



# PUBLIC MEETING AGENDA

**Revised:** April 23, 2019

**April 25, 2019, 9:30 AM to 10:45 AM**

TransLink, Room 427/428, 400 – 287 Nelson’s Court, New Westminster, BC

**Chair:** Mayor Jonathan X. Coté      **Vice-Chair:** Mayor Jack Froese

Note that times for each agenda item are estimates only. This meeting will be livestreamed and available afterwards on TransLink’s [Periscope](#) and [Facebook](#) pages.

Note that times for each agenda item are estimates only.

<b>9:30AM</b>	<b>1. PRELIMINARY MATTERS</b>	
	1.1. Adoption of agenda.....	Page 1
<b>Updated report:</b>	1.2. <a href="#">Approval of Minutes (February 15, 2019)</a> .....	2
	1.3. <a href="#">Approval of Minutes (March 15, 2019)</a> .....	10
<b>9:35AM</b>	<b>2. <a href="#">PUBLIC DELEGATES</a></b> .....	<b>13</b>
<b>9:45AM</b>	<b>3. REPORT OF THE REGIONAL TRANSPORTATION PLANNING COMMITTEE</b>	
	3.1. <a href="#">South of Fraser Rapid Transit Update</a> .....	14
	3.2. <a href="#">SkyTrain Technology and Procurement</a> .....	21
<b>10:00AM</b>	<b>4. REGIONAL TRANSPORTATION STRATEGY UPDATES</b>	
	4.1. <a href="#">Regional Transportation Strategy Scenarios</a> .....	25
	• Attachment #2: Scenarios Report ..... ATTACHED AT END – PAGE 47	
	4.2. <a href="#">Regional Transportation Strategy Engagement</a> .....	39
<b>10:10AM</b>	<b>5. REPORT OF THE FINANCE AND GOVERNANCE COMMITTEE</b>	
	5.1. <a href="#">Transit Fare Discounts and Infractions</a> .....	41
<b>10:30AM</b>	<b>6. REPORT OF TRANSLINK MANAGEMENT</b>	
	6.1. Transit Service Performance Review.....	ON TABLE
<b>10:40AM</b>	<b>7. REPORT OF THE EXECUTIVE DIRECTOR</b>	
	7.1. Cure Congestion Campaign Update.....	ON TABLE
<b>10:45AM</b>	<b>8. ADJOURN to closed session</b>	

## MEETING OF THE MAYORS' COUNCIL ON REGIONAL TRANSPORTATION PUBLIC MEETING MINUTES

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Minutes of the Public Meeting of the Mayors' Council on Regional Transportation (Mayors' Council) held Friday, February 15, 2019 at 9:00 a.m. in Rooms 427/428, TransLink Head Office, 400 – 287 Nelson's Court, New Westminster, BC.

### PRESENT:

Mayor Jonathan Coté, New Westminster, Chair  
Mayor Jack Froese, Langley Township,  
Vice-Chair  
Mayor Neil Belenkie, Belcarra  
Mayor Malcolm Brodie, Richmond  
Mayor Linda Buchanan, North Vancouver City  
Councillor Craig Cameron, West Vancouver  
(alternate)  
Mayor Bill Dingwall, Pitt Meadows  
Mayor George Harvie, Delta  
Mayor Mike Hurley, Burnaby  
Mayor Mike Little, North Vancouver District  
Mayor Doug McCallum, Surrey

Mayor John McEwen, Anmore  
Mayor Ron McLaughlin, Lions Bay  
Mayor Mike Morden, Maple Ridge  
Councillor Alison Morse, Bowen Island  
(alternate)  
Mayor Kennedy Stewart, Vancouver  
Mayor Richard Stewart, Coquitlam  
Mayor Rob Vagramov, Port Moody  
Mayor Val van den Broek,  
Langley City  
Mayor Darryl Walker, White Rock  
Mayor Brad West, Port Coquitlam

### ALSO PRESENT:

Mike Buda, Executive Director, Mayors' Council Secretariat  
Geoff Cross, Vice-President, Transportation Planning and Policy, TransLink  
Kevin Desmond, Chief Executive Officer, TransLink

### PREPARATION OF MINUTES:

Megan Krempel, Recording Secretary, Raincoast Ventures Ltd.

### CALL TO ORDER

A quorum being present, the meeting was called to order at 9:00 a.m.

### 1. PRELIMINARY MATTERS

#### 1.1 Adoption of Agenda

*Draft Agenda for the February 15, 2019 Public Meeting of the Mayors' Council on Regional Transportation, version dated February 8, 2019.*

#### It was MOVED and SECONDED

That the Mayors' Council on Regional Transportation adopts the agenda for its Public meeting scheduled February 15, 2019, version dated February 8, 2019.

**CARRIED**

## 1.2 Adoption of the Minutes

*Draft Minutes of the January 24, 2019 Public Meeting of the Mayors' Council on Regional Transportation.*

### **It was MOVED and SECONDED**

That the Mayors' Council on Regional Transportation adopts the minutes of its Public meeting held January 24, 2019, as circulated.

**CARRIED**

## 2. PUBLIC DELEGATES

*The following items were provided on-table:*

- *Report dated February 14, 2019, from Gemma Lawrence, Coordinator, Mayors' Council Secretariat, titled "Item 2 (On-Table) – Public Delegates: Names, Topics and Presentations"*
- *Report dated February 15, 2019 titled "On-Table Presentations from Public Delegates".*

Roderick Louis expressed concerns about TransLink's annual costs for debt servicing and its capabilities to deal with unexpected occurrences such as a reduction of income or interest rate increases. He requested a letter be written to the Minister of Transportation requesting amendments to the South Coast British Columbia Transportation Authority Act so that Translink debt ceiling increases can not occur without the company making public its anticipated annual income and annual debt service costs looking ahead at least 10 years. He requested that a hold be put on the Broadway Subway project and the Rail to UBC project until an independent engineering consultant is hired and reports on the potential costs and benefits of building an above-ground SkyTrain line to UBC from the Broadway and Commercial SkyTrain stations complex that uses trains powered by regular electric motors instead of trains powered by Linear Induction Motors, which could save \$6 -\$7 billion.

Nigel Malkin, a resident of West Vancouver, opposed the Main-Marine B-Line service connecting North Vancouver to West Vancouver, noting particular concerns regarding: lack of community engagement; existence of a Blue Line bus servicing that route; proposed 24-hour bus lane will eliminate significant retail parking; service will impact the charm and character of the area; and the route will go directly past an elementary school. Mr. Malkin's research indicated the B-Line would benefit 700 people, which is not enough to warrant implementation of the service. A TransLink survey had only 73 respondents from West Vancouver from a total 42,000 participants. He suggested there was no meaningful consultation with seniors groups, schools businesses or emergency services and no detailed design drawings provided. He recommended: the B-Line service not extend past Park Royal; bus "bulges" on Marine Drive be removed to improve traffic flow, increase the amount of #250 buses, and better align the #257 bus with the ferry schedule.

Lazina Sahib discussed challenges that Save-on-Foods at UBC employees face in getting to work on time for their 5:00 a.m. shifts. The SkyTrain from Arbutus to UBC would be beneficial to minimum-wage works and allow them a safe way to get to work.

Karen Ranalletta, one of over 1,500 support staff at UBC, supported the extension of the SkyTrain from Arbutus to UBC. Many UBC employees commute from Maple Ridge and White Rock and do not make large salaries. Easing their commute and reducing their travel times would be a significant improvement to their quality of life.

Angela Chiasson is an early childhood educator working at UBC. She informed that the staff auxiliary list is short as people cannot afford to live in the area. The early childhood education industry is prone to staff burn-out, which makes the lack of available support staff an even bigger challenge. Ms. Chiasson commented that the buses along the Commercial – Broadway Corridor are often full and will pass by designated stops as they are at maximum capacity. UBC Childcare is considered an essential service as without it, the other university services would not be able to function. The SkyTrain to UBC would mean that less people would need to drive to work and would save money by using the available transit.

Nathan Davidowicz referred to his submission to the Select Standing Committee on ride-hailing. He expressed concerns that TransLink's recommendations on the ride-hailing legislation will be denied by the provincial government and that TransLink was not well-informed on Bill 55. He suggested there be an increase in the number of taxi licenses issued and that the government annually review whether additional taxis are needed. Mr. Davidowicz expressed gratitude to TransLink for implementing the extra bus service to UBC and stated that enhancing transit service to the Arbutus to UBC Corridor should be the number one priority.

Hilda Ramos, a Surrey resident, works at the UBC Hospital and her lengthy commute involves multiple changes between bus and SkyTrain. She is in support of the Rail to UBC project as it will significantly reduce commute time and allow her to spend more time with her family.

Cristina Illnitchi, Vice-President of the External Affairs Alma Matter Society, is a student at UBC and supports the Rail to UBC project. She advised that there are 56,000 students and 15,000 staff members at UBC and 40% of them live outside the City of Vancouver. UBC is an important part of Vancouver and needs to be connected to the region. Ms. Illnitchi commented that neither LRT nor increasing the number of buses to UBC would address long-term capacity issues. SkyTrain: would reduce greenhouse gas (GHG emissions); alleviate the travelling burden of many; offer a greater pool of housing options for students; and promote accessibility and equity in employment and education.

Student Devon Wong's daily commute to UBC takes him 3-4 hours and he is unable to live closer to the university as it is too expensive. The SkyTrain to UBC will cut his commute in half and result in better life-work balance and provide economical and sustainability benefits.

Peter Ladner is a member of a transit coalition, comprised of 135 organizations in the Lower Mainland. The group is passionate about improvements to transit and infrastructure and its membership is a testament to the impact and importance of transit in people's lives. The coalition endorses the Mayors' Council committees and encourages them to remain transparent, accountable and inclusive of the public. He suggested that the members of the Mayors' Council regularly take transit to experience the challenges riders face. He informed that the coalition is willing to work with the committees on transit congestion and is supportive of advancing Phase 3 work. He suggested that growing ridership must be continually addressed. He was in support of the Regional Transportation Strategy (RTS), encouraged a strong link with Metro Vancouver's Regional Growth Strategy (RGS), and stressed the importance of appropriate public consultation.

Colin Fowler, a student at Simon Fraser University (SFU), recalled several incidents where traffic accidents or weather had affected transit service to SFU resulting in missed exams and the inability to get to classes. Mr. Fowler strongly supports the Burnaby Mountain Gondola project

noting it will double the capacity of the current bus services and will reduce travel time. He believes that the new Burnaby council may be more supportive of the project than the previous council, and he is using social media to attract more supporters with the involvement of many students. Mr. Fowler expects that approximately 26,000 people will be connected to the university with the implementation of the gondola and feels that this project will alleviate the commuting worries of a significant number of students and faculty members and should be included in the 10-Year Vision.

Greg Pattipas commented that the SkyTrain is a fixed system and is limited to the number of people it can carry. He suggested that with the current system capacity of 203 cars, it will not be enough to support the capacity for two 45-storey buildings at the Expo and Millennium Line stations. The linear induction motor includes a part that is built within the track at a cost of \$29 million/kilometre. Mr. Pattipas informed that the Calgary subway system can transport more people with only 63 cars. He questioned why capacity was not being addressed and the increase in housing pricing associated with SkyTrain stations. Private industry does not pay for roads or transit leaving it to the taxpayers to pay for. The cost of the motor is too expensive.

**It was MOVED and SECONDED**

That the Mayors' Council on Regional Transportation receive this report.

