consists of low density residential areas. Setbacks are relatively wide and plantings are natural in character. There is some mixed uses but primarily in areas adjacent to higher transect zones. Blocks are large and roads can be irregular to accommodate the natural features.
- **T-4: The general urban zone**, consists of mixed uses but primarily residential urban fabric. A wide variety of attached and detached housing types are found in this zone. Setbacks and landscaping are variable. Streets with curbs and sidewalks define the small to medium sized blocks, and street connectivity is high with storm sewers and urban servicing such as water and sewer.
- **T-5: The urban centre zone**, comprises higher density mixed uses that provide for retail offices, and a range of housing types including rowhouses and apartments. Setbacks are minimal and buildings

<sup>31</sup> [https://transect.org/rural\\_img.html](https://transect.org/rural_img.html)

<sup>32</sup> [https://www.canr.msu.edu/news/where\\_are\\_you\\_located\\_on\\_the\\_transect](https://www.canr.msu.edu/news/where_are_you_located_on_the_transect)

<sup>33</sup> [https://www.canr.msu.edu/news/understanding\\_the\\_urban\\_transect](https://www.canr.msu.edu/news/understanding_the_urban_transect)



are close to the sidewalks, which are wide. There is a fine-grained street network forming small blocks and high connectivity and intersection density. The urban centre is often the location of traditional mixed-use downtowns in many North American cities.

- **T-6: The urban core zone**, consists of the highest density and building height with the highest intensity and diversity of land uses. Buildings are sited on the sidewalk, which are wide and there is good street connectivity. The largest cities tend to have such an urban core area(s).

Outside of urban core areas, ground-oriented housing forms can range from semi-detached or duplex houses, to multiplexes, to townhouses to low rise apartment buildings, often referred to as ‘missing middle’ housing.<sup>34</sup> Missing middle housing is a range of multi-unit or clustered housing types, compatible in scale with single-detached homes, that help meet the demand for walkable urban living, and meet the need for more housing choices at different price points.

On the left-hand side of the figure below are single-detached homes.<sup>35</sup> The suburban growth in North American cities has primarily been dominated by these housing types since the 1940s. Towards the right-hand side of the figure is the other end of the form / density spectrum with large, five-to-seven-plus floor, multi-unit apartment, strata, or mixed-use buildings.



### Residential Typology by Tenure<sup>36</sup>

In addition to building form, typology of units can also consider different tenures, including above and below market rental, fee simple (ownership), and other forms.

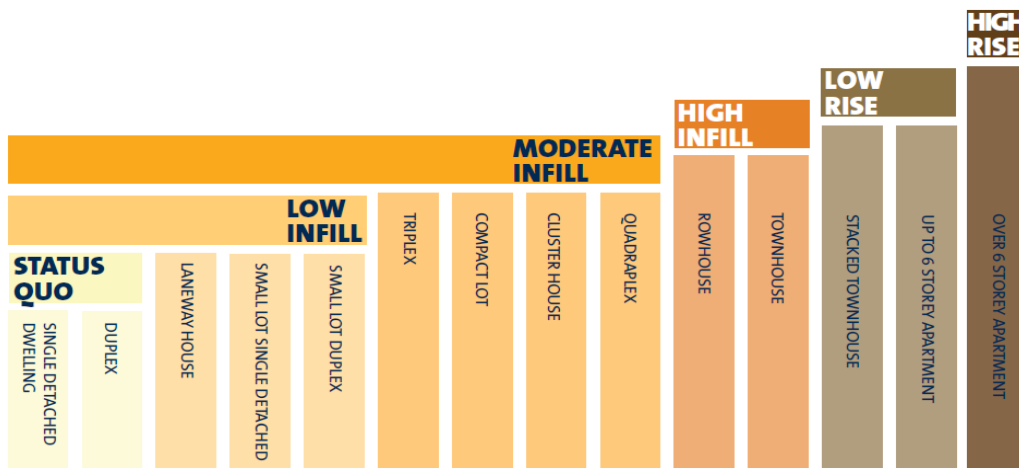
<sup>34</sup> Missing Middle Housing: Thinking Big and Building Small to Respond to Today’s Housing Crisis, Daniel G. Parolek, 2020. <https://missingmiddlehousing.com>

<sup>35</sup> Missing Middle Housing: Thinking Big and Building Small to Respond to Today’s Housing Crisis, Daniel G. Parolek, 2020. <https://missingmiddlehousing.com>

<sup>36</sup> City of New Westminster.



There can be a relationship between building form and housing tenure. Generally single-detached houses and townhouses are owner-occupied, while many apartments are either renter or strata owner occupied. This is conceptually shown in both the above and below figures. For the purposes of this servicing cost study, only built form, not tenure or affordability, is considered in the analysis.



### Defining Typologies and Terms – Additional Considerations and Attributes

Land use patterns can generally be defined and evaluated based on the following attributes<sup>37</sup>:

- Density – the number of people, jobs, or housing units over an area.
- Clustering – whether related destinations are located close together (e.g., commercial centres, residential clusters, urban villages).
- Land Use Mix – whether different land use types (commercial, residential, etc.) are located together or in close proximity.
- Connectivity – the number of connections within the street and pedestrian / cycling networks, with a high intersection density.
- Impervious surface – land covered by buildings and pavement, also called the footprint, which creates rain runoff that must be managed.
- Greenspace – the portion of land used for lawns, gardens, parks, woodlands and other natural spaces.
- Accessibility – the ability to reach desired activities and destinations.
- Non-motorized accessibility – the quality and connectivity / completeness of walking, cycling, and rolling infrastructure.

<sup>37</sup> Evaluating Transportation Land Use Impacts, Victoria Transport Policy Institute, Todd Litman, 2022.

Land use attributes can be evaluated at various scales<sup>38</sup>:

- Site – an individual parcel, building, facility or campus.
- Street – the buildings and facilities along a particular street or stretch of roadway.
- Neighbourhood or centre – a walkable area, that is typically defined by unique use or building forms, often with a commercial centre or node.
- Local community – a small geographic area, often consisting of several neighbourhoods that share a defining geographic, historical, or landform characteristic.
- Municipal – a town or city jurisdiction.
- Region – a geographic area where residents share services and employment options. A metropolitan area typically consists of one or more cities and various suburban areas, smaller commercial centres, and surrounding semi-rural areas that share large public, commercial, and industrial infrastructure.

Geographic areas can be categorized in the following ways<sup>39</sup>:

- Village – a small urban settlement (generally less than 10,000 residents).
- Town – a medium size urban settlement (generally less than 50,000 residents).
- City – a large settlement (generally more than 50,000 residents).
- Metropolitan region or metropolis – a large urban region (generally more than 500,000 residents) that usually consists of one or more large cities, and various smaller peripheral cities and towns, which development pattern is considered ‘polycentric’.
- Urban – relatively high densities (25+ residents and 15+ housing units per hectare), with: mixed-use development forms; employment / commerce and institutional / education centres; shared public infrastructure such as water, sewer, garbage collection; and a multi-modal transportation system.
- Suburban – medium densities (8-20 residents and 3-15 housing units per hectare), separated, homogenous land uses, and an automobile-oriented transportation system.
- Central business district – the main commercial centre in a town or city.
- Exurban – low densities (less than 6 residents or 2 housing units per hectare), primarily estate-style detached homes, rural landscapes and undeveloped lands, located peripheral and near enough to an urban area that exurban residents often commute, shop and use urban services there.
- Rural – very low densities (less than 6 residents or 2 housing unit per hectare), primarily farms and undeveloped lands.

There are often debates about the different development patterns and characteristics of ‘urban sprawl’ and ‘smart growth’ and how they should be measured. The following table compares different development patterns, generally termed urban sprawl and smart growth (or compact development)<sup>40</sup>.

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<sup>38</sup> Evaluating Transportation Land Use Impacts, Victoria Transport Policy Institute, Todd Litman, 2022.

<sup>39</sup> Evaluating Transportation Land Use Impacts, Victoria Transport Policy Institute, Todd Litman, 2022.

<sup>40</sup> Evaluating Transportation Land Use Impacts, Victoria Transport Policy Institute, Todd Litman, 2022.

Attribute	Sprawl	Smart Growth
Density	Lower-density	Higher-density.
Growth pattern	Urban periphery (greenfield) development.	Infill (brownfield) development.
Activity Location	Commercial and institutional activities are dispersed.	Commercial and institutional activities are concentrated into centers and downtowns.
Land use mix	Homogeneous land uses.	Mixed land use.
Scale	Large scale. Larger buildings, blocks, wide roads. Less detail, since people experience the landscape at a distance, as motorists.	Human scale. Smaller buildings, blocks and roads, care to design details for pedestrians.
Transportation	Automobile-oriented transportation, poorly suited for walking, cycling and transit.	Multi-modal transportation that support walking, cycling and public transit use.
Street design	Streets designed to maximize motor vehicle traffic volume and speed.	Streets designed to accommodate a variety of activities. Traffic calming.
Planning process	Unplanned, with little coordination between jurisdictions and stakeholders.	Planned and coordinated between jurisdictions and stakeholders.
Public space	Emphasis on the private realm (yards, shopping malls, gated communities, private clubs).	Emphasis on the public realm (streetscapes, sidewalks, public parks, public facilities).

### Land Use Patterns

Additional considerations associated with varied development forms and densities also include the amount of land devoted to roads and housing in cities. The following figures illustrate some planning objectives and considerations when arranging land uses and patterns as part of a municipal or regional structure, and the relationships between different uses, and associated attributes, what can and cannot be measured. The figures also show typical amounts of land used for different functions in a city, as well as how both the amount of road area and the design of road network can vary. Notably, suburban areas may have proportionally less land devoted to roads, yet are still auto-centric. Furthermore, the amount of space devoted for commercial uses tends to be higher in urban centres, which also have mixed uses and higher densities for all land uses, which can better sustain public transit systems.

The following four figures show conceptual considerations when arranging land uses and city or region scale land use framework.

# Land Use Patterns

- Land requirements for different purposes
- Hierarchy / structure / distribution of functions / uses at different scales, examples:
  - Live close to work
  - Amenities close to homes
  - Industry close to transportation
  - Stores close to customers

**Evolution of uses /  
patterns over time**



---

## Relationships Between Land Uses

- Defining and Measuring Uses:
  - **Type** - what is it
  - **Amount** - how much
  - **Intensity / density** - measures
  - **Location / proximity** - access
- Interactions – adjacency / linkages / transport
- Impacts / implications – complement / conflict

# Typical Municipal Forms

## Urban Function (% land):

- Residential – 51%
- Commercial – 3%
- Industrial – 8%
- Institutional – 8%
- Transport./Utility – 5%
- Rec./Open Space – 5%
- Streets – 20%

## Travel Times:

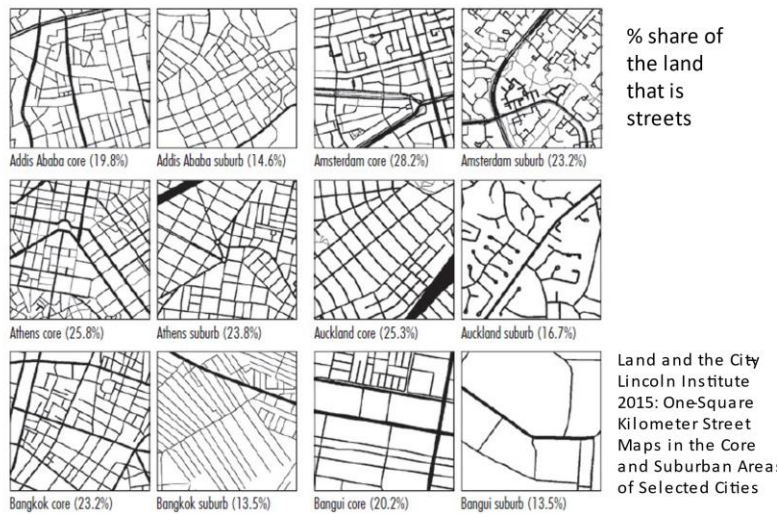
- Work – 20-30 min.
- CBD – 30-45 min.
- Local shopping – 10 min.
- School – 5-10 min.
- Major parks – 30-45 min.



Note: Approximate / typical amounts

## Road Networks and Land Use Patterns

### *Different Designs and Different Issues*



## Calculating Residential Densities

For analysis purposes, residential density in the form of units per hectare is a key component of the density for the typologies used in this servicing cost study. The below figures show the difference between gross land areas and land net land areas, which must be considered when calculating and comparing development densities and urban form.

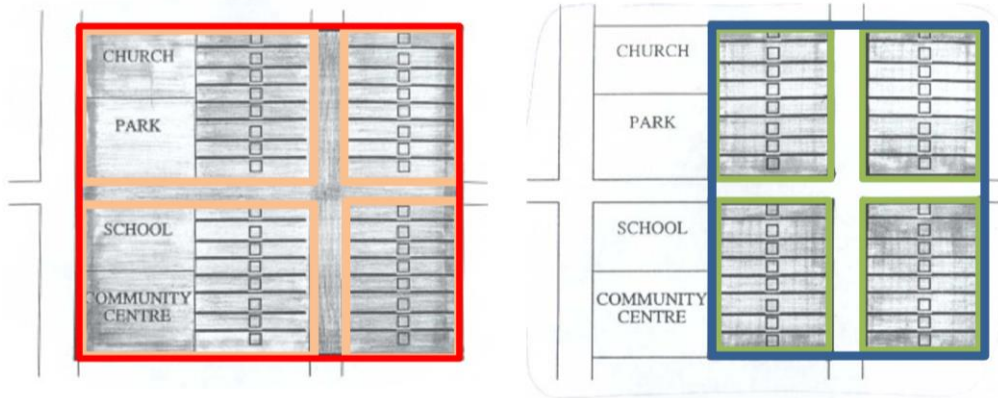
# Calculating Density (Site Area)

- Gross Density / Net Density
- Site Area:
  - Gross Area (total site)
  - Net Developable Area (excl. non -develop. areas)
  - Net Saleable Area (excl. also road dedications)
- Calculating Density: Units and Floor Area

## Site Area: Gross / Net Land

**Gross:** includes all lands  
(roads, parks, enviro)

**Net:** remaining subdivided  
parcels of land (lots)



The figures below show how to calculate density (shown as units per acre in the figure), by dividing the number of units (which should be clearly defined; for example, consistently including or excluding secondary suites in houses) by the amount of land area, and associated built form.

# Calculating Density (Units)

- Density ratio = amount of use (number of units) divided by amount of area (ac or ha of land)
- Different measures:
  - Number of 'Units' – housing, residents, jobs, etc
  - Units per Acre ( upa) or Units per Hectare ( uph)
  - Ex. Number of houses per acre of land

$$\text{UPA} = \frac{\text{Number of Units}}{\text{Land Area Acres}}$$

# Housing Forms and Densities

.... 1 upa to 100 upa ....



## Visualizing Density<sup>41</sup>

The Visualizing Density: The Density Catalog helps define both the physical qualities and numerical measures of development density and urban form. While density may vary or be the same, the design and desirability of neighbourhoods may vary. Notably, it is not development density that makes a neighbourhood appealing or unattractive, but rather the built and urban form, e.g., the street layout,

<sup>41</sup> Visualizing Density: The Density Catalog, Lincoln Institute of Land Policy, Julie Campoli, Alex S. MacLean, 2007.



the arrangement of buildings, the quality of architecture and building design, and use of landscaping and open space.

*Density is easy to calculate. Divide the number of persons by the number of square [kilometres], or the number of housing units by the number of [hectares], and you will know the [gross] density of a given area.*

*But, although measuring density is a rational process, our perception of density is neither rational nor quantifiable. What does a place look like? How does it feel to be there? These qualitative factors, not numbers, determine how we perceive density.*

*We react to the physical environment, which can be shaped in countless ways. How we arrange the streets, buildings, and open spaces of cities and neighbourhoods affects the perception, or feeling, of density.<sup>42</sup>*

Below are some residential density / form examples from the Visualizing Density catalog, from very low to very high densities. These were used to create and inform the typologies for this study.

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<sup>42</sup> Visualizing Density: The Density Catalog, Lincoln Institute of Land Policy, Julie Campoli, Alex S. MacLean, 2007.

**4 UNITS PER ACRE**



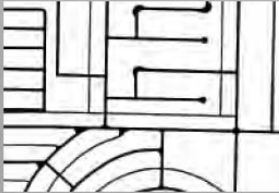
Delano, CA 4.0 units / acre



context



neighborhood plan



street pattern



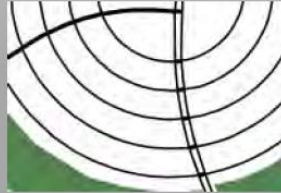
Sun City, AZ 4.1 units / acre



context



neighborhood plan



street pattern



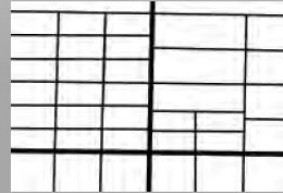
Buckeye, AZ 4.1 units / acre



context



neighborhood plan



street pattern

**MORE THAN 100 UNITS PER ACRE**



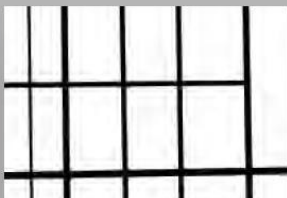
Seattle, WA 100.1 units / acre



context



neighborhood plan



street pattern



Las Vegas, NV 104.8 units / acre



context



neighborhood plan



street pattern



New York, NY 112.2 units / acre



context



neighborhood plan



street pattern



The following figures show the other quantifiable attributes associated with a range of residential densities and forms, noting the number of units and residents (and jobs, if applicable).<sup>43</sup>

	TYPE	NET DENSITY	FORM			UNITS	PEOPLE	JOBS
GROUND-ORIENTED RESIDENTIAL	SINGLE FAMILY REAR GARAGE	20 <sub>appt</sub> (8 appt)				1 <sub>unit</sub>	3 <sub>people</sub>	0 <sub>jobs</sub>
	SINGLE FAMILY NARROW LOT	30 <sub>appt</sub> (12 appt)				1 <sub>unit</sub>	3 <sub>people</sub>	0 <sub>jobs</sub>
	SINGLE FAMILY REAR GARAGE AND ACCESSORY UNIT	40 <sub>appt</sub> (16 appt)				2 <sub>units</sub>	5 <sub>people</sub>	0 <sub>jobs</sub>
	5-6M ROWHOUSE	50 <sub>appt</sub> (20 appt)				1 <sub>unit</sub>	3 <sub>people</sub>	0 <sub>jobs</sub>
	5M ROWHOUSE	60 <sub>appt</sub> (24 appt)				1 <sub>unit</sub>	3 <sub>people</sub>	0 <sub>jobs</sub>
	4.5M ROWHOUSE	70 <sub>appt</sub> (28 appt)				1 <sub>unit</sub>	3 <sub>people</sub>	0 <sub>jobs</sub>
	LOW-RISE, 2-STORY STACKED APARTMENTS	80 <sub>appt</sub> (32 appt)				16 <sub>units</sub>	32 <sub>people</sub>	0 <sub>jobs</sub>
STACKED RESIDENTIAL	LOW-RISE, 3-STORY STACKED APARTMENTS	115 <sub>appt</sub> (46 appt)				23 <sub>units</sub>	46 <sub>people</sub>	0 <sub>jobs</sub>
	LOW-RISE, 4-STORY STACKED APARTMENTS	115 <sub>appt</sub> (46 appt)				23 <sub>units</sub>	46 <sub>people</sub>	0 <sub>jobs</sub>
	LOW-RISE, 4-STORY STACKED APARTMENTS	195 <sub>appt</sub> (78 appt)				39 <sub>units</sub>	78 <sub>people</sub>	0 <sub>jobs</sub>
	LOW-RISE, 5-STORY STACKED APARTMENTS	195 <sub>appt</sub> (78 appt)				39 <sub>units</sub>	78 <sub>people</sub>	0 <sub>jobs</sub>
	MID-RISE, 7-STORY STACKED APARTMENTS	195 <sub>appt</sub> (78 appt)				39 <sub>units</sub>	78 <sub>people</sub>	0 <sub>jobs</sub>
	MID-RISE RESIDENTIAL TOWER	330 <sub>appt</sub> (132 appt)				65 <sub>units</sub>	130 <sub>people</sub>	30 <sub>jobs</sub>

<sup>43</sup> UBC Design Centre for Sustainability.

## Appendix D: Cost Estimate Studies

Literature on sprawl is much related to capital and operating costs, both public and private. Public capital and operating costs usually refer to roads, water and sewer infrastructure, and public buildings, as well as annual expenditures to maintain them. Private capital and operating costs refer to the construction and occupancy costs of private housing and how metropolitan location and the density and form of development might cause them to vary. The following text is extracted from the referenced publications, providing key findings from the literature review.

### Literature Review of the Costs of Infrastructure Provision for Different Development Forms<sup>44</sup>

All linear infrastructure like roads, transit, water and wastewater distribution and collection network and electricity distribution lines, needs to extend to service new areas as a city undergoes physical expansion. Most cities have response time goals for emergency services like ambulance or fire protection, which require additional medical centres / fire stations and vehicles to be located in new growth areas and ongoing improvements to infrastructure to be able to reach a target within the designated response time. The same is true for schools, which are planned based on maximum travel distances by walk and school bus for students to access the school safely, as well as a target teacher to student ratio. Police infrastructure is generally based on staffing ratio for police officers to residents as well as emergency response time goals, which relate the service planning to both population and city growth. Minimum population standards are set for providing parks and open spaces, which tend to be related to population growth and spatial distribution, but they impact urban form as more land is converted to urban uses.

The most dominating development forms for managing growth discussed in all studies are the high-density centralized or clustered development, and the low-density dispersed development. The former compact urban form is also referred to as ‘Smart Growth’ or ‘Infill’ development and the latter is referred to as ‘Urban Sprawl’ or ‘Greenfield’ development. This report discusses the impact of the individual features (like density and dispersion) of these two alternative development settings on infrastructure and development costs. The basic four dimensions of urban sprawl and their related urban characteristics have been defined in a seminal report. These urban form features are the most critical factors defining alternative development settings.

**Table 1. Urban form factors of sprawl. Source: Ewing et al. (2002)**

Sprawl dimension	Urban form factors
A population that is widely dispersed in low-density development	Residential density
Rigidly separated homes, shops, and workplaces	Neighborhood mix of homes, jobs, and services
A network of roads marked by huge blocks and poor access;	Accessibility of the street network
A lack of well-defined, thriving activity centers, such as downtowns and town centers	Strength of activity centers and downtowns

Development cost is a function of land costs, infrastructure costs and structure costs, which eventually influence the final cost of dwelling units. Out of these, infrastructure costs are typically of the highest concern to local governments and authorities. However, analyzing costs of infrastructure provision for

<sup>44</sup> Literature Review of the Costs of Infrastructure Provision for Different Development Forms, University of Toronto Transportation Research Institute, Shivani Ragma, Dena Kasraian, Eric J Millers, 2019.

different development settings is challenging due to variations in urban contexts of cities, socio-demographic differences as well as varying record keeping and accounting practices.

The common major factors influencing infrastructure asset project costs and service delivery costs are listed and described briefly below.

Cost factors affected by the development setting:

- Urban form: population size, density, lot size and shape, location of development, dispersion of development, housing typology, and street network pattern.
- Site conditions / topography: geographical location, space availability and transportation access, slopes.
- Utility capacity utilization: catchment of existing infrastructure and the level of augmentation required is an important location specific factor affecting costs, especially in infill areas.
- Proximity to service areas: distance of a new development from existing utility plants and trunk infrastructure.

Other cost factors:

- Technological change: Infrastructure materials, construction methods and service delivery technology have largely been the same for decades, but there have been design and efficiency improvements in capacity planning and equipment specifications. It is difficult to account for these differences when comparing cost estimates.
- Factor price measures: costs for design and engineering, technical specifications, vertical construction, equipment redundancy, price premiums, market demands, labour factors and many other local area market factors.
- Demographics: age distribution, household size, etc.
- Service delivery standards: per capita service level goal.

Serving large populations may offer a cost advantage from economies of scale, although empirical evidence is mixed about whether scale economies in infrastructure delivery exist, and suggests that it depends on the type of infrastructure service. Generally, services with large capital inputs capture economies of scale in production, like a treatment plant of a given capacity can treat additional water at low marginal costs, allowing for periodic increases in serviced population. However, low per unit costs of treatment may be offset by the higher per capita cost of water distribution, if the population is distributed over a large geographic area.

In terms of drinking water servicing, increasing distance from the source of raw water increases the cost of distribution (i.e., extensive pipeline network and numerous water storage towers) as well as the operational costs of pumping water through the system. Residential density and distance to treatment plants have a significant impact on the costs of 'hard' infrastructure-based services. Distribution infrastructure is much more compact and efficient for a dense development consisting of high-rise towers built in a small area, producing cost savings.

In other words, low density developments are spread over a large area, resulting in high capital costs for linear infrastructure for all capital-intensive hard infrastructure like water, sewerage and stormwater drainage as well as roads and rail-based transit systems. Similarly, each additional kilometre of road or pipeline results in additional maintenance costs over time.

However, costs for labour-intensive services like fire-fighting and education services (i.e., the number of schools / classrooms / teachers) tend to increase with population size and density, because these have a fixed ratio of personnel to serviced population.

While high density development can reduce the cost of producing services (on a per unit basis), it does tend to increase the overall cost due to increase in total demand for services. Thus, effects of density on costs of providing community services cannot be generalized as scale economies are complex and service-specific.

Researchers have suggested designing separate cost-minimizing service-specific districts for infrastructure elements such as water, sewerage, fire protection and schools, to capture scale and size economies for a given residential population and density. This strategy may not be a practical solution however due to differing size jurisdictions for the different services.

Another noteworthy finding is that the majority of cost savings associated with high-density compact developments are made in the user-pay component of infrastructure (i.e., service delivery charges). For example, existing rail-based transit station areas are excellent opportunities for infill transit-oriented developments (TOD) with shared public-private infrastructure costs. TODs create dense, walkable, mixed-use centres of activity and are an essential Smart Growth strategy.

The primary development settings for urban growth include high-density, mixed-use, clustered infill development (Smart Growth) within inner city areas and low-density, dispersed greenfield developments (Urban Sprawl) in fringe areas. These different development patterns are illustrated in the figure below. Compact growth through infill developments instead of fringe growth reduces per-capita land consumption and saves on costs of new land development, building new roads, and extending and maintaining underground linear utilities.



Fig. 3.a.

Fig. 3.b.

**Figure 3.a-b. Comparison of alternative development forms (Conventional suburban development or Sprawl vs. Traditional neighborhood development or Smart Growth). Source: Ford, 2009.**

Infill and intensification of development is generally recognized as having lower infrastructure costs due to the opportunity for developers to utilize servicing capacity within existing infrastructure systems, provided that spare capacity exists. Several studies have established that municipal infrastructure and service delivery costs tend to decline with increased density achieved by infill developments relative to that of greenfield expansion.

If development cost charges are applied as location-specific and reflect the full costs and benefits of development, then developers and public sector decision makers will be incentivized to make more efficient location choices for new development.

Comparing infrastructure costs for different development settings and locations in a metropolitan region can be complex, due to the sharing of costs across municipal boundaries, a lack of long-term data availability, variable units of analysis, cost components, recording methods and their interpretations, and different local contexts. Despite these challenges, the common significant cost factors for infrastructure provision have been identified and some conclusions can be drawn about the effects of two principal alternative development forms on infrastructure costs: high-density infill redevelopment and low-density urban sprawl, greenfield development.

These findings indicate that density and location are the major determinants of infrastructure costs in a metropolitan region. Infrastructure costs are found to be inversely related to density. However, density-related savings from economies of scale are scale and service-specific, that is savings may be captured in production (e.g., a water or sewage treatment plant) but additional demand may or may not result in distribution savings as distribution infrastructure depends on the form and density of development (e.g., compact or dispersed).

Another important trend observed in infrastructure costs varying by urban density is that cost savings may be subject to diminishing returns and decline at very high densities in urban areas. This is in part due to the negative effects of overcrowding, and access constraints and saturation / over use of existing infrastructure capacity in the area. Density benefits need to be combined with spatial factors (i.e., distance from a city centre and from existing infrastructure) to capture cost savings in existing infrastructure. Scale and size economies can be exploited by creating separate cost-minimizing service districts for different infrastructure services. Cost analysis may be conducted for a single infrastructure service at a given time, as it is easier to determine appropriate input and output measures for designing optimum-sized service districts.

Similarly, neighbourhood design and street patterns can affect the costs of linear infrastructure. Mixed housing neighbourhoods based on a grid street pattern, as opposed to curvilinear or cul-de-sac based suburban streets, tend to be the most efficient and cost effective for infrastructure service delivery.

Policies supporting the redevelopment of land in urban areas in the form of infill redevelopments, are needed as providing and maintaining new infrastructure for greenfield developments is fiscally challenging for local governments, especially in the absence of the true pricing of infrastructure costs of development. Moreover, Smart Growth savings from compact, mixed-use and more accessible land use patterns extend beyond municipal government costs to savings for other stakeholders like private sector utilities, school districts, other levels of government, businesses and consumers.

### **Addressing the Fairness of Municipal User Fee Policy<sup>45</sup>**

User fees fund some or all of the costs of a range of municipal services in Canada. These include water supply, sewers, solid waste collection and disposal, public recreation, public transit, and parking, as well as some social services. Fees can range from fixed charges that are unrelated to consumption levels, to charges that vary directly with quantity consumed, to a mix of fixed and variable charges, and may cover

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<sup>45</sup> Addressing the Fairness of Municipal User Fee Policy, Institute on Municipal Finance and Governance, Almos Taassonyi, Harry Kitchen, 2021.

all or only a portion of production and delivery costs.

Decisions about pricing structures and the proportion of costs recovered from user fees depend on considerations such as the type of service, the preferences of residents, and the willingness of local officials to substitute fees for local taxes. Furthermore, in two-tier local governing structures, the importance of user fees in the overall revenue mix is determined by the distribution of functional jurisdiction.

The current design of fees is based largely on the principle of ‘benefits-received’ and addresses ways in which the fee policy could be modified to take the ‘ability-to-pay’ criterion of property tax and fee design into account. Put simply, the benefits-received principle is that “the costs of providing a good or service are borne as directly as possible by those benefiting from them”. The ability-to-pay criterion suggests that those with higher incomes should bear a greater proportion of the cost of providing a good or service.

From an economist’s perspective, user fees should be adopted whenever and wherever possible. They are ideal for funding services for which specific beneficiaries can be identified, non-users can be excluded, and the quantity of service consumed can be measured. These are services such as water, sewers, solid waste collection and disposal, and public transit.

User fees may be less appropriate in the funding of services with certain public good characteristics, i.e., services for which it is difficult or more costly to exclude individuals from using a service and there is a broader benefit to a community. Examples include local roads, and neighbourhood and community parks. Inefficiently set user fees can lead to overinvestment and larger facilities than would be justified if more efficient pricing practices were adopted.

Growing concerns over municipal fiscal sustainability and increasing pressure on the property tax base have highlighted the importance of examining where user fees might be used and how they should be structured to ensure that resources are not wasted or applied in an unfair and inequitable manner.

### **Building Better Budgets: A National Examination of the Fiscal Benefits of Smart Growth Development<sup>46</sup>**

The report surveys 17 studies that compare different development scenarios. The development scenarios are separated into two categories:

- ‘Smart Growth development’ is characterized by more efficient use of land; a mixture of homes, businesses and services located closer together, and better connections between streets and neighbourhoods; and
- “Conventional suburban development” is characterized by less efficient use of land with homes, schools and businesses separated and areas designed primarily for driving.

When compared to one another, findings indicate:

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<sup>46</sup> Building Better Budgets: A National Examination of the Fiscal Benefits of Smart Growth Development, Smart Growth America, 2013.



### *1. In General, Smart Growth Development Costs One-Third Less for Upfront Infrastructure.*

Smart Growth development saves an average of 38% on upfront costs for new construction of roads, sewers, water lines and other infrastructure. Many studies have concluded that this number can be as high as 50%.

Smart Growth development patterns require less infrastructure, meaning upfront capital costs, long-term operations and maintenance costs, and, presumably, cost for eventual replacement are all lower. Smart Growth development also often uses existing infrastructure, lowering upfront capital costs even more.

All development requires infrastructure to support and supply it. The studies included in this report primarily refer to roads, water lines and sewer lines, which account for most of the infrastructure cost associated with new development. Smart Growth development patterns require less infrastructure, meaning upfront capital costs, operations, maintenance and, presumably, cost for eventual replacement are all lower. Smart Growth development also often reuses and increases the use of existing infrastructure, lowering the upfront capital costs even more.

The survey determined one-third savings in upfront infrastructure costs by compiling the estimated savings from case studies considering infrastructure costs. The case studies compared urban and suburban growth between a Smart Growth and a conventional suburban development; the fiscal impacts of rural development scenarios were excluded because their geographic differences produced significantly higher savings.

### *2. Smart Growth Development Saves an Average of 10% on Ongoing Delivery of Services.*

Smart Growth development saves municipalities an average of 10% on police, ambulance and fire service costs.

The geographic configuration of a community and the way streets are connected significantly affect public service delivery. Smart Growth patterns can reduce costs simply by reducing the distances service vehicles must drive. In some cases, the actual number of vehicles and facilities can also be reduced along with the personnel required.

Many public services are sensitive to a community's pattern of development. The configuration of a community and the way it is connected geographically profoundly affects service delivery.

The survey determined an average of 10% savings in service delivery costs by compiling the estimated savings from case studies considering service costs. Services considered across studies were not consistent, and levels of service and economic conditions vary. However, all case studies consistently demonstrated a cost reduction in delivery of services examined when pursuing Smart Growth development. The overall savings figure is a conservative, rough average of savings reflective of available data.

### *3. Smart Growth Development Generates 10 Times More Tax Revenue per Acre than Conventional Suburban Development.*

On an average per-acre basis, Smart Growth development produces 10 times more tax revenue than conventional suburban development.

Tax revenue, typically refers to property taxes and sales taxes, and in some instances licensing fees and other small sources of revenue. Property tax in particular is an extremely important source of revenue for most communities. In a 2010 U.S. Census survey of local government budgets nationwide, 48% of revenue from municipalities' own sources came from property taxes, and 10% came from sales taxes, though the relative importance of these taxes varies across the country.

### **Relationships Between Density and per Capita Municipal Spending in the United States<sup>47</sup>**

The objective of this research was to determine the relationship between land use, particularly density, and per capita spending levels in cities across the United States for different spending categories. A model was developed using data for 2012–2016 from the U.S. Census Bureau's Annual Survey of State and Local Government Finances. This data source provides individual city spending levels for several different spending categories.

This study focused on municipal spending for eight categories that theoretically could be influenced by land use development: fire protection, streets and highways, libraries, parks and recreation, police, sewer, solid waste management, and water. Results from the model show how density and other independent variables are associated with per capita municipal expenditures.

Density was found to be negatively associated with per capita municipal expenditures for the following cost categories: operational costs for fire protection, streets and highways, parks and recreation, sewer, solid waste management, and water; construction costs for streets and highways, parks and recreation, sewer, and water; and land and existing facility costs for police, sewer, and water. Results were insignificant for other cost categories, and a positive relationship was found for police operations costs. In general, results support the conclusion that increased density is associated with reduced per capita municipal spending for several cost categories.

Lower density, auto-oriented developments require more infrastructure per capita than do more compact developments. Sprawling cities have more kilometres of streets and water and sewer pipes per person to maintain, and services such as trash collection and fire and police protection have a greater distance to cover per person. This can result in an increase in per capita infrastructure, maintenance, and service costs for cities. More compact developments can lead to cost savings through economies of scale and economies of geographic scope. Economies of scale are exhibited when the marginal cost of providing services to each additional person decreases as more residents cluster within a smaller geographic area. Economies of geographic scope are found when the marginal cost decreases as each person locates more closely to existing major public facilities.

Urban sprawl was defined as including non-contiguous development, larger lot sizes, and lower floor-to-area ratios for non-residential development. Smart Growth was described as more compact and concentrated around existing urban centres, limiting peripheral developments and reducing the need for new infrastructure. Results showed the substantial savings for water and sewer infrastructure, road infrastructure, and local public service costs that would result by pursuing Smart Growth development instead of conventional sprawl.

The following table illustrates the per capital municipal spending by budget line item.

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<sup>47</sup> Relationships between Density and per Capita Municipal Spending in the United States, Upper Great Plains Transportation Institute, Jeremy Mattson, 2021.

**Table 1.** Per capita municipal spending data, cities with population greater than 25,000.

Spending Category	N	Mean	Median	Standard Deviation	Minimum	Maximum
dollars per capita						
<i>Operations</i>						
Fire	942	164.55	157.13	76.51	1.99	567.97
Streets/highways	994	93.32	81.06	55.15	2.64	457.33
Libraries	535	37.01	30.52	28.17	0.09	206.58
Parks and recreation	954	88.92	74.11	78.19	0.60	1331.94
Police	998	253.06	232.74	108.28	2.13	1077.97
Sewer	902	111.19	98.22	72.36	0.64	619.49
Solid waste	814	69.70	61.74	48.39	0.07	594.77
Water	826	139.48	121.39	84.71	0.12	746.93
<i>Construction</i>						
Fire	114	7.68	5.36	7.35	0.04	38.92
Streets/highways	593	87.55	67.95	77.12	0.04	578.89
Libraries	58	9.34	3.61	14.09	0.13	81.43
Parks and recreation	382	33.02	18.05	79.70	0.15	1406.53
Police	120	13.29	6.66	18.85	0.01	111.86
Sewer	418	71.92	44.14	82.96	0.02	673.67
Solid waste	68	16.43	7.14	37.77	0.09	294.83
Water	416	79.66	52.34	112.26	0.51	1356.78
<i>Land and Existing Facilities</i>						
Fire	357	7.40	5.36	7.88	0.01	53.29
Streets/highways	362	14.58	7.03	24.83	0.01	219.23
Libraries	84	3.26	1.68	4.15	0.06	24.18
Parks and recreation	373	8.84	4.41	12.44	0.06	98.39
Police	471	7.72	5.96	6.90	0.04	53.14
Sewer	222	25.95	9.17	61.91	0.13	694.14
Solid waste	138	7.84	5.58	8.23	0.03	52.17
Water	218	19.68	9.77	28.72	0.11	217.38

Developments were classified as either Smart Growth or conventional suburban. They defined Smart Growth as being characterized by more efficient use of land, greater land use mix, and better connections between streets and neighbourhoods. Conventional suburban (urban sprawl) was then defined by less efficient use of land, separated land uses, and development designed primarily for driving. Their main findings were that Smart Growth development costs about one-third less for upfront infrastructure and saves an average of 10% on ongoing delivery of services, specifically for police, ambulance, and fire.

The research is mixed, but there is some evidence that increased density and Smart Growth development patterns reduce public service expenditures for local governments (on a per capita basis). A number of studies have shown a reduction in total costs. With regard to specific services, different studies provide different results. While it may be expected that many costs would decrease with density, most studies tend to show only some cost reductions to be significant or evident. Many studies find costs decrease with density for roadways, police, and fire protection, while others show similar results for parks and recreation, libraries, or education. Fewer studies have shown reductions in costs for water, sewer, or solid waste, though this may be expected. Some costs have also been shown to increase with density, such as housing and community development or police.

Besides density, previous research has examined several other factors that can influence per capita municipal expenditures. Many studies have examined the effect of population size and whether economies of scale exist. Some research shows that smaller municipalities exhibit higher per capita costs than larger municipalities.

In the construction costs models, density is negative and statistically significant for streets / highways, parks and recreation, sewer, and water, indicating that per capita construction costs are lower in these categories as densities increase, while the relationship is insignificant for the other cost categories. In the land and existing facilities costs models, density is negative and statistically significant for police, sewer, and water, indicating that per capita land and existing facility costs are lower in these categories

as densities increase. For police costs, while the results show a positive correlation between density and operational costs, there was a negative relationship between density and land / existing facility costs.