**CARRIED**

**3. REPORT OF THE FINANCE AND GOVERNANCE COMMITTEE**

**3.1 Committee Terms of Reference and 2019 Work Plan**

*Report dated February 2, 2019, from Mike Buda, Executive Director, Mayors' Council Secretariat and Geoff Cross, Vice-President, Transportation Planning and Policy, titled "Item 3.1 – Committee Terms of Reference and Work Plan"*

The Finance and Governance Committee is structured to enable the Mayors' Council and the TransLink Board to jointly collaborate on work plan items and also meet independently when necessary. It was suggested that the Term of References of each of the committees be placed on the TransLink website, along with copies of meeting agendas and minutes.

**It was MOVED and SECONDED**

That the Mayors' Council on Regional Transportation:

1. Approve the Mayors' Council Finance and Governance Committee Terms of Reference and Work Plan;
2. Approve the Joint Finance and Governance Committee Terms of Reference and Work Plan;
3. Receive this report.

**CARRIED**

**3.2 10-Year Vision Implementation Update**

*Report dated February 7, 2019 from Geoff Cross, Vice-President Transportation Planning and Policy, titled "Item 3.2 – 10-Year Vision Implementation Update".*

Mr. Cross provided an update on the implementation and funding status of projects in the 10-Year Vision. The Joint Finance and Governance Committee endorsed the staff recommendation

to accelerate some of the work of Phase 3 of the 10-Year Vision, such as addressing the issue of overcrowding as a result of the continued growth in bus ridership and accommodate the prioritization of the Surrey-Langley SkyTrain service.

Discussion ensued on:

- Phase 2 included the purchase of 203 SkyTrain cars to be used for expansion and replacement
- Phase 2 is fully funded assuming the revenue sources from increases to the fuel tax and development cost charge (DCC) are fulfilled
- DCC increases will generate \$20 million in 2021 and an additional \$10 million each year after
- Suggestion that a precise definition be given to what equates to “chronic overcrowding on transit routes”
- TransLink staff recommends accelerating expansion of bus service on all routes
- Suggestion that investing in bus service is easily supportable.

**It was MOVED and SECONDED**

That the Mayors’ Council on Regional Transportation:

1. Request staff to accelerate planning of some Phase Three improvements for the next Investment Plan;
2. Receive this report.

**CARRIED**

**3.3 Green Infrastructure Fund**

*Report dated February 7, 2019 from Geoff Cross, Vice-President Transportation Planning and Policy, titled “Item 3.3 – Green Infrastructure Fund”.*

Mr. Cross advised of the availability of a portion of \$9.2 billion in federal funding to support regional and municipal projects that mitigate GHG emissions. Municipalities can apply for a share of the province’s \$62 million in allotted funding for climate resiliency projects. Candidates for this funding were identified as the Low Carbon Fleet strategy and the Burnaby Mountain Gondola to SFU. Due to further work being required on the gondola project, the Joint Finance and Governance Committee recommends that funding be sought for the Low Carbon Fleet strategy and charging infrastructure.

**It was MOVED and SECONDED**

That the Mayors’ Council on Regional Transportation:

1. Ask staff to submit a CleanBC Communities Fund application to secure federal and provincial funding for electric vehicle charging infrastructure as outlined in the Low Carbon Fleet Strategy;
2. Receive this report.

**CARRIED**

**4. REPORT OF THE REGIONAL TRANSPORTATION PLANNING COMMITTEE**

**4.1 Committee Terms of Reference and 2019 Work Plan**

*Report dated February 2, 2019 from Mike Buda, Executive Director, Mayors’ Council Secretariat and Geoff Cross, Vice-President, Transportation Planning and Policy, titled “Item 4.1 – Committee Terms of Reference and Work Plan”.*

## It was MOVED and SECONDED

That the Mayors' Council on Regional Transportation:

1. Approve the Mayors' Council Regional Transportation Planning Committee Terms of Reference and Work Plan;
2. Approve the Joint Regional Transportation Planning Committee Terms of Reference and Work Plan;
3. Receive this report.

**CARRIED**

### **4.2 Rail to UBC**

*The following items were provided in the agenda package:*

- *Report dated February 6, 2019 from Geoff Cross, Vice-President Planning and Policy, titled "Item 4.2 – Rail to UBC"*
- *Annex A: Staff presentation*
- *Annex A: January 24, 2019 Report*
- *Annex B: Technical Report*

Mr. Cross referenced the provided report and presentation, which highlighted the rationale for supporting SkyTrain as the preferred technology for rail to UBC including: alternatives for technology and corridor perspectives; station locations; vertical or horizontal alignment; costings and business case for future funding decisions. Use of Light Rapid Transit (LRT) was considered and it was determined that it would not meet the long-term needs of the system and was substantially more expensive than SkyTrain.

The next phase of work will evaluate:

- How the project compares with other regional priorities
- The developmental impacts
- Effects to congestion relief and reduction in drivers
- Costs comparison for tunnel and elevated systems.

Discussion ensued on:

- The cost analysis of SkyTrain to UBC via 41<sup>st</sup> Avenue
- Concerns the project does not address regional growth issues and has no defined funding
- Project costs must be borne by UBC and Vancouver as the line is not a regional priority
- Clarification that this project does not reprioritize projects in the 10-Year Vision or the RTS
- That the use of an alternative supplier to SNC Lavalin and Bombardier be considered
- Although not proprietary technology, the extension will require trains that are compatible with those used on the Millennium Line
- Multiple companies will bid on the project as part of the open procurement process
- A cost breakdown will be provided on both vertical and horizontal alignments
- Cost for development of the line from Commercial-Broadway to UBC could reach \$7 billion
- TransLink must communicate to the public that SNC-Lavalin and Bombardier do not own SkyTrain technology
- If tunnelling is not required, the cost of tunneling will be paid for by the community
- Suggestion that a lifecycle cost analysis be done on both SkyTrain and LRT options
- Concerns with regional equity and fairness, lack of public consultation and funding

- The funding model for this project should be specific to the jurisdiction as it will ultimately reap the benefits of the transit investment
- The decision-making framework used in identifying projects for the 10-Year Vision was developed with input from the Mayors' Council
- The need for a sustainable provincial transportation funding model
- The project framework should allow for a more competitive procurement process
- Inequity with the development around SkyTrain stations
- Population projections, automation and employment scenarios used in RTS modelling
- This project will have little effect on reducing congestion caused by automobile use
- The project area is already well-served by transit
- Connecting housing affordability to transit service.

**Action Item:** *TransLink staff to provide the Mayors' Council with a presentation on the SkyTrain technology, the rapid transit system design and construction and relevant vendors and suppliers.*

**It was MOVED and SECONDED**

That TransLink staff report back to the Mayors' Council with information on the proprietary nature of the SkyTrain technology and available options for expanding the project procurement process to be more competitive.

**CARRIED**

**It was MOVED and SECONDED**

That the Mayors' Council on Regional Transportation:

1. Endorse a SkyTrain Millennium Line extension from Arbutus Street to UBC as the technology basis to advance to the next stage of project development for Rail to UBC, including development of alternative concept designs and preliminary business case inputs; and
2. Receive this report.

**CARRIED**

(Mayors' Vagramov and Walker voting in opposition.)

**5. REPORT OF THE NEW MOBILITY COMMITTEE**

**5.1 Committee Terms of Reference and 2019 Work Plan**

*Report dated February 2, 2019 from Mike Buda, Executive Director, Mayors' Council Secretariat and Geoff Cross, Vice-President, Transportation Planning and Policy, titled "Item 5.1 – Committee Terms of Reference and Work Plan".*

**It was MOVED and SECONDED**

That the Mayors' Council on Regional Transportation:

1. Approve the Mayors' Council New Mobility Committee Terms of Reference and Work Plan;
2. Approve the Joint New Mobility Committee Terms of Reference and Work Plan;
3. Receive this report.

**CARRIED**



## 5.2 Provincial Ride-Hailing Legislation

*Report dated February 6, 2019 from Geoff Cross, Vice-President, Planning and Policy, titled "Item 5.2 – Provincial Ride-Hailing Legislation".*

Kevin Desmond, Chief Executive Officer, TransLink, advised that he had testified at a provincial government Select Standing Committee on the Provincial Ride-Hailing Legislation, specifically how it can be shaped to ensure that mobility works in the region and with regional policy. TransLink responded specifically to: the criteria for establishing boundaries; managing congestion and the balance of supply and demand and fare structure.

Discussion ensued on:

- TransLink's comments were specific to ride-hailing and not to the taxi industry
- In light of equity and fairness, the ride-hailing boundaries should be the same for taxis
- More services during peak times and late evenings
- Less regulation and more flexibility for the consumer is needed
- The fee structure can generate revenues for accessibility to those areas that taxis are not servicing adequately
- Fares that are too low could result in more frequent short trips and increase congestion
- The province should increase the number of taxi licenses issued to support the demand.

### **It was MOVED and SECONDED**

That the Mayors' Council on Regional Transportation:

1. Endorse TransLink's recommendations to the Select Standing Committee on Crown Corporations regarding operating regulations for transportation network services (i.e. ride-hailing);
2. Receive this report.

**CARRIED**

(Mayor McCallum voting in opposition.)

## 6. ADJOURN TO CLOSED MEETING

### **It was MOVED and SECONDED**

That the Mayors' Council on Regional Transportation Public Meeting held February 15, 2019 adjourned to in-camera.

**CARRIED**

(11:41 a.m.)

Certified Correct:

\_\_\_\_\_  
Mayor Jonathan X. Coté, Chair

\_\_\_\_\_  
Megan Krempel, Recording Secretary  
Raincoast Ventures Ltd.

## MEETING OF THE MAYORS' COUNCIL ON REGIONAL TRANSPORTATION PUBLIC MEETING MINUTES

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Minutes of the Public Meeting of the Mayors' Council on Regional Transportation (Mayors' Council) held Friday, March 15, 2019 at 9:00 a.m. in Rooms 427/428, TransLink Head Office, 400 – 287 Nelson's Court, New Westminster, BC.

### **PRESENT:**

Mayor Jonathan Coté, New Westminster, Chair

Mayor Jack Froese, Langley Township,  
Vice-Chair

Mayor Neil Belenkie, Belcarra

Mayor Malcolm Brodie, Richmond

Mayor Linda Buchanan, North Vancouver City

Councillor Craig Cameron, West Vancouver  
(alternate)

Director Mike Feeley, Electoral Area A

Mayor George Harvie, Delta

Mayor Mike Hurley, Burnaby

Mayor Mike Little, North Vancouver District

Mayor Doug McCallum, Surrey

Mayor John McEwen, Anmore

Councillor Tracy Miyashita, Pitt Meadows  
(alternate)

Mayor Ron McLaughlin, Lions Bay

Mayor Mike Morden, Maple Ridge

Councillor Alison Morse, Bowen Island  
(alternate)

Mayor Richard Stewart, Coquitlam

Mayor Rob Vagramov, Port Moody

Mayor Val van den Broek,  
Langley City

Mayor Darryl Walker, White Rock

Mayor Brad West, Port Coquitlam

### **ALSO PRESENT:**

Mike Buda, Executive Director, Mayors' Council  
Secretariat

Geoff Cross, Vice-President, Transportation  
Planning and Policy, TransLink

Kevin Desmond, Chief Executive Officer,  
TransLink

### **PREPARATION OF MINUTES:**

Christine McLenan, Recording Secretary,  
Raincoast Ventures Ltd.

## CALL TO ORDER

A quorum being present, the meeting was called to order at 9:01 a.m.

### 7. PRELIMINARY MATTERS

#### 1.1 Adoption of Agenda

*Draft Agenda for the March 15, 2019 Public Meeting of the Mayors' Council on Regional Transportation, version dated March 8, 2019.*

#### **It was MOVED and SECONDED**

That the Mayors' Council on Regional Transportation adopts the agenda for its Public meeting scheduled March 15, 2019, version dated March 8, 2019.

**CARRIED**

#### 1.2 Adoption of the Minutes

*Draft Minutes of the February 15, 2019 Public Meeting of the Mayors' Council on Regional Transportation.*

#### **It was MOVED and SECONDED**

That the Mayors' Council on Regional Transportation adopts the minutes of its Public meeting held February 15, 2019, as circulated.

**CARRIED**

### 8. REPORT OF THE FINANCE AND GOVERNANCE COMMITTEE

#### 2.1 Delivering the Next Investment Plan

*Report dated March 15, 2019, from Mike Buda, Executive Director, Mayors' Council Secretariat and Geoff Cross, Vice-President, Transportation Planning and Policy, titled "Item 3.1 – Delivering the Next Investment Plan"*

Geoff Cross, Vice-President, Transportation Planning and Policy, outlined work to date and reviewed the purpose and context of the Plan. Phases One and Two are funded and being delivered. Staff were directed in February 2019 to provide suggestions on how to accelerate some parts of Phase Three. A starting point for Phase Three will be testing which items can meet three conditions in rail, bus and MRN/walking/cycles. If advancing the Plan is to be considered, some of the investments, especially in rail, do not have full maximum match at this point, making it very expensive to move forward. Nor is the business plan complete.

Two options were provided:

1. Hold on Phase Three development until further senior government funding is committed
2. Deliver Phase Three in two parts
  - a. Address immediate transit needs and overcrowding through increased service in one investment plan in 2020
  - b. Complete remaining Vision projects in a subsequent plan in 2022/2023.

Staff is recommending working on advancing as much as is practical in Phase Two and continuing to work on the business case. Staff will bring back what is in the Mayors' Vision and what is identified in the RTS that could be funneled into a business plan.

Comments in discussion included:

- Suggestion to endorse the approach outlined to carry on with Phase Three and see what it entails
- There will be a lot of policy around mobility pricing if that is the direction considered to carry on for financing
- More information is needed regarding funding sources and breaking up the Phases
- The Mobility Committee will be digging deeper into this issue and will be interacting with the Finance and Governance Committee
- This is a good report and shows how much TransLink has done in the first part of the 10-year Plan; however, we are behind in getting new projects out
- We need to finish the work initiated by the previous Mayors' Council and get on with planning
- Some components of Phase Three will require significant funding from senior government
- Could a community do some work in advance within their own budgets?

**It was MOVED and SECONDED**

That the Mayors' Council on Regional Transportation receive this report.

**CARRIED**

**9. REPORT OF THE NEW MOBILITY COMMITTEE**

Councillor Craig Cameron, West Vancouver, provided an overview of the work of the New Mobility Committee to date. There are five areas of focus:

- Automation
- Network design and interconnective
- Pricing road usage and mobility pricing
- Equity and affordability
- Funding for needed investments – mobility pricing will be part of that.

**It was MOVED and SECONDED**

That the Mayors' Council on Regional Transportation receive this report.

**CARRIED**

**10. ADJOURN TO CLOSED MEETING**

**It was MOVED and SECONDED**

That the Mayors' Council on Regional Transportation Public Meeting held March 15, 2019 adjourned to in-camera.

**CARRIED**  
(9:36 a.m.)

Certified Correct:

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Mayor Jonathan X. Coté, Chair

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Christine McLenan, Recording Secretary  
Raincoast Ventures Ltd.

**TO:** Mayors' Council on Regional Transportation  
**FROM:** Mike Buda, Executive Director, Mayors' Council Secretariat  
**DATE:** April 16, 2019  
**SUBJECT:** **ITEM 2 – Public Delegates**

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**RECOMMENDATION:**

That the Mayors' Council on Regional Transportation receive this report.

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**PURPOSE:**

To introduce the objectives and process for hearing from public delegates.

**BACKGROUND:**

Public participation at meetings is valued by the Mayors' Council, and up to one hour is set aside at open meetings to receive public delegations. The Mayors' Council will only receive public delegations who intend to speak on matters that are within the authority of the Mayors' Council.

Individuals can apply to be a delegate by completing the online [Application Form](#) up until 8:00AM, two business days prior to the meeting. In situations where there isn't enough time to hear from everyone wishing to speak, the Mayors' Council encourages written submissions be sent to [mayorscouncil@translink.ca](mailto:mayorscouncil@translink.ca).

The webpage for public delegates includes a Protocol for Public Delegates that notes:

- the Mayors' Council Chair will exercise discretion in maintaining a reasonable level of order and decorum;
- delegates and all meeting participants are reminded that different points of view are respected, and discussions are kept above the level of personal confrontation, disruptive behaviour and profanity.

**DISCUSSION:**

The deadline to apply to speak to the Mayors' Council is 8:00am two days prior to the meeting. At the time of this report, not all prospective speakers will have had a chance to complete applications. Accordingly, the **list of approved speakers and the subjects they indicated they will speak on, as well as any written submissions, will be provided on table**. Any presentations provided by delegates will also be provided to Mayors' Council members only, on table (up to 10-pages maximum).

Each delegation will be given a maximum of five minutes to address the Mayors' Council. As a general rule, there are no questions or discussion between Council and delegates.

**TO:** Mayors' Council on Regional Transportation  
**FROM:** Geoff Cross, Vice President, Transportation Planning and Policy  
**DATE:** April 15, 2019  
**SUBJECT:** **ITEM 3.1 – South of Fraser Rapid Transit Update**

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**RECOMMENDATION:**

That the Mayors' Council on Regional Transportation receive this report for information.

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**PURPOSE:**

To provide a progress update on the project development work for a Surrey to Langley SkyTrain and refresh to the 27 km South of Fraser Rapid Transit Strategy.

**BACKGROUND:**

TransLink is well underway with the work program approved by the Mayors' Council on December 13<sup>th</sup>, 2018. The work program contained in that December report to Mayors' Council identified the technical, financial and policy analysis required as well as the public and stakeholder engagement requirements. The attached briefing deck provides an overview of the progress made on these various streams as well as the key elements of the April public engagement. The first round of engagement on both the 27 km Strategy Refresh and Surrey to Langley SkyTrain (SLS) planning will be complete on April 26<sup>th</sup>.

**DISCUSSION:**

TransLink is undertaking the various streams of work on a schedule to support a late July review by the Mayors' Council and TransLink Board of the preliminary business case for a Surrey to Langley SkyTrain project. An additional round of public engagement is planned for June. The April and June engagements will help identify issues that should be considered in the development of a SkyTrain project, the objectives that should be used to evaluate both the SLS project and gauge support for the public's level of support for the different options for completing the 27 km Rapid Transit Strategy Refresh as well as for an SLS project.

After the first round of engagement is complete, management will work with the Mayors' Council and TransLink Board to finalize the objectives that will form the basis of the subsequent evaluations.

Consistent with the December 13<sup>th</sup>, 2018 Mayors' Council resolution, TransLink has also been advancing work on the components of an MOU with the City of Surrey that would be brought forward in July. The MOU is to contain a specific agreement for the City of Surrey to pay compensation to the region for all the work plan costs unnecessarily expended on the suspended Surrey-Newton-Guildford LRT. Management will bring forward recommendations in May on the principles for establishing the compensation figure as well as the means for fulfilling that compensation and the calculation methodology.

Attachments: South of Fraser Rapid Transit Planning and Engagement Update presentation.



**Item 2.1**

# South of Fraser Rapid Transit Planning and Engagement Update

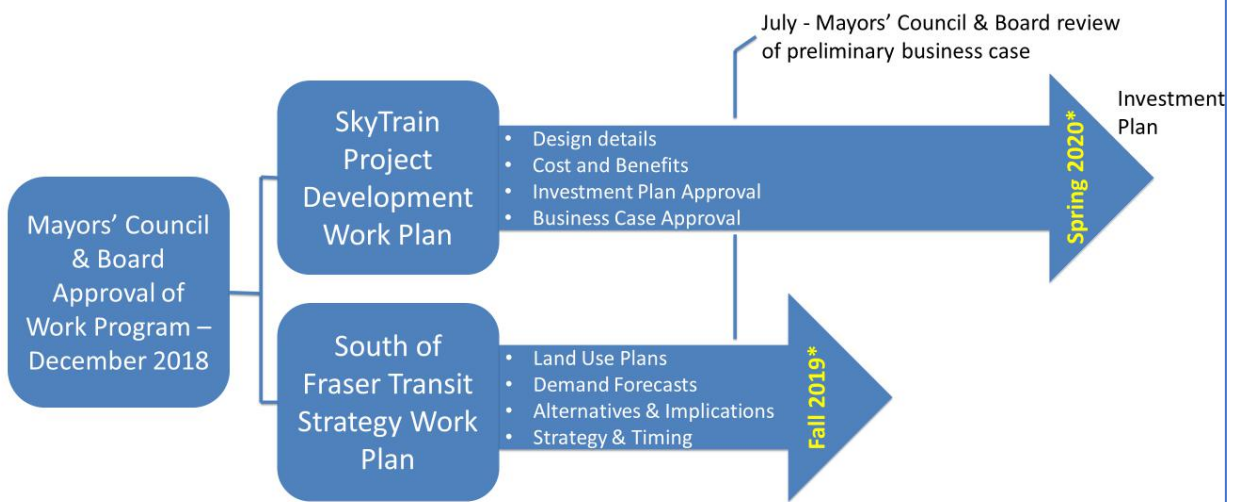
Geoff Cross, VP Planning and Policy

**T** Together all the way



## Overall Schedule and Milestones

Slide 2



\* Schedule estimates

**T** Together all the way



## South of Fraser Transit Strategy Refresh Schedule and Milestones

- By **July 25 Mayors' Council**, we need to:
  - Show how a Surrey Langley SkyTrain meets the objectives of the South of Fraser Rapid Transit Strategy
  - What are the trade-offs? What are the implications for technology choices and priority of rapid transit investment on 104<sup>th</sup> Avenue and King George Boulevard?
  - Determine if any technology options for 104<sup>th</sup> Avenue and King George Boulevard have implications for the design of a Surrey Langley SkyTrain
  
- The full refresh will be completed **later in 2019**
  - What are the recommended technology alternatives for the 104th Avenue and King George Boulevard corridors. What are the trade-offs?
  - Are new concept designs required to inform senior government funding asks and municipal land-use integration?
  - What are the funding and timeline implications of different options? Are additional funds required to upgrade the 96 B-line and other B-lines in the Vision?