Overall, the models clearly show a general negative relationship between density and per capita municipal expenditures for several cost categories. These results indicate that a 10% increase in density would reduce operational costs for fire protection by 1.3%, streets and highways by 2.7%, sewer by 3.1%, etc.

Median house age was positive and statistically significant in all operational cost models except for parks and recreation. This suggests older neighbourhoods require increased operational expenditures, except that parks and recreation expenditures were higher in cities with newer housing. Construction costs for streets / highways, sewer, and water were also higher in cities with older housing, everything else equal. There is some correlation between the age of a neighbourhood and density, as older neighbourhoods tend to be denser. The density contributes to lower costs, while the age of the buildings and infrastructure may contribute to higher costs.

The findings have important implications for the fiscal sustainability and resiliency of cities. By increasing population density, cities can use resources more efficiently and reduce the cost per person of constructing and maintaining infrastructure and providing services. Practices that cities can employ to achieve these outcomes include focusing on infill development, providing a diversity of housing types beyond single family homes, avoiding non-contiguous development, promoting more compact development with smaller lot sizes and multi-use buildings, and building cities at a human scale, where distances between buildings and activities are shorter. Many cities are pursuing these strategies to promote sustainability, reduce automobile use, and create more vibrant, livable communities. This research provides further evidence that these strategies also lessen the burden on taxpayers and reduce some types of municipal spending.

#### **Analysis of Public Policies that Unintentionally Encourage and Subsidize Urban Sprawl<sup>48</sup>**

These density and costing relationships are complex. Denser, infill development can increase some costs due to higher design standards and infrastructure development costs in dense areas, and sometimes brownfield remediation (cleaning up hazardous conditions such as polluted soils), but such costs are not significantly related to development density. A tall building has similar utility connection and brownfield remediation costs as a smaller building, so unit costs often decline with Smart Growth policies that allow higher densities.

Critics argue that sprawl infrastructure costs are exaggerated, citing studies which indicate that per capita government expenditures are often higher in higher-density counties, although such aggregate analyses do not account for important factors such as the tendency of rural residents to supply their own utilities and services (e.g., water, sewage and garbage collection), and incomes (which tend to be higher in larger cities), and the additional public service costs borne by urban areas which tend to contain a disproportionate share of businesses and lower income residents. In addition, such aggregate analysis, which only considers population density at a jurisdictional scale, does not accurately reflect Smart Growth policies which include other factors related to the location and type of development that occurs within a jurisdiction. Two different geographic areas can have the same overall density but differ significantly to the degree that they reflect Smart Growth principles. As a result, if evaluated at an aggregate scale, any Smart Growth public service cost savings would be negligible.

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<sup>48</sup> Analysis of Public Policies that Unintentionally Encourage and Subsidize Urban Sprawl, Victoria Transport Policy Institute, Todd Litman, 2015.

This review indicates that numerous credible studies demonstrate that sprawl typically increases the costs of providing a given level of infrastructure and public services by 10-40%, and sometimes more. These studies reflect lower-bound impacts since most only consider a subset of total public service costs and relatively modest Smart Growth policies, such as more compact single-detached development, as opposed to substantial shifts from single-detached to multi-unit housing. Comprehensive Smart Growth policies that result in greater density increases can provide even larger savings and efficiency benefits.

Some of the largest impacts result from the way that sprawl increases per capita vehicle travel, which increases transport costs including road and parking facility costs, consumer expenditures, traffic accidents and pollution emissions.

### Understanding Smart Growth Savings: Evaluating Economic Savings and Benefits of Compact Development<sup>49</sup>

Ewing and Hamidi’s 2014 report, *Measuring Sprawl*, calculated a compactness index score for 221 U.S. metropolitan areas and 994 counties reflecting four factors: *density* (people and jobs per square mile), *mix* (combination of homes, jobs and services), *roadway connectivity* (density of road network connections) and *centricity* (the portion of jobs in major centres). The table summarizes the key results.

**Table 3** Summary of Smart Growth Outcomes (Ewing and Hamidi 2014)

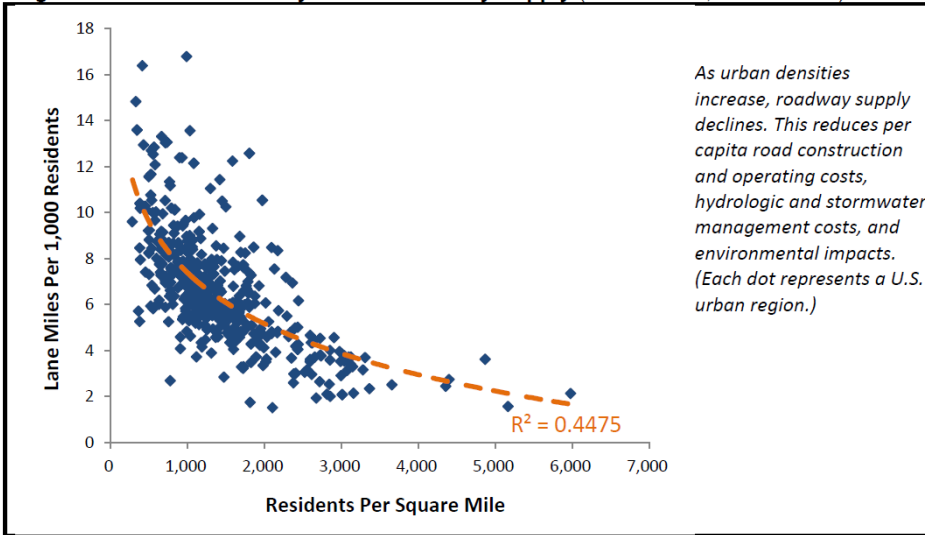
Outcome	Impact of 10% Compactness Score Increase
Average household vehicle ownership	0.6% decline
Vehicle miles traveled	7.8% to 9.5% decline
Walking commute mode share	3.9% increase
Public transit commute mode share	11.5% increase
Average journey-to-work drive time	0.5% decline
Traffic crashes and injuries per 100,000 population	0.4% to 0.6% increase
Fatal crash rate per 100,000 population	13.8% decline
Body mass index	0.4% decline
Obesity	3.6% decline
Any physical activity	0.2% increase
Diagnosed high blood pressure	1.7% decline
Diagnosed heart disease	3.2% decline
Diagnosed diabetes	1.7% decline
Average life expectancy	0.4% increase
Upward mobility (probability a child born in the lowest income quintile reaches the top quintile by age 30)	4.1% increase
Transportation affordability	3.5% decrease in transport costs relative to income
Housing affordability	1.1% increase in housing costs relative to income.

*This table summarizes various economic, health and environmental impacts from more compact development.*

The table above shows how per capita lane-miles decline with urban density. U.S. cities with less than 1,000 residents per square mile (approximately 1.6 residents per acre) have about 670 square feet of road space per capita, nearly three times as much as the 235 square feet in denser cities with more than 4,000 residents per square mile (approximately 6 residents per hectare). Similarly, central neighbourhoods require less road space per capita than at the urban fringe, as illustrated in the following figure.

<sup>49</sup> Understanding Smart Growth Savings: Evaluating Economic Savings and Benefits of Compact Development, Victoria Transport Policy Institute, Todd Litman, 2023.

**Figure 5 Urban Density Versus Roadway Supply** (FHWA 2012, Table HM72)



Smart Growth reduces the costs of providing many types of public infrastructure and services. More compact development reduces the length of roads and utility lines, and travel distances needed to provide public services such as garbage collection, policing, emergency response, and school transport, and so reduces the per capita costs of providing these services. However, some of these impacts are complex and require detailed analysis.

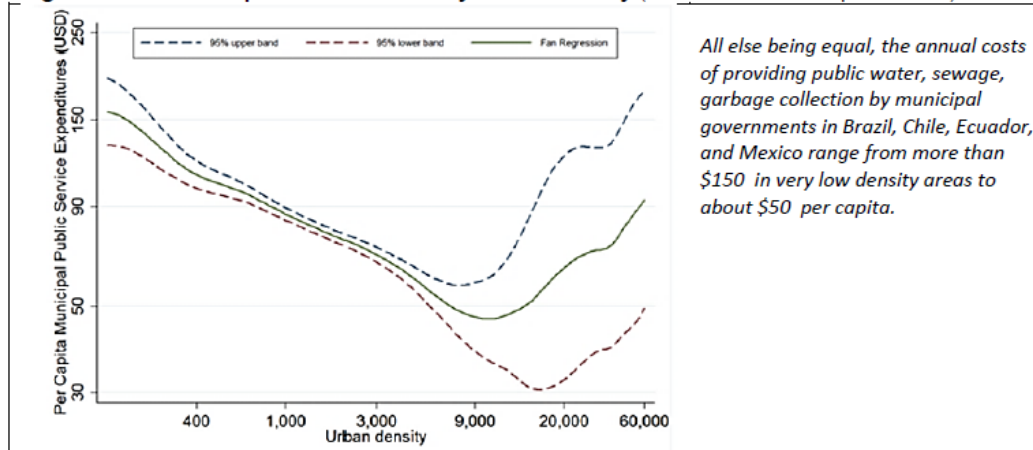
Rural residents traditionally accept lower public service quality, such as unpaved roads and volunteer fire departments, and provide many of their own utilities (e.g., well water, septic systems, garbage disposal), but urban sprawl tends to attract residents who demand urban level services in dispersed locations, despite the higher costs. Infill development can increase some infrastructure costs by increasing design standards, planning requirements and brownfield remediation, but such costs are not proportionate to density; taller buildings usually have similar development mitigation requirements and brownfield remediation costs as a smaller building, so unit costs tend to decline with density.

### Understanding Smart Growth Savings: Evaluating Economic Savings and Benefits of Compact Development<sup>50</sup>

- Burchell and Mukherji (2003) found that sprawl increases local road lane-miles 10%, annual public service costs about 10%, and housing development costs about 8%, increasing total costs an average of \$13,000 per dwelling unit, or about \$550 in annualized costs.
- A Charlotte, North Carolina study found that neighbourhoods with low densities and disconnected streets require four times the number of fire stations at four times the cost compared with more compact and connected neighbourhoods (CDOT 2012).
- Analyzing municipal budgets in 8,600 municipalities of Brazil, Chile, Ecuador and Mexico, de Duren and Compeán (2015) found that low-density development approximately triples per capita expenditures on public service, with the greatest efficiencies at approximately 90 residents per hectare (see figure below). This justifies policies that encourage densification, particularly in medium-sized cities.

<sup>50</sup> Understanding Smart Growth Savings: Evaluating Economic Savings and Benefits of Compact Development, Victoria Transport Policy Institute, Todd Litman, 2023.

**Figure 7** Municipal Service Costs By Urban Density (de Duren and Compeán 2015)

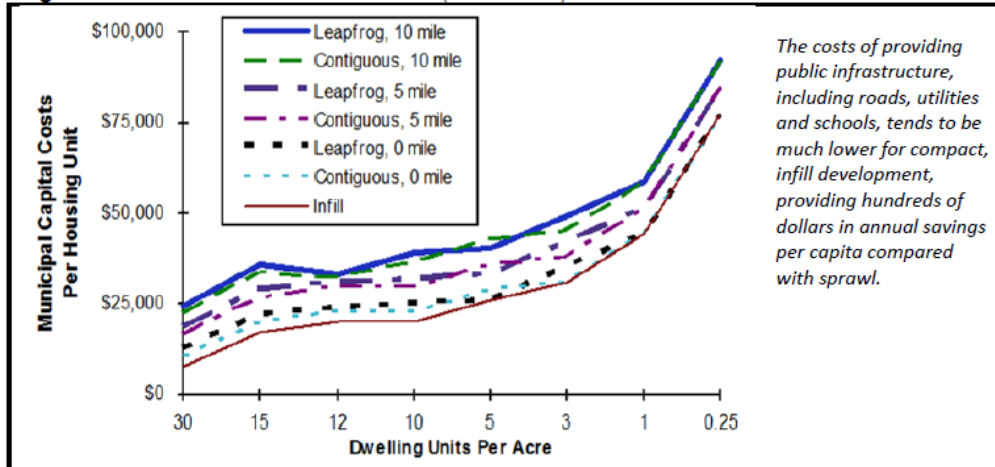


All else being equal, the annual costs of providing public water, sewage, garbage collection by municipal governments in Brazil, Chile, Ecuador, and Mexico range from more than \$150 in very low density areas to about \$50 per capita.

- A study by Mattson (2021) found that the construction and operating costs of municipal streets and highways, emergency services (except police operations), parks and recreation, water, sewage and solid waste management tend to decline with density.
- Goodman (2019) analyzed separately the effects of development density and sprawl on the costs of providing public services. The study found that increased density slightly increases some public costs, but this effect is small compared with the costs of sprawl, which increases per capita costs for education, fire services, police protection, and sewerage. Increasing a city's density from the 25th to the 50th percentile ranking increases annual per capita expenditures by \$5, but reducing its sprawl ranking from the 50th to the 25th percentile reduces per capita annual expenditures by \$61.
- Detailed analysis of 2,500 Spanish municipal budgets found that lower-density development increases per capita costs of providing local services (Rico and Solé-Ollé 2013). The study found that in lower density urban areas with less than 25 residents per acre, each 1% increase in urban land area per capita increases municipal costs by 0.11%. Of this, 21% is due to increased basic infrastructure costs, 17% to increased culture and sports program costs, 13% to increased housing and community development costs, 12% to increased community facilities costs, 12% to increased general administration costs, and 6% due to increased local policing costs.
- Fernández-Aracil and Armando Ortuño-Padilla (2016) found that each 1% increase in compact population is associated with a 0.217% per capita decrease in public service costs in Spanish urban areas.
- Using data from three U.S. case studies, the study, *Smart Growth & Conventional Suburban Development: Which Costs More?* (Ford 2010) found that more compact residential development can reduce infrastructure costs by 30-50% compared with conventional suburban development.
- *Building Better Budgets: A National Examination of the Fiscal Benefits of Smart Growth Development* (SGA 2013) found that Smart Growth development typically reduces public infrastructure construction costs by a third and ongoing public services costs by 10%.
- The City of Calgary (2016) developed cost-based development fees using detailed and transparent accounting of infrastructure costs, such as new water and sewage lines, roadway improvements and other public services. The resulting fees are significantly higher in sprawled locations to reflect the higher costs of providing public infrastructure and services there. Fees range from \$2,593 per multi-unit unit, \$6,267 for a single family home, and \$422,073 to \$464,777 per hectare in suburban areas.

The figure below illustrates the results of a study showing that municipal infrastructure costs tend to decline with density and are lowest for infill development.

**Figure 8 Residential Service Costs (Frank 1989)**



### Evaluating Transportation Land Use Impacts<sup>51</sup>

- More compact development could save Calgary, Alberta about a third in capital costs and 14% in operating costs for roads, transit services, water and wastewater, emergency response, recreation services and schools (IBI 2008).
- A Charlotte, North Carolina, USA study found that lower density neighbourhoods with disconnected streets require four times the number of fire stations at four times the cost compared with more compact and connected neighbourhoods (CDOT 2012).
- A study for the City of Madison, Wisconsin, USA (SGA and RCLCO 2015a) found that annual net fiscal impacts (incremental tax revenues minus incremental local government and school district costs) are \$6.8 million net revenue (\$203 per capita and \$4,534 per acre), compared with \$4.4 million (\$185 per capita and \$1,286 per acre) for the low density scenario.
- A similar study for West Des Moines, Iowa, USA predicts that, to accommodate 9,275 new housing units, compact development designed to maximize neighbourhood walkability would generate a total annual net fiscal impact of \$11.2 million (\$417 per capita and \$17,820 per acre), about 50% more than the \$7.5 million (\$243 per capita and \$2,700 per acre) generated by the least dense scenario (SGA and RCLCO 2015b).
- Similarly, de Duren and Compeán (2015) found that in 8,600 municipalities of Brazil, Chile, Ecuador, and Mexico, municipal service efficiencies are optimized at about 90 residents per hectare, which justifies densification policies, particularly in medium-sized cities of developing countries.

### Analysis of Public Policies that Unintentionally Encourage and Subsidize Urban Sprawl<sup>52</sup>

- Burchell and Mukherji (2003) found that sprawl increases local road lane-miles 10%, annual public service costs about 10%, and housing costs about 8%, increasing total costs an average of \$13,000 per dwelling unit, or about \$550 in annualized costs.
- A Charlotte, North Carolina, USA study found that a fire station in a low-density neighbourhood with disconnected streets serves one-quarter the number of households at four times the cost of an otherwise identical fire station in a more compact and connected neighbourhood (CDOT 2012).
- In a detailed analysis of 2,500 Spanish municipalities' expenditures, Rico and Solé-Ollé (2013) found that lower-density development patterns tend to increase per capita local public service costs.

<sup>51</sup> Evaluating Transportation Land Use Impacts, Victoria Transport Policy Institute, Todd Litman, 2022.

<sup>52</sup> Analysis of Public Policies That Unintentionally Encourage and Subsidize Urban Sprawl, Victoria Transport Policy Institute, Todd Litman, 2015.



- The Delaware Valley Regional Planning Commission, USA (DVRPC 2003) estimated the infrastructure costs of five alternative development scenarios for the Philadelphia region. They found that roads, schools and utilities would cost \$25,000 per household for the most compact scenario, 44% less than the \$45,000 required by the most sprawled scenario. The compact option provides approximately \$850 in annual savings per household.
- Analysis of options for accommodating 1.25 million additional residents and 800,000 additional jobs in Central Texas, USA found \$3.2 billion (\$2,560 per capita) lower infrastructure costs if development is concentrated in existing urban areas, 70% less than the \$10.7 billion (\$8,560 per capita) required if lower-density development trends continue (Envision Central Texas 2003).
- Using data from three U.S. case studies, the study, *Smart Growth & Conventional Suburban Development: Which Costs More?* (Ford 2010) found that more compact residential development can reduce infrastructure costs by 30-50% compared with conventional suburban development.
- More compact development could save Calgary, Alberta about a third in capital costs and 14% in operating costs for roads, transit services, water and wastewater, emergency response, recreation services and schools (IBI 2008).
- *Building Better Budgets: A National Examination of the Fiscal Benefits of Smart Growth Development* (SGA 2013) found that Smart Growth development costs one-third less for upfront infrastructure costs and saves an average of 10% on ongoing public services costs.
- The Utah Governor's Office, USA (2003) sponsored the Municipal Infrastructure Planning and Cost Model (MIPCOM), an easy-to-use spreadsheet model that estimates how factors such as development location and density affect various costs including regional (regional roads, transit and water supply facilities), subregional (water, sewage and stormwater networks, and minor arterials) and on-site infrastructure (local roads, water and sewer lines, stormwater systems, telephone, electricity, etc.).

### Literature Review of the Costs of Infrastructure Provision for Different Development Forms

- For Los Cabos, Mexico, savings on capital costs were 38% and operational cost savings were 60% (Sustainable Cities International, 2012).<sup>53</sup>
- Growth simulations for the USA using mathematical impact models suggest that sprawl developments increase local road lane-miles by 10%, annual public service costs by 10%, and housing development costs by 8%, increasing total development costs by about \$550 per dwelling unit per annum (Burchell & Mukherji, 2003).<sup>54</sup>
- The city of Halifax, Nova Scotia, studied how different settlement patterns affect the cost of services delivered by the city. They studied eight different types of development patterns, and similar to other research, they found that cost decreases with density for many services, especially for roads but also for libraries, parks and recreation, police, fire, water, transit, and sewer. Specifically for roads, they estimated that the cost per household is \$1,053 for low-density rural development (2.5 acres per dwelling unit), \$280 for low-density suburban (8,100 sq ft per dwelling unit), \$124 for mid-density urban (2,400 sq ft per dwelling unit), and \$26 for high-density urban (760 sq ft per dwelling unit). Total per household costs ranged from \$5,240 for low-density rural to \$1,416 for high-density urban. They also noted that operations and maintenance make up 60% to 90% of the overall service costs.<sup>55</sup>

<sup>53</sup> Literature Review of the Costs of Infrastructure Provision for Different Development Forms, University of Toronto Transportation Research Institute, Shivani Ragha, Dena Kasraian, Eric J Millers, 2019.

<sup>54</sup> Literature Review of the Costs of Infrastructure Provision for Different Development Forms, University of Toronto Transportation Research Institute, Shivani Ragha, Dena Kasraian, Eric J Millers, 2019.

<sup>55</sup> Relationships Between Density and per Capita Municipal Spending in the United States, Upper Great Plains Transportation Institute, Jeremy Mattson, 2021.

## Appendix E: Methodological Complexities of Costs and Revenues of Infrastructure by Residential Densities

The following is a summary of methodological considerations and complexities with the calculation and attribution of municipal costs and revenues related to infrastructure by residential densities. These findings were identified through the research associated with preparing the study, and particularly the literature reviews and informational interviews. These noted challenges and complexities do not preclude the need to complete financial analysis, however identify some of the limitations that participants should be aware of. For example, expectations about precision of numeric amounts should be understood as estimates rather than exact; coordination is required between different municipal departments and related functions; and there may be non-financial matters that should be considered as part of the land use planning and community building program.

### Definitions, Concepts and Complexities of Calculating Costs and Revenues

- The definition of low / sprawl and high / urban densities and areas can vary, and thus associated boundaries and measures may not be consistent, resulting in different calculations and values.
- To define density consistently, data analysis can try to use a standardized proximity measure database (i.e., Walk Score, Statistics Canada).
- The link between costs and benefits (or payers / users), or lack thereof, is complex.
- What is the relevant scale, as arguably these different uses are all part of a city / region / community / society.
- Policy approaches (and associated studies) that seek to capture value associated with rezoning land are not the same thing as actual measures of infrastructure / service costs (i.e., development impacts and their costs).
- The differences (and similarities) between a tax and a user fee, noting some items may not be properly classified, is not easy to define.
- The definition and attributes of 'hard' infrastructure vs. 'soft' services vary.
- Fixed costs and past investments vs. variable costs, including baseline operating costs. In some cases, part of a service will have a 'fixed' aspect, and part a 'variable' aspect, each with different cost profiles.
- The difference between the costs of producing and delivering a service, where the cost of the latter may vary by location / geography (e.g., a treatment plant for the city, with service mains to the different areas). Thus, the cost implications of different densities may vary by function and authority; e.g., regional infrastructure treatment facilities may be less impacted by development density than municipal local service infrastructure connections.
- Average costs vs. marginal / incremental costs can differ. Marginal costs may be relevant at the development scale (or for the individual), but average costs are more relevant for the community (and society) longer term / larger scale. In practice, the costs are incurred when infrastructure upgrades are needed. The selected timeframe for amortization is a part of the answer to such cost allocation matters.
- Cumulative impact consideration; the argument that infrastructure costs should be borne by everyone in a community, not just new development / population growth.
- Some services / infrastructure with economies of scale should be provided regionally where possible, whereas others can be done more effectively and efficiently at the local level.

- There are natural economies of scale for some types of infrastructure. Economies of scale work at different levels and vary by type of infrastructure / service. And these economies usually come to an end after a certain size. Thus no single / simple optimum level for all combined services.
- Often an economy of scale is associated with capital-intensive infrastructure (such as water and sewerage treatment plants), but not for labour-intensive services (such as library services, administration).
- Local considerations / context are important. Infrastructure capacity available and incremental thresholds reflect existing local infrastructure and their respective costs.
- In some cases, creating excess capacity may have been done intentionally for future planned development that has not yet occurred (i.e., upsizing pipes for future capacity while replacing them is more cost effective than having to upsize later).
- Some local government and related services and costs are a function of per capita demand, and others based on geography / density, and some a bit of both.
- There are differences, similarities, and overlapping relationships between economies of scale and efficiencies of geography. Higher population cities, not necessarily higher density, can achieve economies of scale, while denser cities can also achieve economies of geography.
- Per unit calculations often fail to acknowledge that the housing unit types are different (i.e., a house and an apartment are both residential units, but not the same in terms of size, number of residents, and infrastructure / service demand).
- Different housing unit types/sizes or household sizes generate different per capita or costs by floor area, rather than just costs per 'housing unit'.
- Smaller housing units generally have lower assessed property values and generally pay less property taxes.

### **Allocating Costs**

- Separating and allocating growth and non-growth related costs is complex.
- There are challenges with allocating / apportioning costs by land use, housing unit type, location / geography, components of services, and infrastructure amortization periods. Cities often do not track sub-area budgets or data.
- When comparing infrastructure costs between scenarios and allocating it to different types and numbers of residential units the results can be influenced by the assumed attribution of costs to non-residential land uses, such as commercial and industrial uses.
- Different development scenarios may not simply be defined as 'high' or 'low' residential densities, but have a mixture of different unit sizes, and different types non-residential uses which pay different tax rates. A higher density community is likely to have more housing units and households, thus more population / consumers that could support a greater amount of local population-based retail and other businesses.
- Any analysis of cost and revenue data for exclusively residential uses would need to separate out values associated with non-residential sectors.
- How best to allocate some infrastructure costs can be complex; e.g., roads could be budgeted by lane kilometre, by area, per year, yet roads are also used by people who do not live in an area or even the community.
- Notably there are some local-serving services such as public transit and schools that are not provided, maintained, or paid for by municipalities, but may be relevant considerations.

- Some other costs such as major infrastructure can be funded by one-time grants by senior levels of government rather than local ratepayers. Even if such capital projects are funded, they become a long-term operating cost liability for a municipality.
- Property taxes calculated based on the value of the property may not be ideal, as the amount of municipal services a household consumes is not directly related to property values.
- User fees could be charged for services consumed that can be readily allocated to a user, while other municipal services could be funded through general property taxation. In Canada taxation is set on assessed property value, but it could be differently allocated, such as based on lot size, lot frontage, building area, etc., as property value is not always an ideal measure of services needed or consumed.
- Based on research, larger cities tend to depend proportionally greater on user fees than smaller ones.
- The manner in which municipalities decide to value a capital asset and associated amortization / depreciation schedule effects assigned costs per year is complex. Some infrastructure may last longer or shorter than initially estimated.
- Reserve allowances for replacement costs may be funded or not, and show up differently in municipal budgets.
- There are different catchment areas for different service types, and thus costs.
- Data about revenues and expenses by item may not be readily available or assignable by sub-geography or unit type.
- Municipal DCCs are typically applied at a municipal-wide rate as it is administratively simpler and provides more flexibility, rather than having to limit infrastructure expenditures to within separate geographies.
- It can be simpler to use averages and equalize tax rates, but that can result in the most efficient areas subsidizing other areas.
- Some services and costs can be metered while others are not, and funded via general taxation.
- Some property taxes go to other levels of government rather than the local municipality.
- Private infrastructure is not typically included in municipal financial analysis. Some services are private responsibilities and do not show up as municipal cost; e.g., strata amenity fees for multi-unit housing which includes private utilities is a cost to those homeowners.
- Some items are not included in the financial analysis; e.g., in some rural communities service levels are low, and there is no reported financial cost as they are paid for privately (e.g., water, sewer) or provided via volunteers, such as firefighting.
- What level of government should provide societal responsibilities is a complex question; e.g., poverty, homelessness, affordable housing, etc. may be addressed via municipal efforts at local costs, but may be the responsibility of other levels of government.

### **Local Considerations / Contexts**

- Servicing costs in many cases are impacted by local matters, such as the available capacity, age, and condition of existing infrastructure, which is often a context / area specific matter. Available infrastructure capacity provides for very different costs to service new development.
- Beyond residential density and type, level of, and costs to provide services may vary by location and circumstances, due to topography, geography, street pattern, condition and capacity of existing infrastructure, non-residential uses, etc.

- If neighbourhoods were developed at different times / places, they may be built to different standards, thus different infrastructure capital and maintenance costs.
- Residential densities and neighbourhood ages are associated with other attributes, which may impact servicing and infrastructure costs in other ways.
- The intensification of areas that were not initially planned for higher densities, such as urban infill areas, can be a challenge and more expensive if infrastructure capacity is not present. This may necessitate replacing existing infrastructure to increase capacity before it would otherwise need to be replaced due to age.
- Older cities have older infrastructure, which is more expensive to maintain, whereas outer suburban areas that may have been developed / built more recently will have newer infrastructure that may not require as much maintenance, and associated cost impacts.
- Complexities and costs of developing in urban areas are notable as 'urban harshness'. Although absolute project costs may be higher, it can be spread over a larger population, thus the per unit cost is lower.
- There are trade-offs between the densities and harshness of a place. Density and agglomeration, both localized and urbanized, may save costs, however some costs increase with higher densities, such as land costs, more complexities, construction works in urban environments. Municipal labour costs may also be higher in larger cities.

#### **Relationship Between Costs and Densities**

- Some costs are more or less sensitive to density than others. Some items / categories of costs and their attribution are clear while others may not be.
- Impacts of growth and development, irrespective of location or form / density, can be the same or can vary.
- There are different issues between high growth and no or low growth cities / regions.
- The relationship between residential density and infrastructure demand is fairly intuitive for some items; i.e., larger residential lots require more linear distance of pipes and pavement per household, thus higher costs, yet parks and recreation costs are based on population of a community, and stormwater drainage costs tend to be related to building site coverage rather than density per se.
- Most of the municipal operating budgets tend to be for labour costs. Some government services are very labour-intensive, thus the costs do not vary much due to geography / density, vs. other costs such as linear infrastructure.
- Urban development provides for lower infrastructure costs, but that's on a per unit basis, not on an absolute basis. Not all services are more efficient with higher densities, and some may have diseconomies of scale.
- Different municipalities may provide different levels of service, in terms of quantity or quality, with unique efficiencies or inefficiencies, which are difficult to address in any cost analysis.
- At some threshold levels, some types of services must move from one delivery program to another, with a significant change in cost structure. This is most often associated with population growth, not density per se; e.g., moving from a volunteer firefighting service to a professional paid one once a municipality reaches a certain size.

## **Policies / Regulations**

- The notion that urban sprawl is caused by planning policies that distort market decisions, fails to acknowledge that other planning policies can cause their own sets of distortions.
- Allowing higher density development forms in urban areas can be a challenge in terms of local resident opposition, a complex and lengthy approvals process, and higher municipal fees, which all add costs over greenfield forms of development.
- While 'Smart Growth' and similar concepts support infill, intensification, and redevelopment, it does not prohibit single-detached housing forms. Many Smart Growth illustrations show the inclusion of small lot, ground-oriented houses as a means of encouraging a greater diversity of housing mix, not all high-density housing forms.
- While 'Smart Growth' is not synonymous with reducing the supply of land that can be developed, it generally discourages greenfield development and outward urban expansion. All else being equal, a reduced land supply in a market with strong demand for housing is likely to create upward pressures on housing price.
- Even though infrastructure costs (per capita) in dense infill sites may be lower, the land development and construction costs tend to be higher due to municipal policies or space / access constraints, which can result in higher housing costs in city centres. An unintended result is a push of some residents to lower-density suburban areas where housing costs are comparatively less, but household transportation costs are higher.
- While infill development may have lower municipal infrastructure costs, it generally does not see lower Development Cost Charges. This indicates that DCCs may not be set correctly if they are the same for an entire municipality, and in fact subsidize some forms of development. In fact, that approach encourages the development of lower density, suburban development where the DCC rates do not necessarily reflect actual infrastructure costs.
- While some charges / fees may vary by residential unit types, often that variance is mostly due to differences in the number of occupants per unit, not significantly by other inputs. Thus the per capita rates are similar when adjusted for the number of residents per household.

## **Community Populations / Preferences**

- Residential market preferences are a major determinate of urban form, and housing choices are important.
- Differing demographics / populations require or consume different levels and types of services, with, as example, poverty, homelessness and crime and the associated costs tending to concentrate in the urban areas.
- Different areas / communities have different population profiles and behaviours as a result of where they live and the environment, or their decisions to live there.
- Different levels of municipal services can be demanded by different communities, often a result of income levels, demographics, cultural background, ability to pay, and household composition.
- Consumer expectations regarding level of service are increasing. In many suburban areas residents expect urban levels of services given the proximity to and familiarity with the services provided in urban communities.
- Communities that have a large industrial or commercial property tax base compared to residential, have the benefit of a different distribution of municipal costs and revenues for residents.
- Externalities and impacts may be within the municipality, or they may extend beyond the geographies / jurisdictions.

- Low growth jurisdictions may have very low DCCs or waive them to attract development activity, indicating that the community benefits from such development, investment, and growth. This results in an infrastructure shortfall that must be made up generally from taxation or other revenue sources.

### **Decision Making**

- Costs and benefits are borne by different parties (i.e., individuals, businesses, society). Thus calculations can vary from the perspective of the consumer vs. municipality.
- There is an element of uncertainty about future costs vs benefits about decisions made now.
- Maintenance can be deferred for a time and not reflected in municipal budgets, although infrastructure deficits typically end up costing more to address the longer they accumulate. Similarly deferring maintenance of infrastructure and waiting for a failure to address also typically end up costing more.
- A range of uses and facilities are required for a community, and must be provided even if not all are high performing from a municipal finance perspective. Infrastructure and service planning should consider the economic and functional needs of the entire city or region over the long term.
- Municipal services in Canada are largely funded by property taxes on an ad valorem system (value of property), rather than on a service consumed basis. Higher value properties pay more towards city services, while user fees are applied only for some services.
- Cities typically charge city-wide average DCCs instead of variable ones by sub-area. This approach is often seen as fairer, and setting different rates for different areas could result in pressures to alter city service provision and reduce city-wide cooperation.

### **Scale / Timeframe Allocation**

- A geographic analysis of spatial activity may be unrealistic or calculated results may vary depending on the selected scales. The scale at which the analysis is undertaken of costs and revenues will impact the results.
- Total costs by service may be tracked and reported by municipalities for their entire jurisdiction, but it is much more difficult to disaggregate by sub-area and by unit type.
- Some major infrastructure that serves one municipality and regional services that support multiple municipalities like sewerage, water, dikes, etc., may be funded by senior levels of government, rather than local government and not reflected in municipal budgets.
- Paying for infrastructure by Development Cost Charges puts the cost on the respective developer and the new residents instead of the broader community through general municipal taxation, thereby transferring infrastructure costs to the private sector from the public sector.
- Some services also have different levels of consumption depending on the unit type, which is associated with development density, such as water, sewerage, and waste, which tend to be much higher in houses than apartments.
- The infrastructure in some municipalities have been over-planned for much larger populations than they currently have, thus affecting services and costs.
- Major infrastructure is large, expensive, and often has to be built all at once and cannot be spread out over time or expanded incrementally to match the gradual increase in demand as a community grows. In those cases, the overbuild needs to be funded upfront for future users / beneficiaries.

## Other Considerations

- Costs to build infrastructure increase every year, primarily driven by labour costs. The construction sector, unlike other sectors such as manufacturing, has not become more efficient / productive over the past decades, through technological innovation.
- Municipal capital infrastructure costs are incurred at once, and unlike variable user fees, do not necessarily influence consumption / usage decisions, such as is the case with water meter charges, for example.
- It is difficult to compare findings between locations and jurisdictions as there can be many different variables in terms of services, costs, revenues, allocations, governance, etc. For example, Quebec's property tax system is more in line with a user-fee basis, with a direct link to services provided to property users, than is Ontario's. BC and Alberta municipalities spend relatively little on social services. Public transit service is the responsibility of the Province in BC and of the municipalities in Alberta, where is the responsibility of regions in Ontario.





**ATTACHMENT 2**



Lulu Island Wastewater Treatment Plant

# Study Findings – Density Impacts on Infrastructure Costs

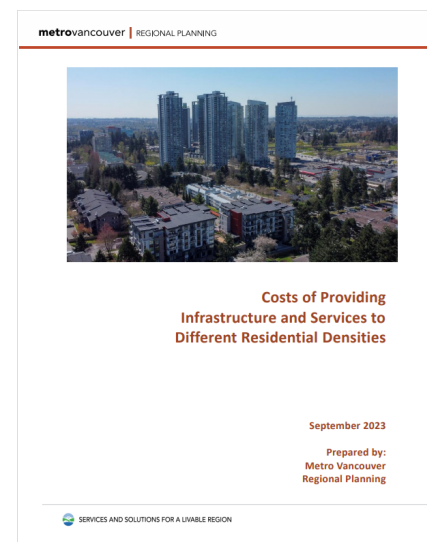
Eric Aderneck, RPP, MPL, BCOM, DULE  
Senior Planner, Regional Planning and Housing Services

Regional Planning Committee | November 3, 2023

**metro**vancouver

## STUDY PURPOSE

- Document the costs of providing infrastructure and services to different residential densities / forms
- Create an accessible resource to inform municipal and regional growth decision making
- Compile available references, case studies, best practices, and informational interviews
- Present findings most relevant to the region



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## SCOPE OF WORK

- Complete research / literature review:
  - Review urban form and infrastructure cost analysis in other jurisdictions
  - Compile the latest research, focused on relevant sources and examples
  - Informational interviews with key informants
  - Consider both capital and operating costs and revenues
  - Summarize existing publications and associated financial estimates
- Identify a series of case study locations using residential densities / forms to determine estimated costs per unit and capita
- Profile findings relevant to the Metro Vancouver context

## METHODOLOGICAL COMPLEXITIES

- Attributing costs and revenues for different services by asset class or unit type is a data challenge
- Many municipal services / costs are more a function of population than density
- Capital-intensive infrastructure can benefit from economies of scale, while labour-intensive services do not
- Significant local considerations and contextual issues
- The complexities / limitations should temper expectations – the results are high-level estimates, rather than precise

## FINDINGS – SERVICING COSTS BY UNIT TYPE

	Scenario	Unit Yield	Servicing Costs	Cost Per Unit	Persons per Household	Cost Per Capita
1	House (Low)	16	\$ 640,000	\$ 40,000	3.10	\$ 12,903
2	House (High)	24	\$ 880,000	\$ 36,667	3.10	\$ 11,828
3	Townhouse (Low)	40	\$ 680,000	\$ 17,000	2.75	\$ 6,182
4	Townhouse (High)	60	\$ 700,000	\$ 11,667	2.75	\$ 4,242
5	Apartment (Low)	100	\$ 800,000	\$ 8,000	1.85	\$ 4,324
6	Apartment (High)	200	\$ 900,000	\$ 4,500	1.85	\$ 2,432

- The costs for onsite infrastructure / servicing for a house vs. apartment are approximately 5X to 9X more expensive on a per capita and a per unit basis
- When adjusted for number of persons per household the cost per capita is also lower as densities increase

## FINDINGS – EXAMPLE DCCS BY UNIT TYPE

Residential Typology	Langley Twp	Langley City	Pitt Meadows	Coquitlam	Port Moody	Surrey	Richmond	DNV	AVERAGE	AVG HHS	AVG per Capita
House (Low)	\$40,104	\$18,409	\$13,493	\$60,422	\$33,453	\$48,595	\$41,533	\$33,269	\$ 36,160	3.10	\$ 11,664
House (High)	\$40,104	\$18,409	\$13,493	\$60,422	\$33,453	\$43,050	\$41,533	\$33,269	\$ 35,467	3.10	\$ 11,441
Townhouse (Low)	\$32,704	\$14,503	\$10,686	\$35,807	\$20,045	\$38,790	\$33,885	\$23,808	\$ 26,278	2.75	\$ 9,556
Townhouse (High)	\$32,704	\$14,503	\$10,686	\$35,807	\$20,045	\$38,790	\$33,885	\$23,808	\$ 26,278	2.75	\$ 9,556
Apartment (Low)	\$26,647	\$ 9,549	\$ 9,250	\$22,694	\$ 9,844	\$23,488	\$19,024	\$13,653	\$ 16,769	1.85	\$ 9,064
Apartment (High)	\$26,647	\$ 9,549	\$ 9,250	\$22,694	\$ 9,844	\$23,200	\$19,024	\$13,653	\$ 16,733	1.85	\$ 9,045

- DCCs range up to \$60,000 for a house, to as low as \$10,000 for an apartment
- Municipal DCC rates by unit type vary considerably by municipality, yet within individual municipalities generally do not vary
- When calculating DCCs by the number of household residents, there is a very close relationship between DCC rates and residents, averaging \$10,000 per person

## FINDINGS – TAXES AND FEES BY UNIT TYPE

- On average:
  - Houses pay \$5,600 in property taxes per year
  - Townhouses pay \$3,000
  - Apartments pay \$2,100
- Of the property taxes, approximately 56% is to the local municipality, and the rest to other authorities
- Approximately  $\frac{1}{3}$  of municipal budget expenditures are impacted to some degree by form / density, while  $\frac{2}{3}$  are not

## FINDINGS AND CONSIDERATIONS

- Higher density forms are more cost-effective in urban areas, where infrastructure investments can be best utilized
- Achieving compact development does not necessarily require extremely high densities

## FINDINGS AND CONSIDERATIONS (CONT'D)

- The use of utility user fees better reflects actual service costs and charges those who benefit:
  - Enhanced use of metering for utilities, where possible
  - Utility fees should not just be focused on raising revenue but also on changing behaviours and outcomes
- Applying DCCs that vary by residential unit type / size / density and by sub-area geography better reflects actual costs of servicing demands
- Closely coordinating / integrating land use planning, infrastructure servicing, asset management, and municipal finance, improves decision-making and outcomes

## NEXT STEPS

- Share with member jurisdictions, stakeholders and the public
- Communicate the importance of cost-effective urban form and coordinated land use and infrastructure planning
- Inform further regional policy work to support *Metro 2050*, municipal land use policy planning and development initiatives
- Support the *Metro 2050* Urban Centre and Frequent Transit Development Area target review project



Thank you

metrovancover

To: Finance Committee

From: Mark Seinen, Senior Planner, Regional Planning and Housing Services

Date: October 13, 2023 Meeting Date: November 9, 2023

Subject: **Greater Vancouver Regional Fund – Options for Program Renewal**

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### RECOMMENDATION

That the MVRD Board direct staff to prepare a new *Greater Vancouver Regional Fund Policy* and work with UBCM staff to revise the *Administrative Agreement on the Federal Gas Tax Fund in British Columbia* for the years 2024 to 2034 based on:

- a) Member jurisdictions continuing to pool 95 percent of the federal Canada Community-Building Fund distributions in support of regional transportation projects (via TransLink) with the remaining five percent allocated to community projects (via member jurisdictions);
  - b) The allocation of any future one-time or permanent increases in Canada Community-Building Fund distributions, beyond the indexed annual rate, being considered on a case-by-case basis by the MVRD Board upon confirmation of the additional funding;
  - c) The project eligibility criteria being updated to specify that only zero-emission transportation projects are to be funded through the renewed program, with any exceptions subject to MVRD Board approval; and
  - d) The funding allocation and criteria set out in the GVRF Policy being reviewed by the MVRD Board after five years of implementation, or sooner if additional permanent sources of funding have the potential to influence the need for the base allocation.
- 

### EXECUTIVE SUMMARY

Metro Vancouver administers the Greater Vancouver Regional Fund (GVRF) program, which has delivered approximately \$1.97 billion in federal infrastructure funding to TransLink for the expansion and modernization of transit infrastructure since its inception in 2005. The ten-year federal funding agreement that enables the GVRF is set to expire in March 2024, and is expected to be replaced by a new agreement. To inform the new agreement and a renewed Metro Vancouver program, direction is needed from the MVRD Board regarding the pooling and strategic allocation of future federal funds. Feedback from the September 29, 2023 Board Workshop on the GVRF has informed this report and as a result, the following is recommended:

- A continuation of the program's funding allocation, with 95 percent of the funds distributed to TransLink for regional transportation projects;
- Introducing a new provision that any future one-time or permanent increases in funding be considered on a case-by-case basis by the MVRD Board;
- Introducing project eligibility criteria requiring all future applications to be for zero-emission transportation projects only; and
- The potential to review the funding allocation and criteria if additional permanent sources of funding have the potential to influence the need for the base allocation.



**PURPOSE**

This report provides the Finance Committee and MVRD Board with recommended program terms for a renewed Greater Vancouver Regional Fund prior to anticipated program renewal in 2024.

**BACKGROUND**

At its July 28, 2023 regular meeting, the MVRD Board adopted the following resolution:

*That the MVRD Board direct staff to organize an MVRD Board workshop in September 2023 to review options for the renewal of the Greater Vancouver Regional Fund program.*

At a special MVRD Board Meeting held on September 29, 2023, the Board discussed some considerations for a renewed GVRF program. Feedback from that meeting has informed this report and its recommendations.

**RENEWAL OF THE GREATER VANCOUVER REGIONAL FUND**

The GVRF is a program that is jointly-administered by Metro Vancouver and the Union of British Columbia Municipalities (UBCM). It pools federal funding from the Canada Community-Building Fund (CCBF) towards regional transportation projects. In 2014, Metro Vancouver member jurisdictions entered into an agreement to pool 95 percent of their respective gas tax funds into the GVRF for TransLink's use towards regional transportation projects, with the remaining five percent being allocated directly to member jurisdictions through the Community Works Fund. In accordance with the terms of that agreement, TransLink submits an annual application for funds from the program to the MVRD Board for consideration. UBCM holds the funds and releases them upon receiving confirmation from Metro Vancouver of application approvals. Since 2005, approximately \$1.97 billion has been delivered to TransLink to expand and modernize the transit system through the GVRF and its predecessor, the Strategic Priorities Fund.

The GVRF is enabled by the *Administrative Agreement on the Federal Gas Tax Fund in British Columbia* (the Agreement), which governs how the federal funds are to be administered within BC including project eligibility criteria (Reference 1). Metro Vancouver established additional criteria for GVRF-funded projects through the Federal Gas Tax Fund Expenditures Policy (GVRF Policy) (Attachment 1). Adopted by the MVRD Board in 2016, and revised in February 2020, the GVRF Policy limits the allocation of funds to regional transportation projects only, in the categories of 1) local roads and bridges, including active transportation; and 2) public transit.

Other background information about the GVRF and the renewal process is contained in a staff report presented to the Finance Committee at its meeting on July 13, 2023 (Reference 2).

The ten-year term of the Agreement expires on March 31, 2024 and UBCM staff anticipate a timely renewal of the program at the federal level. To inform an updated agreement, the MVRD Board must determine:

1. a continuation of the program's pooling and allocation of CCBF funds toward regional transportation projects;
2. the allocation of funds should CCBF funding levels be increased, either as a one-time top-up or on a permanent basis; and

3. the types of projects that are to be supported with funding going forward.

In addition, the MVRD Board has the opportunity to determine any additional modifications to the GVRF application process.

### **1. Allocation of Funding**

The current allocation of the GVRF is that 95 percent of the fund goes to TransLink for regional transportation projects, with the remaining five percent being allocated to member jurisdictions on a per-capita basis for local projects. With the renewal of the Agreement, and the GVRF Policy, the MVRD Board must determine the appropriate allocation of funds toward regional transportation projects, balancing the advancement of regional transportation objectives against other infrastructure funding needs at the municipal and regional levels. The MVRD Board has the option to support the existing funding allocation (i.e., pooling 95 percent of CCBF funds for TransLink's regional transportation investments), or to allocate some or all of this funding to other local or regional infrastructure projects eligible under the CCBF.

At the Board workshop, it was reflected that there is a strong desire to continue to pool 95 percent of the federal CCBF funds in support of regional transportation projects. GVRF funding is a vital contributor to regional transportation and planning objectives, helping to support transit ridership, mode shift, greenhouse gas reductions, economic development and regional growth management, among other objectives. TransLink relies upon the GVRF, and does not have alternative funding sources available at this time. TransLink's Annual Report (Reference 3), received by the MVRD Board at its July 28, 2023 regular meeting, estimates that the regional transportation authority expects to utilize \$1.4 billion in GVRF funding between 2023 and 2031. The GVRF will then be a key source of funding for a large fleet replacement planned for 2032-2034. Any decreases in GVRF funding would lead to reductions in transit service levels.

There is much anticipation for a federal permanent predictable transit fund starting in 2026. In the event that this fund comes to fruition, it may provide a reasonable alternative to the GVRF. As such, staff recommend that the funding allocation and criteria set out in the GVRF policy be reviewed by the MVRD Board after five years of implementation to allow for adjustments, if needed. This recommendation provides flexibility in the event that public transit funding undergoes significant changes in the coming years.

### **2. Potential Funding Increases**

The second determination is how local governments in the region wish to allocate additional funds if CCBF funding levels are increased, either through a one-time top-up or on a permanent basis. Over the course of the ten-year agreement, funding levels from the CCBF may increase. UBCM and the Federation of Canadian Municipalities have been advocating to Infrastructure Canada to double the amount of funding delivered through the CCBF to municipalities across Canada. Moreover, on two previous occasions (i.e., through the 2019 and 2021 Federal Budgets), the CCBF received one-time "top-up" funding that doubled distributions for those years. In the Metro Vancouver region, these additional funds were distributed through the GVRF in the current apportionment (i.e., 95 percent to TransLink projects) according to the existing agreement. In contrast, in Quebec, where 80 percent of CCBF funds are typically allocated to local governments and 20 percent to public

transit authorities, their agreement was structured to direct 100 percent of the 2019 and 2021 top-ups to local governments.

At the Board workshop, members reflected an interest in seeing the allocation of any future one-time or permanent increases in CCBF distributions, beyond the indexed annual rate, considered on a case-by-case basis by the MVRD Board upon confirmation of the funding. This update would ensure that any unanticipated increases in CCBF funding – which are not factored into TransLink's Investment Plans – are given the opportunity to be allocated in a way that best supports the achievement of local and regional infrastructure objectives.

Alternatively, the Board could provide direction for an allocation of any one-time or permanent increases in the Canada Community Building Fund to be a part of this upcoming agreement. For example, that one third go towards regional transportation projects through TransLink, a third to regional sewerage capital infrastructure projects, and a third toward community projects.

### 3. Project Eligibility

The third consideration is whether the MVRD Board wishes to specify the types of projects that are to be supported by GVRF funding. When evaluating GVRF applications in recent years, much of the MVRD Board's discussion has focused on the types of transit projects being funded through the fund (i.e., the use of GVRF funds to procure transit vehicles with diesel, gasoline, or hybrid engines). On two recent occasions, the MVRD Board has deferred approval of TransLink's GVRF applications on this basis, seeking more information from TransLink on its plans and timelines to move away from vehicles powered by fossil fuels and decarbonize its fleet.

In a memorandum dated June 3, 2022, attached to a staff report presented to the Finance Committee at its meeting on July 14, 2022, TransLink made a written commitment that *"going forward, TransLink will only be requesting GVRF funds for the purchase of electric or renewable natural gas vehicles as part of TransLink's Low Carbon Fleet Strategy"* (Reference 4). The renewal of the CCBF agreement provides the MVRD Board with the opportunity to support TransLink's commitment by clarifying the types of projects that are to be supported with the funding going forward. This could include: specifying propulsion technologies (e.g., zero emission); infrastructure types (e.g., fleet or depots); or, more broadly, project categories (e.g., public transit, roads and bridges, active transportation).

At the Board workshop, there was interest expressed in updating project eligibility criteria to specify that only zero-emission transportation projects will be funded through the program, with any exceptions subject to MVRD Board approval on a case-by-case basis. This update would support the achievement of regional greenhouse gas reduction targets, reflect MVRD Board feedback regarding transit fleet propulsion technology, and formalize TransLink's 2022 commitment to no longer use GVRF funding for diesel, gasoline or hybrid engines.

This approach is not intended to limit TransLink's project applications to fleet expansion and replacement projects. All public transit and active transportation projects will remain eligible, including transit depots, station improvements, roads, bridges, bike lanes and sidewalks. Staff are also aware that TransLink has faced acute obstacles in decarbonizing its shuttle fleet (HandyDart

and Community Shuttle) due to vehicle availability; for this reason, shuttles are one vehicle type that could be considered as an exception to the zero-emission criterion.

**ALTERNATIVES**

1. That the MVRD Board direct staff to prepare a new *Greater Vancouver Regional Fund Policy* and work with UBCM staff to revise the *Administrative Agreement on the Federal Gas Tax Fund in British Columbia* for the years 2024 to 2034 based on:
  - a) Member jurisdictions continuing to pool 95 percent of the federal Canada Community-Building Fund distributions in support of regional transportation projects (via TransLink) with the remaining five percent allocated to community projects (via member jurisdictions);
  - b) The allocation of any future one-time or permanent increases in Canada Community-Building Fund distributions, beyond the indexed annual rate, being considered on a case-by-case basis by the MVRD Board upon confirmation of the additional funding;
  - c) The project eligibility criteria being updated to specify that only zero-emission transportation projects are to be funded through the renewed program, with any exceptions subject to MVRD Board approval; and
  - d) The funding allocation and criteria set out in the GVRF Policy being reviewed by the MVRD Board after five years of implementation, or sooner if additional permanent sources of funding have the potential to influence the need for the base allocation.
  
2. That the MVRD Board receive the report dated October 13, 2023, titled, “Greater Vancouver Regional Fund – Options for Program Renewal” and provide alternate direction to staff.

**FINANCIAL IMPLICATIONS**

Over the past ten years, the Agreement and GVRF Policy have directed 95 percent of all federal CCBF funds received in the Metro Vancouver region to support regional transportation projects; the remaining five percent of funds have been delivered directly to member jurisdictions via the Community Works Fund, which is used at their discretion for other eligible infrastructure projects. Over the period of the Agreement and current GVRF Policy (2016-present), \$1.61 billion has been awarded to TransLink in support of regional transportation projects. Table 1 sets out all Board-approved funding requests under the current GVRF Policy.

**Table 1: Approved GVRF Funding Requests 2016 - Present**

<b>Date of Metro Vancouver Board Approval</b>	<b>Funding Approved (\$ millions)</b>	<b>Note</b>
September, 2016	\$127.2	
April, 2017	\$121.3	
July, 2017	\$24.2	Scope change (addition)
October, 2017	\$121.2	
March, 2018	\$0.0	Scope change (cost neutral)
October, 2018	\$142.1	
November, 2019	\$149.1	
January, 2021	\$154.1	
November, 2021	\$358.5	

July, 2022	-\$70.4	Scope change (reduction)
October, 2022	\$400.6	
February, 2023	\$75.2	
July, 2023	\$3.8	Scope change (addition)
<b>Total</b>	<b>\$1,606.9</b>	

In a typical program year, the GVRF has distributed between \$120 and \$160 million to TransLink. TransLink relies upon this funding to maintain and enhance transit services and has previously noted that it anticipates drawing \$1.4 billion in GVRF funding between 2023 and 2031 for future regional transportation projects. CCBF funding does not currently contribute to other regional infrastructure such as liquid waste, solid waste, drinking water, or parks.

**CONCLUSION**

Metro Vancouver administers the Greater Vancouver Regional Fund (GVRF) program, which has delivered approximately \$1.61 billion in federal infrastructure funding to TransLink for the expansion and modernization of regional transit infrastructure under the current GVRF Policy. The ten-year federal funding agreement that enables the GVRF is set to expire in March 2024 and is expected to be replaced by a new agreement. To inform the new federal agreement and a renewed Metro Vancouver program, the MVRD Board needs to make key decisions about the pooling and strategic allocation of future federal funds. Staff recommend Alternative 1, noting:

- A continuation of the program’s funding allocation, with 95 percent of the funds distributed to TransLink for regional transportation projects;
- Introducing a new provision that any future one-time or permanent increases in funding be considered on a case-by-case basis by the MVRD Board;
- Introducing project eligibility criteria requiring all future applications to be for zero-emission transportation projects only; and
- The potential to review the funding allocation and criteria if additional permanent sources of funding have the potential to influence the need for the base allocation.

**ATTACHMENT**

1. Federal Gas Tax Fund Expenditures Policy

**REFERENCES**

1. [Administrative Agreement on the Federal Gas Tax Fund in British Columbia](#)
2. Finance Committee report dated June 21, 2023, titled “[Greater Vancouver Regional Fund – Program Overview and Renewal Process](#)”
3. Finance Committee report dated June 19, 2023, titled “[Greater Vancouver Regional Fund – 2022 Annual Report](#)”
4. Finance Committee report dated July 14, 2022, titled “[Greater Vancouver Regional Fund – 2021 Annual Report and Application for Scope Change to Previously Approved Projects](#)”

**FEDERAL GAS TAX FUND EXPENDITURES**

Effective Date: May 27, 2016 (revised February 28, 2020)

Approved By: MVRD Board

**Policy No. FN-012**

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**PURPOSE**

The purpose of the *Federal Gas Tax Fund Expenditures Policy* is to identify the process through which the Metro Vancouver Regional District (MVRD) Board considers and approves expenditures from the Federal Gas Tax Fund – Greater Vancouver Regional Fund (GVRF) for regional transportation projects proposed by the South Coast British Columbia Transportation Authority (TransLink).

**DEFINITIONS**

**“Eligible Regional Transportation Projects”** means the following eligible project categories described in Schedule B of the Administrative Agreement on the Federal Gas Tax Fund in British Columbia and confirmed by the MVRD Board as follows:

- Local roads and bridges, including active transportation
- Public transit;

**“Evaluation Criteria”** means the performance measures that the MVRD Board uses to assess the merit of each project submitted by TransLink for GVRF funding, as described in the Federal Gas Tax Fund – Greater Vancouver Regional Fund Application Guide;

**“Federal Gas Tax Fund”** means the predictable, long-term, stable funding provided by the federal government as part of the *New Building Canada Plan* for Canadian municipalities to help them build and revitalize local public infrastructure;

**“Greater Vancouver Regional Fund”** means the 95% of the Metro Vancouver Regional District and its member municipalities’ per-capita allocation that is pooled for eligible expenditures of regional transportation projects; and

**“Information Requirements”** means the information that must be provided by TransLink in order to allow for efficient and effective review of proposals by the MVRD Board, as described in the Federal Gas Tax Fund – Greater Vancouver Regional Fund Application Guide.

**POLICY**

As part of the *New Building Canada Plan*, the Government of Canada transfers funds to Canadian municipalities through the Federal Gas Tax Fund as a source of predictable, long-term funding for building and revitalizing public infrastructure. A renewed ten-year gas tax agreement, the Administrative Agreement on Federal Gas Tax Fund in British Columbia (2014 Agreement), came into effect in April, 2014 and extends the Federal Gas Tax Fund to 2024. It provides the framework for the delivery of federal funding to BC municipalities to help build and revitalize public infrastructure.

One of the three programs identified in the 2014 Agreement is the Greater Vancouver Regional Fund (GVRF). The GVRF pools 95% of MVRD member jurisdictions' per capita allocation of gas tax funds to support eligible regional transportation projects proposed and delivered by TransLink. The GVRF program aligns with the Metro Vancouver *Board Strategic Plan* by enabling the MVRD Board to play a key role in approving the use of these funds towards the advancement of the Mayors' Council Vision. Under this Policy, evaluation criteria have been established that will allow the Board to consider applications for the use of federal gas tax funds within the context of *Metro 2040: Shaping Our Future*, the *Regional Growth Strategy* to ensure integration between transportation planning and regional land use planning.

The 2014 Agreement identifies how the funds are to be delivered and provides high-level criteria to identify eligible projects and expenditures. Under the 2014 Agreement the MVRD Board must approve all eligible projects proposed by TransLink for funding. UBCM may not transfer monies to TransLink for eligible projects until it has received an approved list from the MVRD Board.

In order to support MVRD Board decisions related to approving expenditures from the GVRF, a process has been defined to clarify the procedural steps through which TransLink is to propose regional transportation projects to the MVRD Board for funding from the GVRF. Information requirements, including evaluation criteria, have also been defined to support the evaluation of regional transportation projects. Proposals from TransLink for funding from the GVRF must follow the format and procedures set out in the Federal Gas Tax Fund – Greater Vancouver Regional Fund Application Guide (the Application Guide).

### **Application Process**

The GVRF application review process will commence upon receipt of an application from TransLink staff. TransLink staff will strive to observe Metro Vancouver's committee report deadlines and ensure applications are sent with sufficient lead time for Metro Vancouver staff to review and provide staff-to-staff comments prior to finalizing the staff report to committee and Board.

The designated standing committee with responsibility for considering applications will review the submitted projects as described using the Application Guide and will make recommendations to the MVRD Board. The standing committee may request TransLink staff to make presentations as appropriate.

The MVRD Board will strive to make determinations in a timely manner. The MVRD Board will notify the Union of British Columbia Municipalities of the projects that it has approved for funding within seven business days of the decision.

### **Information Requirements**

In order for TransLink proposals to be considered by the MVRD Board, they must include all of the required information and follow the format as specified in the Application Guide.

## BOARD POLICY

Proposals must be accompanied by TransLink's approved Capital Program listing all projects and funding sources, including any projects funded or anticipating funding from the GVRF. Proposals must demonstrate the consistency of projects with the approved Investment Plan. Proposals must also include a description of each project for which funding is requested as defined within the Project Description section, and must demonstrate compliance with evaluation criteria, both as defined within the Application Guide.

### **Evaluation Criteria**

The Application Guide includes a set of evaluation criteria to allow for a detailed assessment of projects for which funding is requested. A description of how each proposed project achieves or works toward each criterion must be provided.

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 quantitative and qualitative assessments of proposed projects based on high priority objectives that reflect the intent of the Federal Gas Tax Fund, Metro Vancouver goals, and the Investment Plan.

### **Review of Federal Gas Tax Fund - Greater Vancouver Regional Fund Application Guide**

The Application Guide may be reviewed and revised as necessary on an ongoing basis at the discretion of the MVRD Board. Metro Vancouver will consult with UBCM and TransLink.

### **GVRF Funding**

TransLink will provide to the MVRD Board annual reports on projects that have received funding through the GVRF as of December 31<sup>st</sup>. Annual reports should be submitted no later than Q2 of the following year. At a minimum, the reports must include updates about variances in budgeted and actual costs, expenditures to date, project schedule, risk assessment, project progress, state of purchased assets, and alignment with the GVRF evaluation criteria.

TransLink need not request expenditure of all GVRF monies in any given year and may choose to apply the approved funding to a project over multiple years.

Following notification by the MVRD Board of projects approved for funding from the GVRF, UBCM will release funding for approved projects in a calendar year in one amount. The amount of funding released will be commensurate with the amount approved by the MVRD Board.

All proposals, MVRD Board decisions, and TransLink annual reports will be posted on a dedicated page on the Metro Vancouver website on an ongoing basis.

### **Ownership of Assets**

The 2014 Agreement does not address the question of ownership of regional transportation assets purchased using GVRF funds. Typically, GVRF funds are combined with other sources of funding to



offset the cost of a package of improvements. When determining whether asset ownership is advisable, the following factors should be considered:

- Public Sector Accounting Principles do not allow ownership of a tangible capital asset to be divided among different parties. Ownership of the asset must rest with one body.
- Should the MVRD decide to become the owner of an asset purchased through GVRF funding, the MVRD will also have responsibility for the maintenance, replacement and disposal of those assets.
- Ownership of assets, including those acquired using GVRF funding, enable TransLink to borrow for its infrastructure needs in the open market. TransLink currently uses this borrowing power to access funds to operate and maintain the regional transit system.

At its discretion, the MVRD Board shall consider the ownership of a regional transportation asset on a case by case basis with consideration given to the above factors.

### **Disposition of Assets**

The 2014 Agreement includes a provision that attaches conditions to the use of revenues generated from the sale, lease, encumbrance, or other form of disposal of gas tax-funded projects that are disposed of within five years of their completion. All such revenues must be invested by TransLink into eligible projects that have been approved by the MVRD Board.

For any assets purchased by TransLink using funds from the GVRF, TransLink will be required to report back annually on the state of the purchased asset in the annual report, including the disposition of any asset and the value of the gas tax funds returned to the GVRF based on the residual value of the disposed asset.

If and when revenues come available from assets that are disposed of by TransLink within five years of a project's completion, the use of such revenues must be approved by the MVRD Board using the same process and Application Guide as for new GVRF funds.

### **Scope Changes and Unspent Funds**

Expenditures from the GVRF for any specific project proposed by TransLink are associated solely with the project as described through the Application Guide, and approved by the MVRD Board. Should at any time, the project undergo changes or modifications, or should a project require greater funds from the GVRF than anticipated, a new project proposal must be submitted by TransLink to the MVRD using the same process as was undertaken for the original proposal.

Should any project approved by Metro Vancouver for expenditure from the GVRF result in unspent funds, these funds must be returned to the GVRF.

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To: Finance Committee

From: Marcin Pachcinski, Division Manager, Electoral Area and Implementation Services  
Regional Planning and Housing Services

Date: October 24, 2023 Meeting Date: November 9, 2023

Subject: **Fraser Basin Council: Renewed Three-year agreement with Metro Vancouver**

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**RECOMMENDATION**

That the MVRD Board direct staff to develop a contribution agreement with the Fraser Basin Council for an annual amount of \$150,000 for the three-year term from January 1, 2024 to December 31, 2026.

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**EXECUTIVE SUMMARY**

Since 1997, Metro Vancouver has provided an annual financial contribution to the Fraser Basin Council (FBC) in recognition that many of its activities align with Metro Vancouver's priorities. This contribution has been set at \$300,000 annually since 2018. Recent examples of FBC activities include electric vehicle incentive programs, Lower Mainland flood planning, and the Realizing UNDRIP Initiative, among others. The current contribution agreement will expire on December 31, 2023, and FBC is requesting the MVRD Board to enter into a new three-year agreement for 2024-2026. Staff have done a high level assessment of FBC's activities in the region relative to Metro Vancouver's priorities and financial contribution. The assessment shows that:

- Metro Vancouver's annual financial contribution is to the organization as a whole, rather than for specific FBC activities;
- There is broad alignment between FBC's activities and Metro Vancouver's priorities, but the activities do not stem directly from Metro Vancouver plans or Board decisions;
- The FBC largely relies on provincial, federal, foundation, and corporate funding sources;
- FBC's activities are mostly province-wide in scope, and often focus on implementing provincial or federal priorities;
- Metro Vancouver has increased its internal capacity and is doing more direct work in common areas of interest such as climate change and reconciliation following the adoption of *Climate 2050* Roadmaps and *Metro 2050*; and
- A reduction in Metro Vancouver's financial contribution is unlikely to impact most FBC activities, but may have an impact on the relationship between Metro Vancouver and FBC.

Staff recommend continuing the partnership with FBC, but recommend a reduced annual contribution in light of the above assessment.

**PURPOSE**

To seek direction from the MVRD Board regarding Metro Vancouver's financial contribution to the Fraser Basin Council for the next three years (2024-2026).

## BACKGROUND

Fraser Basin Council is an external organization that has received annual funding from Metro Vancouver since 1997. The three-year contribution agreement was last approved by the MVRD Board on November 27, 2020 as follows:

*“That the MVRD Board approve a three-year Contribution Agreement with the Fraser Basin Council for an annual amount of \$300,000 for the term January 1, 2021 to December 31, 2023, as presented in the report dated October 19, 2020, titled “Fraser Basin Council – Contribution Agreement 2021 – 2023.”*

The current three-year agreement expires December 31, 2023. This report seeks Committee and Board direction on the level of Metro Vancouver’s financial contribution and involvement moving forward.

## FRASER BASIN COUNCIL (FBC)

FBC is a charitable, non-profit organization that exists to advance sustainability within the Fraser Basin, including Metro Vancouver, and throughout British Columbia. FBC works by promoting and facilitating collaborative action among all orders of government, First Nations, the private sector and the public on a variety of sustainability initiatives. FBC has an ongoing role as a convener and facilitator, engaging diverse stakeholder groups on the importance of sustainability in the Fraser Basin and throughout the Province. As described in its 2021-2026 Strategic Plan (Reference 2), FBC’s vision, mandate, and strategic priorities are:

*Vision:* Social well-being supported by a vibrant economy and sustained by a healthy environment

*Mandate:* Advance sustainability solutions and practices in British Columbia

*Strategic Program Priorities:* Build sustainable and resilient communities; Support healthy watersheds and water resources; and Take action on climate change.

## RECENT FBC ACTIVITIES IN THE METRO VANCOUVER REGION

Below is a list of recent FBC activities in the region, based on the September 29, 2023 external agency status report for Fraser Basin Council Society received by the MVRD Board on October 27, 2023. Some information related to funding sources is also based on Attachment 1 in Reference 1 titled “Attachment "A" Fraser Basin Council Expenditures Supporting Metro Vancouver Priorities 2018-2020\*”.

### Take Action on Climate Change

#### *Electric vehicle incentive programs*

- Public Charger Program
- Clean BC Go Electric Rebates
- Go Electric Fleets Program
- Emotive (The Electric Vehicle Experience)
- EV Advisor Service for Multi-Family Housing and Workplaces
- Overcoming Barriers to Electric Vehicle Uptake

#### *Other energy/resilience programs*

- First Nations Home EnergySave
- Energy Peers in Indigenous Communities
- Climate Adaptation
- FortisBC Energy Efficiency & Conservation Advisory Group

### FBC Activity Funding Sources Relative to Metro Vancouver’s Financial Contribution

The majority of electric vehicle incentive programs are province-wide and provincially funded. As these programs are funded by the Province to achieve provincial (versus local/regional) goals, a reduction in Metro Vancouver’s financial contribution to FBC is unlikely to directly impact these FBC activities. The other energy/resilience programs receive funding from a variety of sources including Natural Resources Canada, the Province, BC Hydro, Fortis BC, and the BC Real Estate Foundation, among others. A reduction in Metro Vancouver’s financial contribution to FBC is unlikely to directly impact these FBC activities.

### FBC Activities Relative to Metro Vancouver’s Priorities

FBC’s electric vehicle incentive programs support Metro Vancouver’s work to accelerate the transition of the passenger vehicle fleet to electric vehicles (Strategy 2 of the *Climate 2050* Transportation Roadmap).

Following the adoption of the *Climate 2050* and the Transportation Roadmap, Metro Vancouver has done more work in advancing electric vehicle uptake in the region, such as the recent Regional EV Charging Analysis and Guidance project, which included the development of a guidance document for EV charging deployment in the region (Reference 3) as well as a primer on EV charging infrastructure (Reference 4). These documents were developed in collaboration with TransLink and BC Hydro for the Metro Vancouver region. This example highlights the greater role that Metro Vancouver is playing in advancing this work directly through the implementation of board-adopted plans such as the Transportation Roadmap.

The other FBC energy/resilience programs are varied in focus and province-wide. They are broadly aligned with Metro Vancouver priorities as stated in corporate management plans, but do not stem from them.

### **Support Healthy Watersheds and Water Resources**

- *Lower Mainland Flood Planning*  
FBC highlights the recent work on completing the Pathways to Action report (Reference 5), which conveys consensus recommendations of First Nations and government contributors with respect to early and medium-term actions to advance flood risk reduction and resilience. Recommendations include calls for substantial new funding for flood mitigation and urgent action to develop top tier regional priorities for investment, as well as the establishment of a new multi-government leadership table. FBC has also been updating the previously completed regional flood model and doing work related to dike vulnerability and seismic risk.
- *BC Flood Plain Mapping Initiative*  
FBC is working with the provincial and federal governments on a province-wide Flood Plain Mapping initiative that includes multiple regional flood plain mapping and scoping study projects.
- *Salmon-Safe BC*  
The urban program has 8 sites undergoing the assessment process in the region with 3 sites on track for certification in the coming months, while the agriculture program currently has 6 sites

certified in the region. Between 2018-2020, 90% of the program’s urban and agriculture eco-certification activities were in the Metro Vancouver region.

#### FBC Activity Funding Sources Relative to Metro Vancouver’s Financial Contribution

For the Lower Mainland Flood Planning work, FBC’s external agency status report states:

*“plays a critical role in providing tools and knowledge in support of informed decision-making, for example, by leading extensive floodplain mapping work in vulnerable regions such as the Lower Mainland. In 2022/23 and 2023/24, FBC secured over \$9.7 million in primarily provincial and federal government funding in support of this essential work.”*

The BC Flood Plain Mapping Initiative is funded by both the Province of BC and the federal government. For the Lower Mainland Flood Planning and BC Flood Plain Mapping Initiative, FBC highlights its ability to leverage the funds provided by Metro Vancouver to obtain additional provincial and federal projects for its activities. Metro Vancouver’s financial contribution are important to leverage additional funds for important flood planning initiatives.

According to the Salmon-Safe BC website, Metro Vancouver and the BC Real Estate Foundation are its current funders. In the external agency status report, FBC notes that *“The Real Estate Foundation of BC has been supporting SSBC operations and outreach through a three-year agreement of \$95,000 concluding in 2023. The financial model of SSBC has now shifted from its initial dependence on grants to a more sustainable assessment fee-based approach.”* This shift to a fee-based approach suggests a reduction in Metro Vancouver’s financial contribution to FBC would not impact this program.

#### FBC Activities Relative to Metro Vancouver’s Priorities

FBC’s Phase 1 and early Phase 2 work created hydraulic modelling, mapping, and a flood risk assessment for the Lower Mainland. This process and outputs were helpful in understanding region-wide flood risk for Metro Vancouver. It informed *Metro 2050* policy work and provided baseline data for understanding potential impacts on Metro Vancouver infrastructure and lands (e.g. regional parks and Barnston Island).

FBC’s role was instrumental in producing data, maps, and various reports that helped all land management agencies in the Lower Mainland understand flood risk and recommend actions to address it. The recent development of the Pathways to Action report (Reference 5) brought the issue of governance to the forefront, and the next step following the completion of the report is for the Province to follow up on with other orders of government. This next step recognizes the complexity of the multiple jurisdictions playing some role in managing flood risk along the lower Fraser River (i.e. multiple municipalities across two regional districts (Metro Vancouver and the FVRD), multiple First Nations, diking districts, the Province, and the Port, among others).

Moving forward, government bodies that have democratic mandates and legislative requirements (including Metro Vancouver) are best suited to be the main drivers in determining what decision-making and funding model will best address flood risk in the Lower Mainland. In this light, Metro Vancouver’s priorities will best be served by directly participating in and shaping whatever new

models are considered through government-to-government talks. FBC can be expected to continue to do technical work (e.g. mapping and analysis related to dike vulnerability and seismic risk) with funding from provincial and federal governments.

## **Building Sustainable & Resilient Communities and Regions**

### FBC Activities

- *Realizing UNDRIP Initiative*  
This is a multi-year program focused on gathering, amplifying, and activating knowledge about how UN Declaration on the Rights of Indigenous Peoples and other tools and resources (e.g. meetings, website) that can advance both reconciliation and sustainability.
- *Vancouver Fraser Port Authority ECHO Program*  
FBC is the Independent Facilitator for the Enhancing Cetacean Habitat and Observation (ECHO) Program, a Vancouver Fraser Port Authority-led initiative to better understand and manage the impact of shipping activities on at-risk whales in the Southern Salish Sea.
- *Youth Program Initiatives*  
The FBC actively engages youth across BC to support them in becoming effective champions for collaboration on sustainability challenges and opportunities.

### FBC Activity Funding Sources Relative to Metro Vancouver’s Financial Contribution

Based on 2018-2020 information, the Realizing UNDRIP Initiative is paid for through a combination of provincial, corporate, foundations and individual sources. Metro Vancouver’s financial contribution and partnership is important to ensure FBC’s ability to leverage funds from these sources.

The Vancouver Fraser Port Authority ECHO Program is a Port program, and a reduction in Metro Vancouver’s financial contribution to FBC is not expected to impact this program.

The Youth Program Initiatives are varied and mostly province-wide. Funding agencies includes the BC Climate Action Secretariat and Environment and Climate Change Canada. Metro Vancouver’s financial contribution and partnership is likely important to FBC’s ability to leverage funds from these sources.

### FBC Activities Relative to Metro Vancouver’s Priorities

FBC’s activities around building sustainable & resilient communities and regions are broadly aligned with Metro Vancouver’s plans and priorities, including supporting and implementing the United Nations Declaration on the Rights of Indigenous Peoples. While broadly aligned, these activities do not directly stem from Metro Vancouver plans or priorities.

## **SUMMARY ASSESSMENT OF FBC ACTIVITIES RELATIVE TO METRO VANCOUVER’S PRIORITIES AND FINANCIAL CONTRIBUTION**

This report is organized by FBC’s activities as that is how FBC demonstrates its value to the Metro Vancouver region. The financial contribution Metro Vancouver provides annually is for FBC as an organization, rather than for specific activities. FBC’s activities continue to be broadly aligned with

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Metro Vancouver priorities as expressed through Board-adopted plans, including *Climate 2050*, *Metro 2050*, and the Board Strategic Plan. Notably though, individual programs and activities FBC undertakes are primarily driven by available funding from provincial or federal agencies, often to advance or implement a provincial or federal goal.

Moving forward there remains a strong alignment and value for Metro Vancouver to continue to provide an annual financial contribution to the FBC. FBC’s work in producing flood risk related maps and reports is an excellent example of an FBC activity that has been a direct benefit to Metro Vancouver and member jurisdiction staff and their work.

The flood mapping and electric vehicle incentive programs highlight the role that FBC plays as an implementation arm of the Province of BC, and to a lesser extent certain federal agencies. FBC’s size and reach across the province means it is well positioned to deliver certain provincial programs, most of which benefit the Metro Vancouver region given the region’s large concentration of BC residents. The flood mapping example also illustrates the limits of FBC’s ability to replace the Province and government agencies in general. FBC was able to produce data and reports, but does not have capacity, powers, or mandates of government to make decisions related to governance or funding of a flood risk mitigation body.

Overall, staff assess that Metro Vancouver’s continued partnership and financial contribution to FBC is beneficial because FBC’s work is for the most part a reflection and implementation of provincial and federal priorities related to key issues such as climate change, sustainability, and reconciliation. This work broadly aligns with Metro Vancouver board-adopted management plans, but staff note that Metro Vancouver is doing more work in these areas that is directly tied to implementing board-adopted plans and that is tailored to the needs of the region.

Placing a dollar value on what Metro Vancouver should contribute to FBC moving forward is difficult because it is not tied to specific projects, but rather to the organization as whole. FBC’s funding sources for its activities indicate most would not be significantly impacted by a reduction in Metro Vancouver funding, but staff are unable to assess potential impacts from a funding reduction on FBC staffing resources used to implement those activities.

Staff’s recommendation for a reduction in Metro Vancouver’s financial contribution to FBC is not an indication that FBC does not provide value to the region through its activities. Rather, it is a recognition of Metro Vancouver’s increased capacity and commitment in common areas (e.g. climate change, flood resiliency and reconciliation) and a signal that Metro Vancouver is focusing more on direct implementation of board-adopted plans.

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**ALTERNATIVES**

1. That the MVRD Board direct staff to negotiate a contribution agreement with the Fraser Basin Council for an annual amount of \$150,000 for the three-year term from January 1, 2024 to December 31, 2026.
2. That the MVRD Board direct staff to negotiate a contribution agreement with the Fraser Basin Council for an annual amount of \$300,000 for the three-year term from January 1, 2024 to December 31, 2026 that seeks greater alignment with Metro Vancouver Board-adopted plans and priorities and is more focused on a project based delivery model.
3. That the Finance Committee receive the report titled “Fraser Basin Council – Metro Vancouver’s Financial Contribution” dated October 24, 2023 for information, and provide alternate direction to staff.

**FINANCIAL IMPLICATIONS**

If the Board approves Alternative 1, the Contribution Agreement funding would be supported through the General Government Program and would commit Metro Vancouver to three years of funding to the FBC in the amount of \$150,000 each year for a three-year term. This option will maintain a partnership between Metro Vancouver and FBC, however may result in relationship impacts between the two organizations, and may initiate a pattern in terms of commitment to, and local government funding for, the agency.