## South of Fraser Transit Strategy Refresh Current Stage of Work

- Confirming scope of engagement to meet Mayors' Council expectations for July 25
  - April: objectives confirmation
  - June: assessing alternatives against objectives
  
- Updating evaluation data for alternatives analysis; procuring resources
  
- Regional Transportation Model updates



## Surrey Langley SkyTrain

### Schedule and Milestones

Slide 5

- **June 2019 Board of Directors:**
  - Brief Board on preliminary findings
- **July 25 2019 Mayors' Council:**
  - Present draft business case:
    - For full Surrey to Langley SkyTrain
    - Scope of project achievable within \$1.6B current funding
  - Seek Mayors' Council endorsement to further advance business case/project development
- **January 2020 Mayors' Council:**
  - Final Draft Business Case
- **March 2020:**
  - Earliest anticipated date for senior government approval
- **Spring 2020:**
  - Earliest anticipated date for investment plan approval
  - Procurement – 15 months
  - Construction – 4 years

## Surrey Langley SkyTrain

### Current Work and Key Issues

Slide 6

- Reference case design commenced with Owner's Engineer team
- Requirements input being coordinated with key stakeholders

#### Key Issues

- Confirming requirements within project schedule
- Coordinating with off-corridor supporting upgrades (vehicles, storage, systems, etc)
- Community feedback regarding specific project impacts

## Accomplishments since December 2018

- ✓ TransLink Surrey Langley SkyTrain project team formed
- ✓ Project development budget approved
- ✓ First project development board meeting held with:
  - Surrey, Langley City, Township of Langley, TransLink and the Province of BC
- ✓ Owner's engineer contract awarded
- ✓ Procurement and awards under way for additional services contracts
- ✓ Requirements gathering commenced with City of Surrey and BC Rapid Transit Company
- ✓ Engagement plan developed and initial First Nations' meetings held
- ✓ Federal & Provincial environmental scoping meetings held

## Progress on Related Work

- Also needed for July 25 Mayors' Council:
  - Principles for municipal contribution to SkyTrain and reimbursement of LRT expenditures
    - *Update planned to Joint Finance and Governance and Joint Regional Transportation Planning committees in early April*
  - Framework for Supportive Policy Agreements
- Will be reviewed with Board in the June cycle

## Upcoming Engagement Round

- South of Fraser stakeholder meetings underway and ongoing
- Engagement period: Spring 2019
- 4 proposed public events in 4 locations
  - Surrey Central
  - Fleetwood
  - Newton
  - Langley
- Online survey
- Review of existing information with questions on objectives, opportunities and concerns

## Objectives for South of Fraser Rapid Transit

- **Predictable transit travel time** that helps me get to my destination faster
- Increased **transportation choices** and that facilitates my use of bus, SkyTrain, SeaBus, including connections to those services by walking and cycling
- Feelings of **comfort and safety** when I use transit
- **Reliable driving time** when I drive for work or pleasure
- The **Efficient movement of goods and services** in my community
- **Helps limit climate change** and reduces my exposure to air pollutants
- **Economic development and job growth**
- Efficient use of **public money**
- **Minimized construction impacts** on my daily life
- **Protection of green space** and **reduced urban sprawl** in the region
- **Affordable and desirable community** with transit access to jobs and recreation.

# QUESTIONS

**TO:** TransLink’s Mayors’ Council

**FROM:** Sany Zein, Vice President, Infrastructure Management & Engineering  
Derrick Cheung, Vice President, Strategic Sourcing and Real Estate

**DATE:** April 25, 2019

**SUBJECT:** **ITEM 3.2 – SkyTrain Technology and Procurement**

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**RECOMMENDATION:**

That the Mayors’ Council receive this report.

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**PURPOSE:**

The purpose of this report is to respond to the Mayors’ Council direction that TransLink staff report back with information on SkyTrain technology and TransLink’s practices to ensure competitive procurement processes.

**BACKGROUND:**

On February 15 the Mayors’ Council received a report on Rail to UBC and endorsed SkyTrain as the technology basis to advance to the next stage of development for a rail project from Arbutus to UBC. During discussion, comments were raised about SkyTrain technology and questions were asked about whether SkyTrain is proprietary and how TransLink can increase competition for future SkyTrain procurement efforts. A motion was passed requesting additional information in response to these comments and questions.

This report provides a factual overview of the history, technology, procurement methods and market competitiveness related to SkyTrain.

**DISCUSSION:**

**SkyTrain launched in 1986 for Expo ’86**

“SkyTrain” is the brand name used for grade-separated automated rail rapid transit in Metro Vancouver and includes the Expo, Millennium, and Canada lines. When SkyTrain was launched in 1986 for Expo, it was one of the world’s first driverless, automated rapid transit systems. Since that time, our automated SkyTrain system has served the region well, with 79 kilometres of track, 53 stations, and a record 160 million boardings in 2018.

**Driverless, automated vehicles are the new norm for rapid transit**

SkyTrain was one of only three automated systems in 1986 but now there are more than 65 fully-automated lines in 42 cities worldwide that account for 1,052 kilometres in operation. In addition, major systems, including the Metro in Paris and Underground in London, are upgrading their busiest lines to be automated and driverless. Being an early adopter of this technology has paid off in several ways.

First, automation is economical. Without the need to staff trains over the past 30 years, the region has invested additional resources into the maintenance and expansion of the system. Second, driverless technology promotes rail safety because it reduces the potential for human error. Third, automation increases capacity because trains can run more frequently than conventional rapid transit, which allows the system to move more people, more quickly.

**SkyTrain is a brand name, not a technology—there are multiple technologies working together to make the system work**

Statements made that SkyTrain is “proprietary” to SNC Lavalin and Bombardier (or any other specific manufacturer) are false. SkyTrain is the brand name associated with grade-separated automated rail rapid transit in Metro Vancouver.

The technology underlying SkyTrain consists of trains powered by a linear induction motor (LIM) and controlled by a communications-based train control (CBTC) system. Neither LIM nor CBTC are proprietary. The SkyTrain technology combining LIM and CBTC was conceived in the 1970s as the Intermediate Capacity Transit System (ICTS) by the Urban Transportation Development Corporation (UTDC), an Ontario Crown Corporation. UTDC was subsequently privatized and sold to Bombardier in 1991, however Bombardier does not hold patents that would prevent other suppliers from bidding on any of SkyTrain’s key equipment or components.

The multiple technologies and components working together to make SkyTrain function—power, communications equipment, trains, guideway structure and rail—could each be supplied by several different companies.

***Automated control system***

The automated control system technology at the heart of making SkyTrain driverless and automated is called Communications-Based Train Control (CBTC). The specific CBTC system used by SkyTrain is known as SelTrac and was originally developed by Standard Elektrik Lorenz. It was subsequently sold to Alcatel and is currently owned, maintained and updated by Thales Rail Signaling Solutions. It is not a requirement that SkyTrain use the SelTrac system. There are several manufacturers with systems that can deliver CBTC of similar size and complexity. However, changing the automated control system would be a multilayered task and complexities exist in upgrading the existing 79 kilometres of SkyTrain or transitioning from one major control system to another.

***LIM propulsion vehicles***

The Expo and Millennium lines run on conventional metal rails and use power from a third rail.<sup>1</sup> The trains are powered by a linear induction motor (LIM), and use a fourth induction rail placed between the running rails to propel the vehicle. LIM propulsion was originally chosen when SkyTrain technology was conceived in the 1970s because of its superior performance on steep grades and in snowy and icy conditions, as well as its reduced operating and maintenance costs. Linear induction motors capable of powering transit systems are not proprietary. Multiple suppliers can provide vehicles that use linear induction motor technology. While theoretically SkyTrain can be converted to run using conventional rotary motors, this fundamental change would practically require significant technologically conversion resources.

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<sup>1</sup> The Canada Line also runs on conventional metal rails and uses power from a third rail, but uses an electric rotary traction motor, which is a more common propulsion technology. Because Canada Line uses different power technology, it is not interoperable with the Expo and Millennium Lines—Canada Line trains cannot be used on the other two lines, and vice versa. The original order of 20 2-car trains was delivered by Rotem, a division of Hyundai Motor Group. Twelve additional 2-car trains are currently being procured by TransLink.

The original fleet of LIM vehicles were supplied by Urban Transportation Development Corporation. Subsequent vehicle procurements were open to competition, but only Bombardier Transportation provided proposals.<sup>2</sup> Follow-up with other potential suppliers found that the region's orders for additional new cars were too small for them to submit proposals.

**SNC-Lavalin has led or been on the team for previous construction and engineering services to build SkyTrain, but has no proprietary role in its function or delivery**

Procurement for engineering and construction services are made on a project-by-project basis. Past procurement efforts for delivering large SkyTrain expansion projects have been led by the provincial government, with the exception of Canada Line. The firm SNC-Lavalin has either led, co-led, or was on a team that was awarded past contracts to deliver guideway structure and rail engineering/construction for SkyTrain. However, SNC-Lavalin holds no proprietary technology related to SkyTrain. In addition, SkyTrain does not require SNC-Lavalin to build future extensions. Most major construction and engineering firms could assemble teams to deliver the infrastructure for SkyTrain. Below is a history of past major infrastructure procurement efforts and SNC-Lavalin's involvement:

- **Expo Line.** Procurement was led by the Province and was delivered by the Urban Transportation Development Corporation (UTDC), an Ontario Crown Corporation. Pacific Liaison and Associates Inc. (which became a Division of SNC-Lavalin as part of a merger in 2001) was part of this team and performed design management for the Expo Line.
- **Millennium Line.** Procurement for construction and engineering was led by the Province through a provincial agency called RTP 2000. The consortium that delivered the project included the firms ND Lea, SNC-Lavalin, and Stantec.
- **Evergreen Extension of the Millennium Line.** Procurement for construction and engineering was led by the Province. A team led by SNC-Lavalin was selected from three qualified proponents.
- **Canada Line.** Procurement for construction and engineering services was led through Canada Line Rapid Transit Inc. (formerly RAVCO), a wholly-owned subsidiary of TransLink. During procurement and construction, Canada Line Rapid Transit Inc. was governed by a Board of Directors composed of representatives appointed by various funding agencies. A consortium led by SNC-Lavalin and Serco was selected from three qualified proponents to design, build, finance, operate and maintain the Canada Line for a 30-year period.

**TransLink's Strategic Sourcing Department leads procurement to ensure open and fair competition within national and international trade rules**

TransLink uses an open and transparent procurement process and is dedicated to increasing competition and getting the best value for money. The Strategic Sourcing and Contract Management department at TransLink handles all capital and operational procurement requirements for projects delivered by TransLink (and in some instances, leading collaborative procurements together with other public sector agencies) and must follow provincial, federal, and international laws governing procurement. Additionally, TransLink abides by all relevant trade agreements, including the Comprehensive Economic and Trade Agreement (CETA), which specifically prohibits preferential treatment for local/national suppliers.

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<sup>2</sup> Subsequent vehicle procurements supplied by Bombardier Transportation for vehicles running on the Expo and Millennium lines include 150 Mark I trains, 108 Mark II trains, and 28 Mark III trains. Additionally, 56 Mark III trains have been procured and are in the process of being delivered and introduced into service.

TransLink procurement efforts must also adhere to any additional rules set as a condition of funding by funding partners.

Multiple tools and methods are used to increase competition. Annual supplier forums, market sounding events and industry presentation events are held to connect suppliers with internal needs and generate greater interest in TransLink projects. TransLink recently upgraded our procurement software to Ariba Discovery, which we can use to reach a wide group of local, national and international suppliers. Ariba Discovery has a positive impact on competition, price, quality, and exposure to “best in class” products and services. TransLink also has checks and balances in place to regularly gauge competition and fairness—the procurement team monitors the projects with advice and assistance from project boards, steering committees, and legal counsel.

**TransLink is beginning the procurement process for its largest order of SkyTrain vehicles**

The next procurement of SkyTrain vehicles is funded in the Mayors’ Plan for at least 203 cars. The size of this order is more than three times bigger than any previous SkyTrain car order procured by TransLink, and therefore is expected to attract increased interest. The procurement strategy is to ensure competitiveness, and has included ongoing market sounding, an open Request for Information (RFI), and an upcoming open Request for Proposals (RFP). In response to the RFI, multiple responses and expressions of interest were received.

Efforts will continue to be made to broaden the potential pool of proponents.



**TO:** Mayors' Council on Regional Transportation

**FROM:** Geoff Cross, VP Transportation Planning & Policy, TransLink

**DATE:** April 11, 2019

**SUBJECT:** **ITEM 4.1 – Regional Transportation Strategy Update: Regional Long-Range Growth and Transportation Scenarios Summary Report**

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**RECOMMENDATION:**

That the Mayors' Council on Regional Transportation receive the report entitled "Regional Long-Range Growth and Transportation Scenarios – Draft Summary Report."

**PURPOSE**

To provide an overview of outcomes from the Regional Long-Range Growth and Transportation Scenarios project.

**BACKGROUND**

TransLink is in the process of updating the RTS, the 30-year long range transportation strategy that will outline a transportation and mobility vision for the region and priority transportation actions, investments and policies. Given uncertainties that might impact the future, scenario planning was identified during the strategy scope development process as a useful tool to examine these uncertainties in updating the RTS.