If the Board approves Alternative 2, the annual contribution would be maintained at the past funding level of \$300,000 each year. Staff will work with the Fraser Basin Council to restructure the three-year agreement to ensure that it has a stronger alignment between Metro Vancouver’s financial contribution and advancing Board-adopted plans and priorities. Shortly before report publishing, Fraser Basin Council provided their most recent financial statements (Attachment 1) and revenue sources (Attachment 2). These are provided as additional information for the Committee and Board’s consideration.

**CONCLUSION**

FBC continues to provide value to the region and its work is broadly aligned with Metro Vancouver’s priorities. Metro Vancouver’s increased commitment and capacity related to climate change, flood resilience, reconciliation, and other work means there is less of a reliance of FBC’s activities to implement Metro Vancouver’s priorities. A reduction in Metro Vancouver’s financial contribution is not expected to have a significant impact on FBC’s activities in the region. Staff recommend Alternative 1, however, Alternative 2 allows for continued funding at the current level and the opportunity to work with the Fraser Basin Council to restructure the agreement to ensure more project based funding aligned with the Board-adopted plans and priorities.

**ATTACHMENTS**

1. Financial statements of Fraser Basin Council Society – March 31, 2023
2. Fraser Basin Council revenue by source 2022-2023



**REFERENCES**

1. [Fraser Basin Council Contribution Agreement 2021-2023 Staff Report](#) – November 2020
2. [Fraser Basin Council 2021-2026 Strategic Plan](#)
3. [Keeping it Current Report #3: Guidance for Collaborative Deployment of EV Charging in Metro Vancouver](#) – August 2023
4. [Keeping it Current Report 1: Primer on EV Charging Infrastructure](#) – August 2023
5. [Fraser Basin Council Pathways to Action for Flood Risk Reduction and Resilience](#) – Summer 2023

Financial Statements of

**FRASER BASIN COUNCIL SOCIETY**

And Independent Auditor's Report thereon

Year ended March 31, 2023



KPMG LLP  
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## INDEPENDENT AUDITOR'S REPORT

To the Board of Directors of Fraser Basin Council Society

### Report on the Audit of the Financial Statements

#### *Opinion*

We have audited the financial statements of Fraser Basin Council Society (the "Society"), which comprise:

- the statement of financial position as at March 31, 2023
- the statement of operations for the year then ended
- the statement of changes in net assets for the year then ended
- the statement of cash flows for the year then ended
- and notes to the financial statements, including a summary of significant accounting policies

(hereinafter referred to as the "financial statements").

In our opinion, the accompanying financial statements, present fairly, in all material respects, the financial position of the Society as at March 31, 2023, and its results of operations and cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

#### *Basis for Opinion*

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the "**Auditor's Responsibilities for the Audit of the Financial Statements**" section of our auditor's report.

We are independent of the Society in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada and we have fulfilled our other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.



## ***Responsibilities of Management and Those Charged with Governance for the Financial Statements***

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Society's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Society or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Society's financial reporting process.

## ***Auditor's Responsibilities for the Audit of the Financial Statements***

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit.

We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.

The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Society's internal control.



- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Society's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Society to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

### **Report on Other Legal and Regulatory Requirements**

As required by the Societies Act (British Columbia), we report that, in our opinion, the accounting policies applied in preparing and presenting the financial statements in accordance with Canadian accounting standards for not-for-profit organizations have been applied on a basis consistent with that of the preceding period.

A handwritten signature in black ink that reads 'KPMG LLP' with a horizontal line underneath.

Chartered Professional Accountants

Vancouver, Canada  
October 11, 2023

# FRASER BASIN COUNCIL SOCIETY

## Statement of Financial Position

March 31, 2023, with comparative information for 2022

	2023	2022
<b>Assets</b>		
Current assets:		
Cash and cash equivalents	\$ 3,936,351	\$ 3,791,863
Cash held in trust (note 8)	50,701,538	54,281,169
Investments at fair value (note 3)	1,837,530	1,073,317
Project and other receivables (note 8(a))	51,880,298	1,466,755
Prepaid expenses	17,093	34,426
	<u>108,372,810</u>	<u>60,647,530</u>
Capital assets (note 4)	38,332	68,710
	<u>\$ 108,411,142</u>	<u>\$ 60,716,240</u>

## Liabilities and Net Assets

Current liabilities:		
Accounts payable and accrued liabilities (note 5)	\$ 834,632	\$ 1,540,238
Deferred revenue (note 6)	4,120,276	3,065,115
Replacement reserve (note 7)	116,480	145,311
Funds held in trust (note 8)	101,201,538	54,281,169
Current portion of obligations under capital lease (note 9)	3,476	3,476
Deferred lease inducement	6,389	7,986
	<u>106,282,791</u>	<u>59,043,295</u>
Obligations under capital lease (note 9)	580	4,056
	<u>106,283,371</u>	<u>59,047,351</u>
Net assets:		
Invested in capital assets (note 10)	27,887	53,192
Internally restricted: Stabilization fund	1,915,697	1,615,697
Unrestricted	184,187	-
	<u>2,127,771</u>	<u>1,668,889</u>
Commitments (note 11)		
	<u>\$ 108,411,142</u>	<u>\$ 60,716,240</u>

See accompanying notes to financial statements.

Approved on behalf of the Board:

  
Director

  
Director

# FRASER BASIN COUNCIL SOCIETY

## Statement of Operations

Year ended March 31, 2023, with comparative information for 2022

	2023	2022
Revenue:		
Projects (note 12):		
Sustainable and resilient regions and communities	\$ 2,966,792	\$ 2,439,606
Climate change and air quality	2,513,590	2,287,765
Watershed and water resources	2,473,453	3,710,088
Council governance and operations	104,552	94,734
Investment and other income	83,221	28,180
Gain on fair value adjustment of investments	3,018	18,327
	<u>8,144,626</u>	<u>8,578,700</u>
Expenses:		
Projects:		
Sustainable and resilient regions and communities	2,484,163	1,926,640
Climate change and air quality	2,243,872	2,071,279
Watershed and water resources	2,025,940	3,324,559
Administration	895,082	789,776
Amortization of capital assets	36,687	43,728
	<u>7,685,744</u>	<u>8,155,982</u>
Excess of revenue over expenses	<u>\$ 458,882</u>	<u>\$ 422,718</u>

See accompanying notes to financial statements.

# FRASER BASIN COUNCIL SOCIETY

## Statement of Changes in Net Assets

Year ended March 31, 2023, with comparative information for 2022

	Invested in capital assets (note 10)	Internally restricted: Stabilization fund	Unrestricted	Total 2023	Total 2022
Balance, beginning of year	\$ 53,192	\$ 1,615,697	\$ -	\$ 1,668,889	\$ 1,246,171
Excess (deficiency) of revenue over expenses	(35,090)	-	493,972	458,882	422,718
Changes in invested in capital assets (note (10(c)))	9,785	-	(9,785)	-	-
Transfers (note 2(d))	-	300,000	(300,000)	-	-
<b>Balance, end of year</b>	<b>\$ 27,887</b>	<b>\$ 1,915,697</b>	<b>\$ 184,187</b>	<b>\$ 2,127,771</b>	<b>\$ 1,668,889</b>

See accompanying notes to financial statements.



# FRASER BASIN COUNCIL SOCIETY

## Statement of Cash Flows

Year ended March 31, 2023, with comparative information for 2022

	2023	2022
Cash provided by (used in):		
Operating:		
Excess of revenue over expenses	\$ 458,882	\$ 422,718
Gain on fair value adjustment of investments	(3,018)	(18,327)
Amortization of capital assets	36,687	43,728
Amortization of deferred lease inducement	(1,597)	(1,597)
Changes in non-cash operating working capital:		
Project and other receivables	86,457	(280,314)
Prepaid expenses	17,333	(8,246)
Accounts payable and accrued liabilities	(705,606)	148,777
Deferred revenue	1,055,161	(492,287)
Replacement reserve	(28,831)	-
	915,468	(185,548)
Investing:		
Purchase of investments, net	(761,195)	4
Purchase of capital assets	(6,309)	(22,636)
	(767,504)	(22,632)
Financing:		
Repayment of capital lease obligation	(3,476)	(3,476)
Increase (decrease) in cash and cash equivalents	144,488	(211,656)
Cash and cash equivalents, beginning of year	3,791,863	4,003,519
Cash and cash equivalents, end of year	\$ 3,936,351	\$ 3,791,863
Non-cash transactions:		
Change in funds held in trust	\$ 46,920,369	\$ 1,615,852

See accompanying notes to financial statements.

# FRASER BASIN COUNCIL SOCIETY

Notes to Financial Statements

Year ended March 31, 2023

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## 1. Operations:

Fraser Basin Council Society (the "Society") is incorporated under the *Societies Act* (British Columbia). Its mandate is to advance sustainability of the Fraser Basin and monitor implementation of the Charter for Sustainability. The Charter for Sustainability is designed to maintain and enhance social, economic and environmental sustainability of the Fraser Basin. The Society qualifies as a registered charity under the *Income Tax Act* and, accordingly, is exempt from federal and provincial income and capital taxes.

## 2. Significant accounting policies:

These financial statements have been prepared by management in accordance with Canadian accounting standards for not-for-profit organizations in Part III of the CPA Canada Handbook – *Accounting* and include the following significant accounting policies:

### (a) Revenue recognition:

The Society follows the deferral method of accounting for contributions. Externally restricted contributions are deferred and recognized as revenue in the year in which the related expenses are incurred. Unrestricted contributions are recognized as revenue when received or receivable if the amount to be received can be reasonably estimated and collection is reasonably assured.

Externally restricted investment income is deferred and recognized as revenue when the restriction, as defined in the related contribution agreement, is fulfilled. Unrestricted investment income is recognized as revenue when earned.

### (b) Cash and cash equivalents:

Cash and cash equivalents are comprised of cash and highly liquid short-term deposits maturing or convertible to cash within 90 days of acquisition.

### (c) Capital assets:

Capital assets are recorded at cost less accumulated amortization. Amortization is computed on a straight-line basis over the assets' estimated useful lives as follows:

Asset	Useful lives
Computer and office equipment	3 - 5 years
Leasehold improvements	Lesser of useful life and term of lease

When a capital asset no longer contributes to the Society's ability to provide services, the carrying amount is written down to its residual value, if any.

# FRASER BASIN COUNCIL SOCIETY

Notes to Financial Statements (continued)

Year ended March 31, 2023

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## 2. Significant accounting policies (continued):

### (d) Internally restricted: Stabilization fund:

Transfers to the internally restricted Stabilization fund from unrestricted net assets are restricted through Board of Directors' (the "Board") approval. The funds are currently available-for-use under certain circumstances, as determined by the Board.

### (e) Unrestricted net assets:

Unrestricted net assets are the accumulation of the excess of revenue over expenses, which have not been internally designated for use on a specific project or are not invested in capital assets.

### (f) Measurement uncertainty:

The preparation of financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. Actual results may ultimately differ from these estimates.

### (g) Lease inducements:

Amounts received by the Society from the landlord as inducements to lease office premises are recorded as liabilities on the statement of financial position and recognized as a reduction of rent expense on a straight-line basis over the term of the lease.

### (h) Financial instruments:

Financial instruments are recorded at fair value on initial recognition. Freestanding derivative instruments that are not in a qualifying hedging relationship and equity instruments that are quoted in an active market are subsequently measured at fair value. All other financial instruments are subsequently recorded at cost or amortized cost, unless management has elected to carry the instruments at fair value. The Society has elected to carry investments at fair value.

Transaction costs incurred on the acquisition of financial instruments measured subsequently at fair value are expensed as incurred. All other financial instruments are adjusted by transaction costs incurred on acquisition and financing costs, which are amortized using the straight-line method.

Financial assets carried at costs or amortized costs are assessed for impairment on an annual basis at the end of the fiscal year if there are indicators of impairment. If there is an indicator of impairment, the Society determines if there is a significant adverse change in the expected amount or timing of future cash flows from the financial asset.

# FRASER BASIN COUNCIL SOCIETY

Notes to Financial Statements (continued)

Year ended March 31, 2023

## 2. Significant accounting policies:

### (h) Financial instruments (continued):

If there is a significant adverse change in the expected cash flows, the carrying value of the financial asset is reduced to the highest of the present value of the expected cash flows, the amount that could be realized from selling the financial asset or the amount the Society expects to realize by exercising its right to any collateral. If events and circumstances reverse in a future period, an impairment loss will be reversed to the extent of the improvement, not exceeding the initial carrying value.

### (i) Related party transactions:

Monetary related party transactions and non-monetary related party transactions that have commercial substance are measured at the exchange amount when they are in the normal course of business, except when the transaction is an exchange of a product or property held for sale in the normal course of operations. Where the transaction is not in the normal course of operations, it is measured at the exchange amount when there is a substantive change in the ownership of the item transferred and there is independent evidence of the exchange amount. All other related party transactions are measured at the carrying amount.

## 3. Investments at fair value:

	2023	2022
Cash held for reinvestment	\$ 20,568	\$ 33,351
Canadian fixed income, including pooled funds	923,158	515,723
Canadian equities, including pooled funds	571,855	368,489
US equities	321,949	155,754
	<u>\$ 1,837,530</u>	<u>\$ 1,073,317</u>

The cost of the investments as at March 31, 2023 is \$1,749,594 (2022 - \$948,566).

## 4. Capital assets:

			2023	2022
	Cost	Accumulated depreciation	Net book value	Net book value
Computer and office equipment	\$ 531,454	\$ 504,530	\$ 26,924	\$ 49,696
Leasehold improvements	71,716	60,308	11,408	19,014
	<u>\$ 603,170</u>	<u>\$ 564,838</u>	<u>\$ 38,332</u>	<u>\$ 68,710</u>

Included in computer and office equipment are assets under capital lease with a net book value of \$3,477 (2022 - \$6,953).

# FRASER BASIN COUNCIL SOCIETY

Notes to Financial Statements (continued)

Year ended March 31, 2023

## 5. Accounts payable and accrued liabilities:

Included in accounts payable and accrued liabilities as at March 31, 2023 are government remittances payable of \$9,047 (2022 - \$963) relating to federal and provincial sales taxes, payroll taxes, health taxes and workers' safety insurance.

## 6. Deferred revenue:

	Watershed and Water Resources	Climate Change and Air Quality	Sustainable and Resilient Regions and Communities	2023 Total	2022 Total
Balance, beginning of year	\$ 263,909	\$ 720,965	\$ 2,080,241	\$ 3,065,115	\$ 3,557,402
Amounts received during the year	1,065,000	917,224	787,427	2,769,651	893,010
Amount recognized as revenue in the year	(55,000)	(366,602)	(1,292,888)	(1,714,490)	(1,385,297)
Balance, end of year	\$ 1,273,909	\$ 1,271,587	\$ 1,574,780	\$ 4,120,276	\$ 3,065,115

Included in deferred revenue for Sustainable and Resilient Regions and Communities is \$251,025 (2022 - \$214,471) for the Shuswap Watershed Council.

## 7. Replacement reserve:

The Society receives funding from the Prince George Monitoring Working Group. The total funding deferred as at March 31, 2023 of \$116,480 (2022 - \$145,311) is restricted for expenditures related to replacement and maintenance of air quality equipment.

## 8. Funds held in trust:

Funds held in trust represent the excess of funding received from government and private sources to be administered by the Society in respect of specific third-party projects, and for which the Society earns an administration fee. The Society acts as an agent only to collect funds and make disbursements with respect to these projects, and accordingly, related revenue and expenditures have not been included in the financial statements of the Society.

# FRASER BASIN COUNCIL SOCIETY

Notes to Financial Statements (continued)

Year ended March 31, 2023

## 8. Funds held in trust (continued):

During the year, trust funds managed by the Society had the following activity:

	2022	Contributions and interest	Disbursements	2023
Remote Community Infrastructure Fund	\$ 2,904,084	\$ 59,942	\$ 1,540,120	\$ 1,423,906
Log Debris Management	210,000	-	-	210,000
Mountain Cariboo	72,707	-	-	72,707
Sea to Sky Land and Resource Management Plan Trust	17,180	-	10,549	6,631
Northern Spotted Owl	8,498	-	-	8,498
Roy Mussel Fund	5,065	125	-	5,190
Muska – Kechika Advisory Board	133,464	77,419	74,225	136,658
South Peace Northern Caribou	339,436	8,466	9,553	338,349
Murray River	46,951	60,776	7,794	99,933
Hullcar Fund	81,023	2,021	2,021	81,023
Specialty Use Vehicle Incentive	31,156,209	950,411	3,188,576	28,918,044
Charging Solutions and Incentive Programs	504,547	4,930	169,936	339,541
Community Energy Leadership	264,142	5,509	269,651	-
Renewable Energy Remote Communities	664,916	506,256	65,647	1,105,525
Salmon Restoration Columbia River	310,186	529,622	722,979	116,829
Indigenous Participation in Caribou Recovery	186,353	2,306	26,767	161,892
CleanBC Go E-Charger (a)	10,929,409	50,765,304	1,276,692	60,418,021
CleanBC Go E-Fleets	6,096,999	1,159,722	838,146	6,418,021
Northern Interia Caribou	-	1,015,722	29,837	985,885
E-motive	350,000	4,331	-	354,331
	\$ 54,281,169	\$ 55,152,862	\$ 8,232,493	\$ 101,201,538

(a) \$50,500,000 of the funding for the CleanBC Go E-Charger project was recorded in project and other receivables as at March 31, 2023 (2022 - nil) and the full amount of the funding was received April 2023.

## 9. Obligations under capital lease:

The Society has financed certain office equipment by entering into capital lease arrangements. The minimum lease payments under those capital leases are as follows:

	2023	2022
2023	\$ -	\$ 3,532
2024	3,532	3,532
2025	590	590
	4,122	7,654
Less amount representing interest at 1.62%	66	122
Obligation under capital lease	4,056	7,532
Current portion of obligations under capital lease	3,476	3,476
	\$ 580	\$ 4,056

# FRASER BASIN COUNCIL SOCIETY

Notes to Financial Statements (continued)

Year ended March 31, 2023

## 10. Invested in capital assets:

(a) Invested in capital assets is calculated as follows:

	2023	2022
Capital assets	\$ 38,332	\$ 68,710
Amounts financed by obligations under capital lease	(4,056)	(7,532)
Deferred lease inducements	(6,389)	(7,986)
	<u>\$ 27,887</u>	<u>\$ 53,192</u>

(b) Deficiency of revenue over expenses:

	2023	2022
Amortization of capital assets	\$ 36,687	\$ 43,728
Amortization of lease inducements	(1,597)	(1,597)
	<u>\$ 35,090</u>	<u>\$ 42,131</u>

(c) Change in net assets invested in capital assets:

	2023	2022
Purchase of capital assets	\$ 6,309	\$ 22,636
Repayments of capital lease obligations	3,476	3,476
	<u>\$ 9,785</u>	<u>\$ 26,112</u>

## 11. Commitments:

The Society is committed to make monthly lease payments for certain office premises as follows:

2024	\$ 201,311
2025	196,883
2026	200,852
2027	25,313
2028	16,876
	<u>\$ 641,235</u>

# FRASER BASIN COUNCIL SOCIETY

Notes to Financial Statements (continued)

Year ended March 31, 2023

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## 12. Related parties:

During the year, the Society provided secretarial and management services, including the executive director function, to the Prince George Air Improvement Roundtable, a British Columbia not-for-profit society. The Society received revenue from those services of \$157,906 (2022 - \$140,476) and recorded the revenues to Climate Change and Air Quality revenues. At March 31, 2023, accounts receivable included \$26,871 (2022 - \$20,350) relating to these services.

In addition, the Society provided secretarial and management services, including the executive director function, to the North Central Local Governments Association, a British Columbia not-for-profit society. The Society received revenue from those services of \$184,461 (2022 - \$158,194) and recorded the revenues to North Central Local Governments Association revenues. At March 31, 2023, accounts receivable included \$142,461 (2022 - \$57,710) relating to these services.

## 13. Financial instruments:

### (a) Liquidity risk:

Liquidity risk is the risk that the Society will be unable to fulfill its obligations on a timely basis or at a reasonable cost. The Society manages its liquidity risk by monitoring its operating requirements. The Society prepares budget and cash forecasts to ensure it has sufficient funds to fulfill its obligations.

### (b) Credit risk:

Credit risk refers to the risk that a counterparty may default on its contractual obligations resulting in a financial loss. The Society is exposed to credit risk with respect to the cash and cash equivalents and project and other receivables. The Society assesses, on a continuous basis, project and other receivables and provides for any amounts that are not collectible in the allowance for doubtful accounts.

### (c) Interest rate risk:

Interest rate risk is the risk of fair value fluctuation of fixed rate financial instruments, or future cash flow changes on floating rate instruments, due to changes in market rate of interest. The Society is exposed to interest rate risk on its fixed interest rate financial instruments, including investments, which creates risk of fair value fluctuations.

There has been no change to the risk exposures outlined above from the prior year.



# FRASER BASIN COUNCIL SOCIETY

Notes to Financial Statements (continued)

Year ended March 31, 2023

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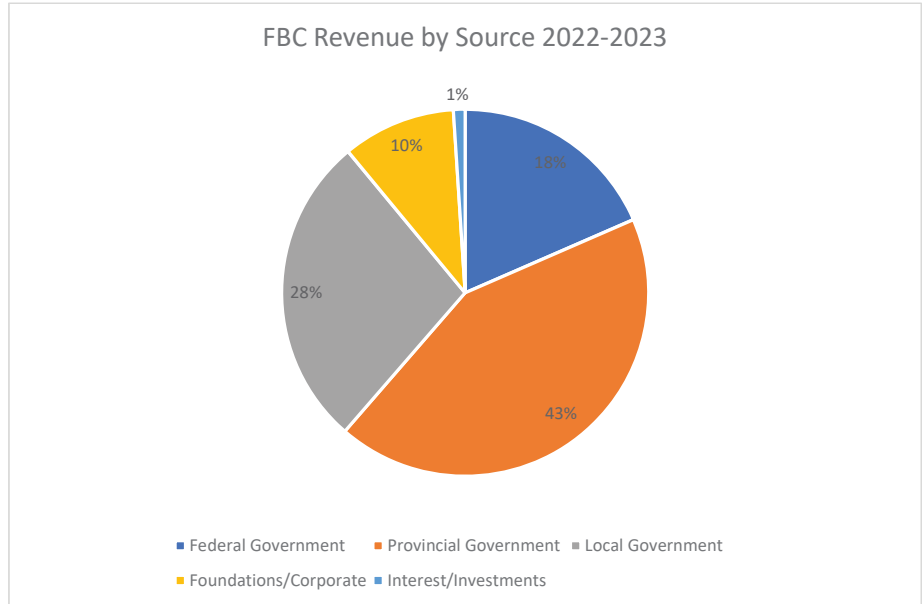
## **14. Employee and contractor remuneration:**

For the year ended March 31, 2023, the Society paid total remuneration of \$1,491,772 (2022 -\$1,372,171) to 14 (2022 - 13) employees, each of whom received total annual remuneration of \$75,000 or greater. There were no contractors for services that received total annual remuneration of \$75,000 or greater. No remuneration was paid to any member of Board.

## **15. Comparative information:**

Certain comparative information has been reclassified to conform to the financial statement presentation adopted in the current year.

Federal Government	18%	1,503,778
Provincial Government	43%	3,493,386
Local Government	28%	2,247,512
Foundations/Corporate	10%	813,711
Interest/Investments	1%	86,240
		<u>8,144,627</u>



To: Finance Committee

From: George Kavouras, Director, Procurement, Procurement & Real Estate Services  
Brent Krezan, Director, Information Technology & Fleet Management, Corporate Services

Date: October 30, 2023 Meeting Date: November 9, 2023

Subject: **Award of an Enterprise Agreement to Microsoft Canada under Government of British Columbia Master Business and Services Agreement**

---

### RECOMMENDATION

That the MVRD Board:

- a) approve award of Microsoft Enterprise Agreement ("Enterprise Agreement") in the amount of up to \$10.8 million (exclusive of taxes) to Microsoft Canada ("Microsoft") and its reseller Partner Softchoice LP for a term of five years, subject to final review by the Chief Administrative Officer; and
  - b) authorize the Chief Administrative Officer and the Corporate Officer to execute the required documentation once the Commissioner is satisfied that the award should proceed.
- 

### EXECUTIVE SUMMARY

Metro Vancouver's current Enterprise Agreement with Microsoft Canada has been in place since 2020. This agreement is set to expire at the end of 2023 and allows for corporate-wide use of Microsoft products. Metro Vancouver plans to continue using and expanding its use of Microsoft products. Therefore, it is recommended to enter into a new five-year agreement with Microsoft. This new agreement will offer support for existing Microsoft products and grant access to additional services, including Microsoft's cloud-based Azure, Office 365, and cybersecurity platforms.

### PURPOSE

Pursuant to the *MVRD Officers and Delegation Bylaw 1208, 2014* and *Board Policy No. FN-006*, procurement contracts which exceed a value of \$5 million require the approval by the MVRD Board.

### BACKGROUND

Metro Vancouver's existing Enterprise Agreement with Microsoft Canada expires at the end of 2023. Metro Vancouver will continue to use and will grow the use of Microsoft products, thus a new five-year agreement is recommended. Metro Vancouver utilizes Microsoft products throughout all levels of the organization. From end-user workstation software, to application databases and servers, and to the networks in between, Microsoft products are used. This includes, but is not limited to, software such as Microsoft Windows, Office, Outlook Email, SharePoint, and SQL Server.

Microsoft and the Government of British Columbia have executed a Master Business and Services Agreement (MBSA). The MBSA allows for other public organizations to enter into enterprise agreement enrollments under that MBSA to take advantage of the same terms and conditions.

Metro Vancouver intends to execute an enterprise agreement with Microsoft, utilizing the provincial MBSA program to leverage the negotiated benefits. One of these advantages is the ability to utilize Government Level-D pricing, typically accessible only to commercial entities with 15,000+ licenses.

The Enterprise Agreement will provide support for existing Microsoft products and offer access to new functionality, including Microsoft's cloud-based Azure and 365 platforms. These products will modernize Metro Vancouver's systems and tools, thereby providing options to increase staff productivity and bolster cybersecurity measures. Some of the new solutions and their benefits include Microsoft Teams for improved and integrated communication, SharePoint Online for information sharing and collaboration, as well as Azure for cloud-based infrastructure such as servers, databases, and system integration. New cybersecurity tools include Microsoft Defender endpoint protection, Intune mobile device management, and Purview for data compliance.

### **PROCUREMENT SUMMARY**

Negotiations with Microsoft were completed on October 23, 2023 and the terms of the contract were agreed to and finalized. The contract value agreed to is up to \$10.8 million over a five year term and allows for service requirement growth over the term of the contract. Microsoft pricing increased by 6% effective September 1<sup>st</sup>, 2023. However, MVRD secured the ability to maintain the previous pricing for this contract, subject to full execution of the Enterprise Agreement by end of November 2023. Additionally, MVRD will receive deployment and implementation services estimated to be worth \$65,000 at no additional cost to the Corporation.

### **ALTERNATIVES**

1. That the MVRD Board:
  - a) approve award of Microsoft Enterprise Agreement ("Enterprise Agreement") in the amount of up to \$10.8 million (exclusive of taxes) to Microsoft Canada ("Microsoft") and it's reseller Partner Softchoice LP for a term of five years, subject to final review by the Chief Administrative Officer; and
  - b) authorize the Chief Administrative Officer and the Corporate Officer to execute the required documentation once the Commissioner is satisfied that the award should proceed.
  
2. That the Finance Committee receive the report dated October 30, 2023, titled "Award of an Enterprise Agreement to Microsoft Canada under Government of British Columbia Master Business and Services Agreement", for information, and direct staff to report back to the MVRD Board with options for an alternate course of action.

### **FINANCIAL IMPLICATIONS**

Finance has reviewed and confirmed that funding is available from Operating IT Infrastructure budget. There are no financial implications.

**CONCLUSION**

It is recommended that MVRD Board authorize the Chief Administrative Officer and the Corporate Officer to approve the award of an Enterprise Agreement, in the amount of up to \$10,800,000 (exclusive of taxes) to Microsoft Canada.

63338135

To: MVRD Board of Directors

From: Mayors Committee

Date: November 16, 2023

Meeting Date: November 24, 2023

Subject: **Policing Our Ports**

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### **MAYORS COMMITTEE RECOMMENDATION**

That the MVRD Board send a letter to the Prime Minister of Canada, Premier of British Columbia, and appropriate federal and provincial ministers requesting a response to the following concerns outlined in the report dated September 12, 2023 titled “Policing Our Ports” by Peter German & Associates:

- the absence of dedicated, uniformed, community-oriented port police services;
  - the reduced federal capacity to effectively conduct drug and other controversial investigations, and to respond to seizures conducted by the Canada Border Services Agency;
  - the flow of contraband, including illicit drugs, in and out of Canada through its ports; and
  - the urgent need for concerted and strategic action to fortify our ports, protect our communities, and preserve the integrity of our nation’s security.
- 

At its November 16, 2023 meeting, the Mayors Committee received a verbal update from Board Chair Harvie in regard to policing at the ports. The Committee subsequently passed the following motion:

That the MVRD Board send a letter to the Prime Minister of Canada, Premier of British Columbia, and appropriate federal and provincial ministers requesting a response to the following concerns outlined in the report dated September 12, 2023 titled “Policing Our Ports” by Peter German & Associates:

- the absence of dedicated, uniformed, community-oriented port police services;
- the reduced federal capacity to effectively conduct drug and other controversial investigations, and to respond to seizures conducted by the Canada Border Services Agency;
- the flow of contraband, including illicit drugs, in and out of Canada through its ports; and
- the urgent need for concerted and strategic action to fortify our ports, protect our communities, and preserve the integrity of our nation’s security.

This matter is now before the Board for its consideration.

### **ATTACHMENTS**

1. “Delta – Policing Our Ports – A Report to the City of Delta” from Peter German & Associates Inc. dated September 12, 2023.



Delta

# **POLICING OUR PORTS**

## **A REPORT TO THE CITY OF DELTA**

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Peter German & Associates Inc.  
September 12, 2023

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## ABBREVIATIONS & ACRONYMS

ACI.....	Advance Commercial Information
ACPA.....	Association of Canadian Port Authorities
AMP.....	Administrative Monetary Penalty
ATF.....	Bureau of Alcohol, Tobacco, Firearms and Explosives (U.S.)
BCMEA.....	British Columbia Marine Employers Association
CBP.....	U.S. Customs and Border Protection
CBSA.....	Canada Border Services Agency
CLEU.....	Combined Law Enforcement Unit
CMA.....	<i>Canada Marine Act</i>
CPC.....	Canada Ports Corporation
CPR.....	Canadian Pacific Railway
CSA.....	<i>Canada Shipping Act</i>
DEA.....	Drug Enforcement Administration (U.S.)
DFO.....	Fisheries and Oceans Canada
DPD.....	Delta Police Department
FBI.....	Federal Bureau of Investigation (U.S.)
FSOC.....	Federal Serious and Organized Crime (RCMP)
HSI.....	Homeland Security Investigations (U.S.)
ILWU.....	International Longshore and Warehouse Union
IMO.....	International Maritime Organization
INTERPORT.....	International Organization of Airport & Seaport Police
ISPS.....	<i>International Ship and Port Facility Security Code</i>

MFSP.....	Master Facility Security Plan
MTSCP.....	Marine Transportation Security Clearance Program
MVRD.....	Metro Vancouver Regional District
MVTP.....	Metro Vancouver Transit Police
NHB.....	National Harbours Board
NHBP.....	National Harbours Board Police
NPET.....	National Port Enforcement Team
OCABC.....	Organized Crime Agency of British Columbia
PCP.....	Ports Canada Police Department
PEO.....	Port Enforcement Officer
PIMSWIG.....	Pacific Integrated Marine Security Working Group
PMSP.....	Port Master Security Plan
POSPD.....	Port of Seattle Police Department
RCMP.....	Royal Canadian Mounted Police
TEU.....	Twenty-foot Equivalent Unit
TOC.....	Transnational Organized Crime
TSA.....	Transportation Security Administration (U.S.)
TWIC.....	Transportation Worker Security Card
UBCM.....	Union of BC Municipalities
USSS.....	United States Secret Service
VFPA.....	Vancouver Fraser Port Authority
VPD.....	Vancouver Police Department
WJFO.....	Waterfront Joint Forces Operation
YVR.....	Vancouver International Airport

# EXECUTIVE SUMMARY

## Background

The City of Delta, nestled in the heart of the Metro Vancouver region, is home to the largest container terminal in Canada – the Vancouver Fraser Port Authority’s Roberts Bank Terminal. This bustling terminal handles a staggering volume of over 3 million containers annually, which are both received and dispatched to destinations across the globe. With the planned expansion of container facilities at Roberts Bank Terminal 2, this number is poised to surge even further.

## Recognition

George V. Harvie, Mayor of Delta, has been acutely aware of the profound impact that the existing Roberts Bank Terminal, and its anticipated expansion, have on the City of Delta and—more specifically—on the safety and security of the entire Metro Vancouver region. Since the disbandment of the Ports Canada Police in 1997, the responsibility for port security has been distributed among various entities, resulting in a complex web or potpourri of security oversight. This complex situation has relied on local municipal police, an assortment of task forces and working groups, as well as the federal RCMP. Notably, no dedicated police force exists that is solely committed to safeguarding the ports.

## The Research Initiative

Recognizing the need for a comprehensive evaluation of the state of port policing, Mayor Harvie commissioned Peter German & Associates to conduct an extensive research study. Their mission: to delve into the history, current status, and future prospects of policing at the port.

## The Magnitude of Today's Challenges

The findings of Peter German & Associates resonate with a sense of urgency. Today's challenges are far more profound than those of 1997, with national security and the inflow and outflow of illicit drugs and contraband topping the list. These findings underscore the pressing need for change, lest we allow a relentless flow of contraband into Canada by sea and, in parallel, enable the outbound trafficking of domestically manufactured drugs to foreign shores.

## The Port Authority's Distinction

It is worth noting that the Vancouver Fraser Port Authority, the custodian of port operations, firmly distinguishes between policing and security. In their realm, security is fortified by robust measures such as fencing, electronic surveillance, and the deployment of security guards with little legislative authority. However, the reports from experts in the field accentuate a fundamental concern: the paramount issue is not limited to static security but encompasses the pervasive infiltration of organized crime and the unfettered movement of illegal commodities through the ports.

## Summary of Findings

1. **Fragmented Security Responsibility:** The intricate landscape of port security in Canada reveals a disconcerting fragmentation of responsibilities. This fragmented approach raises pertinent questions about the efficacy and coherence of security measures.
2. **Organized Crime Infiltration:** A growing concern centers around the infiltration of Canadian ports by organized crime syndicates. These criminal entities are engaged in multifarious illicit activities, spanning drug trafficking and counterfeit goods trade. The ramifications of such infiltration are profoundly concerning, not only for port security but also for the broader community.
3. **Access Control Challenges:** The Marine Transportation Security Act governs port access, but concerns have been raised regarding the absence of robust security clearance processes for individuals working at the ports. This lack of stringent access control is a vulnerability that needs to be addressed.
4. **Reduction in Policing Resources:** A key concern illuminated in the report pertains to the absence of a dedicated, uniform, community-oriented port police plus the stark reduction in the federal capacity “to effectively conduct drug and other contraband investigations, and to respond to CBSA seizures.”
5. **Need for Uniformed Police Presence:** There is a strong argument for the presence of uniformed police officers within the port environment. These officers would play a crucial role in building relationships, gathering intelligence, and maintaining a visible security presence, all of which are essential for port security.

6. **Calls for Integrated Policing:** The report sounds a clarion call for an integrated federal response to bridge the existing gap in policing brought about by a steady decline in funding and staffing of federally-funded waterfront positions.

#### Key Takeaways:

1. **Dedicated Police Resources:** The pivotal takeaway revolves around the indispensable need for dedicated police resources within the port. This entails the establishment a bifurcated approach meaning both frontline and investigative teams. Several feasible and effective options are presented for achieving this imperative.
2. **Funding for the RCMP's Integrated Waterfront Joint Forces Operation:** A call to action underscores the necessity of providing fenced funding to the RCMP's Waterfront JFO, staffing it to its funding level, and focusing its mandate on the ports. This allocation of resources is imperative to bolster the federal ability to investigate organized crime.

#### Concluding Thoughts

In conclusion, this report paints a vivid tapestry of the complex and multifaceted challenges facing port policing in Metro Vancouver. It underscores that the security of these vital ports is not merely a local concern but an issue of national significance, touching the very fabric of Canada's economic prosperity and safety. The time is ripe for concerted and strategic action to fortify our ports, protect our communities, and preserve the integrity of our nation's security.

## CONSULTANTS

**Peter German** was a member of the Royal Canadian Mounted Police for 31 years, serving in various capacities across Canada, including as the Operations Officer at Richmond Detachment, Lower Mainland Operations Officer, Lower Mainland District Commander, and Deputy Commissioner for Western and Northern Canada. He also served as Regional Deputy Commissioner (Pacific) for Correctional Service Canada. Dr. German is a lawyer and member of the British Columbia and Ontario Bars, with graduate degrees in public policy and law. A long-time resident of Richmond and Delta, B.C., Dr. German sits on non-profit boards and was a police board member. During his career, he has received numerous medals and awards, including King's Counsel, and Officer of the Order of Merit of the Police Forces. He is the Principal of Peter German & Associates Inc., as well as President of the International Center for Criminal Law Reform, located at the University of British Columbia.

**Doug LePard** was a member of the Vancouver Police Department for 35 years, serving in numerous roles before retiring as a Deputy Chief, then served for several years as the Chief of the Metro Vancouver Transit Police. He is now an independent consultant providing services in the criminal justice sector. He is a member of two tribunals: the Mental Health Review Board and the BC Review Board and is on the Boards of BC Emergency Health Services and the Canadian Institute for the Administration of Justice. He holds a B.A. in Criminology and an M.A. in Criminal Justice. He has authored or co-authored numerous articles, textbook chapters, and major reports on a variety of policing issues. His awards include the Queen Elizabeth II Diamond Jubilee Medal, the Governor General's Academic Medal, the Lieutenant Governor's Merit Award, and the Gold Medal of the International Society for the Reform of Criminal Law. He is an Officer of the Order of Merit of the Police Forces.



## ACKNOWLEDGEMENTS

This report would not have been possible, were it not for the passionate support of both the Mayor of Delta, George Harvie, and its Chief Constable, Neil Dubord. Both individuals assisted greatly by making initial contact with individuals and generally, opening doors that might otherwise have remain closed. Mayor Harvie also led a delegation of Delta and Metro Vancouver Regional District (MVRD) officials on a very productive visit to the Port of Seattle.

We wish to acknowledge the co-operation of all persons who were contacted and agreed to provide their insights during the research of this report. Some requested anonymity and that has been respected.

We are particularly grateful to the members of U.S. law enforcement and U.S. port authorities, who were gracious with their time and candid with their experiences regarding policing.

This report is a composite of research, interviews, and site visits. We have attempted to collate the results in a fair and objective manner.

## MANDATE AND INTRODUCTION

The issue of port policing is not new, garnering headlines with the elimination of a dedicated port police force in 1997 and resurfacing regularly in Parliamentary reports, academic writing, and government reports.<sup>1</sup> It has been of great concern to many individuals in British Columbia, simply because the province is home to Canada's largest commercial and container port, in Greater Vancouver, and its third largest port, in Prince Rupert.<sup>2</sup>

The port facilities in Delta, Surrey, Vancouver and elsewhere in the Lower Mainland are part of the Port of Vancouver.<sup>3</sup> Nearly three million containers are processed yearly in the port, a number which is expected to increase dramatically with the expansion of the container facilities at Roberts Bank in Delta.<sup>4</sup>

The Roberts Bank Terminal 2 project involves the construction and operation of a three-berth marine container terminal, a widened causeway to accommodate additional road and rail infrastructure, and an expanded tug basin. The project will increase capacity by an additional 2.4 million containers annually. It will also increase marine shipping activity within the project area and within the 12 nautical mile limit of Canada's territorial sea.<sup>5</sup> The expansion has received approval from the federal government, subject to numerous conditions.<sup>6</sup>

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<sup>1</sup> In this report, we refer to the word, 'port' to mean 'seaport', however we use the word 'seaport' where confusion may arise with reference to an 'airport'. In the marine context, a port is a government owned facility that provides access for commercial operations (<https://open.canada.ca/data/en/dataset/5f3c273a-7a0d-4b5f-8059-b34cc3f116c7>).