Metro Vancouver had been working to develop regional long-range growth scenarios since March 2018. Recognizing an opportunity to leverage their work and better integrate regional land use and transportation planning, the TransLink Board and Mayors' Council in May 2018 expressed interest in partnering with Metro Vancouver in the development of shared long-range scenarios. The Metro Vancouver Regional District Board endorsed the partnership between Metro Vancouver and TransLink in September 2018.

**DISCUSSION**

**Scenario planning is examining possible futures and their potential implications and impacts to our region**

Typical planning processes assume past trends will continue forward, perhaps with slight variations, to estimate the future of the region. However, external forces, which are trends and disruptors outside the control of governments in this region, can impact how the future could manifest.

TransLink and Metro Vancouver decided to partner on scenario planning, as it provides an opportunity to consider a broader range of factors and assumptions that might shape land use and transportation in the future, such as climate change or automated vehicles.

The project objectives of the Regional Long-Range Growth and Transportation Scenarios project are to:

- Understand future global trends and disruptors and their potential for impacts on our region;
- Develop plausible scenarios to test the resiliency of current and future plans; and
- Support future updates to population, housing, employment, land use and transportation projections

**Scenario planning is not about picking a preferred future, but providing a framework to assess the resiliency of our plans and strategies against possible futures**

The scenarios developed through this exercise are shaped by external forces outside the control of governments in this region, therefore the objective is not to select a preferred scenario, but to identify strategies that will be more resilient in a wider variety of circumstances. The scenarios:

- Provide a framework for resiliency analysis of potential portfolios of policies, projects, and programs in updating the RTS;
- Highlight where greater resiliency in existing policies is required;
- Provide a rationale for updating existing models to account for new factors, such as autonomous vehicles; and
- Give an indication of future opportunities and challenges that may support or direct land use and transportation choices in the future

**The scenario development process involved technical work and input from regional stakeholders and subject matter experts**

The scenario development process began with identifying and exploring the external forces that could have an impact on the region’s land use and transportation planning context. These external forces were identified as major trends and disruptors beyond the direct control of local government that could potentially impact the future of the region, change the availability and ways in which land might be used, and affect the way in which people travel. The process considered a geography broader than the Metro Vancouver region, to consider impacts at the local, regional, national and global scale as well. After considering the external forces, Metro Vancouver and TransLink worked with regional stakeholders to consider how these forces could affect the region to the year 2050. In addition, the project team engaged a small number of subject matter experts representing several academic, non-profit agency and industry representatives to comment on the assumptions underpinning the draft scenarios. Key meetings and events hosted by Metro Vancouver and TransLink informing the development of the scenarios are summarized in Attachment 1.

The scenarios that resulted were developed using a set of assumptions that impact the region’s population growth, where people live and work, employment and income, and how they move around. This allows comparison of the impacts in terms of the current regional policy frameworks, and to foster conversations of how the frameworks could be more resilient for the opportunities and challenges on future regional growth, land use and transportation planning efforts. Four scenarios were developed:

- A. Current economic, growth and development trends continue.
- B. Automation-driven job losses and outmigration result in a regional economy in decline.
- C. Barriers to global trade spur a more self-sufficient local economy.
- D. Automation drives a new economic boom led by new creative & knowledge sectors.

*Climate Change Impacts*

There is a higher level of confidence projecting climate change impacts for the region, as such all four scenarios assume climate change impacts will reflect the higher end of accepted global and local projections. Details on the four scenarios can be found in the summary report (Attachment 2).

### **Key lessons to be applied to update of Regional Transportation Strategy and Regional Growth Strategy**

Through the process of developing the scenarios, TransLink and Metro Vancouver identified the following key lessons:

- While the scenarios are not exact predictions of what could happen, the scenarios show possible futures and opportunities and challenges the region needs to consider, either to leverage or to mitigate
- These opportunities and challenges impact our existing regional values and potentially highlight other values the region needs to consider
- The existing policies in the RGS and RTS may not address many of these opportunities and challenges, and the updates to the RGS and RTS should consider them
- The scenarios provide a framework to help ensure policies and actions on land use and transportation in the RGS and RTS are resilient and responsive to an uncertain future

### **NEXT STEPS**

In addition to an update and report on this project to the Joint New Mobility Committee at its April 4, 2019 meeting, Metro Vancouver staff provided a parallel update and report on this project to the Regional Planning Committee at its April 5, 2019 meeting.

With input received at both the Joint New Mobility Committee and Regional Planning Committee, staff are finalizing the draft summary report. A final summary report will be provided to the Joint New Mobility Committee in June, with a recommendation to endorse the scenarios in the report and their use to assess the resiliency of portfolios of policies, projects, and programs in the Regional Transportation Strategy Update.

Following partnering with Metro Vancouver in the development of long-range scenarios to understand future global trends and disruptors and their opportunities and challenges on our region, Metro Vancouver and TransLink will use the scenarios to inform updates to the RGS and RTS. Specifically, the scenarios support the update of the RTS by:

- Providing future updates to population, jobs and housing projections
- Highlighting potential gaps in existing policies to respond to the opportunities and challenges
- Context-setting for the public engagement on the regional vision and values
- Supporting idea generation on possible policies, program and projects to leverage opportunities or mitigate challenges
- Testing of portfolios of policies, programs and projects to ensure the preferred portfolio is resilient to various possible futures

### **Attachments**

1. Timeline of key meetings and events hosted by Metro Vancouver and TransLink
2. Regional Long-Range Growth and Transportation Scenarios Draft Summary Report (attached separately)

## REGIONAL LONG-RANGE GROWTH AND TRANSPORTATION SCENARIOS DEVELOPMENT

## List of Events and Presentations

Event	Lead Agency	Date	Description
Regional Planning Committee	Metro Vancouver	April 6 2018	Confirmation of project objectives and scope.
Regional Planning Advisory Committee	Metro Vancouver	March 16 2018	Confirmation of project objectives, stakeholder list, and purpose of upcoming April workshop
Workshop on Understanding Metro Vancouver's Growth Projections	Metro Vancouver	April 5 2018	Metro Vancouver hosted a workshop with member jurisdictions and other regional agencies to present Metro Vancouver's baseline growth projections and discuss the methods used to create them.
Municipal "Road Show" on Regional Growth Projections	Metro Vancouver	June-July 2018	Metro Vancouver staff met individually with 18 member jurisdictions, each of whom expressed an interest in a more detailed discussion of the draft projections for long-range growth.
Regional Planning Committee	Metro Vancouver	September 7 2018	Confirmation of partnership with TransLink for developing the Long-Range Growth Scenarios.
Workshop on External Forces	Metro Vancouver & TransLink	October 18 2018	Workshop to prioritize a list of external forces – factors outside the direct control of Metro Vancouver or TransLink but that may have a significant impact on the future of growth and transportation. Over 65 attendees representing member jurisdictions and regional agencies participated.
Regional Planning Committee	Metro Vancouver	February 1 2019	Update on process to date, focusing on outcomes from External Forces workshop and next steps.
Subject Matter Expert Input	Metro Vancouver & TransLink	February 2019	A small number of subject matter experts were asked to review six draft scenario concepts, providing comment by email. 9 responses were received.
Workshop on Draft Scenarios	Metro Vancouver & TransLink	Feb 27 2019	Workshop to test the plausibility of four draft scenarios and to identify opportunities and challenges for long-range planning. Over 60 people attended representing a range of member jurisdictions, regional agencies and subject matter experts.
Regional Planning Advisory Committee Meeting	Metro Vancouver	March 15 2019	Update on February 27 workshop results and next steps
TransLink Board and Mayors' Council joint New Mobility Committee	TransLink	April 4	Update and overview of Draft Summary Report for Long-Range Growth and Transportation Scenarios
Regional Planning Committee	Metro Vancouver	April 5, 2019	Update and overview of Draft Summary Report for Long-Range Growth and Transportation Scenarios

In addition, TransLink has updated its New Mobility Committee and Mayors' Council through regular updates on the Regional Transportation Strategy.

## Item 4.1 – Regional Transportation Strategy Update

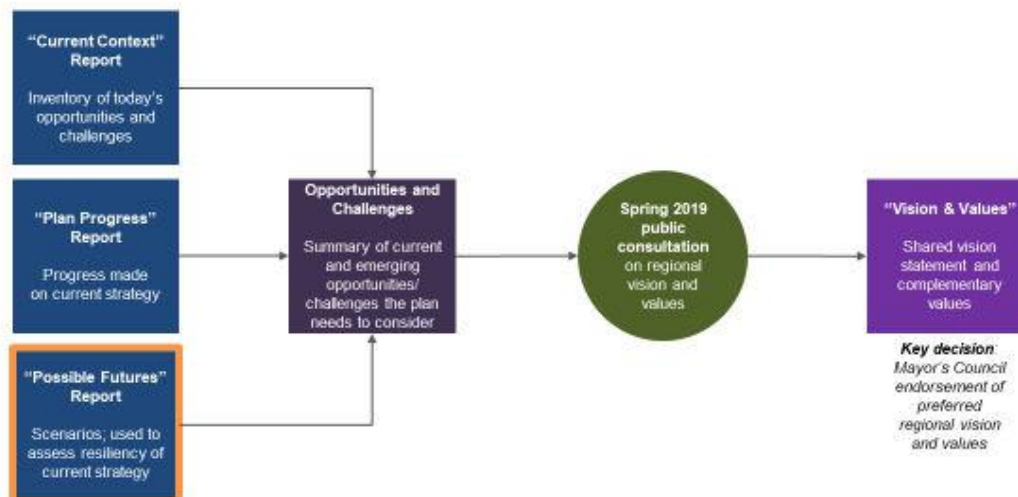
### Regional Long-Range Growth and Transportation Scenarios Summary Report

- Purpose is to provide an overview of outcomes from the Regional Long-Range Growth and Transportation Scenarios project
- Work completed in partnership with Metro Vancouver
- Developed as a tool to examine uncertainties that might impact the future, and to assess their potential impacts on transportation and land use

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### Scenarios supports the discussion on emerging opportunities and challenges the RTS needs to consider



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## Purpose of Scenarios

- Supports visioning and engagement with narratives of future scenarios
- Identify potential future opportunities for leveraging, and potential challenges to mitigate
- Allows resiliency testing to determine the best mix of policies, programs and projects across multiple scenarios



## Review of Draft Scenarios Summary Report

### Regional Long-Range Growth and Transportation Scenarios

MAYORS' COUNCIL ON REGIONAL TRANSPORTATION

April 25, 2019

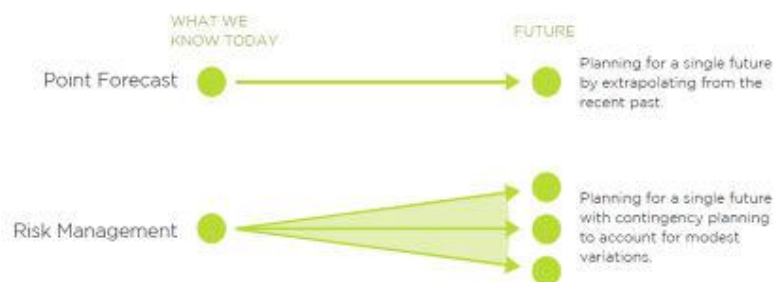
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# When we plan for the future, what sort of future are we planning for?

## Previous starting point for long-range plans: the future will look much like the past.

- Assumptions about land availability, immigration, population, jobs, incomes, auto ownership, trip rates and distances, transport technologies are all extrapolated from the past into the future, perhaps with modest variations.



## Which prediction of the future should we pick and subsequently base all of our planning assumptions and major investment and policy decisions upon?

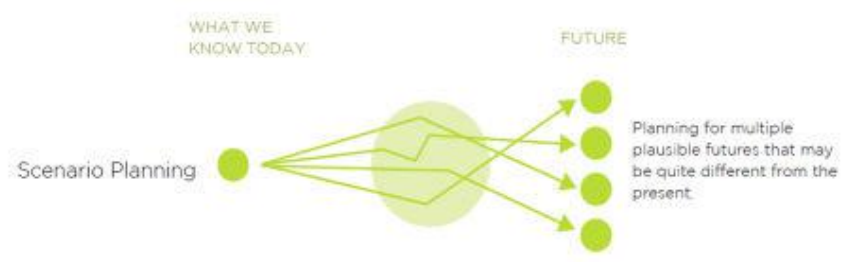
## When in fact, the future's uncertain

- We know that **emerging forces** beyond our control, such as AI & automation and shifts in the global economy are likely to **dramatically shape our region's future** but in ways that we cannot reliably predict...
- As a result of these unpredictable forces, the following key planning inputs may be **MUCH HIGHER** or **MUCH LOWER** than current forecasts:
  - Immigration into Canada and migration to Metro Vancouver,
  - Secure **employment**, household incomes & income inequality
  - Cost of **housing** and demand for different **housing types**
  - **Share of jobs** in each market sector and their **locational preferences**
  - Trip demand and trip lengths
  - Auto ownership rates & share of vehicles that are SAE 4/5 autonomous
  - Federal government revenue and spending levels



# New starting point for long-range planning takes these uncertainties into account.

- The solution to this dilemma? Don't pick just one point forecast.
- Generate several scenarios describing plausible but divergent futures.



Planning for multiple plausible futures that may be quite different from the present.



# Scenario planning is a narrative tool to help manage uncertainty

- We can use these “what-if” scenarios to:
  - *Identify strategies that will be effective in a wider variety of circumstances.*
  - *Avoid making decisions that leave us with stranded assets.*
  - *Better prepare & manage for uncertainty along the way.*

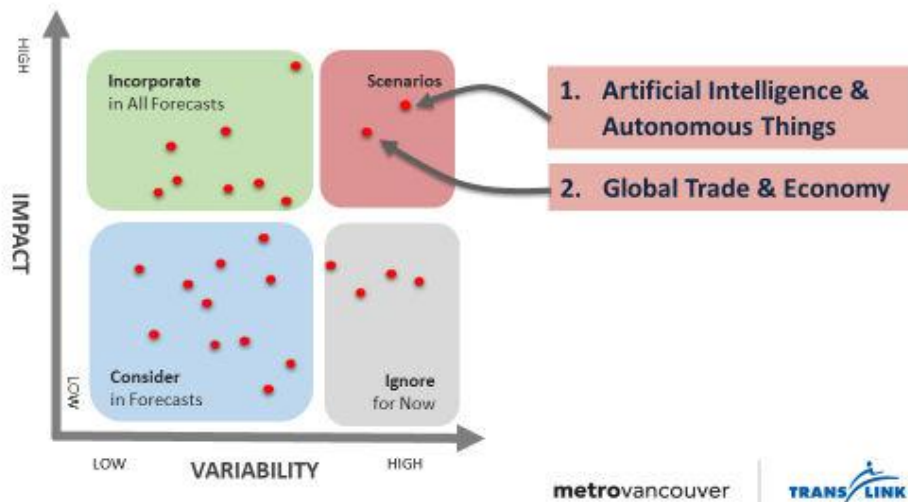


Planning for multiple plausible futures that may be quite different from the present.

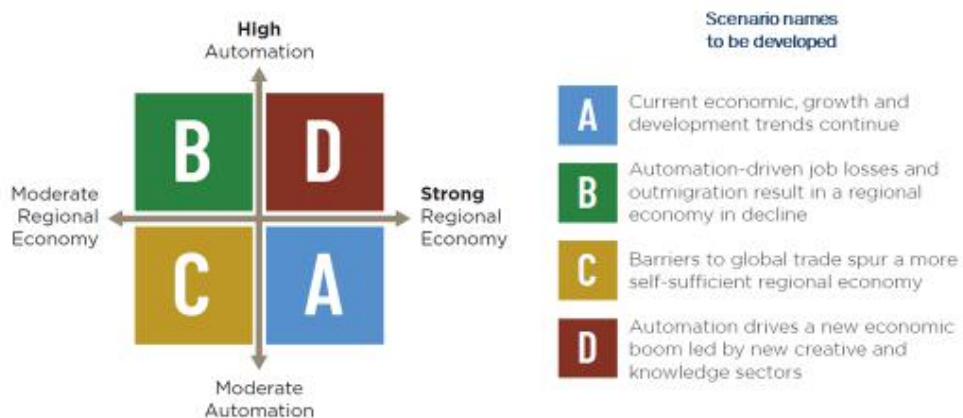


# Scenario building: focus on highest impact & highest variability forces

- For each of 25 external forces, we assessed **IMPACT** to transportation and land use in the region and **VARIABILITY** in the ways it might play out here.



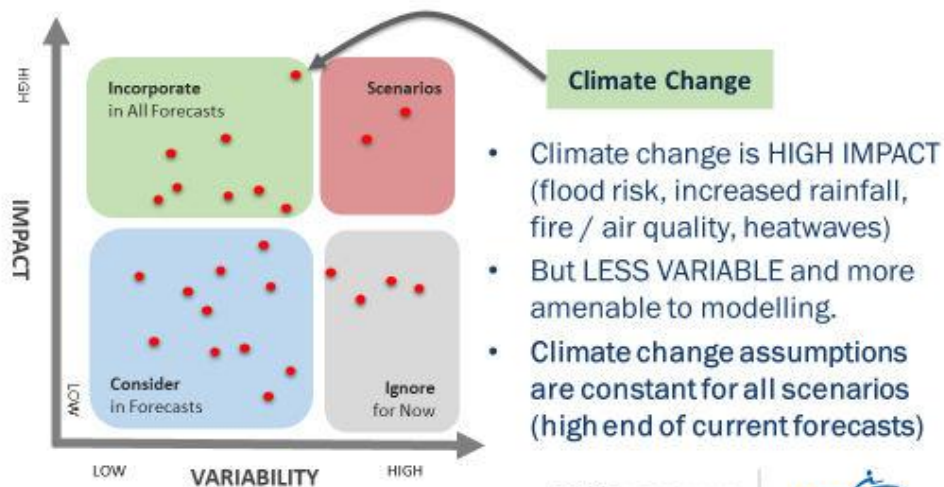
# Setting out these two forces in a matrix leads to 4 plausible but divergent futures



## What about high impact & low variability forces? Bake them in to all scenarios.

13

- Incorporate forces that are high impact but less variable into all scenarios;
- For other forces that are lower impact, either consider or ignore.



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## A Current economic, growth and development trends continue.

14

### The story (excerpt)

In 2050 automation has had modest and diverse impacts on economic competitiveness and employment. Some countries have embraced extensive automation while others, through an abundance of caution and frequently due to more limited capital investment resources (as in Canada), have seen automation impact the economy in more limited ways.

Improved efficiency from expanding automation goes hand in hand with Metro Vancouver maintaining its role as a prominent trade gateway. Regional goods movement activity also continues to increase owing to economic and population growth in the region and the steady growth in e-commerce and just-in-time deliveries. Privately-owned automated vehicles (AVs) become more common in the region resulting in demand for much more vehicle travel as these are frequently sent on errands while empty.

Overall, the region continues to focus growth in centres and corridors, in line with current regional and local plans. Clusters of specialized creative industries and labour, in the areas of film, social media or high-value food and beverage production, are increasingly represented throughout Metro Vancouver.



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## **B** Automation-driven job losses and outmigration set the region's economy in decline.

### The story (excerpt)

In 2050, automation is pervasive across most economic sectors. Artificial intelligence and advanced robotics are common in the workplace, moving beyond repetitive, labour-intensive tasks into professions like teaching, healthcare delivery, and R&D. No job types are left untouched.

Automation in the workplace results in significant job displacement. Similarly, in retail and services, companies have continued to automate most functions and online retailing continues to dominate.

With decreased employment and wealth in the region, there is less trip demand. Transport equity is of concern, particularly with decreased number of trips, decreased farebox revenue, and limitation of transit services across the region.

There is an increasing share of automated trucks on the road, as there is still significant movement of goods from the few companies that have automated their supply chains.



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## **C** Barriers to global trade spur a more self-sufficiency-focused regional economy.

### The story (excerpt)

In 2050, many countries around the world experience increasing challenges associated with income inequality and stagnant wage growth and have adopted more protectionist policies reducing the movement of both people and goods across borders. These political shifts, combined with technological developments such as 3D printing, support the return of manufacturing to Canada but in the form of smaller and more distributed local production operations closer to sites of consumption. Modest automation in most sectors occurs alongside a resurgence in small-scale artisans, makers, and producers who deploy some automated things to their advantage.

There are fewer truck kilometers travelled on the road owing to less global trade and more integrated local production.

There is a lower AV adoption rate due to lack of global investment here and limited manufacturing capabilities to advance the technology within Canada.



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## D Automation drives a new economic boom led by new creative & knowledge sectors.

### The story (excerpt)

In 2050, advanced digital connectivity and immersive technologies like virtual reality make Vancouver reshape where people choose to live and work. It is common to live in one region while working for a company elsewhere in the world, with many more people choosing to relocate to Metro Vancouver thanks to its relative safety, food and water security and high quality of life compared to elsewhere in the world. High automation improves productivity and global trade increases accordingly.

Jobs in many new sectors blossom but are more distributed around the region. The increase in unconventional work locations results in a decrease in work-related travel. The increase in wealth also means that some people choose to own AVs resulting in demand for much more vehicle travel as these are frequently sent on errands while empty.

There is an increase in on-demand delivery of goods and services, reducing personal trips but increasing local delivery traffic. There are also more (non-work related) discretionary trips resulting from the increased wealth in the region.



## Implications

Indicator	Today	Scenario A	Scenario B	Scenario C	Scenario D
Regional Population	2.57 million	+40% (3.6 million)	-0% (2.6 million)	+20% (3.1 Million)	+80% (4.6 million)
Distribution of People	-	More dispersed	More concentrated	-	-
Total Jobs	1.34 million	+35% (1.8 million)	-20% (1.1 million)	+10% (1.5 Million)	+60% (2.1 million)
Distribution of Jobs	-	More concentrated	More concentrated	More dispersed	More dispersed
Unemployment Rate	4.3%	No change	↑↑	No change	↓
Median Household Income	\$73,000	↑	↓	↓	No change
Income Equality	-	↓	↓↓	↑	No change
Trip Demand	2.7 trips per person/day	↑	↓	↑	↓
Trip Length	Average length 10km	↑	↓	↑	↓
Share of Personal Vehicles that are Automated	None	50%	50%	30%	70%
Mode Share	SOV: 57% Other (Shared and Active): 43%	SOV: ↑↑ Other: ↓↓	SOV: ↓ Other: ↑	SOV: ↓ Other: ↑	SOV: ↓ Other: ↑
Federal Government Funding	-	↑	↓	↓	↑
Sea Level Rise	-	1 metre	1 metre	1 metre	1 metre

Each scenario points to some  
**unique challenges and opportunities** for  
consideration as we begin to compile ideas  
and develop alternative portfolios

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**TO:** Mayors' Council on Regional Transportation

**FROM:** Geoff Cross, Vice President, Transportation Planning and Policy  
Steve Vanagas, Vice President, Customer Communications & Public Affairs

**DATE:** April 11, 2019

**SUBJECT:** **ITEM 4.2 – Transport 2050 Phase 1 Engagement Program**

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**RECOMMENDATION:**

That the Mayors' Council on Regional Transportation receive this report for information.

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**PURPOSE:**

To provide the Mayors' Council with an overview of the Transport 2050 Phase 1 Engagement Program.