<sup>2</sup> Dolphin Team, "The 5 Largest Major Ports in Canada, Feb. 4, 2021, accessed at <https://dolphindelivery.ca/the-5-largest-major-ports-in-canada/>.

<sup>3</sup> In this report, we use the terms, Port of Vancouver, Vancouver / Delta, and Greater Vancouver interchangeably.

<sup>4</sup> The container facilities in the Port of Vancouver include Canterm, Deltaport, DP World, and Vanterm. There are also transloading facilities and container storage and maintenance facilities (<https://www.portvancouver.com/cargo-terminals/container/>). Containers are measured in TEUs, or "twenty-foot equivalent units", a proxy used throughout the supply chain to determine storage capacity.

<sup>5</sup> Impact Assessment Agency of Canada, "Federal Review Panel Report for the Roberts Bank Terminal 2 Project" (Ottawa, Mar. 27, 2020) at p. I, accessed at <https://iaac-aeic.gc.ca/050/documents/p80054/134506E.pdf>.

<sup>6</sup> Impact Assessment Agency of Canada, "Government of Canada Approves Key Roberts Bank Terminal 2 Project in British Columbia, subject to strict conditions to protect the local environment" (Ottawa, Apr. 20, 2023), accessed at

The anticipated expansion of Roberts Bank’s capacity has renewed concern by political leaders at both the provincial and municipal levels over the state of port policing, leading to this examination.

In 2019, the provincial government released a second report on money laundering, entitled *Dirty Money – Part 2*.<sup>7</sup> It referenced the disbandment of the Ports Canada Police, observing that the move created a “serious gap in our law enforcement umbrella”. The report highlighted the stark difference between policing resources in Greater Vancouver’s ports from those in Seattle, where the Port of Seattle Police Department (POSPD) had approximately 150 resources dedicated to policing Sea-Tac Airport and the Port of Seattle.<sup>8</sup>

The reduction in port policing resources and the concerns raised in *Dirty Money – Part 2* were noted in a 2019 Union of BC Municipalities (UBCM) resolution, sponsored by the City of Delta. It observed that, “this loss of police resources has weakened the security of Canada’s ports and allowed organized crime elements to proliferate”.<sup>9</sup> The resolution called on the provincial government to, “re-establish dedicated resources to police ports and waterfronts”. In response, the province noted that port policing was a federal responsibility, “notably the RCMP - Federal, Serious and Organized Crime FSOC and the Canada Border Services Agency”.<sup>10</sup>

The purpose of this report is to examine the issues surrounding port policing and, tangentially, port security in Delta and elsewhere in British Columbia. The current situation is founded on a long history of starts and stops, initiatives, and failed solutions. This report concludes with options for consideration by government, aimed at improving the present situation.

The methodology employed in this report included the review of a wide array of hard copy and online documents, many of which are listed in the footnotes, open-source research of various

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<https://www.canada.ca/en/impact-assessment-agency/news/2023/04/government-of-canada-approves-key-roberts-bank-terminal-2-project-in-british-columbia-subject-to-strict-conditions-to-protect-the-local-environment.html> .

<sup>7</sup> Peter German & Associates Inc., *Dirty Money – Part 2: Turning the Tide - An Independent Review of Money Laundering in B.C. Real Estate, Luxury Vehicle Sales & Horse Racing* (Province of B.C., 2019), accessed at <https://icclr.org/publications/dirty-money-report-part-2/> .

<sup>8</sup> *Ibid* at pp. 170-175.

<sup>9</sup> Resolutions to be Considered at the 2019 UBCM Convention (Resolution B90 – Port Policing), accessed at <https://www.ubcm.ca/convention-resolutions/resolutions/resolutions-database/port-policing>.

<sup>10</sup> *Ibid*.

kinds, and interviews with stakeholders and persons familiar with the ports due to their past or present employment.

This report was completed in a brief period of approximately two months, with the result that there is considerable opportunity for additional interviews, greater in-depth analysis, and assessment of options. We strongly recommend a feasibility study of preferred options and funding.

Attached to this report are appendices containing the Terms of Reference for this report and the entities contacted.

## PROLOGUE - KILLER DRUGS

Illegal drugs produced domestically or imported from another country are killing Canadians at an unprecedented rate. In fact, more people died from drug overdoses in British Columbia during the years of the Covid-19 pandemic, than died from the virus.<sup>11</sup> The dead represented all ages, all sexes, all neighbourhoods, and all classes of society.

Government's response to illegal drugs has evolved over time, from one which emphasized an enforcement solution, involving police investigations and prosecutions, to one which emphasizes medical and psychological support, including access to soft and hard drugs and drug substitutes.

At present, there is an amalgam of drugs on the market, including those supplied or authorized for distribution by government and those supplied by organized crime. Just as the legalization of cannabis has led to competition between legal and illegal producers and sellers, so too has the hard drug market. Unfortunately, organized crime continues to provide more potent and toxic drugs and drug ingredients, which have laid waste to so many.

A byproduct of the transition from an enforcement to a medical response has been a change in the role of police on our streets. Municipal police are increasingly acting as community safety officers, working with mental health professionals and others, as opposed to arresting and prosecuting persons in possession or trafficking in drugs. The RCMP eliminated its commodity-

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<sup>11</sup> Dr. Patricia Daly, Chief Medical Officer at Vancouver Coastal Health advised Vancouver City Council that the overdose crisis killed 3,000 people in B.C. between January 2020 and July 2021, compared to 1,800 who died from COVID-19 in the same period (Nathan Griffiths, "Opioid deaths in B.C. far outpaced those from COVID-19" (*Vancouver Sun*, Oct. 22, 2021), accessed at <https://vancouver.sun.com/news/opioid-deaths-in-b-c-far-outpaced-those-from-covid-19>).

based units in 2013, including its drug squad. It now targets organized crime groups as opposed to commodities and does so based on intelligence analysis. It is severely constrained, however, by a lack of funding and human resources. The police response to the changing view regarding drug use is also reflected in the priorities of the federal and provincial prosecution services.<sup>12</sup>

The upshot of the foregoing reorientation magnifies the importance of preventing illegal drugs from reaching consumers. This includes domestically produced drugs, but increasingly, drugs produced in other countries and transported to Canada by Transnational Organized Crime (TOC) groups, working in partnership with home grown Canadian organized crime. Our borders present the first and last opportunity to interdict the flow of illegal drugs and other commodities from entering or leaving our country.

## PORTS ARE HIGH RISK PLACES

If there was ever any doubt that ports are at high risk of organized criminal activity, the 1954 Hollywood classic, *On the Waterfront*, starring Marlon Brando as Terry Molloy, disabused North Americans of that notion. The movie shone a light on corruption within the port environment and among union bosses.<sup>13</sup> Few in America doubted that art was imitating life. But what of Canada, and Greater Vancouver?

Prior to the advent of containers, theft of cargo was the primary criminal activity on Vancouver's waterfront. Exposed shipments, insecure terminals, and an unregulated workforce contributed to the loss of cargo. The advent of containers, or 'sea cans', reduced the opportunity for theft however gave rise to an entirely new crime type, the import and export of illegal commodities concealed within those containers.<sup>14</sup> The problem is global in nature, exacerbated by the low

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<sup>12</sup> *Supra*, *Dirty Money – Part 2*, at pp. 306-310.

<sup>13</sup> Horizon Pictures, "On the Waterfront", July 28, 1954 (<https://www.imdb.com/title/tt0047296/>). The movie reference is found in Chris Madsen, "Pacific Gateway: State Surveillance and Interdiction of Criminal Activity on Vancouver's Waterfront", *Salus Journal*, Vol. 6, No. 1 (2018), pp. 26-43 at 26, accessed at [https://salusjournal.com/wp-content/uploads/2018/03/Madsen\\_Salus\\_Journal\\_Volume\\_6\\_Number\\_1\\_2018\\_pp\\_26-43.pdf](https://salusjournal.com/wp-content/uploads/2018/03/Madsen_Salus_Journal_Volume_6_Number_1_2018_pp_26-43.pdf).

<sup>14</sup> Recognizing the risk posed by containers, the United Nations Office on Drugs and Crime has operated a Container Control Programme for many years. Its mission "is to build capacity in countries seeking to improve risk management, supply chain security, and trade facilitation in

percentage of containers that are searched. There is also constant pressure to move containers to their destination, due to the prevalence of a 'just in time' supply chain. As container ships increase in size and capacity, so too have seizures in the U.S. and Europe.<sup>15</sup>

Various Asian and South American countries produce large quantities of illicit commodities, most notably drugs, but also firearms, and counterfeit products for the North American market. Producers and shippers of these illegal products learned early on to exploit the use of containers as part of the illegal supply chain.<sup>16</sup> Although most of our attention in this report is on the import of illicit drugs, the export of drugs and other commodities cannot be ignored. In *Dirty Money – Part 2*, considerable attention was devoted to the export of stolen vehicles in containers and in the grey market of vehicles, purchased in British Columbia through intermediaries using dubious funds, and then exported to Asia.<sup>17</sup>

Containers are the lifeblood of the Vancouver, Delta, and Prince Rupert ports. The recent strike of longshoremen highlighted how dependant the entire Canadian economy is on the efficient movement of containers from ports to their intended destination. It has been estimated that ports in Canada are responsible for annual imports and exports worth more than \$250 billion.<sup>18</sup> Port security is, therefore, crucial to both national security and economic stability.

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seaports, airports and land border crossings in order to prevent the cross-border movement of illicit goods" (<https://www.unodc.org/unodc/en/ccp/index.html>).

<sup>15</sup> Costas Paris, "Global Shipping Faces Troubling New Smuggling Questions" (*Wall Street Journal*, Jan. 6, 2002), accessed at <https://www.wsj.com/articles/global-shipping-faces-troubling-new-smuggling-questions-11578330634>.

<sup>16</sup> Tailgating is a term used to describe the secreting of illegal cargo within containers that carry predominantly legal cargo. "Rip loads" is a term to describe removing the seal on a container or removing cargo. The intermodal supply chain can include cargo owners, shipping lines, marine terminals, off-dock facilities, railroads, and trucking companies.

<sup>17</sup> Generally, where there is a disproportionate recovery rate of luxury vehicles, it is safe to assume that they have left the jurisdiction and most of those have likely left via containers. Because vehicles are not controlled, prohibited, or regulated goods under the *Customs Act*, it is only when CBSA suspects a vehicle is stolen and being exported, that it will detain the vehicle and advise the RCMP.

<sup>18</sup> Transport Canada, "What we heard report: Ports modernization review" (Aug. 10, 2022), accessed at (<https://tc.canada.ca/en/corporate-services/consultations/what-we-heard-report-ports-modernization-review>).

## THE GOVERNANCE OF CANADA'S PORTS

Greater Vancouver's waterfront includes not only the port facilities in Vancouver but also in Delta and along the banks of Burrard Inlet and the Fraser River. In addition to containers, lumber and other bulk commodities are shipped from terminals. As far back as 1905, Vancouver's potential was recognized in a Board of Trade submission to the Royal Commission on Transportation:<sup>19</sup>

“The geographical position and magnificent extent of the land-locked harbour of Vancouver, ice-free at all seasons and, with capacity and anchorage to accommodate vessels of the largest tonnage afloat, undoubtedly establish it as, for all time, Canada's gateway on the Pacific.”

Vancouver has a geographic advantage due to its location directly north of the United States and being the nearest North American port of call to some Asian cities. Roberts Bank in Delta is strategically located on reclaimed land and rests on the 49<sup>th</sup> parallel. The port can be a lucrative stop in a service string. Much like a bus schedule, large shipping companies operate their fleets on a schedule which seeks the optimal sequencing of port visits. In an ideal world, they would never travel empty. Vancouver has a reputation for loading more return cargo to Asia than other ports on the western seaboard of North America. Much of this cargo is heavy; agricultural produce and the like, which increases volume.

Another distinct advantage enjoyed by Vancouver is the nature of rail traffic in Canada, which operates east-west, while rail traffic in the United States predominantly operates north-south and zigzags across that country.

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<sup>19</sup> “Report of the Royal Commission on Transportation”, Dec. 11, 1905, at p. 42, as included in “Supplement to the Report of the Minister of Public Works, 1905”, *Sessional Paper No. 19a* (Ottawa: King's Printer, 1906), accessed at <https://archive.org/details/reportofroyalcom00cana/page/34/mode/2up>.

Canada's Constitution assigns responsibility for ports to the federal government.<sup>20</sup> That is just the foundation, however. Governance of Canada's ports has a complex history and presently operates under a decentralized model.

The 1905 Royal Commission recommended the establishment of a system of national ports.<sup>21</sup> At that time, Vancouver's waterfront was almost wholly owned by the Canadian Pacific Railway (CPR). Wresting the property away from the CPR was the first task. The *Vancouver Harbour Commissioners Act* of 1913 established the Vancouver Harbour Commission.<sup>22</sup> A national ports survey conducted by Sir Alexander Gibb in 1932<sup>23</sup> served as the groundwork for the establishment in 1936 of the National Harbours Board (NHB).<sup>24</sup> The public harbours at Halifax, Saint John, Chicoutimi, Quebec City, Trois Rivières, Montreal, and Vancouver were dissolved, and their property vested in the new board. It administered the ports and was accountable to the Minister of Transport. Provision was made for the possibility of "other harbours and works and property" being transferred to NHB.<sup>25</sup>

The *National Harbours Board Act* authorized the Board to employ officers and agents for various enforcement purposes and gave them the power to use reasonable force to prevent by-law offences.<sup>26</sup>

In 1983, NHB was replaced by Canada Ports Corporation (CPC). Most of NHB's responsibilities were not assumed by the new organization. Instead, they were transferred to local port corporations or harbour commissions. Vancouver Port Corporation was created on July 1, 1983.<sup>27</sup> CPC's primary responsibility was to ensure that national transportation objectives were met. It also had the ability to employ police constables under the *Canada Ports Corporation Act*, to

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<sup>20</sup> *Constitution Act*, 1867 (Canada), s. 91(2) – Trade and Commerce; s. 91(10) – Navigation and Shipping; s. 91(12) – Sea Coast and Inland Fisheries; and s. 91(13) – Ferries between a Province and any British or Foreign Country.

<sup>21</sup> *Supra*, "Report of the Royal Commission on Transportation", at p. 34.

<sup>22</sup> S.C. 1913, c. 54.

<sup>23</sup> Sir Alexander Gibb, *National Ports Survey, 1931-32* (Ottawa: King's Printer, 1932).

<sup>24</sup> *The National Harbours Board Act*, S.C. 1936, c. 42.

<sup>25</sup> *Ibid.* at s. 6,

<sup>26</sup> *Ibid.* at s. 14.

<sup>27</sup> Canada Gazette, Part 1, Vol. 117, No. 40 at p. 8739.



enforce “the laws of Canada or a province when related to the protection of port property and persons” at the port or for 25 miles from a port.<sup>28</sup>

In December 1995, the federal Minister of Transport proposed a new national marine policy which called for the elimination of Canada Ports Corporation, the replacement of port authorities (including the Vancouver Port Corporation) with local port authorities, and the disbandment of the Ports Canada Police. This raised significant concerns for B.C.’s provincial government as well as for municipalities.

The changes took place in 1997 and 1998. *The Canada Ports Corporation Act* was repealed and replaced by the *Canada Marine Act* (CMA).<sup>29</sup> The preamble to the new *Act* provides that it was intended to make, “the system of Canadian ports competitive, efficient and commercially oriented, providing for the establishing of port authorities and the divesting of certain harbours and ports”. The Vancouver Port Corporation was continued as the Vancouver Port Authority.<sup>30</sup>

Although the legislation made the new port authorities responsible for port security, it did not provide them with enforcement authority. This disconnect between responsibility and authority created a serious problem.<sup>31</sup> Under the *Act*, port authorities were intended to contribute to the “competitiveness, growth and prosperity of the Canadian economy.”<sup>32</sup> Over time, this was expanded to include various other requirements, not the least being national security. Downloading additional responsibilities on port authorities, such as enhanced port security and enforcement, made it necessary to raise fees to client shipping lines. The Association of Canadian Port Authorities (ACPA) lobbied the federal government in the hope of obtaining financial support for the additional economic and management costs attributed to security.<sup>33</sup>

In 2007, as part of the Asia-Pacific Gateway initiative, Transport Canada announced its intention to combine the three port authorities in Metro Vancouver – the Fraser River Port Authority, the North Fraser Port Authority, and the Vancouver Port Authority – into the Vancouver Fraser Port

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<sup>28</sup> *The Canada Ports Corporation Act (An Act respecting the Canada Ports Corporation)* S.C. 1980-81-82, c. 121, proclaimed on Feb. 24, 1983. The geographic or spatial limitation on jurisdiction mirrors the jurisdiction of Canada’s railway police, who are authorized to exercise their powers within a certain number of kilometers from their respective railway lines.

<sup>29</sup> *Canada Marine Act*, S.C. 1998, c. 10, s. 197. Royal Assent, June 11, 1998.

<sup>30</sup> *Ibid.* at section 12.

<sup>31</sup> ACPA, “Strengthening Security in Canadian Port Authorities” (Ottawa: Feb. 2015), at p. 2.

<sup>32</sup> *Ibid.*

<sup>33</sup> *Ibid.*, generally.

Authority (VFPA). The effective date of the amalgamation was January 1, 2008. Currently, VFPA includes 29 terminals within seven municipalities; Burnaby, Delta, North Vancouver, Port Moody, Richmond, Surrey, and Vancouver. The VFPA now operates under its marketing name, the Port of Vancouver, but its legal name continues to be the Vancouver Fraser Port Authority.<sup>34</sup>

The VFPA manages federally owned industrial land through leases to private terminal operators. The operators are responsible for building and maintaining facilities, observing environmental and marine safety standards, and general site security.<sup>35</sup> The 'clients' of port authorities are the terminals where ships dock to load and unload cargo. Port authorities actively compete for business. An example is the longstanding rivalry between the ports of Seattle and Vancouver, for both container and cruise traffic. As with any commercial operation, keeping costs down, thereby reducing the fees charged to shipping companies, help make a port attractive.

The need to balance security and safety measures while ensuring the competitiveness and efficiency of Canadian ports creates a paradox for port authorities. As noted by Professor Kevin Quigley of Dalhousie University:<sup>36</sup>

“Security culture,...is much less open and less trusting; information is often shared with those in the know,...and often on a need-to-know basis. Much of it is cloaked in secrecy. Port staff do not understand where safety and security lie in the list of priorities. This dynamic discourages staff from slowing down the flow of cargo in the name of safety or security.”

In the aftermath of 911, the International Maritime Organization (IMO) adopted the *International Ship and Port Facility Security Code* (ISPS) to guide ports, ships, and their national governments when preparing security plans and programs. Parliament passed the *Maritime Transportation Security Act* and its regulations,<sup>37</sup> which placed a new overlay of security responsibilities on ports,

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<sup>34</sup> Courthouse Libraries B.C., “Vancouver Fraser Port Authority” (Sept. 7, 2022), accessed at <https://www.courthouselibrary.ca/how-we-can-help/our-legal-knowledge-base/vancouver-fraser-port-authority>

<sup>35</sup> Port of Vancouver, “About us”, accessed at <https://www.portvancouver.com/about-us/>.

<sup>36</sup> Quigley Kevin F. and Bryan Mills, “‘Set Adrift’: Fatalism as Organizational Culture at Canadian Seaports,” *Journal of Homeland Security and Emergency Management*, De Gruyter, vol. 13(1), pages 191-218, April 2016.

<sup>37</sup> S.C. 1994, c. 40 and the *Marine Transportation Security Regulations*, SOR/2004-144, registered May 21, 2004.

giving port authorities responsibility for safety, order, and the port environment, subject to approval from Transport Canada's Maritime Safety and Security Group.

VFPA must provide a Port Master Plan for both cruise ship and container operations. A risk assessment, intended to prevent terrorism or attacks on critical infrastructure, is also required.<sup>38</sup> This responsibility cascades down to tenants of the port authority. Every tenant that hosts a foreign vessel must create a five-year security plan, which is reviewed and authorized by Transport Canada.

## THE STRUCTURE OF CANADA'S POLICE

Canada's Constitution assigns responsibility for Canada's criminal law to the federal Parliament.<sup>39</sup> The administration of justice, however, is a provincial responsibility.<sup>40</sup> It is interpreted to include policing the criminal law and provincial statute offences, the operation of provincial courts, and related criminal justice services.

This constitutional apportionment of responsibility has resulted in a policing framework which includes the RCMP acting, for most purposes, as Canada's federal police, and each province having a standalone or contracted provincial police. Within British Columbia, policing falls within the remit of the Minister of Public Safety and Solicitor General.

Each province delegates responsibility for local policing to municipalities, which then either create a standalone police force or contract for the services of another municipal police force or the provincial police service. Municipal chiefs of police are hired and report to municipal police boards. Funding for the police comes from municipal councils but is routed through the police boards. Delta, New Westminster, Port Moody, and Vancouver fit within this model. Burnaby, Prince Rupert, and Surrey represent RCMP municipal contracts.

In addition to public policing, there is a history in Canada of private police with the same or similar authority to that of municipal police officers. The railway police are an example at the federal level.

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<sup>38</sup> VFPA, "Port Policing Memo", Aug. 21, 2023.

<sup>39</sup> *Constitution Act, 1982*, s. 91(27).

<sup>40</sup> *Constitution Act, 1982*, s. 92(14).

Canadian National, Canadian Pacific, and BNSF railways all have police forces, in which officers take an oath of office before a superior court judge and can exercise the same powers as other police officers within 500 metres of property owned, possessed, or administered by the railway. All three railway forces operate within British Columbia. In Greater Vancouver, the Metro Vancouver Transit Police, Canada's only dedicated transit police force, is funded by the transit authority and reports to a police board. The uniform RCMP contingent at Vancouver International Airport is funded by the airport authority.

## POLICING OUR BORDERS

Importation of illegal commodities can occur in one of three ways: across the land border from the United States, by way of airline passengers and cargo, or via Canada's seaports. Effective enforcement of all three avenues is critical to interdicting the flow of fentanyl, methamphetamine, heroin, cocaine, and so many other drugs that find their way onto the streets of our cities and into the homes of Canadians.

The Canada Border Services Agency (CBSA), is a law enforcement body, charged with preventing illegal smuggling and migration across Canada's air, land, and sea borders.<sup>41</sup> Its officers cannot be everywhere and, like most government bodies, CBSA must apportion its resources according to need. Except for 'border jumpers' who enter illegally, CBSA checks every passenger arriving in Canada by land, sea, or air.

CBSA is not a police force. Its officers are peace officers with powers which are specific to the many statutes that they are mandated to enforce.<sup>42</sup> Its U.S. equivalent is part of the U.S. Customs and Border Protection agency (CBP). Anyone who travels between Canada and the U.S. has met officers of both the CBSA and CBP.

Since 2003, CBP also includes the U.S. Border Patrol, recognizable for their green uniforms and Stetson hats, which patrols the Canadian and Mexican borders between entry points. They are a

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<sup>41</sup> In this report, reference is made throughout to the acronym, CBSA, despite the agency being formed in 2003 through an amalgamation of Canada Customs and other entities.

<sup>42</sup> Police officers include RCMP officers, who take an oath upon engagement, and provincial and municipal officers who are granted the status of constable under provincial legislation.

large federal force, supported by sophisticated electronic warning devices, and air and ground support. Canada has no equivalent agency.

Responsibility for policing between border entry points in Canada falls to the RCMP, which provides the service through units spread across Canada. The irregular migrant entries in recent years along the Quebec and other provincial borders highlighted this role. In British Columbia, although the border is a federal responsibility, most first response policing is provided by RCMP officers on municipal contract or municipal police.<sup>43</sup> The amount of routine border patrol is limited.

Our airports house a large contingent of CBSA officers who vet every person entering Canada by air. They also oversee international cargo and mail shipments. Policing of Vancouver International Airport (YVR) is the responsibility of airport authorities. The airport is situated within the City of Richmond, itself policed on contract by the RCMP. The RCMP detachment includes a separate unit contracted to the airport authority.

Our seaports also house significant numbers of CBSA officers, who have the daunting task of interdicting contraband entering and leaving Canada's container and cruise ports, the largest being in Vancouver / Delta. CBSA employs various technologies, as well as physical searches. No police force is dedicated to working in the ports. That is the focus of this report.

## POLICING OUR PORTS

In both Canada and the United States, ports have been intrinsically linked to the development of civilian police. The first organized and community funded, full-time police force in the United States, was formed in 1838 in Boston. There, merchants persuaded the government to create a paid police force which would ensure the safety of port infrastructure and the safe movement of cargo into and out of the Port of Boston.

It was likely not lost on Boston's politicians that ports can be volatile places. It was a mere 50 years earlier that a cantankerous group of citizens tossed a cargo of tea into Boston Harbour,

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<sup>43</sup> In British Columbia, the only municipal police force which has jurisdiction abutting the international land border, is the Abbotsford Police Department.

helping spark a revolt, which became a war for independence, and ultimately, gave birth to a new country.<sup>44</sup> Ports are important places.

The ports of Halifax and Montreal were particularly vulnerable to port crime until police constables were hired, or forces were formed, prior to Confederation.<sup>45</sup> These were essentially private police forces paid out of port revenues rather than government appropriations. Speaking to a hearing on security in the Port of New York / New Jersey, the Director General of Police and Security for Canada's National Harbours Board, Donald N. Cassidy, stated, "that as long as the protection of cargo remained with private security agencies the high standards required in cargo protection would not be reached." He added, "that one of the recommendations made to his board last year by its staff was the replacement of private security agencies and their guards and watchmen in Canadian ports with members of a National Harbours Board security force."<sup>46</sup>

Both New York and the Canadian government appear to have listened. The Port Authority of New York & New Jersey now has the largest dedicated seaport / airport police force in the U.S.<sup>47</sup> and in Canada, the separately administered security and police forces at each port were consolidated in 1968, into one national organization, the National Harbours Board Police (NHBP). Cassidy became its first chief.

## NATIONAL HARBOURS BOARD POLICE / PORTS CANADA POLICE

With headquarters in Ottawa, and detachments in St. John's, Halifax, Saint John, Montreal, Quebec; Churchill, and Vancouver, the NHBP was a national force. Smaller ports were served by the nearest NHBP detachment.<sup>48</sup>

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<sup>44</sup> Olivia B. Waxman, "How the U.S. Got Its Police Force" (*Time Magazine*, May 29, 2017), accessed at <https://time.com/4779112/police-history-origins/>.

<sup>45</sup> By example, the Halifax Police Department was formed on Oct. 28, 1864, although a system of constables had operated in an unofficial manner since the first days of European settlement in 1749. Each ship arriving in Halifax would appoint one member of the crew to act as a constable, responsible for the actions of the crew and passengers.

<sup>46</sup> "Waterfront Panel Warns of Tighter Security Needs" (*NY Times*, Apr. 19, 1970) at p. 86, accessed at <https://www.nytimes.com/1970/04/19/archives/waterfront-panel-warns-of-tighter-security-needs.html>.

<sup>47</sup> See <https://www.panynj.gov/police/en/index.html>.

<sup>48</sup> T. Lazenby, "National Harbours Board Police now one of the world's most innovative forces – Canada", *Canadian Police Chief*, Vol. 68, No. 3 (Summer 1979) at pp. 39-42.

Responsibilities were delegated to it, “under the laws of Canada, the Attorneys General of the provinces in which it operates and the policies of the National Harbours Board with respect to the protection of assets.”<sup>49</sup> The NHBP was organized akin to a municipal police department. Members of the force had all the powers, authority, protection, and privileges of police officers under the *Criminal Code*. They also supervised security guards hired in the port. The force was paid out of port revenues rather than government appropriations. Functions of the force included investigation, intelligence, crime prevention, physical security, national security, and emergency planning. Liaison was maintained with both Canadian and foreign police forces.<sup>50</sup>

Members of the NHBP either transferred in from another police force or trained at a police academy. In Vancouver, the NHBP had a superintendent and over 30 officers, including an inspector, sergeants, corporals, and constables. Officers were second to CLEU and there was an investigative unit. In the early days, many arrests were made from people pilfering cargo, later with the advent of containers, there were employee thefts as cargo was unloaded from containers. With the automation of container movement, those thefts decreased and increasing reliance was placed on intelligence regarding suspect shipments.. The police tracked containers, built suspect profiles, and located stolen vehicles. There was a joint RCMP, VPD and NHBP drug squad on the waterfront. Members of the NHBP walked the terminals and container sheds and visited every incoming ship, speaking to the captain and examining crew manifests. The port police ensured a physical presence within the port, checking people and containers. Its officers understood the environment, what to look for and areas of greater risk to theft and other crime.

On Cassidy’s initiative, the International Organization of Airport & Seaport Police (INTERPORT) was established in 1969 as a specialized security association to support port police authorities globally. INTERPORT continues to be a robust organization within the international policing fabric, providing a forum for the discussion of measures to detect and prevent criminal activity in airports and seaports.<sup>51</sup>

In 1983, the National Harbours Board was replaced by Canada Ports Corporation. There was a corresponding devolution of many functions to local authorities. The NHBP was renamed, Ports

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<sup>49</sup> *Ibid.* at p. 40.

<sup>50</sup> *Ibid.*, generally.

<sup>51</sup> See <https://interportpolice.org/> . Director General Cassidy became the first Board President, in 1970-71.

Canada Police (PCP). The police force continued to police Canada's ports after its re-branding, and, was a productive force, with a physical presence on the waterfront and making numerous arrests and contraband seizures.

Unlike a public police force, however, the authority of Ports Canada Police was limited to protecting persons and property on or under the administration of Canada Ports Corporation, or a local port.<sup>52</sup> The restriction on its territorial jurisdiction surfaced in a B.C. Supreme Court chambers application. Officers were found to have exceeded their authority by arresting an individual on port property for an outstanding *Criminal Code* arrest warrant, respecting an offence committed elsewhere. Describing the officers' jurisdiction as "highly localized and circumscribed", the chambers judge noted that if they had "possessed the more plenary jurisdiction of a regular peace officer such as a member of the Vancouver City Police then their activities would have been appropriate and justified."<sup>53</sup>

Despite the jurisdictional restraint, the police continued in their duties. In 1992, during his review of protective services within Canada's ports, Judge René J. Marin expressed the belief that Vancouver's port continued to need a professional port police force.<sup>54</sup> However, that was not to be. In December 1995, the Minister of Transport proposed a new national marine policy, which called for the elimination of Canada Ports Corporation and the replacement of the Vancouver Port Corporation with a local authority. The Minister also proposed disbanding Ports Canada Police.

## 1996 VANCOUVER CITY COUNCIL OPPOSITION

In February 1996, Vancouver's city manager submitted a policy report to City Council outlining concerns that policing of Vancouver's port was already inadequate due to a lack of policing resources, and that if the Vancouver Police Department (VPD) was to assume the policing duties

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<sup>52</sup> *Canada Ports Corporation Act*, S.C. 1980-81-82-83, c. 121 at s. 5(1).

<sup>53</sup> *Collinson v. Canada Ports Corporation, Vancouver Port Corporation and Three Unknown Ports Canada Police Constables*, SCBC (in Chambers), April 27, 1990, file C871659 (Vancouver Registry). This case was not appealed. The simple fix, which we now see with the Metro Vancouver Transit Police, is to cross-designate federal officers as provincial police constables, giving them police powers throughout the province (see <https://transitpolice.ca/about-us/jurisdiction-mandate-and-authority/>).

<sup>54</sup> René J. Marin, "External Review of the Protective Services of Ports Canada" (1992). Marin completed several reports on police-related issues for the federal government, including on the RCMP and Canada Post.



formerly performed by the ports police, federal funding would be required. The report's recommendation to Council was to:<sup>55</sup>

“urge the Solicitor General of Canada to acknowledge the historical position that substantive federal policing interests including illegal immigration, drug importation and gun importation are inherent in the operations of the Port of Vancouver, the third busiest port on the continent, and further acknowledge the Federal Government's constitutional obligation to provide for the safety and security of the people of Canada by ensuring adequate policing in this gateway of the nation.”

In support of the recommendation, the policy paper included the following:

“Ports, by their nature, generate policing issues that fall under federal responsibility, such as organised crime, immigration, illicit drug, alcohol and arms trade, customs, national security, maritime terrorism, peacetime emergency planning, and enforcement of laws such as the new Maritime Security Act. Due to limited resources, these responsibilities are not being adequately met under present circumstances.”

The report described four tiers of policing in ports - security services, municipal police services, extraordinary local police services due to the “unique nature” of port operations, and federal policing. It argued that, in view of the port being a national gateway and the consequent “policing problems it generates”, funding should come from the federal government, possibly from the land rent paid by the port authority.

Noting that the level of policing undertaken in Vancouver by Ports Canada Police had “in some ways been inadequate, due to limited resources”, the paper recommended that the VPD continue to offer regular municipal police services to the port should PCP be disbanded, however “police services that were previously undertaken by the Ports Canada Police force, or services / service levels that are required but not at present being provided should not be funded by Vancouver taxpayers. This is a federal responsibility.”

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<sup>55</sup> Vancouver City Council, “The New National Marine Policy and the Port of Vancouver”, Policy Report, Feb. 19. 1996, accessed at [https://council.vancouver.ca/previous\\_years/960227/p4.htm](https://council.vancouver.ca/previous_years/960227/p4.htm).

## 1996 PROVINCE OF B.C. OPPOSITION

In March 1996, B.C.'s Attorney General, Ujjal Dosanjh, issued a media release, calling on the federal government to reverse its decision to disband the PCP, arguing that the move would imperil public safety. The Ministry's press release summarized his concerns:<sup>56</sup>

"Despite a serious threat to public safety, the Vancouver Port Corporation intends to disband its Ports Canada Police detachment by June 1, Attorney General Ujjal Dosanjh said today following a tour of the Vancouver waterfront.

"Federal Transport Minister David Anderson says he'll ensure that the port continues to have the level of policing that exists now. The Vancouver Port Corporation claims it knows nothing about such assurances," said Dosanjh.

"Mr. Anderson must show he means what he says and reverse the decision to withdraw police from Canada's busiest port. The safety of much more than just the port will be compromised if this issue is not resolved immediately".

"I have seen firsthand how dangerous this decision is for the safety of British Columbians. Investigations by B.C.'s Co-ordinated Law Enforcement Unit and other police agencies underscore the danger. The decision also makes a mockery of the federal government's gun control legislation, a central feature of which is controlling illegal gunrunning through ports."

Dosanjh said public safety and security must not be subordinated to the economic interests of the ports. "Ports are vital to B.C.'s economy, as is a strong, dedicated police force which must be maintained".

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<sup>56</sup> Ministry of the Attorney General, "Province Opposes Decision to Disband Ports Police", Mar. 22, 1996, accessed at <https://archive.news.gov.bc.ca/releases/archive/pre2001/1996/9603mar/15port.asp>. See also, "Dosanjh criticizes plans to disband port police", *Globe and Mail*, March 1996, accessed at <https://www.theglobeandmail.com/news/british-columbia/bc-flashback-port-force-disbanding-air-india-acquittal/article1322102/>.

"I have written again to the minister of transport telling him that a serious assessment of the policing needs of the port must be undertaken in consultation with the province and affected municipalities. The federal government's alternative that British Columbia taxpayers pay the tab is simply unacceptable."

In the last 10 years, police have seized \$1.25 billion worth of illegal drugs on the Vancouver waterfront. And in the first three months of this year, they have recovered close to \$2 million worth of luxury cars being smuggled out of the country.

The Ports Canada Police detachment at the Port of Vancouver includes 29 officers, seven civilian staff and eight seasonal employees. They are responsible for policing about 275 kilometres of coastline, including the Port of Vancouver, North Vancouver, the bulk terminal at Port Moody, Roberts Bank, waters adjacent to Vancouver International Airport and waters surrounding the ferry terminal at Tsawwassen and Boundary Bay, extending to the U.S. border."

## 1997 DISBANDMENT

The pleas were to no avail. Ports Canada Police was disbanded in July 1997, prior to the *Canada Marine Act* coming into force. There has never been a public airing of the reasons for the disbandment. Accusations of mandate creep into areas not originally contemplated, such as investigating corruption, excessive bureaucracy, and a lack of solid results, have all been provided as reasons.<sup>57</sup> There is no indication that the decision resulted from an objective analysis into the PCP's administration and operations.

With its disbandment, policing of port property became the responsibility of the police force of jurisdiction. For Greater Vancouver, this meant a multitude of different municipal police forces and the RCMP.

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<sup>57</sup> Curiously, this mimics the questions that still resonate with respect to the abolition of the B.C. Provincial Police in 1950.

# POLICING OUR PORTS – POST-1997

## NATIONAL PORT ENFORCEMENT TEAMS

With the demise of the Ports Canada Police, the federal government funded the RCMP's establishment of National Port Enforcement Teams (NPET) at Vancouver, Montreal, and Halifax. Initially, the RCMP received funding for six positions in Vancouver. The Vancouver Fraser Port Authority agreed to contribute funding to supplement the federal resources.

## WATERFRONT JOINT FORCES OPERATION

The Vancouver NPET established a Waterfront Joint Forces Operation (WJFO), comprised of RCMP, VPD, Delta Police Department (DPD), and CBSA. Its primary mandate was the investigation of criminal activity and intelligence collection, working alongside VFPA, law enforcement, intelligence, and regulatory bodies.

Also in 1997, the federal government agreed to provide the City of Vancouver with approximately \$4 million, in declining sums over seven years, to fund additional police officers to work in a combined unit with the NPET, through an agreement with B.C.'s Minister of Public Safety and Solicitor General.<sup>58</sup> With this funding, 15 officers were added to the VPD to create a Waterfront Team, combining patrol officers with the existing Marine Unit.<sup>59</sup> The province also funded an analyst position at the Combined Law Enforcement Unit (CLEU).

The WJFO appears to have functioned well and was supported both financially and with the appropriate resources. It worked closely with CBSA respecting controlled deliveries of drugs. Long term undercover operations were also mounted to determine the extent of organized crime's

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<sup>58</sup> "City of Vancouver Submission to the *Canada Marine Act* Review Panel", Oct. 30, 2002, accessed at <https://council.vancouver.ca/20030116/csb2.htm>.

<sup>59</sup> City of Vancouver Administrative Report, Apr. 9, 2002, accessed at <https://council.vancouver.ca/020409/RR1c.htm>.

influence within the ports. Over time, however, members of the WJFO were pulled away on other duties, money became scarce, and resources became scarcer. More of that later.

## 2001 SENATE COMMITTEE

On May 31, 2001, a standing committee of the Senate was authorized to conduct an introductory survey of the major security and defence issues facing Canada.<sup>60</sup> Its work acquired greater urgency after the events of September 11, 2001. Chaired by Senator Colin Kenny, the committee received testimony in Vancouver during November 2001, with respect to the port.<sup>61</sup>

The Committee summarized the evidence of Brian Bramah, Regional Director, Security and Emergency Preparedness, Transport Canada and Chris Badger, Vice-President of Operations, Vancouver Port Authority, including the following from Mr. Badger:

“The Port Authority has relatively little responsibility for security in the Port. It operates a system of closed circuit television cameras which monitor the various parts of the Port 24 hours a day, 7 days a week. It has acquired a mobile scanner that can produce an image of the contents of a 40 foot container in about 40 seconds, hence it is possible in theory to screen 100% of the containers moving through the Port. The Port Authority also pays \$250,000 a year for increased security patrols around the perimeters of the Port.”

Their answers to questions were summarized in the official record, as follows:

“The cruise lines are responsible for screening all the passengers and baggage boarding their vessels.

The Port Authority has established a small intelligence unit to co-ordinate the work of the 8 municipal police forces with jurisdiction over Port territory. There is general satisfaction

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<sup>60</sup> Senate of Canada, Standing Senate Committee on Defence and Security, First Report, June 7, 2001.

<sup>61</sup> Senate of Canada, “Report of Fact-Finding Visit: 19-22 November 2001 Vancouver, Victoria and Winnipeg” (<https://sencanada.ca/en/Content/SEN/Committee/371/defe/fact/rep19nov01-e>). The agenda indicates that other persons were present from the stakeholders and may have contributed to the responses (see <https://sencanada.ca/en/content/sen/committee/371/defe/fact/fact19nov01-e>).

with the status quo which is considered an improvement over the Port Police because there are more officers on patrol and because they have a mandate beyond Port property.

The Port Authority claims not to have any knowledge about the activities of organized crime in the Port. (Customs officials report tactics of intimidation as they inspect containers and say that the Hell's Angels is the dominant criminal influence within the Port.) This is the responsibility of the provincial Organized Crime Agency.

The Port Authority subjects its employees to security screening, but it hires only 121 of the 27,000 persons working on Port property. Companies which lease Port property are free to screen or not screen as they choose. In conjunction with the private companies the Port Authority is trying to develop an identification card system common to all port employees.

The British Columbia Marine Employers Association hires and trains dock workers, but workers are dispatched to their assignments through a hiring hall.”

The Senate Committee also heard from Deputy Chief John Unger of VPD and RCMP Inspector Doug Kiloh. The official summary of their evidence included the following:

“They discussed with the Committee the public interest in policing private property and the problems that arose. There is an agreement with the Attorney-General of British Columbia to cover police activities on Port property, but compensation for the policing is a sore point with local municipalities.

A large number of municipalities are involved in policing Port property, not to mention the involvement of provincial and federal police forces, departments and agencies, and private security companies. Consequently, there is seldom a clear division of responsibility. Nevertheless, the police officers were satisfied that policing was co-operative and effective.... An Intelligence Analyst from the British Columbia Organized Crime Unit noted that all the elements of traditional organized crime were involved in the Port, as well as the more modern Asian Triads, Russian Gangsters, and Narco-Terrorists, etc.

The range of criminal activity was much the same as in the Port of Montreal. Motorcycle gangs are very active and visible, linking criminal activities

in the eastern and western ports. The various elements of organized crime tended to have specialities, but they all participated in the import/export of illegal drugs as the most common and lucrative activity. In addition, Asian and Russian gangs exported stolen luxury cars; the Russian gangs were also active among chandlers; and Mexican and Columbian gangs were involved in narco-terrorism.”

In response to questions, VPD confirmed that it still patrols the port. Determination of responsibility for incidents in the port is handled on an ad hoc basis. The emphasis on commercial interests and expediting port traffic can detract from the needs of security, which can be expensive and time-consuming. No agreement could be reached on the ideal model for port policing, although there was a belief that Canadian ports must be brought up to the level of security that exists at major airports; including the following:

- employees must be security screened and access denied to those with relevant criminal records or known criminal associations;
- movement on, into and out of Port property must be controlled; and
- there must be central reporting of theft of containers and their contents.

In its final report, issued in February 2002, the Senate Committee made numerous recommendations, including,<sup>62</sup> the creation and funding of a co-ordinating body to support integration and liaison among the various law enforcement units that work at the port. The report commented on the many municipal police forces and RCMP units which had port policing responsibilities in B.C. Police stakeholders, including the VPD and RCMP, “opposed formation of a single authority to police all the Ports of Canada believing that it would lack flexibility”.<sup>63</sup> The police representatives noted that, unlike Ports Canada Police, municipal and RCMP officers have a “mandate beyond Port property”. This was a reference to the limited powers of the Ports Canada Police described in the *Collinson* decision.

The Senate Committee commented that witnesses supported a co-operative, multi-agency policing model, however the Committee choose not to offer its opinion, other than to state that the “federal and provincial expenditures on controlling organized crime were inadequate and

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<sup>62</sup> Senate of Canada, “Canadian Security and Military Preparedness”, Report of the Standing Committee on National Security and Defence, 1<sup>st</sup> Session, 37<sup>th</sup> Parliament, Feb. 2002 (<https://sencanada.ca/Content/SEN/Committee/371/defe/rep/rep05feb02-e.pdf>).

<sup>63</sup> *Ibid.*, at p. 45.

completely disproportionate to the proceeds of crime.” The Committee called for an inquiry into port security.<sup>64</sup>

Five years later, in 2007, Senator Kenny and his committee continued to express concern about the state of port policing. He linked the disbandment of Ports Canada Police to “the growing boldness of organized crime groups, like the Hells Angels.” In a March 2007 op ed, published in a New Brunswick paper, an obviously frustrated Senator Kenny wrote:<sup>65</sup>

“All the Committee is asking is that the government take reasonable measures to upgrade security at Canadian ports, which several witnesses have told us are inundated with organized crime. We would not be asking that the government take reasonable measures if we thought they were already taking them.

Why is the presence of organized crime at our ports a factor in this discussion? Because criminals like security holes – they wouldn’t be able to siphon money from the system if such holes didn’t exist. And security holes that create opportunities for criminals also provide opportunities for terrorists....

I agree with the comments made last week by Pat Riley, president of Local 273 of the International Longshoremen’s Association [that] “more enforcement and tighter security measures” are needed to combat organized crime at ports,....

There are other problems with port security. Inadequate policing. Non-existent waterside surveillance. Inadequate background checks on port workers. Lack of scrutiny of people entering restricted areas....

The Committee’s last report on Canada’s Ports was issued in 2003. It recommended that the government of the day initiate a public inquiry under the Inquiries Act into security at Canada’s ports. No such inquiry was ever initiated.

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<sup>64</sup> *Ibid.*, at p. 47.

<sup>65</sup> Colin Kenny, “Security at Canada’s Ports: What Makes Sense?” (*Telegraph-Journal*, Saint John, Mar. 28, 2007), accessed at <https://colinkenny.ca/fr/Security-at-Canadas-Ports-What-Makes-Sense.html>.



We don't see ship owners, port authorities or unions pushing for such an inquiry. One wonders why. Is it that as long as all parties are making good money at our ports, they will shrug off crime as the cost of doing business?

Canada's ports need a shift in culture, away from various fiefdoms acting in their own interests toward owners, shippers, unions and shipping companies acting in the Canadian public's interest."

## **2007 / 08 TODDINGTON / MOULTON REPORT**

In 2007, the RCMP contracted Toddington International Inc., "to assess the current situation in respect of the policing of the maritime environment and the ports of British Columbia and provide possible solutions." The report's focus was on the entire B.C. coast and was written at a time when the RCMP was advocating the use of internal and external integration as a delivery model to leverage the resources of multiple policing units and agencies to deal with a wide variety of policing responsibilities.

The study noted that, "stakeholders were unanimous as to the existence of an enormous gap between needs for ports and maritime policing and the means to fulfill them." The lead author, Earl Moulton, concluded that the key to success was the establishment of "integrated marine units". The report advocated a seven-point action plan, including community and industry support, a tri-partite government funding model, a unified governance structure, real time intelligence and information sharing, integrated service delivery, shared skills and standards, and an optimal level of resources.

The report assumed the need for maritime policing but did not dwell on relative roles and responsibilities, or governance and funding. Alternate service delivery models were not considered, and no analysis was conducted of a port police model. Despite a detailed action plan, including sample memorandums of understanding, the report's recommendations were not implemented.

## 2011 PRESIDIA SECURITY REPORT

In 2011, Public Safety Canada commissioned a report into the vulnerability of ports to organized crime. The report, based upon a literature review and interviews, was summarized in an Organized Crime Research Brief released by the Ministry.<sup>66</sup>

The report described the vulnerabilities and risks presented at Canada's major ports. Despite numerous successful seizures, "Canada's largest marine ports remain vulnerable to the smuggling of inbound precursor chemicals, illegal drugs and counterfeit goods." Noting that historically some of the largest smuggling cases involved corruption at ports, the report described the following:

"OC activity in the largest commercial marine ports included: (1) increased precursor chemical shipments for domestic synthetic drug production; (2) export of domestically-manufactured synthetic drugs to marine ports abroad; and (3) large-scale import of counterfeit consumer products, particularly cigarettes. The authors observe that these trends are linked to three inter-related factors: (1) most precursor chemicals and counterfeit goods are frequently shipped from China, (2) the Port of Vancouver is the principal marine gateway into Canada, and (3) inbound (precursor chemicals) and outbound (synthetic drugs) smuggling is largely controlled by Chinese criminal networks.

The authors concluded that Canada's three largest commercial marine ports located in Halifax, Montreal and Vancouver are the most vulnerable to both inbound and outbound smuggling due to the sheer volume of container traffic processed annually. This volume of traffic reduces the likelihood of contraband being inspected, detected and seized. These marine ports were also identified as significant conduits for smuggling since established and sophisticated OC groups are based in the host cities of Montreal and Vancouver.

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<sup>66</sup> Presidia Security Consulting Inc., 'A Study of the Vulnerability of Marine Port Operations to Organized Crime' (Ottawa, Public Safety Canada, 2011), as summarized in "Marine Ports and Organized Crime", Organized Crime Research Brief no. 25 (Ottawa: Public Safety Canada, nd), accessed at <https://www.publicsafety.gc.ca/cnt/rsracs/pblctns/rqgzd-crm-brf-25/index-en.aspx>.

Factors such as the high volume of traffic, reduced likelihood of inspection, existing storage protocols within container terminals permitting storage of domestic and international containers (as well as empty containers) in the same compound, contribute to the vulnerability of the marine ports to OC groups. Moreover, the challenging physical layout and spatial characteristics of these marine ports add to the difficulty of providing adequate security and law enforcement.”

Although the authors commented favourably on the merits of intelligence-led targeting, the use of technology to detect illegal cargoes, manual searching, and co-operation among agencies, they concluded that the expanded use of these measures was “constrained by the availability of sufficient resources” and “that current law enforcement resources continue to be insufficient relative to the scope of smuggling taking place.”

## **2015 END OF VFPA FUNDING**

Despite the ongoing concerns respecting port policing and the inadequacy of the current state of play, in 2015, the Vancouver Fraser Port Authority ended its partial funding of the WJFO. The impact of that defunding decision continues to the present. The explanations given over time for this move have included that:

- no other Canadian port paid for such a service;
- port policing was outside its business model;
- it is accountable to its tenants;
- it became clear that the RCMP and CBSA had primary responsibility;
- the funding was transitional;
- the WJFO was only able to provide limited information to support VFPA security responsibilities due to privacy and other legal concerns;
- VFPA could not request nor direct police involvement in preference to any other member of the public;
- it did not satisfy a cost-benefit analysis; and

- it had developed effective relationships with the various police forces of jurisdiction, which contributed to an increase in operational support to VFPA.<sup>67</sup>

The funding was apparently redirected to expand VFPA's security department and security systems, in "a multi-layered approach to its security program."<sup>68</sup> As a result of the claw back by VFPA, the WJFO was reduced from 13 to 9 officers with the elimination of the VPD and DPD positions and two RCMP positions.<sup>69</sup>

The irony of retracting and choosing to restrict its mandate to security left the port authority in the anomalous position that it no longer had anyone who could carry out criminal or regulatory enforcement in the port. Although much ado was made of a program of Port Enforcement Officers (PEO), it soon became apparent that their ability to enforce regulations was severely constrained by a conflict between the *Canada Marine Act* and the federal *Contraventions Act*.<sup>70</sup>

## 2015 / 2018 ACPA WHITE PAPER

The Association of Canadian Port Authorities issued a White Paper in 2015, in which it recommended that the federal government do the following:<sup>71</sup>

- review and rectify the disconnect between the port security requirements of the Canada Marine Act and the Contraventions Act;
- clarify the role of port authorities in providing waterside security;
- establish authorities for port authority security enforcement; and
- ensure appropriate information sharing among marine partners.

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<sup>67</sup> VFPA, "Port Policing Memo", Aug. 21, 2023. One academic writes that, "[A]t times, the WJFO appeared more taxed by public and Aboriginal protests... than organized crime" (Chris Madsen, "Pacific Gateway: State Surveillance and Interdiction of Criminal Activity on Vancouver's Waterfront", *supra* at p. 31).

<sup>68</sup> VFPA, "Port Policing Memo", Aug. 21, 2023. Presumably the port authority knew at the outset of funding that it did not have the authority to direct police involvement.

<sup>69</sup> Jon Azpiri, "Port Metro Vancouver cuts funding to police unit" (*Global News*, Dec. 8, 2015), accessed at <https://globalnews.ca/news/2389470/port-metro-vancouver-cuts-funding-to-police-unit/>.

<sup>70</sup> S.C. 1992, c. 47.

<sup>71</sup> ACPA, "Strengthening Security at Canadian Port Authorities", *supra* at pp. 2-3.

In its paper ACPA pointed to the fact that port security had changed forever since the 9/11 attacks in the U.S., and that shipping lines, port authorities, and governments were now cognizant of the “inherent vulnerabilities of the marine sector.” This included the broad jurisdiction of some ports, over bridges, highways, rail yards, underwater pipelines, overhead electrical wires, and even airports.

ACPA reiterated its recommendations in another review, released at the end of 2018.<sup>72</sup>

## 2018 TRANSPORT CANADA REVIEW

In March 2018, Transport Canada announced its Port Modernization Review, including the issue of port security. In response to a call for submissions, both the Vancouver Police Department and the Ontario Provincial Police responded. VPD’s enthusiasm for port policing appears to have waned from 17 years earlier when it appeared before Senator Kenny’s Committee. With respect to a police presence in the ports, VPD observed:<sup>73</sup>

“Historically, the Port Police would patrol all areas of the Port. The security at the Port has evolved with heightened physical barriers and private security. As a result, little proactive police patrols occur on the secure side of the Port.

The cruise ship terminal, which is accessible to the public, also presents security challenges due to the volume of passenger traffic. The VPD responds to calls for service in this area, however, do [not] assume a security function.”

When asked whether “Local Police Best Equipped to Deal with Ports?”, the VPD stated:

“Proactive policing of the Vancouver Ports not an enforcement priority with the city police. Therefore, enforcement of issues at the Vancouver Ports is deferred to

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<sup>72</sup> ACPA, “Ports Modernization Review” (Ottawa, Dec. 3, 2018) at p. 29, accessed at [https://acpa-aapc.ca/wp-content/uploads/2021/01/ACPA\\_Ports\\_Modernization\\_Review\\_Submission\\_EN.pdf](https://acpa-aapc.ca/wp-content/uploads/2021/01/ACPA_Ports_Modernization_Review_Submission_EN.pdf).

<sup>73</sup> Vancouver Police Department, “Transport Canada’s Post Modernization Review: Vancouver Police Department’s Response to CACP” (2018) at p.1, accessed at <https://wm-so.q1b.shawcable.net/service/home/~/?auth=co&loc=en&id=479042&part=3>.

federal authorities such as the Canada Border Service Agency (CBSA) and RCMP drug and organized crime enforcement.

Jurisdictionally, the port area crosses different districts, and there is not overall ownership of it. For example, there is no geographic delineation with statistics related to the port. The transit system in the Lower Mainland had similar jurisdictional issues; this was resolved with the creation of a dedicated police agency responsible for all transit systems (Metro Vancouver Transit Police).”

On the issue of co-ordination, VPD wrote:

“There ought to be consideration of an integrated or coordinated marine policing unit for the Port area as information exchanges between law enforcement agencies and stakeholders is not adequate.

Between, CBSA, RCMP, Waterfront JFO, VPD, and Fisheries and Oceans Canada (DFO), it is difficult to determine who is doing what. Even within the RCMP, there are five separate units/sections that are responsible for investigation and enforcement, with no coordination between each of those units.”

Transport Canada’s final report did not mince words when it described how organized crime, “to facilitate their smuggling activities... are involved in the corruption of port workers and have embedded members and associates within port facilities by way of legitimate employment.” The report “warned that organized crime groups are “certain” to continue smuggling large amounts of drugs and illegal goods through British Columbia ports because of widespread corruption and massive profits. The internal report warned that 27 members of organized crime groups, associates or people with serious criminal records were members of the longshoreman’s union at the time.”<sup>74</sup>

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<sup>74</sup> Jen St. Denis, “Revive port police to fight organized crime on the waterfront, Delta chief says” (*Star Vancouver*, Sept. 11, 2019) accessed at <https://www.thestar.com/vancouver/2019/09/11revive-port-police-to-fight-organized-crime-on-the-waterfront-delta-chief-says.html>.

## CONCERNS OF THE CITY OF DELTA

The Delta Police Department has jurisdiction for municipal policing of Delta and its port, as well as the highways and rail lines leading to and from the port. Between 2009 and 2018, DPD responded to 754 calls for service, or on average, 75 calls per year, at or near the Roberts Bank container port. The calls included emergencies, general assistance, traffic offences, property damage, and suspicious vehicles or persons.

DPD includes the port in its emergency planning strategy, meets with port management at least once a year, and includes them in emergency exercises. Delta Police are not resourced to conduct any proactive policing or sophisticated organized crime investigations within the port. Furthermore, access to the port proper is restricted and DPD officers must request permission to enter.

## 2019 BCMA RESOLUTION

In 2019, Delta sponsored a resolution on port policing at the annual UBCM conference. The resolution, agreed upon by those in attendance, observed that the “loss of police resources has weakened the security of Canada’s ports and allowed organized crime elements to proliferate”.<sup>75</sup> The resolution called on the provincial government to, “re-establish dedicated resources to police ports and waterfronts”. In reply, the province noted that port policing is a federal responsibility, “notably the RCMP - Federal, Serious and Organized Crime FSOC and the Canada Border Services Agency”.<sup>76</sup>

Since the 2019 resolution, both Mayor Harvie and Chief Constable Dubord have continued to express their concerns over the state of policing at B.C.’s ports. In a September 2019 media interview, Chief Dubord noted that after VFPA removed its funding contribution, the WJFO team

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<sup>75</sup> Resolutions to be Considered at the 2019 UBCM Convention (Resolution B90 – Port Policing), *supra*.

<sup>76</sup> *Ibid*.

dropped from 13 positions to 9, and eventually, to zero. This left the responsibility for ports policing to various integrated teams, that also had numerous other responsibilities.<sup>77</sup>

## 2020 FEDERAL REVIEW PANEL

In March 2020, the Federal Review Panel for the Roberts Bank Terminal 2 Project released its report on the viability of expanding the container port facility. Deep within the 613-page report is a discussion of the impact on policing. The Review Panel recognized the lacunae in policing since the disbandment of Ports Canada Police, which it believed would be further aggravated by an expansion. In its words:<sup>78</sup>

“The Panel is also aware of the concerns regarding the potential for increased crime rates with the Project and the need for adequate police and security services. Based on the revenues and expenditures presented by the City of Delta, the Panel notes that protective services constitute the city’s main expenditure and it is apparent that the City of Delta, to some extent, relied on the Port Authority to fund the integrated police team. The Panel finds that the estimated \$4.6 million in annual property taxes in addition to fees and payments in lieu is a significant beneficial economic effect for Delta. However, the Panel realizes that the effects of the Project on Delta’s community safety and security would only be mitigated if actual improvements were made to the city’s policing services. For this reason, the Panel is of the view that the Port Authority should resume its annual integrated police team funding.”

At the conclusion of its four-year impact study, the Review Panel took great care to make 71 recommendations, including the following:<sup>79</sup>

### Recommendation 48

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<sup>77</sup> Jen St. Denis, “Revive port police to fight organized crime on the waterfront, Delta chief says”, *supra*.

<sup>78</sup> Impact Assessment Agency of Canada, “Federal Review Panel Report for the Roberts Bank Terminal 2 Project”, *supra* at pp. 340-341.

<sup>79</sup> Impact Assessment Agency of Canada, “Federal Review Panel Report for the Roberts Bank Terminal 2 Project”, *supra* at pp. 341-342.



“The Proponent [VFPA], in consultation with the Delta Police Department, the Royal Canadian Mounted Police and the Canada Border Services Agency be required to:

- Examine the creation and implementation of a multi-jurisdictional port policing authority to prevent and control crime incidence at Roberts Bank terminals. The task force would eventually transition to the Roberts Bank Terminal 2 port operator security entity; and
  
- Negotiate an agreement with the City of Delta to allocate sufficient funds to implement an integrated police team commensurate with the requirements of the Project.”

## RECENT DEVELOPMENTS

The failure of the existing port governance regime to enforce regulatory offences, effectively neutered the role of port enforcement officers. In the hope of mitigating this issue, Transport Canada recently promulgated regulations allowing for *Canada Marine Act* Enforcement Officers, with the ability to impose Administrative Monetary Penalties (AMP).<sup>80</sup> The Enforcement Officers will not be police officers or peace officers. Transport Canada and the port authorities are currently developing the program.

During parliamentary consideration of Supplementary Estimates for ports and railways in December 2022, Transport Canada indicated an intention to strengthen the oversight of railway police in Canada, noting that they, “are often the first line of defence against safety and security issues that affect our railway system.”<sup>81</sup> No mention was made of the vulnerability of ports or the absence of policing in ports.

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<sup>80</sup> See <https://www.canada.ca/en/transport-canada/news/2023/07/minister-of-transport-introduces-new-regulations-for-enhanced-safety-and-enforcement-in-canadas-marine-transportation-system.html> . The AMP regime is not necessarily a panacea, witness the issues faced by FinTRAC, Canada’s financial intelligence unit’s, recent experience (see Peter M. German, “Proceeds of Crime and Money Laundering” (Toronto: Thomson Reuters, 2022) at pp. 22-147-152.2.

<sup>81</sup> “TRAN Appearance”, 2022-2023 Supplementary Estimates (B), Dec. 5, 2022., accessed at <https://tc.canada.ca/en/binder/10-railway-policing>.

On the horizon is Bill C-33, having passed First Reading in the House of Commons.<sup>82</sup> The government bill intends to amend various pieces of legislation to strengthen the port system and railway safety. The amendments are intended to enhance the efficiency and resilience of Canada's supply chains, and optimize traffic management at ports. Policing is not mentioned in the legislation, nor is there reference to the impact on policing of the measures intended to create a more efficient supply chain.

## POLICING OUR PORTS - TODAY

### THE THREAT

It is important to understand the threat environment in which we live. Vancouver is no longer the backwater that it was just a few decades ago. As a byproduct of globalization, the 1986 world exposition, the 2010 Olympics, and the rabid pace of change, which is prevalent in all walks of life, Vancouver has become a world city.

Though not large in terms of population, Vancouver's pivotal location beside the United States, facing Asia, and closer to Britain by air than it is to Canada's Atlantic seaboard, gives it strategic gravitas. Being home to a plethora of banks, casinos, communications, and encryption companies, and possessing a multi-ethnic and multi-lingual workforce, Vancouver is open for business. It is also open to transnational organized crime, having provided a staging point for Asian, South American, Mexican, and home-grown syndicates and cartels. The absence of effective investigative processes; cumbersome, lengthy, and failed criminal prosecutions; and a compassionate sentencing regime, mean that there is literally no downside for persons who engage in organized criminality.

Recently, ports scored very high in British Columbia's provincial threat assessment with respect to the potential for infiltration and corruption. According to police intelligence, transnational organized crime groups are active within our ports. They use ports to export illicit commodities

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<sup>82</sup> "Strengthening the Port System and Railway Safety in Canada Act, Bill C-33, 44<sup>th</sup> Parliament, 1<sup>st</sup> Session, accessed at <https://www.parl.ca/legisinfo/en/bill/44-1/c-33>.

and take advantage of the low level of scrutiny of outgoing containers, which is even less than the scrutiny of incoming containers.

TOC groups will not hesitate to attempt to corrupt those who control hiring and dispatch. In addition, commercial truckers are accessing ports, including restricted areas, without criminal record checks. Illicit drugs and precursors destined for clandestine Canadian labs arrive in the port, and the product of such labs leaves in containers for Australia, Japan and elsewhere in Asia.

In February 2020, CBSA seized 106 kilos of methamphetamine at Deltaport, concealed within a shipment of cement blocks that originated in Mexico. It had an estimated value of \$13.5 million. The seizure resulted from a tip received from CBSA's National Targeting Centre. The case was referred to the RCMP's FSOC, which spent weeks tracking the suspects responsible, eventually laying charges against four individuals.<sup>83</sup>

A recent, record-breaking seizure of outbound methamphetamine underscores the severity of the problem. Canada is clearly a source and a transshipment stop for vast quantities of drugs.<sup>84</sup> CBSA officers made four seizures, amounting to 6,330 kilograms of liquid and crystal methamphetamine, contained in 419 canola oil jugs, destined for export to Australia. With a street value of a staggering \$1.5 billion, it was described as the CBSA's "single largest methamphetamine seizure" by its regional director.

Greater Vancouver has a hierarchy of organized crime groups, from those engaged in transnational import and export, to others that work the streets, selling drugs and other contraband. Of great concern is the reality that Canada, once a source country for marijuana, nicknamed "B.C. Bud", is now producing deadly drugs for export. Approximately 20 'super labs' have been dismantled in recent years within Greater Vancouver.

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<sup>83</sup> Kim Bolan, "More than 100 kilos of meth seized at B.C. container terminal (*Vancouver Sun*, April 7, 2020), accessed at <https://vancouver.sun.com/news/local-news/more-than-100-kilos-of-meth-seized-at-b-c-container-terminal>.

<sup>84</sup> Elizabeth McSheffrey, "Record amount of methamphetamine found in canola oil jugs bound from B.C. to Australia accessed" (*Global News*, June 14, 2023), accessed at <https://globalnews.ca/news/9768269/drug-bust-canola-oil-jugs-bc-australia-cbsa/>. See also Simon Little and Grace Ke, "Delta's mayor wants dedicated police force patrolling Metro Vancouver ports" (*Global News*, June 20, 2023), accessed at <https://globalnews.ca/news/9782381/delta-calls-for-dedicated-port-police/>.

The Mexican cartels discovered Vancouver a few years ago and are increasingly making inroads. Australia is a lucrative market for Mexican drugs, worth up to five times what the drugs sell for on our streets. There is now a direct rail route from Vancouver to Mexico with the merger of CPR and Kansas City Southern railway, becoming CPKC, “the first and only transnational rail network in North America”.<sup>85</sup>

The location of the ports in Greater Vancouver is also important. They are not contiguous, one with the other. Instead, they are scattered among multiple municipal jurisdictions and operated by a decentralized federal agency. But it is more than geography. A senior officer at FSOC advised us that their biggest challenge is that the port is its “own community, just like at the airport, and close knit.” A police presence is easily detected. The officer added, “we know there is a level of corruption. And the sophistication of the large criminal groups is high. They will open a legit company, run products through the port legally for several years, then transition to illegal import when they are off the radar.”

Mitigating the threats in the port is not easy. FSOC advise having to resort to confidential informants and data and pattern analysis. Just obtaining information from CBSA and Transport Canada is difficult due to legal requirements. Formal requests or a production order are required, noting that agencies are very wary of breaching privacy legislation.

A senior RCMP officer was candid in his assessment that, “we really need help to make sure we can keep the foot on the gas and with the expansion of Delta Port there needs to be more of a robust investigative capacity for ports policing.”

In the face of this risk environment, it is helpful to know what is being done to counter the threat.

## CBSA

The Canada Border Services Agency describes its role quite simply – dealing with the international aspect of what enters and leaves Canada. It does not engage in domestic investigations and its border services officers, although they are peace officers and members of

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<sup>85</sup> See <https://www.cpkcr.com/en/about-cpkc>.

law enforcement, are not provincial constables or police. When they locate a shipment of illegal drugs, the case is turned over to the RCMP, for whatever action it deems necessary, such as a controlled delivery.<sup>86</sup> For any policing issues in and about the port, CBSA will typically contact the municipal police force of jurisdiction.

The Metro Vancouver District of CBSA has dockside operations at the various container and cruise terminals. Of interest to this review is the container examination process, which can be described as both simple and complex. It is simple by virtue of all containers being scanned for radiation when they arrive in the port, and only a small fraction undergoing more detailed imaging or searching. The complexity revolves around deciding which containers to image and search.

This determination begins in the foreign port where the container originates. A shipper is required to provide what is referred to as Advance Commercial Information (ACI), including electronic data on origin, source, and content of its cargo at least 24 hours prior to a ship's departure. This ACI is reviewed by CBSA's computer systems using an algorithm, to determine if there are concerns. Although it is possible to prevent a shipment from leaving a foreign port, that is a rare occurrence. Virtually all containers do leave and arrive in Canada, where search decisions must be made by the CBSA officers working in the port.

Upon arrival in Canada, all containers are scanned for radiation. Intelligence, analytics, and the work of border service officers to detect anomalies, will determine if a container receives further scrutiny. This could involve medium or large-scale imaging, which provides an X-ray view of contents in a container. The final step would be a physical search by border services officers, including the possible use of canines, at one of the container examination facilities.

Search facilities are found in various locations, including Roberts Bank itself and Burnaby. CBSA does not disclose the percentage of containers that are imaged, or opened and searched but it is believed that less than two percent are imaged and less than one per cent are physically searched. Containers which arrive in the port and are shipped by rail or truck to the U.S., undergo additional scrutiny at the U.S. border.

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<sup>86</sup> A controlled delivery is one in which police conduct surveillance of the contraband to its ultimate destination, then seize the contraband and arrest the recipient. These investigations can be extremely time consuming and resource intensive, requiring evidence that the suspect had knowledge of the illegal contents of the item shipped.

Although outgoing containers are expected to receive the same degree of rigour as incoming containers, those familiar with the ports were clear that this is not the practice, or practicable. Appendix “C” is flow chart of CBSA’s container examination process.

## **VFPA SECURITY PROGRAMS**

Contracted private security firms perform basic security and control access. The port performs water and land patrols, staffs a 24-hour, service operations centre, with real-time feeds from video cameras and transponders on trucks, issues port access passes, and co-operates with government and private industry. It also operates a drone for surveillance.

The VFPA is required to develop a Port Master Security Plan (PMSP) for the container and cruise ports, while each terminal operator that receives foreign vessels is required to develop a Marine Facility Security Plan (MFSP). The VFPA has a Port Security Officer, and each terminal has a Marine Facility Security Officer and an alternate. All plans must be approved by Transport Canada.

The VFPA prides itself on having spent millions of dollars securing port lands, including secure access gates, port security boats and on security personnel. All of this is, of course, necessary but does not deal with the issue of what takes place within the port. Access gates keep out the unwanted, but 30,000 access cards ensure that everyone with a job can enter.

## **RCMP FSOC**

Unit 4 of the RCMP’s Federal and Serious Organized Crime section is responsible for federal border operations. It targets border-related criminality, including organized crime, illegal migrants, suspicious vessels and cargo, and the import and export of illicit commodities at and between ports of entry – air, land, and sea. Other federal units provide support, depending on the nature of the offence. It works as an integrated and intelligence-focussed unit, engaged on cases related to national security, organized crime, controlled substances, corruption, and other investigative priorities.

As part of FSOC-4, WJFO’s mandate is border security at the ports. It works in partnership with domestic and international law enforcement and other partners. Prior to Covid-19, WJFO had a

steady caseload, however resources were diverted to the land border during the pandemic, and the unit is now rebuilding. FSOC advise that the WJFO could have a team of 50 officers and that still would not be enough to deal with the casework.

Traditionally, the 'bread and butter' of WJFO work at the ports was controlled deliveries, which result from CBSA discoveries of contraband. These investigations are resource heavy, human, and technical, as the contraband often must be replaced with an innocent substance plus technical probes, and then followed by police surveillance teams to its destination. At that point, police may have to wait weeks or months for the item to be picked up and opened.

When the RCMP's commodity teams, including the drug section and border integrity section, were replaced in 2013 by organized crime teams, the RCMP lost the ability to respond nimbly to calls from CBSA. Now, they must first assess the viability of information, then determine if resources can be reassigned from ongoing organized crime investigations. Oftentimes, they cannot, turning significant discoveries into 'no case' seizures.

When active on port cases, the WJFO operates like a plainclothes drug unit, spending a lot of time on surveillance. Its targets have connections to the port, including importers and exporters, but the WJFO seldom works in the ports. The members also handle a lot of administrative details, such as processing the no-case seizures received from CBSA.

Being the only FSOC unit that is not located at the RCMP's provincial headquarters in Surrey, the WJFO members get pulled away for numerous duties, including working on cases at the airport. After the removal of VFPA-funded positions, one former WJFO member advised that they seldom had more than five persons working.

We were advised by the RCMP that WJFO resources are "shared fluidly" between the airport and the seaport, noting that the resources at the seaport or airport, "can change dynamically based on operational requirements". That is consistent with the foregoing. At present, on paper, the unit is commanded by a staff sergeant, with a total of 9 RCMP members, 2 secondments from NRPD, one analyst and administrative staff. The number of positions that are staffed is less. Without quibbling over numbers, it is safe to assume that the WJFO strength is in the single digits, and less when engaged on airport duties.

The WJFO is not ring-fenced, meaning that it is funded out of the broader RCMP federal budget and is one of many units competing for dollars. Staffing of positions is dependant first, on there being funding and second, on there being human resources to fill those funded positions. There is currently no supplemental government or private sector funding for port policing.

FSOC advised that the majority of WJFO projects files involving Greater Vancouver ports relate to the importation of illicit drugs. Since 2021, the RCMP dealt with several seaport files, including:

- an outbound marine shipment of 75 kg of cocaine;
- assisting CBSA with precursor chemicals in a container;
- an investigation into possible drug importation / exportation by individuals linked to organized crime; and
- a foreign stowaway on a marine vessel of national security concern.
- seizures of 170 kgs and 100 kgs of opium concealed within inbound containers; and
- the importation of 108 kgs of methamphetamine within cement blocks, in a container.

The RCMP advise that it is well known that chemical precursors and illicit drugs are secreted and imported in a broad range of legitimate cargo, including foodstuffs.

## **MUNICIPAL POLICE**

Currently the VFPA's jurisdiction over ports in Greater Vancouver finds it working with numerous police forces. These include:

- Burnaby RCMP
- Delta PD
- New Westminster PD
- North Vancouver RCMP
- Port Moody RCMP
- Surrey RCMP
- Vancouver PD
- West Vancouver PD
- CFSEU
- RCMP (multiple federal units)



- BNSF Police Service
- CN Police Service
- CP Police Service
- Metro Vancouver Transit Police

In addition, various integrated units have responsibility over aspects of the port, including the integrated homicide, collision, and forensics teams. This does not include the enforcement responsibilities of CBSA, and Transport Canada..

Attached as Appendix “D” are the 5 Year Crime Statistics for Greater Vancouver ports.

## PIMSWG

The Pacific Integrated Marine Security Working Group (PIMSWG) is currently the only inter-agency meeting of port and transport officials and law enforcement, other than ad hoc meetings regarding a particular case. Numerous agencies attend PIMSWG meetings, including VFPA (chair), Transport Canada, RCMP, CBSA, DPD and VPD. PIMSWG meetings generally occur on a quarterly basis, however none has yet been held in 2023.

The VFPA has stated that “it coordinates security efforts with more than two dozen police and regulatory agencies with mandates covering the port.”<sup>87</sup> In fact, PIMSWG meetings are more in the nature of general networking. They are not focused on files or targeted enforcement initiatives. The VFPA itself has separately pointed to the weakness of these meetings being the inability of the port and law enforcement to share information. It is hard to co-ordinate operations when you cannot discuss operations.

In 2019, VFPA hosted a Port of Vancouver Law Enforcement Forum which included a host of agencies with a “shared objective for a strong security posture” at the port. Discussion surrounded awareness of mandates, information sharing, training, policy and legislation, and resourcing.

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<sup>87</sup> Simon Little and Grace Ke, “Delta’s mayor wants dedicated police force patrolling Metro Vancouver ports”, *supra*.

The reference to ‘security’, both at PIMSWG and the Community Forum, once again conflates security and policing. Why VFPA finds it necessary to co-ordinate a working group of regulators and law enforcement, as well as a law enforcement forum, despite avowing that it has no responsibility for law enforcement, is not easy to reconcile. One explanation is that no police agency has taken the initiative. Or, that it really is semantics to suggest that security does not include policing.

## WORKING IN OUR PORTS

### ORGANIZED CRIME

A 2015 *Vancouver Sun* investigative report by reporter, Kim Bolan, served as a throwback to Marlon Brando on the Waterfront.<sup>88</sup> The public asked, and open radio shows discussed how it was possible that members of an outlaw motorcycle gang could be working in the ports of Greater Vancouver?

The Hells Angels occupy a curious place in the social fabric of British Columbia. Declared an organized crime group many years ago by CFSEU-BC<sup>89</sup> and actively tracked by a dedicated police unit, the courts in British Columbia have yet to find that they or any of their puppet clubs are criminal organizations under the *Criminal Code* definition. Not so in Ontario where the Superior Court found in 2005, that the Hells Angels was a criminal organization at the time specified in the indictment.<sup>90</sup>

The Hells Angels would serve as an outstanding Harvard Business School case. Their business model operates in a decentralized manner. Members typically do not sit around the clubhouse conference table, plotting nefarious activities. Instead, members operate as individual entrepreneurs, aligning their activities with members of subservient or puppet clubs. Oftentimes those activities are illegal, and examples are legion.

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<sup>88</sup> Kim Bolan, “Organized crime and the port: part one of my series”, *Vancouver Sun*, May 8, 2015.

<sup>89</sup> CFSEU-BC, “Gangs Operating in BC in 2011”, accessed at <https://www.cfseu.bc.ca/gangs-in-b-c/>. The page is no longer available.

<sup>90</sup> *R. v. Lindsay*, 2005 CanLII 24240 (ONSC), approved 2009 ONCA 532, leave to appeal to the SCC dismissed.

Greater Vancouver is reputedly home to more chapters of the Hells Angels than any other metropolitan area in the world. Despite a few high-profile prosecutions, they have been relatively untouched by law enforcement in B.C. The result has been the gradual 'maturing' and diversification of the organization. Members typically do not wear their colours except on annual runs or special occasions. Over time, the public has become desensitized to their presence, in part due to their involvement in community activities, such as toy runs.

It is instructive to turn the clock back to the entry of the Hells Angels to Vancouver and British Columbia. In July 1983, the Montreal Hells Angles opened three chapters in B.C. by patching over the Satan's Angels, giving them "a foothold in another part of the country and a better network for criminal activities, especially those involving drugs." In December 1983, an East End chapter was opened in Vancouver.<sup>91</sup> In June 1987, the Haney chapter was opened.<sup>92</sup>

Interestingly, Vancouver's port played a pivotal role. In 2022, private communications of William Miller, a member of the North Toronto chapter of the Hells Angels were intercepted by police and entered into evidence in Ontario Superior Court.<sup>93</sup> Included was the following:<sup>94</sup>

"In a December 7, 2002 conversation, Miller "said the Outlaws [another motorcycle gang] grabbed border crossings, but the Hells Angels grabbed ocean ports. He talked about "it" coming in to docks controlled by others, and said it was like a grocery store being surrounded and unable to sell to anybody else, so it can only go one place. In Staff Sergeant Lemieux's [expert] opinion, the HAMC established itself in port areas in Canada, including Montreal, Vancouver and Halifax. It uses the ports to import drugs."

Although the dominance of the Hells Angels over certain illicit markets continues, South Asian and Asian organized crime is increasingly involved in container shipments of drugs, as well as the trucking industry which delivers the containers to the buyer. The latter tend to be quite sophisticated, including the use of front companies.

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<sup>91</sup> *Ibid.* at paras. 663-664.

<sup>92</sup> *Ibid.* at para. 673.

<sup>93</sup> *R. v. Lindsay*, 2005 CanLII 24240 (ONSC).