**BACKGROUND:**

As required under the *SCBCTA Act*, every 5 years the Mayors' Council on Regional Transportation and TransLink Board must update and approve the 30-year strategy for the transportation system in Metro Vancouver. Through close collaboration with Metro Vancouver, Transport 2050 will be a shared transportation strategy for the entire region, outlining the investments and policy actions that we collectively need to make to achieve our transportation goals over the next 30 years.

**DISCUSSION:**

Transport 2050 is preparing to launch the Phase 1 Engagement Program, on the themes of values, vision, and soliciting a wide range of ideas for the future of transportation.

**The region has made good progress delivering on past plans.**

With the completion of the 10-Year Vision, the region will have implemented nearly all the major road and transit projects set out in the early 1990s in Transport 2021. A key question for Transport 2050 is 'what's next?'

**Rapid pace of change in the mobility landscape presents new opportunities and challenges.**

Technological advances in artificial intelligence and automation, digital connectivity, and electric mobility are disrupting the existing transportation ecosystem and leading to a rapid growth of new services and business models including dock-less micro-mobility, carsharing, ride-hailing, and shared freight and delivery services – all of which are well on their way to becoming self-driving. Together these developments have the potential to substantially change how people and goods move.

### **Transport 2050 Phase 1 will ask people about their values and their transportation ideas**

To support the Mayors' Council in making difficult decisions about what to build next and about how best to deploy and manage these new technologies and services, the first phase of engagement (May-Sep 2019) will include a far-reaching and inclusive program that invites the people of Metro Vancouver to articulate:

- what they value about living in and moving around the region,
- their hopes and concerns for the future, and
- their ideas for future transportation policies, programs and investments.

### **Phase 1 Engagement input will be used to refresh the Regional Vision and generate a long-list of ideas**

The Joint New Mobility Committee, in collaboration with Metro Vancouver and the Province, will use Phase 1 input to recommend an updated shared regional vision statement, and updated transportation goals and targets for approval by the Mayors' Council and Board. Through the fall of 2019 and winter of 2020, the Joint New Mobility Committee will evaluate the long-list of ideas generated in phase 1 and combine the most promising ideas into several portfolios for consideration and consultation in Phase 2.

### **Phase 1 Engagement will seek formal input from each Mayor & Council on local transportation priorities**

Senior municipal land use and transportation planning staff are helping to shape Transport2050 through monthly meetings of a Regional Agency Advisory Group. In May, and again in late summer, workshops will be held for local, provincial, and federal elected officials and their senior staff to provide input on their agency's transportation priorities. Formal written submissions will also be welcomed through the summer.

### **NEXT STEPS**

1. Mayors' Council members will be invited to participate in Transport 2050 public engagement and media events, including a launch event in early May.
2. Mayors' Council members are requested to inform TransLink staff of any local events, outreach and engagement opportunities happening from May through September 2019 where the Transport 2050 team could attend and engage with their community members.
3. Staff will provide a communications package to Mayors' Council members in order to promote public engagement in Transport 2050 through their communication channels.



**TO:** Mayors' Council on Regional Transportation  
**FROM:** Geoff Cross, Vice President, Transportation Planning & Policy  
**DATE:** April 18, 2019  
**SUBJECT:** **ITEM 5.1 – Transit Fare Discounts and Fare Infractions**

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**RECOMMENDATION:**

That the Mayors Council on Regional Transportation:

1. Reaffirm the existing policy position of the Mayors' Council and TransLink Board that expanding transit fare discounts for low-income residents, children and youth are social policy objectives and are best funded and administered by the Provincial Government.
2. Publicly advocate to the Province for funding to expand discounts to: (a) more low-income residents than are currently eligible under the existing BC Bus Pass Program; and (b) children and youth on the basis that the Province pays all associated TransLink incremental costs.
3. Direct staff to report back through the Joint Finance and Governance Committee on the review of the fare infractions policy.

**PURPOSE**

This report describes considerations arising from work to explore possible expanded transit rider discounts and possible changes to fare infraction protocols.

**BACKGROUND**

A key recommendation of the Transit Fare Review was to expand discounts for youth and low-income riders in collaboration with the Provincial government. Since summer 2018, staff have been working to better understand the requirements and implications of implementing an expanded discount. At the same time, several advocates have raised concerns about the difficulties encountered by youth and low-income adults in affording transit fares and fines for fare evasion. Some local municipal councils have formally endorsed motions asking TransLink to respond to these concerns.

TransLink staff have been working to explore both expanded fare discounts and the impact of fare evasion fines on youth and low-income individuals.

**DISCUSSION RELATED TO EXPANDED TRANSIT FARE DISCOUNTS**

**Existing discounts available to children, youth, and low-income riders**

TransLink currently provides discounts for children and youth in the form of Concession Fare discounts. Depending on the fare product, Concession fares are discounted 12 to 70 per cent off the regular adult fare price. Existing data indicates there are approximately 55,000 Compass users aged 5-18. Children younger than 5 travel free. The Provincial government currently provides discounted transit to low-income seniors (BC Bus Pass) and individuals receiving disability assistance (Transportation Support

Allowance). TransLink supports this Provincial program by providing these passes to the Province at a discounted Concession rate. We estimate there are approximately 45,000 active transit users in the Lower Mainland who are low-income<sup>3</sup> and not currently eligible for any existing discount.

**New funding would be required to implement expanded discounts for youth and low-income residents**

The cost of a new discount program can be defined by revenue loss, which sees revenue from fares decrease while ridership, and subsequent demand for service, remains constant or increases. If discounts were expanded to make transit free for youth and low-income riders and if ridership remained constant, the cost of the discount would be defined by the revenue lost as outlined in the Table 1 below. The table also outlines the rate changes that would be required should these discounts be funded by increases to existing regional transportation funding sources. For context, the cost to TransLink to provide our existing discounts to youth is estimated to be approximately \$18 million annually in foregone fare revenue, over what we would collect if we instead charged full adult fares (assuming no change in ridership).

**Table 1: Preliminary Cost Estimates for Youth and Low-Income Fare Discounts**

	<b>Revenue loss per year</b> <i>(assuming little to no change in ridership)</i>	<b>Existing Funding Source A: Property tax increase</b> <i>(\$ increase per average household per year)</i>	<b>Existing Funding Source B: Fuel tax increase</b> <i>(\$ increase above existing \$0.17 per litre tax)</i>	<b>Existing Funding Source C: Transit fare increase</b> <i>(\$ increase per adult trip)</i>	<b>Equivalent Service Cost</b>
<b>Free for youth (age 5 to 18)</b>	\$40 - \$50 million	\$22 - \$27 per household/year	\$0.02 - \$0.03 per litre	\$0.15 - \$0.20	5% - 7% of annual bus service hours
<b>Free for low-income</b>	\$25 - \$40 million	\$14 - \$22 per household/year	\$0.01 - \$0.02 per litre	\$0.10 - \$0.15	3% - 5% of annual bus service hours

In practice, new discounts would lead to an increase in ridership with the scale of the increase dependent on both the extent of the discount and the price elasticity (or sensitivity) of the user and trip type. Expanding discounts would also introduce new costs if any substantial increase in service hours was also needed to accommodate corresponding increases in ridership. For example, when the TTC in Toronto made transit free for youth in 2014, ridership of this age group doubled, with a sizeable share of this travel occurring during already busy peak periods where service expansion is most expensive, requiring new capital investment in new buses and trains.

**There is low public support for funding new or expanded discounts with increases to transit fares for other riders**

Through the Transit Fare Review, the public indicated support for expanded discounts for low income riders who are not eligible for existing discounts but were not supportive of paying for it with a fare increase. In Phase One of the Transit Fare Review, approximately 63% of residents surveyed indicated

<sup>3</sup> Low-income is defined here by LICO, the Low-Income Cut-Off.

that low-income individuals should receive a discounted transit fare; only 22% disagreed. However, when asked if fares should increase to pay for these discounts, support dropped to 47% and opposition rose to 41%.

Existing regional transportation funding sources (property tax, fuel tax, transit fares) are not linked to income and so are ultimately less effective for income redistribution purposes than income taxes which are already based on the taxpayer's ability to pay.

### **It is difficult to accurately estimate the ridership and cost impacts of a new discount**

Estimating the ridership and cost impacts of any new discounts is always challenging and is influenced by several currently unknown factors. These include the potential displacement of full-fare paying riders on crowded routes and the extent to which newly discounted riders would be accompanied by full-fare paying riders (i.e., adults accompanying newly discounted youth). Other Canadian cities have found that uptake of a new discount is highly dependent on the extent that it is accompanied by marketing, outreach and education. The integrity of the fare enforcement system also affects costs. For example, adults fraudulently travelling on free child passes in Toronto was recently flagged by Toronto's Auditor General as a key driver of fare evasion that is costing the TTC \$61 million annually<sup>4</sup>. The more attractive the discount, the greater the likelihood that more users will attempt to fraudulently use the discounted product. Accordingly, fare enforcement resources would need to be increased along with any sizeable increase in discounts.

### **Any discounted transit passes should be part of existing fare payment & enforcement mechanisms**

Free or deeply discounted transit passes would still require a Compass card to board buses or access the fare paid zone on SkyTrain. This would maintain the integrity of the fare gates and ensure accurate data collection from Compass taps is available to support system planning. Discounted transit passes should be consistent with existing fare enforcement mechanisms. They should be consistent with the technology required for fare validation and should have adequate barriers in place to prevent fraudulent usage.

### **Across Canada, low-income transit discounts are funded by the levels of government or agencies with the mandate for social services delivery**

In the past five years, low-income transit discounts have been implemented in cities including Calgary, Ottawa and Kingston, and committed to in Montreal. In all cities, these discounts are intended to make transit more affordable and are funded by the levels of government with the mandate for poverty reduction and income redistribution (see Table 2). In Ontario and Alberta, the responsibility to fund and deliver welfare programs has been partially downloaded from the Province to local governments and so some cities in these provinces fund low-income transit discounts directly. In British Columbia, where such downloading has not occurred, social assistance and welfare programs remain the responsibility of the Province. Accordingly, the existing low-income transit discount in British Columbia – the BC Bus Pass Program – is funded by the BC Ministry of Social Development & Poverty Reduction.

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<sup>4</sup> Source: [https://www.ttc.ca/About the TTC/Commission reports and information/Commission meetings/2019/February 27/Reports/3 AG Report Review of TTC%27s Revenue Operations.pdf](https://www.ttc.ca/About%20the%20TTC/Commission%20reports%20and%20information/Commission%20meetings/2019/February%2027/Reports/3%20AG%20Report%20Review%20of%20TTC%27s%20Revenue%20Operations.pdf)

**Table 2: Select Peer Review Highlights: Low-Income Discounts**

	<b>Calgary Transit</b>	<b>Edmonton Transit Service</b>	<b>Toronto Transit Commission</b>	<b>OC Transpo (Ottawa)</b>
<b>Fare products</b>	Monthly pass	Monthly pass	Monthly pass & single ride	Monthly pass & single ride
<b>Discount amount from equivalent adult fare product</b>	47% - 95%	64%	24% - 33%	50%
<b>Funding and accountability</b>	City of Calgary Province of Alberta	City of Edmonton Province of Alberta	City of Toronto ( <i>program expansion contingent on Provincial and Federal cost sharing</i> )	City of Ottawa
<b>Level(s) of government responsible for social assistance/welfare</b>	Municipal Provincial	Municipal Provincial	Municipal Provincial	Municipal Provincial

**Existing TransLink policy endorses the concept of expanding discounts for children, youth and low-income riders and that these discounts should be funded by the Provincial government**

In June 2018, the Mayors’ Council endorsed the final recommendations of the Transit Fare Review, including a recommendation to work towards increasing discounts for low-income residents, youth and children.:

*Recommendation 6.3 Work with the Provincial Government to explore expanded discounts for low-income residents, children and youth: TransLink acknowledges the societal benefits that these discounts would provide. However, social assistance is not within TransLink’s mandate, which is to provide an efficient transportation system that is largely self-funded. To support these benefits through discounts without raising fares for other riders and remaining revenue neutral, additional funding would be required. Recognizing that resources are limited at all levels of government, additional discussions with the Province in the context of the BC Poverty Reduction Strategy will help identify available funding and priorities.*

**The Mayors’ Council could consider alternate actions to reduce transit fares that align with its mandate to provide an efficient transportation system that is largely self-funded**

Transit fares currently cover 58% of TransLink’s transit operating costs, with the remainder primarily funded through a regional property tax and a regional fuel sales tax. Ensuring strong and sustained growth in transit ridership will help ensure the future financial sustainability of transit operations in Metro Vancouver. Accordingly, regionally-funded fare reduction measures that are designed to grow overall revenues and improve capacity utilization (e.g. lower off-peak prices for children and youth to encourage families to travel by transit and build life-long transit habits) are consistent with existing TransLink policy to provide an efficient transportation system that is largely self-funded.