<sup>94</sup> *Ibid.* at paras. 439 and 660.

Considering organized crime's interest in our ports, the process for access to the port and for hiring of dock workers makes it relatively easy for organized crime to pursue its objectives.

## ACCESS

Port access is governed by the *Marine Transportation Security Act*<sup>95</sup> and its *Regulations*.<sup>96</sup> The VFPA estimates that approximately 30,000 people have card access to Greater Vancouver ports, however only approximately 6,000 of those individuals occupy positions requiring a Marine Transportation Security Clearance (MTSCP).<sup>97</sup> During regular meetings with Transport Canada officials in Ottawa, port security officers have asked that all persons working in the port be security cleared.

In essence, people working in the port receive a pass that allows access through the electronic entry gates. No security clearance is required. These passes are administered by the VFPA. The MTSCP governs those workers employed in sensitive or restricted areas. The designation of these positions is made by terminal operators when drafting their security plans, which are then reviewed and approved by Transport Canada. Guiding factors include the physical location of a position and the information which an incumbent can access at work.

The clearance process is quite basic and requires renewal every five years. A criminal record is not an automatic bar to obtaining a clearance. Very few are refused, as low as 1 in 2010 and 21 in 2014.<sup>98</sup> Interestingly, the International Longshore and Warehouse Union mounted an unsuccessfully challenge to the clearance program, arguing that it was an unfair restriction on employment.<sup>99</sup>

The clearance process in Canada differs markedly from that in the U.S., where all port employees must possess a Transportation Safety Authority (TSA) approved Transportation Worker Identity Card (TWIC).

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<sup>95</sup> S.C. 1994, c. 40.

<sup>96</sup> *Marine Transportation Security Regulations* (SOR/2004-144).

<sup>97</sup> We were unable to obtain exact numbers from Transport Canada.

<sup>98</sup> Madsen, *supra* at p. 36.

<sup>99</sup> *Ibid.*

## HIRING

A focus of Kim Bolan's 2015 articles was the presence of Hells Angels in the port. In 2018, in its submission to Transport Canada, the Vancouver Police Department stated:<sup>100</sup>

"The largest issue from a gang crime prevention perspective is the hiring and retention of employees at the Vancouver Ports with documented history of criminality and/or association with organized crime.

The VPD, unlike the Royal Canadian Mounted Police is not indemnified when releasing information about enhanced security backgrounds for Government of Canada security checks. As a result, we are cautious on release of their information to the RCMP, where the person is not convicted of a criminal offense. This might contribute to less security as a result of not being able to freely disclose information during background checks."

Much has been made of the dispatch system in the ports, in which the British Columbia Maritime Employers Association (BCMEA) represents employers. They determine resource needs and then workers are dispatched by the union.

Madsen notes that Hells Angels work their way up from the dispatch boards until they are sponsored for full union membership.<sup>101</sup> Some have won union elections. They have also been known to openly wear colours to regular and executive meetings, and to sponsor other family members and associates once in the union. The union has many multi-generational families that have worked the docks.<sup>102</sup>

Madsen writes that criminal convictions for drugs and related offences are not a bar to union membership and jobs have been known to be waiting for associates upon release from

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<sup>100</sup> Vancouver Police Department, "Transport Canada's Post Modernization Review", *supra* at p.2.

<sup>101</sup> Madsen, *supra*, citing a confidential source.

<sup>102</sup> *Ibid.*

incarceration.<sup>103</sup> The presence of individuals on the waterfront with criminal records is of great concern to law enforcement. In the final analysis, the issue is not about the Hells Angels. They are merely symptomatic of a system which provides unrestricted access to ports, without oversight by law enforcement.

## WATERSIDE POLICING

Waterside security is critical to national and international maritime commerce. This is particularly so in the post-911 world. Overlapping mandates among agencies or the opposite, the absence of a mandate, can be a threat to public safety. Who is the lead? Is there information sharing? Are there sufficient human, financial, and technical resources? Is there a co-operative, tested approach to crisis management?

The waterways of Greater Vancouver have long presented challenges for waterside policing. The RCMP's West Coast Marine Section is situated in Nanaimo and is primarily focussed on northern and isolated communities, not the Lower Mainland. In most cases, waterside security in Greater Vancouver has rested with the police force of jurisdiction, whether it be a contract RCMP detachment or a municipal police department. As noted above, only VPD has a permanent marine unit. Waterside safety rests with the Canadian Coast Guard, supported by municipal police and others.

The Vancouver Fraser Port Authority has several patrol boats which operate daily in the harbour and approaches. They are well equipped and focussed on environmental spills, hazards to navigation, and other related tasks. They have no law enforcement or policing powers.

The Association of Canadian Port Authorities has been vocal in its concern that waterside security has been downloaded to the port authorities, without a concomitant infusion of funding and legislative changes respecting information sharing and enforcement. The ACPA expressed concern that port authorities are not equipped to undertake waterside security. Furthermore, local

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<sup>103</sup> Kim Bolan, "Crime & the Waterfront: Longshoreman by day, smuggler by night", *Vancouver Sun*, May 13, 2015, accessed at <https://vancouver.sun.com/news/metro/crime-the-waterfront-longshoreman-by-day-smuggler-by-night>.

police of jurisdiction have resource limitations and can, at best, provide limited waterside security and enforcement.<sup>104</sup>

ACPA argued that Transport Canada should consider assigning waterside security responsibilities to federal agencies that are capable and authorized to undertake the task. It noted that port authorities have no ability to direct the operations of RCMP, police forces of jurisdiction, the Coast Guard, or the military.<sup>105</sup> The following was provided by VPD to Transport Canada's 2018 review:<sup>106</sup>

“Currently, there is a lack of 24-7 police or security presence waterside of the ports. Therefore, all commercial shipping, including the cruise ship industry are vulnerable from waterside threats. This includes terrorism, smuggling, narcotics trafficking and illegal immigration (ship jumping).

The Port of Vancouver manages the waters of the port on behalf of the Federal Government of Canada. The Canada Marine Act (CMA) gives the Port Authority the power to implement Regulations to run the Port effectively taking into account mainly safety, environment, and effect on community and efficiency. This power is outlined in Section 56(1) CMA.

Currently, the Port of Vancouver has two active patrol vessels in the harbour that normally work from 0600-1800 hrs daily. The crews of patrol vessels are responsible for ensuring deep sea vessels at anchor in English Bay and throughout Burrard Inlet, are complying with safety and pollution regulations and numerous other regulatory requirements of port facilities within the jurisdiction of the Port of Vancouver. The crews also respond to reports of pleasure craft creating safety issues or not complying with regulations such as human powered craft or PWC's in the harbour or vessels encroaching on commercial traffic.

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<sup>104</sup> ACPA, “Strengthening Security in Canadian Port Authorities”, *supra* at p. 4.

<sup>105</sup> *Ibid.*

<sup>106</sup> Vancouver Police Department, “Transport Canada’s Post Modernization Review”, *supra* at p.1.

At this time, Port of Vancouver crews attempt to educate and direct the offending pleasure craft out of the area but if the pleasure craft operator refuses to stop or comply, the Port crews have no powers under the CMA or the Canada Shipping Act to intervene and must contact VPD Marine to assist.

The VPD Marine Unit does not have any authority to enforce the CMA. If necessary, VPD Marine will use subsequent sections of the Canada Shipping Act (CSA) to direct the pleasure craft accordingly or to take enforcement action. Since VPD has no enforcement authority under the CMA, proceeding with a Criminal Code Obstruction investigation is not an option.

Currently the Port of Vancouver has regulations under the CMA that are not enforceable by VPD. Such an issue would be pleasure craft approaching a cruise ship alongside Canada Place. The Port has a regulation that pleasure craft must remain 50 meters away from Canada Place. This is to provide safety to the cruise ships loading and unloading thousands of passengers and also to ensure no vessel enters underneath Canada Place for nefarious reasons. If a cruise ship is preparing to depart Canada Place, the CSA provides VPD with the powers under the Vessel Operation Restriction Regulations to direct a vessel away for navigational safety reasons.

Recently, the VPD underwent a review of the organization and as a result, the Marine Unit was downsized by 50%. This has subsequently reduced the operating hours of the Marine Unit and limited the ability of the VPD to provide an effective presence and response to activities within the Port.”

The fact that agencies work well together and encourage information sharing where possible, can never be more than a partial solution to a problem, let alone a crisis. It is a basic premise of emergency planning that one person or entity must always be in charge, even if leadership changes during the various stages of a crisis. In the marine context, this could be a fire department, ambulance service, CBSA, police, or a port authority.

In addition to the *ad hoc* nature of co-operative solutions, they tend to rise and fall with funding increases and decreases. When money is tight, government entities will invariably reduce or



eliminate spending on discretionary items and give precedence to what they consider to be their core duties and responsibilities.

## THE U.S. EXPERIENCE

It is not uncommon for Canadians to cast a disparaging glance south of the 49<sup>th</sup> parallel at the plethora of agencies which constitute law enforcement in the United States. Much like Canada, there are three levels of government – federal, state (provincial), and municipal. Each level has multiple law enforcement agencies, many with overlapping mandates. What we often overlook is the level of co-operation which exists between these agencies and certain common denominators which all but guarantee strong collaboration.

To use the State of Washington as an example, all municipal police officers attend the same basic training academy, in Burien. Municipal police officers also share common benefits and easily move between forces to pursue personal and career interests. Specialized police units have common standards, which again allow for portability. State policing standards apply to all municipal forces, including audit requirements.

At the federal level, the so-called alphabet agencies - Alcohol, Tobacco, and Firearms (ATF), Drug Enforcement Agency (DEA), Federal Bureau of Investigation (FBI), Homeland Security Investigations (HSI), United States Secret Service (USSS), and many others have primary and secondary mandates. There is often overlap, however each agency has its investigative priorities. The overlap ensures that no area of criminality is left without an investigative agency. When, for example, an incident such as the hijackings of 911 causes an agency, in that case the FBI, to redirect its resources, others fill the gap.

Canada does not have the luxury of multiple, overlapping federal agencies. If the RCMP lacks resources, there is likely no other agency which can fill the gap. The result is an investigative deficit, finger pointing, and accusations. Another key issue, quite relevant to our current study, is the number of niche areas of crime which are left virtually unpoliced in Canada. For example, within the federal domain, the RCMP is expected to police dozens of federal statutes that do not have their own enforcement agency. To avoid having to rely on the RCMP and to foster specific

investigative knowledge and skills, many federal agencies and departments have developed their own investigative capacity. Three examples are bankruptcy, combines, and elections.

## U.S. PORT POLICE

A phenomenon of U.S. law enforcement is the merger of airport and seaport police in standalone agencies, sometimes also including transit, university, or other specialized policing tasks.<sup>107</sup> The combination of airport and seaport police is long standing and is, in part, explained by both ports being the responsibility of state and local governments. Although there are strong federal regulatory requirements at airports and seaports, the state criminal law applies and aligned to it, is policing of the criminal law. Federal agencies contribute but obtain their authority from specific federal statutes. The models prevalent in the United States include the following:

- reliance on private security and the police force of jurisdiction;
- a marine division of the police force of jurisdiction;
- a dedicated seaport police force; and
- an integrated police force, including seaport and other specialist police, such as airports, transit, or university;<sup>108</sup>

Examples of all four models can be found on the western seaboard of the U.S., respectively:

- Port of Oakland,
- Port of Long Beach,
- Port of Los Angeles, and
- Port of Seattle.

In the research for this report, we had the opportunity and privilege of visiting with the Seattle Port Authority and the Port of Seattle Police Department and speaking with the Long Beach Port

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<sup>107</sup> Although time did not permit us to review port policing in countries other than Canada and the U.S., it is worth noting that dedicated ports police forces are found in port cities around the world.

<sup>108</sup> The largest department is the New York – New Jersey Port Authority Police Department, consisting of approximately 2,500 officers, with responsibility for the airports and seaports in its jurisdiction.

Authority and the Port Division of the Long Beach Police Department. Both seaports are competitors to Vancouver in container and cargo traffic.

The port officials interviewed in Seattle and Long Beach were unequivocal in support of their port police. Despite the cost involved, they were very satisfied with the value for money which their police provided.

## PORT OF SEATTLE

The Port of Seattle Police Department is a full-service police agency with a complement of 103 sworn officers and 50 unsworn employees.<sup>109</sup> The sworn officers are all police academy graduates. A majority have prior experience with other police departments or the military. The minimum staffing level is between 13 and 15 for day shift, and 11 at night. This includes a minimum of one supervisor and two officers at the seaport. The minimum staffing levels do not include specialty teams, such as bomb disposal and the police boats. Senior management includes a chief, deputy chief, five commanders and 18 first level supervisors at the sergeant rank. The department will increase its strength for special occasions. For example, up to six officers are brought in on overtime to handle additional requirements when cruise ships are in port.

Although the POSPD does its own hiring, it obtains labour relations support from the port authority. Police officers we spoke with emphasized excellent salaries (US\$120,000 base) and benefits, a good schedule, specialization opportunities, and even paid workouts. The departmental budget is approximately US\$40 million, with 11 per cent designated for the seaport. In addition, there are capital outlays, including for two state of the art, fast harbour police boats.

Police activity in the port includes providing police services to houseboats, residential areas within the boundaries of the port, dealing with homeless people, thefts from vehicles, assaults on employees, and various police occurrences which “bleed over” from bordering municipalities. They conduct thousands of area checks annually and have 12,000 alarm points. They do not actively patrol cargo facilities due to safety concerns but co-operate on investigations with federal authorities. Coast Guard, CBP, and HSI have border search authority. The police have a very good relationship with the longshore workers’ union, including one officer who has mediated

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<sup>109</sup> See its website at <https://www.portseattle.org/about/port-police#>.

disputes on the waterfront. POSPD has its own emergency centre at Seatac Airport, which covers both the airport and the seaport, and 911 calls are downloaded from the King County Sheriff's Department.

The police see great advantage to the merger of airport and seaport policing, which they describe as an "ecosystem". It allows for differential response when one or the other becomes busy, such as the seaport in the summer.

We spoke to senior port authority officials who emphasized that they "love our police", who they view as "really valuable". They appreciate the timely response to calls, stakeholder relationships, collaboration with other law enforcement entities, and the POSPD commitment to keeping commerce flowing. A recent national security challenge was posed by a vessel arriving in Seattle from a nation which faces numerous international threats. Without the POSPD, the port authority would not have felt comfortable with the vessel stopping in Seattle.

The port authority noted that the police are "stretched thin". There has been no move to defund the POSPD. In fact, the port authority indicated that it would entertain charging cruise passengers for police service rather than cutting the police budget. They would do the same with containers, although that becomes more complex. Governance of the police is provided by an elected board of King County voters.

The TWIC card, issued by the TSA has been a welcome addition to port policing. Organized crime among longshore workers has not been an issue. The police wryly note that organized crime hates having its picture taken.

U.S. ports continue to be supported by the federal Port Security Grant Program. The POSPD has also benefited financially from asset forfeiture recoveries.

## **PORT OF LONG BEACH**

The Port of Long Beach polices its port through a contract with the Long Beach Police Department, which has created a Port Police Division.<sup>110</sup> They view security and policing as

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<sup>110</sup> See its website at <https://www.longbeach.gov/police/about-the-lbpd/bureaus/support-bureau/port-police-division/>.

integral to the port, observing that after 911, the federal government required terminals to develop security plans and have a facility security officer. They view these security plans as the foundation for their work.

The Marine Division is led by a commander, with a lieutenant in charge of operations, five sergeant supervisors, 27 officers, and administrative staff, with a budget of approximately \$12 million per year. In addition, Long Beach possesses a Harbour Patrol, consisting of approximately 70 trained patrol officers, with limited police powers, armed for protection, who handle much of the response policing involving closed circuit cameras, and traffic. The port authority appreciates the Harbour Patrol, which can assist with ship movement. The police act as advisors to the Patrol. There is also a Commercial Vehicle Enforcement Team, which operates on a cost-recovery basis, and a Command Centre, which was referred to as its “Crown jewel”.

The CBP has a “huge contingent” working at the container port, in collaboration with numerous federal agencies. The police note that there is very little criminal activity in the port. Typical calls include homeless persons near the port, drug use within, and arguments and fights among truckers and longshore employees. The police are first responders for most issues on the water, where there have been occasional ‘body dumps’. Long Beach relies upon the Los Angeles Port Police for maritime training.

As in Seattle, all persons employed in the port require a TWIC card. According to the police, the fear of losing your TWIC card due to bad behaviour is a strong deterrent to criminal activity.

The Long Beach Port Authority is very supportive of its contract police service, referring to it as a “visible deterrence”, and “you get what you pay for”.

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## **U.S. FEDERAL LAW ENFORCEMENT**

Often referred to as the premiere U.S. law enforcement agency, the FBI, established in 1908, has responsibility for the enforcement of a wide array of federal statutes, including program areas devoted to aviation, maritime, and rail offences. Members of the FBI were present during our meeting with the POSPD. The consensus of the FBI agents in attendance and senior management of the police department was that both entities co-operate exceedingly well with

each other. The FBI was very complimentary of the police department's knowledge of its community and key stakeholders within the airport and seaport.

The FBI noted that it is always easier to move a file up to the federal level from the municipal level than to go in the other direction. In other words, most files start at the municipal level and if it is found that there are potential federal offences, the file will be referred to the FBI. On occasion, however, the FBI has its own self-initiated investigations which touch upon the airport or the seaport and will request POSPD assistance. All investigations within the port are joint in nature.

An example would be an offence that occurs on the high seas, which falls within the FBI's mandate, but would require considerable assistance from port police. There are designated officers within POSPD who either work with the FBI on joint units or are contacts for the federal agency. There is also co-operation between both levels of policing with respect to recovering and forfeiting the proceeds of crime. The FBI will assist port police with overtime spent on related case work, training, and conference attendance, and arranging for the appropriate security clearances. The FBI works in a similarly co-operative manner with American railway police.

Other U.S. federal agencies also work with the POSPD. In addition to the FBI and CBP, HSI and the Coast Guard are essential partners. The DEA also works many drug cases with the port police.

## SUMMARY

Canada's ports are a cornerstone of Canada's economic security. The recent port strike likely solidified this fact in the minds of all Canadians. Our container and cruise ports are also part of a very competitive environment, facing off against large ports on the western seaboard of the United States for market share. An important component of success is that our ports be safe, secure, and able to face the challenges of today and tomorrow. They must also be part of the solution and not the problem, with respect to contraband entering or leaving the ports, particularly contraband that kills.

Policing is an essential tool in the tool kit. Understanding the current state of policing in the ports is difficult because very few people in authority wish to discuss the matter, and those that do often speak in generalities or provide bland and sanitized versions of what is occurring. If the intent is

not to allow organized crime to understand the true situation in our ports, the cat may already be out of the bag, and the fox may be in the henhouse. It is easy to sympathize with Senator Kenny in his call for an inquiry or review.

Far too often the merits of a uniform police service are underestimated, and yet, it is precisely this public-facing policing which Sir Robert Peel envisaged in 1829, when he expounded his principles of policing.<sup>111</sup> Although the merits of community policing were lost for many decades of the last century, they are rightly acknowledged today as the cornerstone of community safety.<sup>112</sup>

A uniform police presence, operating within a community policing model, can be expected to develop strong relationships with all stakeholders in a port environment. Situational awareness of how the ports operate is critical to any successful waterfront criminal investigation and that is only something that can be achieved by a permanent policing presence. We should not forget that port ecosystems include the surrounding roads, rail lines, and airports. Maintaining commercial vehicle safety, working with railway police, and ensuring the safety of passengers at airports and heliports is also critical. All of these exist in the case of both Vancouver and Delta ports.

The civilian police model includes the need for effective governance by an independent board, with stakeholder and citizen representatives. Much as the Transit Police has a board governing its activities, so should a port police.<sup>113</sup>

Ever since the abolition of Canada Ports Police in 1997, there have been calls for a replacement entity on the waterfront. Some argue in favour of an integrated investigative team, while others argue for a uniform presence. The absence of a police presence on the landside of our ports is matched by its absence on the waterside. Except for VPD's marine unit, there is no police presence on the water surrounding Greater Vancouver.<sup>114</sup>

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<sup>111</sup> Charles Reith, *A Short History of the British Police*, Oxford: University Press, 1948.

<sup>112</sup> As recently as this month, a report on the CFSEU, though critical of that organization, was complimentary of its uniformed gang enforcement team, and its commendable, street-level work. But the report also emphasized the need to leverage those resources to further the broader CFSEU mandate Kim Bolan, "Anti-Gang Failure – Report slams B.C. agency" (Vancouver Sun, Sept. 8, 2023) at p. A1, accessed at <https://epaper.vancouversun.com/Vancouver-sun/20230908>.

<sup>113</sup> B.C.'s *Police Act* provides for designated policing units, such as the Transit Police. *Police Act*, RSC 1996, c. 367, s. 4.1.

<sup>114</sup> Although some municipalities have funded small watercraft for their police, these tend to be used on a seasonal basis, and are not crewed around the clock.

The solution need not be complex. A federal police presence is required to work cases referred by CBSA and to pursue organized crime investigations. But a traditional, community-focussed police presence, with access to investigative and specialist resources, is also required for both the land and water sides of the port.

We have addressed possible options in the following section, however there must be more. We can no longer allow open access to our ports for all who obtain a casual or permanent job within. In the same manner that every person accessing the secure side of a courthouse, or an airport is security cleared, so should it be with our ports. Due to the sheer number of unvetted individuals working within our ports, vetting new hires rather than the entire workforce, may be the only viable route.

The future is now. The Port of Vancouver will only become larger, much larger, with time and public safety cannot be ignored. The Port is a conduit for goods, a hub of Canada's economy. Government must do its utmost to prevent contraband passing through the ports, victimizing Canadians, and the citizens of foreign nations. Policing is only one part of the equation but an important one. In the words of a former Ports Canada Police officer:

“I think the WJFO is a positive step but it's not like a 24/7 uniform presence.... As a citizen and taxpayer, it really makes me wonder what's happening here, especially given Terminal 2 coming in Delta. The crooks aren't dumb, and they will take advantage of the lack of dedicated policing.”

Another officer familiar with policing in the port, emphasized the dual requirements of an investigative unit similar to the WJFO and a uniformed presence, as follows:

“... there needs to be a uniformed police presence because CBSA only interdicts, they don't investigate or prosecute. FSOC can't do uniformed policing because they can't burn themselves. I really think, like a school liaison officer, you need uniformed officers there building relationships, learning, sharing information, gathering intel, developing sources, learning the nuances of the ports from being there every day, not every few months.”



In the following section, we look at the options available to decision makers.

## OPTIONS - OVERVIEW

Based on the assumption that Canada's ports require a permanent policing presence, the question becomes, what is the optimum service delivery model for port policing in Canada and in particular, British Columbia? Various options are presented below. Further work is required to develop preferred models.

From our research, it is apparent that there is a need for both a proactive investigative unit and for a response policing model in the port. The former fits well with the RCMP's federal role and the latter fits well with the traditional municipal policing model. Two threshold issues are funding (who pays) and governance (who governs).

### FUNDING

Potential funding sources include users of the port, the port authority, and the three levels of government. In the past, port authorities have pointed to the taxes paid to municipalities as justification for relying on municipal services, including policing. What is often overlooked is that the taxes paid to municipalities are heavily discounted, resulting in the citizens of surrounding municipalities, such as Delta, subsidizing the cost of ports. It is the clients of port authorities who receive the benefit of federal and municipal police services. One suggestion has been the imposition of a public safety tax or surcharge on each container that arrives in our port, to cover the cost of policing and other safety services.

### GOVERNANCE

Governance of all the models should include oversight by a board. As discussed earlier, the value of an independent governance board is accepted within the police universe. It can take many different forms. These include the provincially appointed boards in those municipalities that have their own police force, or the council safety committees prevalent in municipalities which contract with the RCMP. The Transit Police Board is the closest equivalent to what one would expect for a port police force.

## **PROACTIVE INVESTIGATIVE POLICING**

The proactive investigative model aligns with the RCMP continuing to develop intelligence and investigate organized crime in the port, through its Waterfront Joint Forces Operation. This unit currently operates in an integrated fashion with partner agencies. Problems with the current model include no 'ring fencing' of its budget, staffing shortages, and the use of the same waterfront policing officers to assist at Vancouver International Airport. Options for improvement include ring fencing, staffing to complement, and not using officers for other duties.

## **RESPONSE POLICING**

The local policing model entails developing a capacity to police the ports with uniform officers, who respond to calls for service. These calls will run the gamut from minor assistance to serious criminal offences. They are also the essential partners that federal law enforcement requires to do its job. The police should have access to specialized services, including an investigative component. The following are potential models. We provide brief comments with respect to each.

### **OPTION - STATUS QUO**

The status quo means no dedicated police force on the waterfront. Crime is managed by the police in the municipality where an offence takes place.

### **OPTION - NATIONAL PORTS POLICE**

A national ports police force was abolished in 1997. Reconstituting it would require cross-designating its officers as provincial constables. It would be a visible, uniform presence in the port, allowing for community policing, relationship building, crime prevention, and response to calls. The force would likely not have the critical mass to provide specialized services in the various ports, causing it to rely on local police forces for those services. This model is similar to that of Canada's three railway police forces.

### **OPTION – GREATER VANCOUVER PORT POLICE**

A Greater Vancouver Port Police would also constitute a visible, uniform presence in the port, allowing for community policing, relationship building, crime prevention, and response policing. However, the force would likely not have the critical mass to provide specialized services in the various ports, causing it to rely on local police forces for those services. Its officers should also be designated as provincial constables.

### **OPTION - DIVISION OF EXISTING POLICE FORCE**

Municipal police forces, including Delta and Vancouver, could create dedicated divisions within their organizations which are focussed on the seaport. These divisions would develop local expertise and relationships in the port and be able to access specialized services within their respective departments. This is the Long Beach, California model.

### **OPTION - INTEGRATED SEAPORT, AIRPORT, AND TRANSIT POLICE**

Various seaport policing models exist in the U.S., where airport and seaport policing are combined into a joint port police. As noted above, the RCMP currently links the seaport and the airport in terms of its waterfront resources. A merger of seaport and airport policing with the existing Metro Vancouver Transit Police would create a force with critical mass, allowing for specialized units. This is similar to the Seattle model.

Respectfully submitted this 14<sup>th</sup> day of September 2023.

Peter M. German, KC, PhD  
Peter German & Associates Inc.

# APPENDIX “A”

## Terms of Reference

The issue of port security has been a recurring issue in Canada since the abolition of the Ports Canada Police in 1997. British Columbia’s West Coast is home to some of Canada’s largest ports for commercial and container traffic, including Vancouver, Delta, Surrey, and Prince Rupert.

In the past, both the Mayor and the Chief Constable of Delta have expressed concerns regarding port security, in and about Roberts Bank container port, in Delta. The possible expansion of Roberts Bank’s capacity has increased the urgency of examining the state of port security. Similar concerns exist elsewhere in the province.

To better understand the current state of security in our ports, the City of Delta requires that the Consultant provide strategic advice to the city, including the following tasks:

Undertake a fulsome examination of the issue, including the historical backdrop, the present level of port security, and options moving forward. This will include researching public information sources, interviewing relevant stakeholders, and making site visits.

The Consultant will prepare a comprehensive report on or before August 31, 2023, with time being of the essence. The report is to include options, for consideration by the city, for port security.

## APPENDIX “B”

### Consultations

Canada Border Services Agency

Combined Forces Special Enforcement Unit

Delta Police Department

Federal Bureau of Investigation

Long Beach Police Department

Port Authority of Long Beach

Port Authority of Seattle

Port of Seattle Police Department

Vancouver Police Department

Vancouver Fraser Port Authority

# APPENDIX “C”

## CBSA Container Search Process

# PROCESS MAP: MARINE CONTAINER EXAMINATION PROCESS

- 1 Industry prepares for import
- 1 CBSA risk assessment begins

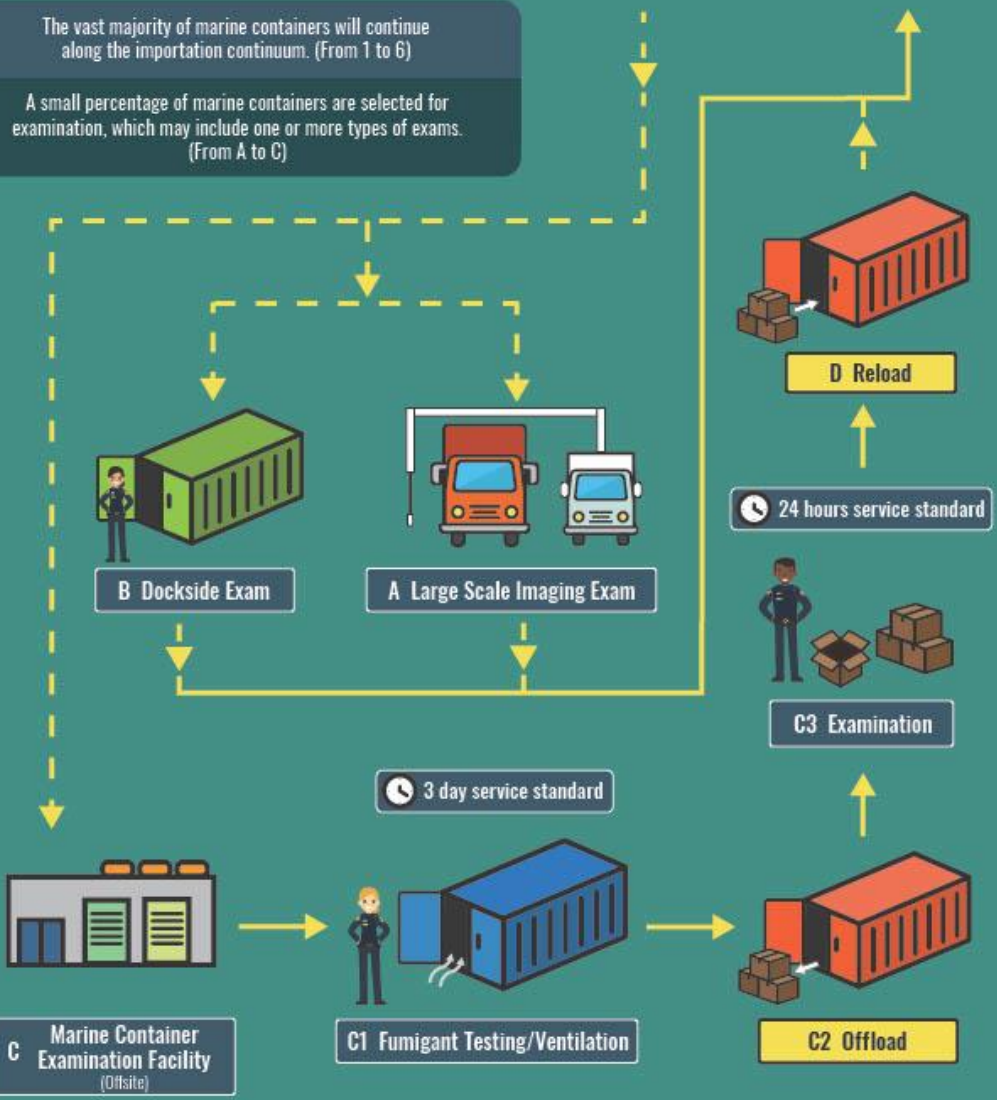
## WHO IS RESPONSIBLE?

Industry	Canada Border Services Agency
May proceed	
Proceeds	



The vast majority of marine containers will continue along the importation continuum. (From 1 to 6)

A small percentage of marine containers are selected for examination, which may include one or more types of exams. (From A to C)



Canada Border Services Agency

Agence des services frontaliers du Canada





## APPENDIX “D”

### Port Crime Statistics - Great Vancouver (2018–2023)

Please note that this information carries RCMP "Protected A" classification and also includes statistics from other jurisdictions, thus it cannot be openly shared.

With the authorization of the Delta Police Department (DPD), data regarding calls for service that the DPD responded to at or near the Roberts Bank container port can be shared.

From 2009 to 2018, the DPD attended to 754 calls for service, averaging 75 calls per year. These calls included emergencies, general assistance, traffic offences, property damage, and reports of suspicious vehicles or individuals.

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To: Regional Parks Committee

From: David Leavers, Division Manager, Visitor and Operations Services, Regional Parks

Date: October 17, 2023 Meeting Date: November 1, 2023

Subject: **MVRD Regional Parks Regulation Amendment Bylaw No. 1372, 2023 – Amends Bylaw No. 1177, 2012**

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### **RECOMMENDATION**

That the MVRD Board:

- a) give first, second and third reading to *Metro Vancouver Regional District Regional Parks Regulation Amendment Bylaw No. 1372, 2023*; and
  - b) adopt *Metro Vancouver Regional District Regional Parks Regulation Amendment Bylaw No. 1372, 2023*.
- 

### **EXECUTIVE SUMMARY**

This report summarizes proposed amendments to the Regional Parks Regulation Bylaw – Schedule A – Fees and Charges. There are no regulatory amendments being proposed at this time.

The annual update of the bylaw ensures that fees and charges are appropriate and based upon current market conditions. Fee changes brought forward as part of the bylaw amendment are for implementation in the coming calendar year. While most fee increases are inflationary including parking permit rates, camping fees, and indoor facility rental rates, a number of additional changes are proposed that will affect administration of the schedule and the fees charged for public services provided by Regional Parks. Proposed changes are expected to generate a net increase of approximately \$150,000 in revenues to offset increasing operational costs. Proposed changes to Schedule A – Fees and Charges are included in the amendment bylaw and are to take effect January 1, 2024.

### **PURPOSE**

To consider amendments to the *Metro Vancouver Regional District Regional Parks Regulation Amendment Bylaw No. 1177, 2012* that propose changes to Regional Parks' fees and charges.

### **BACKGROUND**

The Regional Parks Regulation Bylaw sets out prohibitions and a system for permitted use designed to regulate park visitor behaviour and activities. The bylaw is typically amended annually in the fall to bring forward any recommended regulatory changes and to amend existing, or establish new, fees and charges. In some years, no regulatory amendments are proposed. However, there is typically a need to propose changes to Regional Parks' fees and charges to help ensure the appropriateness of the fees based on current market conditions.

## **REGIONAL PARKS' FEES AND CHARGES**

The MV Board approved Regional Parks Plan (2022) includes Strategy 2 that requires Regional Parks to “Update existing financial tools and investigate additional financial mechanisms to support service provision, land acquisition, and operation and maintenance of new parkland.” This includes Action 2.4 that states that Regional Parks will “conduct an annual review of fees and charges established through the Regional Parks Regulation Bylaw.”

Regional Parks’ fees and charges are established by comparing them with municipal parks systems across Metro Vancouver, the private sector and other government and non-profit agencies. The fee schedule is adjusted annually based on Regional Parks’ approach to remain in the mid-range market of comparable fees, and avoid overly large, less frequent adjustments. Fees and charges help recover, or partially offset, increases in operating and maintenance costs. Proposed regional park fees and charges are listed in Schedule A. The annual update of the bylaw ensures that fees and charges are appropriate and based upon current market conditions. Fee changes brought forward as part of the amending bylaw for MVRD Board approval are for implementation in the coming calendar year. Proposed fee changes in this amending bylaw are to take effect January 1, 2024.

## **PROPOSED FEES AND CHARGES AMENDMENTS (TO TAKE EFFECT JANUARY 1, 2024)**

### **a) Liquor Administration Fee (Section 1.2)**

Staff propose to eliminate the Liquor Administration Fee. When a client books a facility or hosts a special event and chooses to serve liquor, they are required to obtain a Special Event Permit from the provincial Liquor and Cannabis Regulation Branch (LCRB). The additional Liquor Administration Fee required by Regional Parks was initiated because there was often extra clean-up after events that required staff time. All facility rental bookings require a damage deposit, and starting January 1, 2024, staff propose that each special event permit will also require a damage deposit. If staff time is required to perform extraordinary clean-up work after an event or facility booking, staff can simply deduct their additional cleaning time from the damage deposit. This negates the need to have a Liquor Administration Fee, which often confused clients who already had to pay an application fee for the Special Event Permit from the LCRB. This proposed fee elimination will reduce overall revenues by approximately \$3,000 per year.

### **b) Parking Permits (Section 1.3)**

Staff propose to make an administrative change to the title of the second column from ‘Location’ to ‘Date’, to better organize the information in the schedule. In the first column, it is proposed to add the words ‘Fraser Lot’ after Pacific Spirit to be more specific regarding the particular pay lot, and to add the word ‘təmtəmix˘tən’ before Belcarra to honour and recognize the new name of this regional park. In the newly named ‘Date’ column, it is proposed to include the words ‘Year round’ for Pacific Spirit (Fraser Lot), and ‘April 1 – September 30 only’ for both təmtəmix˘tən/Belcarra and Lynn Headwaters Regional Parks given the seasonal nature of the pay parking program in these parks. For Lynn Headwaters, this includes a change from the current dates of seasonal pay parking, reducing the pay

parking requirements by two months to be consistent with the season at t̄amt̄amíx<sup>w</sup>t̄an/Belcarra, adding March and October as additional months with free parking.

The fee for parking at both Lynn Headwaters Regional Park and t̄amt̄amíx<sup>w</sup>t̄an/Belcarra Regional Park is proposed to increase from \$2.50 per hour to \$3.00 per hour, with the per day fee increasing from \$15 per day to \$17.50 per day. The fee for parking at Pacific Spirit - Fraser Lot is also proposed to increase from \$2.50 per hour to \$3.00 per hour and \$17.50 per day. This increase will bring all parking fees into alignment. Parking rates at Pacific Spirit will become more comparable, yet remain lower than neighbouring privately managed University of British Columbia parking lots.

Parking rate increases are expected to generate an additional \$135,000 in revenues to offset increased operational costs at these three regional parks. Parking rates are advertised inclusive of both the GST (5%) and the Translink Parking Tax (24%). Increased fees will strengthen the disincentive for visitors to use personal vehicles to travel to these parks, while providing increased parking revenues used to manage traffic and visitation. Staff will continue to promote the use of public transit, active transportation and alternative forms of transportation to park visitors at these three busy park locations.

**c) Commercial Use Permit Application and Annual Fees (Section 2.1)**

Staff propose to change the title of this section to 'Commercial Use Permit Fees'. This is because it is proposed to introduce a *daily* commercial use permit fee for photography, so the new title will be more inclusive. The purpose of issuing a commercial use permit is to monitor and manage how specific activities impact park and public use, and to promote bylaw compliance. The fees associated with commercial use permits help offset administrative and operating costs.

Staff propose to include the word 'Annual' in front of the following commercial use permit fees:

- Commercial use permit application fee for non-profit organizations;
- Commercial use permit fee for general commercial activities;
- Commercial use permit fee for general commercial activities of a non-profit organization;
- Commercial use permit fee for commercial photography;
- Commercial use permit fee for dog walking, up to 4 dogs;
- Commercial use permit fee for dog walking, more than 4 dogs; and
- Commercial use permit fee for equestrian usage.

Staff propose to add a new fee called 'Daily Commercial use permit fee for commercial photography'. This fee will be set at \$75. This fee was chosen by looking at similar fees in other jurisdictions, and after receiving feedback from commercial photographers who asked for a day rate for less frequent use of the parks.

Staff propose to move the 'Commercial use ID card for approved equestrian permittees' from 2.1 Commercial Use Permit Fees to 2.2 Commercial Use Permit Specialized Fees, as this is administratively a better fit for this fee in the schedule. This proposed change will generate only negligible additional revenue.

**d) Outdoor Facilities – Fields (Section 3.2)**

Staff propose to remove all the listed fields by their specific names from this section and replace the list of fields with two new categories of fields: small field and large field. It is proposed to have the fees set at \$100 for a small field and \$300 for a large field. This will provide staff with the ability to charge for a field rental that is not currently listed as a specific field in the Fees and Charges section of the Bylaw. Previously, if a group hosting a special event requiring the use of a field that was not listed in the Fees and Charges section of the Bylaw, staff would not be able to permit the exclusive use of these areas. This proposed change will generate only negligible additional revenue.

**Outdoor Facilities – Miscellaneous (Section 3.3)**

Staff propose to remove the 'Campbell Downs Overflow Parking Lot' from this list and replace that with a more inclusive fee called 'Parking Lot (that is not a pay parking lot)'. The fee for this will be \$100. This will allow staff to charge event organizers for the use of a parking lot that is not listed specifically in the Bylaw. This proposed change will generate only negligible additional revenue.

**Outdoor Facilities – Camping (Section 3.4)**

Staff propose to raise all Group Camp fees by CPI of 2.5%. Rounded, this will bring the fee per night from \$229 to \$235 for adults, and from \$114 to \$117 per night for youth. Staff also propose to raise the per night camping fee at Edgewater Bar Campground at Derby Reach Regional Park from \$25 to \$30 for adults, and from \$22 to \$27 for seniors/persons with disabilities. This would bring the fee more in alignment with similar campground fees in other jurisdictions, and offset increasing expenses required for servicing the campground. These proposed changes are expected to generate an additional \$5,000 in camp and campground revenues.

**e) Indoor Facilities (Section 3.5)**

For Camp Capilano, staff propose to increase the fees by CPI of 2.5%. This would increase the fee per night from \$1,142 to \$1,170 for adult groups. For youth groups (the majority of groups that utilize the camp), the fee would increase from \$477 per night to \$489 per night. Day use rates would increase from \$571 per day to \$585 per day for adults, and for youth the fee would increase from \$251 to \$257 per day. The fees for late checkout and for adding a lifeguarding service would remain the same.

Staff propose to include a new fee called 'Security Deposit (0-2 nights) adult', and set this fee at \$500. This is in alignment with the security deposit fee for other buildings that are rented out. The security deposit for youth would stay at \$250, and it is proposed to add the word 'youth' in front of security deposit to differentiate between the two fees.

At Cammidge House at Boundary Bay Regional Park, staff propose to increase the fees by CPI of 2.5%. This would increase the hourly rate from \$86/hr to \$88/hr. Staff also propose to remove the 'Tent or Over Occupancy Limit' fee. This fee is equal to the special event fee and if an event will be larger than 50 people, this fee would still be applicable, however it would be added as a 'special event fee', and not a 'Tent or over Occupancy Limit fee'. Renters would be required to pay the special event fee, and staff would communicate this information on the Metro Vancouver facility rentals website.

For Inverholme Schoolhouse, staff propose to increase the fee by CPI of 2.5%. The fee would increase from \$64/hr to \$66/hr.

For Minnehada Lodge, staff propose to introduce a two tier pricing for renting the lodge on weekdays and weekends. The proposed new fees would increase the rate from \$146/hr to \$150/hr for Monday through Thursday, and from \$146/hr to \$200/hr for Friday through Sunday. This proposed fee structure provides a new incentive for weekday use of the facility and the significant increase in the new weekend rate will bring the fee closer to market rates for similar venues in the region.

Bookable facility rental rate increases are expected to generate an additional \$4,500 in revenues to offset increased operational costs.

**f) Special Use and Special Event Permit Fees (Section 4.0)**

The framework used to set core fees for special events was reviewed in detail against market rates and best practices. The associated fees are based on expected attendance numbers. Fees collected are to help recover expenditures in support of each privately organized event including staff time, security, clean up, use of specialized equipment and infrastructure.

Staff propose to restructure the different tiers to better represent the numbers associated with the special events that occur in regional parks. The current list of five tiers will be reduced to four tiers. Tier one was Up to 75 people, and it is proposed to increase that capacity to Up to 100 people. The price would remain the same - \$250 or \$125 for a non-profit organization. For Tier two, 76-300, staff propose to change to a new capacity of 101 to 500. The rate would remain the same as well - \$435 or \$215 for a non-profit organization. Tier three was 301-500, and it is proposed to change this capacity to 501-1500. The cost for this would be \$650 or \$325 for a non-profit organization. Tier four was 501-1500, and it is proposed to change this capacity to events with over 1500. The cost for this would be \$1,000 or \$500 for a non-profit organization. These are comparable to market rates. The old tier five of Over 1500 people would be eliminated, as that is now the capacity for tier 4.

Staff propose to add a new fee for prep and wrap days for events. Prep and wrap days often have a lower impact on the regional park, since the number of people onsite is much lower than on event day. Other municipalities have fees for prep and wrap days, and recognize that these days are different than event days, and hence have a lower fee for these days.

This allows event organizers to have an opportunity to set up their event, or take down their event after it finishes, without having to pay the full special event fee each day.

Staff propose to add a security deposit for special events to cover the cost of any damages that may be incurred by the event host.

Staff propose to add a date change fee to recover the administrative costs related to the date change, and to prevent event organizers from changing their date multiple times, resulting in onerous work for staff.

As these proposed changes are mostly administrative, the impact on overall revenues is negligible.

**g) Cancellation Fees (Section 5.0)**

It is proposed to add the following sentence: If Metro Vancouver cancels a facility rental, a full refund will be given. This is to differentiate between a client initiated cancellation and a Metro Vancouver initiated cancellation.

**h) Filming Fees (Section 6.0)**

It is proposed to keep filming fees the same. After extensive research of filming fees for parks in other jurisdictions, Metro Vancouver fees for filming are on par. It has been a particularly difficult year for the film industry and raising fees seems inappropriate at this time. Overall filming revenues are much more tied to the volume of filming applications than the fees charged. It is hoped that recovery in the industry will result in overall increased revenues from filming activities in Metro Vancouver.

**METRO VANCOUVER REGIONAL DISTRICT FEES AND CHARGES BYLAW**

In the coming months, staff will be proposing the consolidation of all Metro Vancouver Regional District fees and charges into a new proposed MVRD Fees and Charges Bylaw. When the new MVRD bylaw is enacted, it is anticipated that Regional Parks staff will bring forward a recommendation to remove its Schedule A - Fees and Charges from the Regional Parks Regulation Bylaw, and move them into the newly created MVRD bylaw as a new schedule, where they can be managed under the same bylaw as other MVRD fees and charges. Having all fees in a single bylaw can ensure that all fees are regularly reviewed and adjusted.

**ALTERNATIVES**

1. That the MVRD Board:
  - a) give first, second and third reading to *Metro Vancouver Regional District Regional Parks Regulation Amendment Bylaw No. 1372, 2023*; and
  - b) adopt *Metro Vancouver Regional District Regional Parks Regulation Amendment Bylaw No. 1372, 2023*.
2. That the MVRD Board receive for information the report dated October 17, 2023, titled "Metro Vancouver Regional District Regional Parks Regulation Amendment Bylaw No. 1372, 2023 – Amends Bylaw No. 1177, 2012" and provide alternate direction to staff.

### **FINANCIAL IMPLICATIONS**

Regional Parks' approach is to review fees and charges annually to reflect current market rates and adjust as required to remain in the mid-range of comparable fee schedules and to avoid overly large, less frequent adjustments. Market research is completed on comparable rentals and permits in municipal park systems in Metro Vancouver. A median rate is targeted for Metro Vancouver's Regional Parks' fees to generally stay in line with comparable market rates and to not compete unfairly by subsidizing rentals with tax revenues.

Based on the 2023 level of rentals and permits, the increases and other changes in proposed fees and charges is expected to result in an overall increase in Regional Parks revenues of \$150,000.

### **CONCLUSION**

This report summarizes proposed amendments to the Regional Parks Regulation Bylaw – Schedule A – Fees and Charges. The annual update of the bylaw ensures that fees and charges are appropriate and based upon current market conditions. While most fee increases being proposed are inflationary including parking permit rates, camping fees, and indoor facility rental rates, a number of additional changes are proposed that will affect administration of the schedule and the fees charged for public services provided by Regional Parks. Proposed changes to Schedule A – Fees and Charges are to take effect January 1, 2024.

### **ATTACHMENT**

1. *Metro Vancouver Regional District Regional Parks Regulation Amendment Bylaw No. 1372, 2023*

62662958



**METRO VANCOUVER REGIONAL DISTRICT  
BYLAW NO. 1372, 2023  
A bylaw to amend “Metro Vancouver Regional District Regional Parks Regulation Bylaw  
No. 1177, 2012”**

**WHEREAS:**

- A. the Board of Directors of the Metro Vancouver Regional District has adopted “Metro Vancouver Regional District Regional Parks Regulation Bylaw No. 1177, 2012”, a bylaw to establish rules and regulations for the management, maintenance, operations, enforcement, control, and use of regional parks and property in regional parks; and
- B. the Board of Directors of the Metro Vancouver Regional District wishes to amend “Metro Vancouver Regional District Regional Parks Regulation Bylaw No. 1177, 2012”.

**NOW THEREFORE** the Board of Directors of the Metro Vancouver Regional District enacts as follows:

**Citation**

- 1. The official citation of this bylaw is “Metro Vancouver Regional District Regional Parks Regulation Amendment Bylaw No. 1372, 2023”.

**Effective Date**

- 2. This bylaw will come into effect on January 1, 2024.

**Schedule**

- 3. The following Schedule is attached to and forms part of the bylaw:
  - Schedule “A”, Fees and Charges.

**Amendment of Bylaw**

- 4. “Metro Vancouver Regional District Regional Parks Regulation Bylaw No. 1177, 2012” (the “Bylaw”) is hereby amended as follows:
  - a) Effective January 1, 2024, Schedule “A” of the Bylaw is deleted and replaced with Schedule “A”, Fees and Charges which is attached to and forms part of this bylaw.

Read a first, second, and third time this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

Adopted this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_  
George V. Harvie, Chair

\_\_\_\_\_  
Dorothy Shermer, Corporate Officer

## Schedule A

### Fees and Charges (Effective January 1, 2024)

Section 1.0 GENERAL FEES				
<b>1.1 Staff Assistance Fees</b>				
	<b>Staff Time</b>			
	Staff time – regular hours			\$85/hour
	Staff time - overtime			\$170/hour
	Pre-event Site Visit			\$100/visit
<b>1.2 Parking Permits / Reservation Fees</b>				
	<b>Regional Park</b>	<b>Date</b>	<b>Fee, per hour</b>	<b>Fee, per day</b>
	Pacific Spirit (Fraser Lot)	Year round	\$3.00	\$17.50
	təmtəmíxʷtən/Belcarra	April 1 – September 30 only	\$3.00	\$17.50
	Lynn Headwaters	April 1 – September 30 only	\$3.00	\$17.50
Section 2.0 COMMERCIAL USE PERMIT FEES				
<b>2.1 Commercial Use Permit Fees</b>				<b>Fee</b>
	Commercial use permit application fee (one time)			\$200
	Annual Commercial use permit application fee for non-profit organization			\$100
	Annual Commercial use permit fee for general commercial activities			\$200
	Annual Commercial use permit fee for general commercial activities of a non-profit organization			\$100
	Annual Commercial use permit fee for commercial photography			\$200
	Daily Commercial use permit fee for commercial photography			\$75
	Annual Commercial use permit fee for dog walking, up to 4 dogs			\$470
	Annual Commercial use permit fee for dog walking, more than 4 dogs			\$780
	Annual Commercial use permit fee for equestrian usage			\$2,000

**Section 2.0 COMMERCIAL USE PERMIT FEES (Continued)**

<b>2.2 Commercial Use Permit Specialized Fees</b>		<b>Fees</b>
Locker storage of commercial-use related equipment at Wreck Beach, where the maximum rental period permitted is April 1 to September 30 of each year		\$100 per small bin per rental period (non- refundable) \$200 per medium bin per rental period (non- refundable) \$300 per large bin per rental period (non- refundable)
Replacement key for locker storage at Wreck Beach		\$15 per replacement
Vest		\$50 per vest
Equestrian ID cards		\$35 per ID card
Daily or Annual Parking Permit for buses and other motor vehicles that enter a regional park in connection with a commercial use		11 or fewer seats: \$20 per vehicle per day or \$700 annually per vehicle
		12 to 24 seats: \$31 per vehicle per day or \$1,000 annually per vehicle
		25 seats or more: \$51 per vehicle per day or \$1,450 annually per vehicle

**Section 3.0 REGIONAL PARK FACILITY PERMIT FEES**

**3.1 Outdoor Facilities – Picnic Shelters**

<b>Regional Park</b>	<b>Facility</b>	<b>Fee on weekends and holidays, per day</b>	<b>Fee on weekdays, per day</b>
Aldergrove	Blacktail Picnic Shelter	\$157	\$77
təmtəmiχʷtən/Belcarra	Belcarra 1 Picnic Shelter	\$157	\$77
təmtəmiχʷtən/Belcarra	Belcarra 2 Picnic Shelter	\$157	\$77
Boundary Bay	Cattail Picnic Shelter	\$157	\$77
Boundary Bay	Sandpiper Picnic Shelter	\$157	\$77
Campbell Valley	Old Orchard Picnic Shelter	\$157	\$77
Crippen	Crippen 1 Picnic Shelter	\$157	\$77
Crippen	Crippen 2 Picnic Shelter	\$157	\$77
Crippen	Crippen 3 Picnic Shelter	\$157	\$77
Deas Island	Deas Picnic Shelter	\$157	\$77
Deas Island	Muskrat Meadows Picnic Shelter	\$157	\$77
Derby Reach	Marpole Picnic Shelter	\$157	\$77
Surrey Bend	Hawk Picnic Shelter	\$157	\$77
Surrey Bend	Warbler Picnic Shelter	\$157	\$77
Surrey Bend	Wren Picnic Shelter	\$157	\$77

**Section 3.0 REGIONAL PARK FACILITY PERMIT FEES (Continued)**

**3.2 Outdoor Facilities – Fields**

	<b>Regional Park</b>	<b>Facility</b>	<b>Fee per day</b>
	All	Small Field	\$100
	All	Large Field	\$300

**3.3 Outdoor Facilities – Miscellaneous**

	All	Parking Lot (that is not a pay parking lot)	\$100
	Campbell Valley	Campbell Downs Equestrian Riding Rings	\$157
	Campbell Valley	McLean Pond	\$42
	Pacific Spirit	Lily Site – Private Group	\$98
	Pacific Spirit	Lily Site – Commercial Use Permit Holder or Primary, Middle, or Secondary Educational Institution (Monday to Friday only)	\$5
	Pacific Spirit	Heron Site – Private Group	\$98
	Pacific Spirit	Heron Site – Commercial Use Permit Holder or Primary, Middle, or Secondary Educational Institution (Monday to Friday only)	\$5
	Pacific Spirit	Salish Site – Private Group	\$98
	Pacific Spirit	Salish Site – Commercial Use Permit Holder or Primary, Middle, or Secondary Educational Institution (Monday to Friday only)	\$5

**Section 3.0 REGIONAL PARK FACILITY PERMIT FEES (Continued)**

**3.4 Outdoor Facilities – Camping**

		<b>Fee, per night</b>	<b>Youth group fee, per night</b>
Campbell Valley	Camp Coyote Group Camp	\$235	\$117
Deas Island	Muskrat Meadows Group Camp	\$235	\$117
Tynehead	Raven's Nest Group Camp	\$235	\$117
Camping outside of designated campsites	\$6 per person	\$6 per person	\$6 per person
		<b>Fee, per night</b>	<b>Seniors/Persons with disabilities fee, per night</b>
Derby Reach	Edgewater Bar Campground Site	\$30	\$27
	Reservation fee (via phone)	\$5	\$5
	Additional Vehicle	\$12	\$11

**3.5 Indoor Facilities**

		<b>Fee</b>	<b>Youth Group Fee</b>	
Capilano River	Camp Capilano	Overnight rental	\$1170 per night	\$489 per night
		Day use, from 9am to 5pm	\$585 per day	\$257 per day
		Late checkout	\$200 per hour	\$200 per hour
		Lifeguarding service	\$40 per hour	\$40 per hour
		Security Deposit (0-2 nights) youth		\$250
		Security Deposit (0-2 nights) adult		\$500
		Security Deposit (3-6 nights)		\$500
Boundary Bay	Cammidge House	Facility rental (Limit 50 persons)	\$88 per hour	n/a
		Late checkout	\$200 per hour	n/a
		Security Deposit		\$500
Deas Island	Inverholme Schoolhouse	Facility rental	\$66 per hour	n/a
		Security Deposit		\$500
Minnekhada	Minnekhada Lodge	Facility rental (Monday - Thursday)	\$150 per hour	n/a
		Facility rental (Friday - Sunday)	\$200 per hour	n/a
		Late checkout	\$200 per hour	n/a
		Security Deposit		\$500

<b>Section 4.0 SPECIAL USE AND SPECIAL EVENT PERMIT FEES</b>		
<b>Type of Permit</b>	<b>Fee per day – Private Group</b>	<b>Fee per day – Non-Profit Organization</b>
<b>Special Use Permit</b>	NIL	NIL
<b>Special Event Permit</b>	<b>Fee per day – Private Group</b>	<b>Fee per day – Non-Profit Organization</b>
Up to 100 persons	\$250	\$125
101 to 500 persons	\$435	\$215
501 - 1500 persons	\$650	\$325
Over 1500 persons	\$1,000	\$500
Prep and Wrap days	\$100	\$50
Security Deposit	\$250	\$250
Date change fee	\$25	\$25

<b>Section 5.0 CANCELLATION FEES</b>		
<b>Park Permit</b>	<b>Cancellation Notification Period</b>	<b>Fee</b>
Outdoor Facilities, See Schedule A section 3.1	More than 2 months prior to the rental date	\$25
	2 months or less prior to the rental date	100% of fee paid
Indoor Facilities, See Schedule A section 3.2	More than 3 months prior to the rental date	50% of security deposit
	3 months or less prior to the rental date	100% of security deposit
Special Events, See Schedule A section 4.0	More than 2 months prior to the event date	\$25
	2 months or less prior to the event date	100% of security deposit
Private Group, See Part 14 section 14.3	At least 14 days prior to the program date	\$25
	Fewer than 14 days prior to the program date	100% of fee paid
Edgewater Bar Camping, See Schedule A section 3.1	At any time	\$6
	Fewer than 7 days prior to the arrival date	\$6 + 1 night of camping fees
	During stay (after arrival)	100% of fee paid
<b>Note:</b> If Metro Vancouver initiates the cancellation of any facility rental or event, a full refund will be given.		

<b>Section 6.0 FILMING FEES</b>	
<b>Location</b>	<b>Fee</b>
Application Fee	\$250
MVRD Staff: Regular / Management	\$85/hr
Parkland – Reserves & Greenways – Film Day	\$1,000
Parkland – Reserves & Greenways – Film Day – Clean Energy discounted rate (2 days maximum)	\$500
Parkland – Reserves & Greenways – Still shoot Day	\$500
Parkland – Reserves & Greenways – Prep/Wrap/Hold Day	\$500
Parkland – Reserves & Greenways - Crew/Circus Staging Area Day	\$420
Parkland – Reserves & Greenways – Crew/Circus Staging Area Day – Clean Energy discounted rate (2 days maximum).	\$210
Parkland – Reserves & Greenways – Minor Shoot Day (crews of 10 people or less)	\$500
Parkland – Reserves & Greenways – Minor Shoot Day (crews of 10 people or less) Clean Energy discounted rate (2 days maximum)	\$250
BC Mills House Houston House / Karr Mercer Barn Inverholme Schoolhouse	\$1,100/film day
Clean Energy discounted rate (2 days maximum): BC Mills House Houston House / Karr Mercer Barn Inverholme Schoolhouse	\$610/film day
BC Mills House Houston House Inverholme School House	\$610/film day prep/wrap/hold day
Burvilla Cammidge House Camp Capilano Delta Heritage Airpark Kanaka Creek Stewardship Centre Louck’s House Minnekhada Lodge	\$1,875/film day

<b>Section 6.0 FILMING FEES (Continued)</b>	
Clean Energy discounted rate (2 days maximum): Burvilla Cammidge House Camp Capilano Delta Heritage Airpark Kanaka Creek Stewardship Centre Louck's House Minnekhada Lodge	\$1,375/film day
Burvilla Cammidge House Camp Capilano Delta Heritage Airpark Kanaka Creek Stewardship Centre Louck's House Minnekhada Lodge	\$1,125/film day prep/wrap/hold day
Administration Fee - Electrical Supply / Tie In Agreement	\$25 [ <i>cost of electrical supply is in addition to Administration Fee</i> ]
Security Deposit (Certified Cheque)  <b>Note:</b> Security Deposits can be amended subject to impact, risk of the facilities and Regional Parks	\$12,500



To: Climate Action Committee

From: Marina Richter, Air Quality Planner II  
Esther Bérubé, Division Manager, Bylaw Development,  
Air Quality and Climate Action Services

Date: October 13, 2023 Meeting Date: November 2, 2023

Subject: **MVRD Air Quality Management Fees Regulation Amendment Bylaw No. 1373, 2023**

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### RECOMMENDATION

That the MVRD Board:

- a) give first, second, and third reading to *Metro Vancouver Regional District Air Quality Management Fees Regulation Amendment Bylaw No. 1373, 2023*; and
  - b) pass and finally adopt *Metro Vancouver Regional District Air Quality Management Fees Regulation Amendment Bylaw No. 1373, 2023*.
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### EXECUTIVE SUMMARY

Metro Vancouver protects air quality through emission regulations and site-specific conditional authorizations for the discharge of air contaminants. Metro Vancouver charges regulatory fees for authorized air emissions to recover administrative costs and to encourage emission reductions. After broad engagement in early 2021, the Metro Vancouver Regional District (MVRD) Board adopted the *MVRD Air Quality Management Fees Regulation Bylaw No. 1330, 2021* (Bylaw 1330) on October 29, 2021.

Bylaw 1330 establishes emission fee rates for different categories of air contaminants depending on their harm potential and emission reduction benefits, in particular for methane and other greenhouse gases based on their global warming potential. Staff are proposing that the MVRD Board amend Bylaw 1330 by adopting the attached *MVRD Air Quality Management Fees Regulation Amendment Bylaw No. 1373, 2023*. The amendment would clarify the meaning of “global warming potential”, and clarify and confirm the regulatory fee rate chargeable for methane emissions, to align with the intent of Bylaw 1330.

### PURPOSE

To seek MVRD Board adoption of the *Metro Vancouver Regional District Air Quality Management Fees Regulation Amendment Bylaw No. 1373, 2023* to clarify definitions in Bylaw 1330, which will clarify and confirm the chargeable fee rate for methane emissions.

### BACKGROUND

At its October 29, 2021 meeting, the MVRD Board adopted Bylaw 1330 (Reference 1) to update Metro Vancouver’s air quality permit and regulatory fees. This report brings forward an amendment to Bylaw 1330 needed to clarify the bylaw.

## DEVELOPMENT OF BYLAW 1330

Metro Vancouver charges fees for authorized air emissions to recover the cost of its air quality regulatory services, incentivize emission reductions, and protect air quality. Metro Vancouver developed a discussion paper (Reference 2) proposing changes to its air quality permit and regulatory fees, which was the basis for public engagement with affected and interested audiences that took place between January and April 2021. On October 29, 2021, the MVRD Board adopted the *MVRD Air Quality Management Fees Regulation Bylaw No. 1330, 2021* which repealed and replaced the *GVRD Air Quality Management Fees Regulation Bylaw No. 1082, 2008*.

## PROPOSED AMENDMENTS

### Clarification of Global Warming Potential

This proposed change will amend the Bylaw 1330's definition of "global warming potential" to clarify that information on global warming potential (GWP) comes from the most recent Working Group 1 contribution (The Physical Science Basis) to the most recent Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) at any given time, reflecting any corrections made to the working group contribution or the overall assessment report. Historical reports remain available on the IPCC website and are not replaced by the most recent reports. As such, the amendments will fulfill the intention to use the most current GWP information

### Clarification of Methane Emission Fee Rate

Methane (CH<sub>4</sub>) is commonly known as one of the three greenhouse gases that contribute the most to climate change, along with carbon dioxide (CO<sub>2</sub>) and nitrous oxide (N<sub>2</sub>O). Bylaw 1330's emission fee rate for methane was developed based on its GWP relative to carbon dioxide, and to reflect its role in climate change as a greenhouse gas. Due to its chemical and physical properties, methane belongs to the category of non-photoreactive volatile organic compounds as well. Bylaw 1330 establishes a different emission fee rate for non-photoreactive volatile organic compounds. The proposed amendment bylaw will exclude methane from the definition of non-photoreactive volatile organic compounds under Bylaw 1330 and clarify a single emission fee rate for methane recognizing its global warming potential, as was originally intended in the discussion paper and Bylaw 1330.

## ALTERNATIVES

1. That the MVRD Board:
  - a) give first, second, and third reading to *Metro Vancouver Regional District Air Quality Management Fees Regulation Amendment Bylaw No.1373, 2023*; and
  - b) pass and finally adopt *Metro Vancouver Regional District Air Quality Management Fees Regulation Amendment Bylaw No. 1373, 2023*.
2. That the MVRD Board receive for information the report dated October 13, 2023, titled "MVRD Air Quality Management Fees Regulation Amendment Bylaw No. 1373, 2023" and provide alternate direction to staff.

## FINANCIAL IMPLICATIONS

Prior to the adoption of Bylaw 1330 in October 2021, there was no specified emission fee rate for methane based on its global warming potential, and an emission fee rate for non-photoreactive volatile organic compounds (VOC) of \$30/tonne was applied to methane emissions. Bylaw 1330

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established the fee rate schedule for methane from 2022-2028 with a gradual increase in fee rates from \$180/tonne to \$1,120/tonne over this time period (Reference 1) to reflect methane's high global warming potential and encourage emission reduction.

Under Alternative 1, there will be no change in the fee rates in Bylaw 1330. The amendment will clarify and confirm that methane emissions will be charged at the rate that Bylaw 1330 specifically sets out for methane, rather than at the rate for non-photoreactive VOC, in keeping with Bylaw 1330's intent.

### **CONCLUSION**

The proposed *MVRD Air Quality Management Fees Regulation Amendment Bylaw No. 1373, 2023* will clarify the meaning of global warming potential and clarify and confirm the chargeable fee rate for methane emissions in Bylaw 1330, in accordance with the intent of Bylaw 1330 and the public engagement leading to the bylaw's adoption. No changes to the emission fee rates are proposed.

Staff recommend Alternative 1, that the MVRD Board adopt proposed Amendment Bylaw 1373.

### **ATTACHMENT**

1. Metro Vancouver Regional District Air Quality Management Fees Regulation Amendment Bylaw No. 1373, 2023

### **REFERENCES**

1. [\*Metro Vancouver Regional District Air Quality Management Fees Regulation Bylaw No. 1330, 2021\*](#)
2. [\*Proposed Amendments to Air Quality Permit and Regulatory Fees in Metro Vancouver Discussion Paper, November 2020\*](#)

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**METRO VANCOUVER REGIONAL DISTRICT  
AMENDMENT BYLAW NO. 1373, 2023  
A Bylaw to Amend “Metro Vancouver Regional District Air Quality Management Fees  
Regulation Bylaw No. 1330, 2021”**

**WHEREAS:**

- A. Metro Vancouver Regional District has enacted the “Metro Vancouver Regional District Air Quality Management Fees Regulation Bylaw No. 1330, 2021”;
- B. That Bylaw contemplates the establishment and payment of fees; and
- C. The Board of the Metro Vancouver Regional District wishes to amend the “Metro Vancouver Regional District Air Quality Management Fees Regulation Bylaw No. 1330, 2021”.

**NOW THEREFORE** the Board of Directors of the Metro Vancouver Regional District enacts as follows:

**Citation**

1. The official citation of this bylaw is “Metro Vancouver Regional District Air Quality Management Fees Regulation Amendment Bylaw No. 1373, 2023”.

**Amendment of Bylaw**

2. "Metro Vancouver Regional District Air Quality Management Fees Regulation Bylaw No. 1330, 2021" (the “Bylaw”) is amended as follows:

- a) The definition “**global warming potential**” in section 5 of the Bylaw is deleted and replaced with the following:

“**global warming potential**” means the 100-year global warming potential of a greenhouse gas, as listed in the most recent Working Group 1 Contribution (The Physical Science Basis) to the most recent Assessment Report of the Intergovernmental Panel on Climate Change, all as corrected from time to time;

- b) The definition “**non-photoreactive volatile organic compounds**” in section 5 of the Bylaw is deleted and replaced with the following:

“**non-photoreactive volatile organic compounds**” means any volatile organic compounds:

- (a) listed as exclusions under “Volatile organic compounds that participate in atmospheric photochemical reactions” in Schedule 1 (List of Toxic Substances) of the *Canadian Environmental Protection Act, 1999*, S.C. 1999, c. 33, as amended from time to time, except methane; or
- (b) as determined by the district director;

Read a first, second, and third time this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

Adopted this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

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George V. Harvie, Chair

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Dorothy Shermer, Corporate Officer

To: Finance Committee

From: Linda Sabatini, Director, Financial Operations

Date: October 30, 2023

Meeting Date: November 9, 2023

Subject: **MVRD Temporary Borrowing Bylaw No. 1374, 2023**

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### **RECOMMENDATION**

That the MVRD Board:

- a) authorize to temporarily borrow on behalf of Greater Vancouver Water District (“GVWD”) an amount, or amounts in aggregate, not exceeding \$1.833 billion dollars, the amount authorized by the *Greater Vancouver Water District Borrowing Bylaw No. 261, 2023*, the maximum borrowing authorized; and
  - b) give first, second and third readings to *Metro Vancouver Regional District Temporary Borrowing Bylaw Number 1374, 2023*.
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### **EXECUTIVE SUMMARY**

Metro Vancouver introduced temporary borrowing in 2022 as a cash management strategy for infrastructure financing for GVWD and GVS&DD. Although, the GVWD Act, does not include provisions for temporary borrowing, MVRD can access temporary borrowing on behalf of the GVWD, through the Municipal Enabling and Validating Act (MEVA S.45 No.2).

Approval of the *Metro Vancouver Water District Temporary Borrowing Bylaw No. 1374, 2023* provides the authority for temporary borrowing in the amount not exceeding \$1.833 billion, the amount of the *Greater Vancouver Water District Borrowing Bylaw No. 261, 2023*, and the maximum borrowing authorized. This will provide Metro Vancouver with borrowing methods equivalent to what is used in municipalities and provides the optimization of cash and investment portfolio decisions which can reduce overall debt servicing costs and provide maximum investment returns.

### **PURPOSE**

To seek Board approval for temporary borrowing through the Metro Vancouver Regional District (“MVRD”) and the Municipal Finance Authority of British Columbia (“MFA”), for anticipated capital infrastructure activities, for an amount, or amounts in the aggregate, not exceeding \$1.833 billion dollars, the amount of the *Greater Vancouver Water District Borrowing Bylaw No. 261, 2023*, and the maximum borrowing authorized.

### **BACKGROUND**

Metro Vancouver introduced temporary borrowing in 2022 as a cash management strategy for infrastructure financing for GVWD and GVS&DD. Previously to this, GVWD and GVS&DD only borrowed long-term through MFA’s two annual borrowing opportunities (in spring and fall) and relied on internal interim funding, drawing from cash on hand and investments. With the growth of the capital plan, reliance on internal funding puts pressure on cash and investment balances and therefore, lowers opportunity for maximum investment returns.

## TEMPORARY BORROWING AUTHORITY

The borrowing process under the GVWD Act, does not include provisions for temporary borrowing. However, through the Municipal Enabling and Validating Act (MEVA S.45 No.2), MVRD can access temporary borrowing on behalf of the GVWD, from a financial institution or other lender (including the MFA). Temporary borrowing provides Metro Vancouver with borrowing methods equivalent to what is used in municipalities.

Under the MEVA legislation, two approved bylaws are required to allow GVWD the opportunity to temporary borrow. The first bylaw is the *Greater Vancouver Water District Temporary Borrowing Bylaw No. 262, 2023* establishing the authority for GVWD to access temporary borrowing up to and amount, or amounts in aggregate, not exceeding \$1.833 billion dollars, the amount of the *Greater Vancouver Water District Borrowing Bylaw No. 261, 2023*, and the maximum borrowing authorized. This bylaw is being submitted to the GVWD Board for approval on November 24, 2023.

The second bylaw, required for temporary borrowing, is the *Metro Vancouver Regional District Temporary Borrowing Bylaw No. 1374, 2023* authorizing MVRD to borrow on behalf of GVWD. This report introduces this bylaw for consideration and approval.

A cash management strategy that includes a combination of temporary and long-term borrowing allows the optimization of cash and investment portfolio decisions which can reduce overall debt servicing costs and provide maximum investment returns, as investments can be retained for longer periods.

The *Metro Vancouver Regional District Temporary Borrowing Bylaw No. 1374, 2023*, Attachment 1, provides a block of temporary borrowing authority in advance of any actual borrowing. The borrowing authority under this bylaw is consistent with the expenditures included in the five-year financial plan and the *Greater Vancouver Water District Borrowing Bylaw No. 261, 2023*.

## ALTERNATIVES

1. That the MVRD Board:

- a) authorize to temporarily borrow on behalf of Greater Vancouver Water District ("GVWD") an amount, or amounts in aggregate, not exceeding \$1.833 billion dollars, the amount authorized by the *Greater Vancouver Water District Borrowing Bylaw No. 261, 2023*, the maximum borrowing authorized; and
- b) give first, second and third readings to *Metro Vancouver Regional District Temporary Borrowing Bylaw Number 1374, 2023*.

2. That the GVWD Board direct staff to only borrow long-term under the GVWD Act and not take advantage of opportunities available with temporarily borrowing

## FINANCIAL IMPLICATIONS

The approval of alternative one will provide staff with the authority to continue to make prudent financing decisions with respect to GVWD's capital program. A cash management strategy that includes a combination of temporary and long-term borrowing allows the optimization of cash and

investment portfolio decisions which can reduce overall debt servicing costs and provide maximum investment returns. Temporary borrowing will provide the flexibility to make appropriate decisions regarding balancing the cost of financing with the services provided by the related infrastructure. Should this authority not be granted, under alternative two, staff will only be authorized to utilize long-term borrowing for capital funding purposes.

### **CONCLUSION**

This Borrowing Bylaw, as recommended under alternative one, provides the necessary authorization for the GVWD to temporary borrow funds as and when required up to a maximum of \$1.833 billion, the amount of the *Greater Vancouver Water District Borrowing Bylaw No. 261, 2023*, and the maximum borrowing authorized.

### **Attachments**

1. "*MVRD Temporary Borrowing Bylaw, No. 1374, 2023*", October 30, 2023

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**METRO VANCOUVER REGIONAL DISTRICT  
BYLAW NO. 1374, 2023**

A bylaw to undertake temporary borrowing on behalf of the Greater Vancouver Water District  
pending the sale of debentures

**WHEREAS:**

- A. Section 45 of the *Municipalities Enabling and Validating Act (No. 2)* (the "MEVA") authorizes the Metro Vancouver Regional District ("MVRD") to borrow from a bank, financial institution, regional authority, or any other lender, for the purpose of providing temporary financing for a regional authority.
- B. The Greater Vancouver Water District (the "District") is a regional authority under s.45 of the MEVA.
- C. All of the conditions required for the MVRD to borrow under s.45 of the MEVA on behalf of the District have been satisfied.
- D. The District has, with the approval of the Inspector of Municipalities, adopted the *Greater Vancouver Water District Borrowing Bylaw No. 261, 2023* (the "District Borrowing Bylaw"), which authorizes a maximum of \$1.833 billion (CAD) in borrowing for the purposes of the District's undertakings authorized by the *Greater Vancouver Water District Act* (the "Act") or for the purpose of discharging the payment of matters or things contemplated or authorized by the Act, including for the purpose of repaying or refunding either before or at maturity monies which have been borrowed by the District by issue of temporary securities or other debentures or securities.
- E. The District has, with the approval of the Inspector of Municipalities, adopted the *Greater Vancouver Water District Temporary Borrowing Request Bylaw No. 262, 2023* (the "District Temporary Borrowing Request Bylaw"), which requests the MVRD to provide temporary financing to the District for an amount or amounts not exceeding the sum of \$1.833 billion (CAD), as set out in this bylaw.
- F. On September 21, 2022, the MVRD and the District entered into an agreement which provides that the District will pay all costs of the MVRD associated with any temporary borrowing, and if requested by the MVRD, deliver to it security in the form of securities sufficient for the MVRD to meet and discharge all its obligations associated with the borrowing.
- G. The sale of debentures has been temporarily deferred.

**NOW THEREFORE** the Board of the Metro Vancouver Regional District enacts as follows:

**Citation**

- 1. This official citation of this bylaw is "Metro Vancouver Regional District Temporary Borrowing Bylaw No. 1374, 2023".

**Authority**

- 2. The MVRD Board is hereby authorized and empowered to borrow from a bank, financial institution, or any other lender an amount or amounts not exceeding the sum of \$1.833 billion (CAD), as the same may be required, to lend to the District for the purposes set out in the District Borrowing Bylaw and District Temporary Borrowing Request Bylaw specifically, for meeting the District’s capital requirements or other requirements for which financing is to be used in accordance with its approved financial plan.
- 3. The maximum term of any temporary borrowing arrangements to or from the MVRD under this bylaw is five years.
- 4. MVRD will issue one or more promissory notes to evidence amounts borrowed under this bylaw, each of which must be approved and executed as required in accordance with the *Metro Vancouver Regional District Banking Authority Bylaw No. 1361, 2023*, as such bylaw may be amended.
- 5. All money borrowed under this bylaw will be used solely for the purposes set out in the District Borrowing Bylaw and District Temporary Borrowing Request Bylaw and this bylaw.
- 6. The proceeds from the sale of debentures or so much thereof as may be necessary will be used to repay the money borrowed by the MVRD under this bylaw.

**Severability**

- 7. If any portion of this bylaw is deemed ultra vires, illegal, invalid, or unenforceable in any way in whole or in part by any court of competent jurisdiction, such decision will not be deemed to invalidate or void the remainder of the bylaw.

Read a first, second, and third time this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

Adopted this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

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George V. Harvie, Chair

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Dorothy Shermer, Corporate Officer

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## COMMITTEE INFORMATION ITEMS AND DELEGATION SUMMARIES

Metro Vancouver Regional District

Board Meeting Date – Friday, November 24, 2023

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This information item, listing recent information received by committee, is provided for the MVRD Board's information. Please access a complete PDF package [here](#).

### Regional Parks Committee – November 1, 2023

*Delegations:*

No delegations presented

*Information Items:*

5.2 Regional Parks Public Programming Strategy Implementation Update

### Climate Action Committee – November 2, 2023

*Delegation Summaries:*

No delegations presented

*Information Items:*

5.1 Climate Action Committee and Regional Planning Committee Joint Discussion on the Metro 2050 Climate Policy Enhancement Study

### George Massey Crossing Task Force – November 2, 2023

*Delegation Summaries:*

No delegations presented

*Information Items:*

5.1 Fraser River Tunnel Project Environmental Assessment Process – Update  
5.2 Fraser River Tunnel Project Procurement Process - Update

### Finance Committee – November 9, 2023

*Delegation Summaries:*

3.1 David Marshall, Chief Executive Officer, Fraser Basin Council  
Subject: Metro Vancouver – Fraser Basin Council Agreement Renewal  
Executive Summary Provided

3.2 Roderick V. Louis  
Subject: GVWD Borrowing Bylaw No. 261, 2023 and GVWD Temporary Borrowing Bylaw No. 262, 2023  
Executive Summary Provided

*Information Items:*

- 5.1 MVRD Audit Plan from BDO Canada LLP
- 5.3 Metro Vancouver Quarterly Financial Report - September 30, 2023
- 5.4 Treasury Report - July 1, 2023 to September 30, 2023

**Mayors Committee – November 9, 2023**

*Delegation Summaries:*

No delegations presented

*Information Items:*

- 5.1 Metro Vancouver Industrial Lands and Property Taxation Overview

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