If Provincial priorities are focused on poverty reduction, any expanded low-income discounts they choose to fund are likely to also capture a portion of children and youth riders, which would advance the objectives from the Transit Fare Review and the #AllonBoard Campaign, which advocates for deeper discounts. Once the Province has confirmed if and what additional funding it will commit to towards expanding low-income fare discounts, it will become clearer what the relative costs and benefits of any additional expansion of discounts for children and youth might be. The Mayors' Council could choose at that time to initiate an assessment of possible additional regionally-funded changes to any of our existing discounts.

## **DISCUSSION RELATED TO TRANSIT FARE INFRACTIONS**

As described above, transit fares fund 58% of TransLink's transit operating costs and so ensuring fare compliance is essential to the financial viability of transit operations in Metro Vancouver. Fare inspection and fines are widely accepted around the world and in the research literature as an effective practice to deter fare evasion. However, in the absence of expanded discounts for low-income residents, a one-size fits all approach to fare enforcement can have a disproportionate negative impact on low-income individuals who have the least ability to pay full-price transit fares in the first place, let alone the high cost of fare evasion fines. At the encouragement of the #AllonBoard campaign, TransLink has initiated a review of our fare enforcement practices to assess the viability of alternatives.

### **Existing fare infraction protocols**

An individual caught fare evading can currently be ticketed and fined by front line staff under two different pieces of legislation:

- a) Fare Infraction Notices (FIN): a by-law infraction related to failing to present valid fare payment in a fare paid zone
- b) Provincial Offense Tickets (PVT): a provincial offense related to the misuse of fare gates

Both carry a fine of \$173 (increasing up to \$273 if unpaid after 366 days) and may prevent an individual from renewing their drivers' license or vehicle insurance if the fine remains unpaid.

FIN's can be cancelled through a formal dispute/appeal process on the basis that (1) the individual did not commit the infraction as alleged, or (2) the ticket does not comply with the SCBCTA Act. The fine amount cannot be changed or adjusted. PVT's have a more discretionary dispute process where the fine amount can be reduced, or the violation can be cancelled at the discretion of a Provincial judge when brought forward in an appeal to the court. TransLink's current review focuses on exploring options related to FINs, as TransLink does not have any direct ability to change PVT fine levels, collection, or enforcement.

**The number of tickets issued for fare infractions or other violations represents approximately 0.01% of total annual system-wide journeys**

Just over 20,000 tickets for fare evasion and related violations were issued in 2018.<sup>5</sup> This represents approximately 0.01% of total system journeys during that year (estimated at over 260 million journeys in 2018). FINs account for two-thirds of tickets issued on the system today.

In 2017, new PVT offenses were added that addressed the misuse of fare gates, resulting in a redistribution of tickets issued. Prior to this change, between 2013 and 2016, FINs accounted for 98% of tickets issued.

Since 2013, less than 10,000 tickets have been issued to youth, representing approximately 6% of all tickets issued during that 6- year period; the number of tickets issued annually to youth (individuals under the age of 18) has decreased every year since 2013.

In 2018, youth were issued less than 1,000 tickets, which currently accounts for approximately 4% of all tickets issued. For context, youth are estimated to account for between 6 and 12% of total system-wide journeys. Information on income of individuals receiving an infraction or violation ticket is not readily available. If the exploratory work with the Province on expanded discounts for youth and/or low-income residents results in changes, it would likely further reduce the number of tickets issued.

### **Alternative approaches to fare infraction protocols and processes are being explored and evaluated against multiple objectives**

TransLink staff are currently working to identify and examine options that may minimize the disproportionate impacts that TransLink's existing Fare Infraction Notices and fines have on individuals with less ability to pay. These may include allowing Fare Infraction Notices fines to be adjusted based on ability to pay, allowing alternatives to a monetary fine, reducing fine amounts for early payments, and others. These alternative approaches will be assessed against key objectives and criteria, including:

- a) **Financial impact to youth and low-income individuals:** ability to reduce long term financial impact of fare infraction penalty on youth and/or low-income individuals
- b) **Fairness for all riders:** impact on fairness for customers who pay the appropriate fare
- c) **Fare evasion deterrence:** ability to effectively deter fare evasion
- d) **Administrative costs:** impact on TransLink's fare infraction administration and costs
- e) **Safety:** ability to minimize potential conflict between offenders and front-line security staff
- f) **Ease of Implementation:** likelihood that option can be introduced within existing legal and administrative framework

An assessment of options will be provided to the Finance and Governance Committee and Mayors' Council for information at a subsequent meeting.

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<sup>5</sup> This number excludes tickets that were issued and subsequently cancelled.

**DRAFT**



# Regional Long-Range Growth and Transportation Scenarios

## SUMMARY REPORT

APRIL 2019

metrovancouver







## Table of Contents

Executive Summary _____	4
What Sort of Future Are We Planning For? _____	5
What is Scenario Planning? _____	6
Climate Change _____	8
Understanding the Scenarios _____	10
Four Possible Futures Compared--2050 Scenarios _____	11
Scenario A _____	12
Scenario B _____	14
Scenario C _____	16
Scenario D _____	18
Next Steps _____	20
Appendix A: Detailed Scenario Summary Table _____	22
Appendix B: Key Facts Supporting Scenario Development _____	26
Endnotes _____	27
References _____	29

## Executive Summary

When we plan for the future, what sort of future are we planning for? Our current regional strategies are all premised on a future that looks much like the past. Recognizing that the future is always uncertain, the scenarios described in this report instead lay out four distinct futures, each considering what the year 2050 may look like in the Metro Vancouver region. Metro Vancouver and TransLink will use these four scenarios as a tool to better account for uncertainty and help to identify land use and transportation strategies that will be effective in a wider variety of circumstances.

The Long-Range Growth and Transportation Scenarios project began with an assessment of 25 key external forces that will likely influence the future of the region and narrowed down to the two with both the highest potential impacts and also the highest degree of variability: Technology and Automation and Economy and Trade.

These two forces provide the basis for four divergent but possible future scenarios:

**Scenario A:** which looks a lot like the current trajectory that we're on today – with a prosperous and diversified regional economy and steady population and job growth.

**Scenario B:** where foreign investment in a now highly automated economy keeps the regional economy going – despite higher unemployment and growing income inequality.

**Scenario C:** where declines in global trade and a subsequent weakening of the national economy leads to federal restrictions on immigration and lower population and job growth. The regional economy re-orientes to be more focused on local production and self-sufficiency.

**Scenario D:** where Canada's more open immigration policy attracts a highly mobile global force to relocate to Metro Vancouver. Population and employment grow much faster as a result.

**Each scenario presents opportunities the region could leverage and challenges the region might want to mitigate against.** For example, high automation might improve our productivity but could also displace many livelihoods and worsen income inequality. Increasing global trade barriers might slow the national economy but could also create opportunities for new local production and manufacturing.

The scenarios also acknowledge that over the coming decades our region may see much more or much less population and employment growth, economic growth, federal investment, housing affordability, goods movement, and volume of passenger trips to name just a few key indicators. As we collectively plan for the future of the region, **these scenarios will serve as a useful tool to help us make better decisions today in the face of uncertainty about the future.**

# What Sort of Future Are We Planning For?

Metro Vancouver is known for its natural beauty and world-class livability. Home to Canada’s biggest seaport and gateway to the Pacific, as well as growing creative and knowledge-based industries, the region enjoys one of the fastest growing economies in the country. As a result, Metro Vancouver remains an attractive place to live, work and play and has continued to experience significant population growth fuelled by immigration from abroad as well as migration from the rest of Canada.

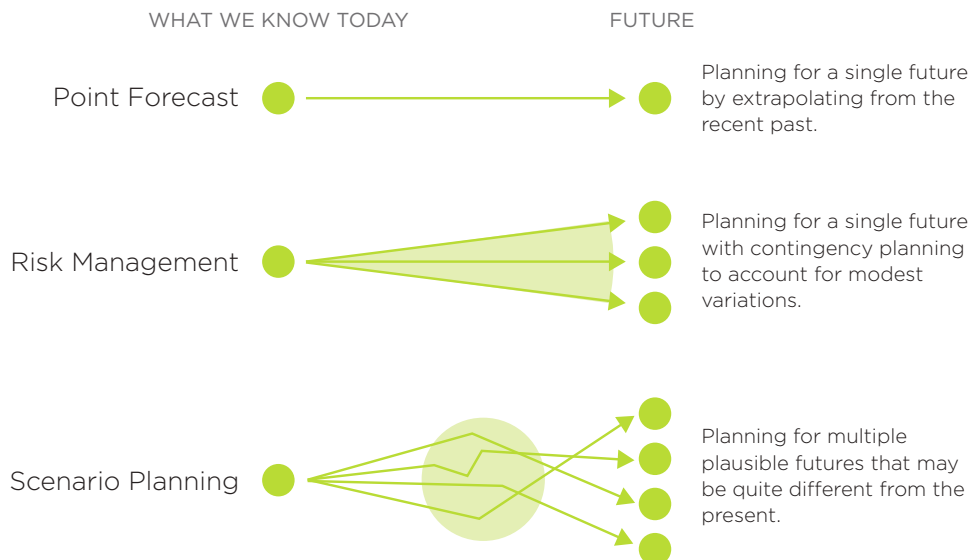
*Metro Vancouver 2040: Shaping our Future*, the regional growth strategy, the *Regional Transportation Strategy* and the *Mayors’ 10-Year Vision for Transit and Transportation* provide a shared vision for managing regional growth and transportation over the coming decades. These regional plans assume a future where social, economic and environmental forces continue to look much like they do today. Some of the emerging trends and new realities facing the region, such as

climate change and automation (i.e. new technologies such as artificial intelligence and robotics), were not thoroughly explored in these strategies, but have the potential to dramatically shape the future of the region.

Recognizing that the future is always uncertain, Metro Vancouver and TransLink have collaborated on this project to explore possible futures, along with the opportunities and challenges that result, to provide a new common starting point for long-range planning in the Metro Vancouver region.

While typical planning processes assume that past trends will continue forward, scenario planning allows the exploration of different potential futures that consider difficult-to-predict and new variables. With this approach, we can better manage uncertainty and identify strategies that will be more resilient.

## Approaches to Planning for the Future



## What is Scenario Planning?

In scenario planning, stories are crafted to represent a range of potential but realistic futures that could come about because of forces beyond our control. Broadly defined, external forces are trends and disruptors that could impact the future of the region in significant ways, change the availability and ways in which land might be used, and affect the ways in which people travel.

### Scenario planning in Metro Vancouver

The scenario planning process began by identifying and exploring a list of these external forces. As a globally-connected metropolitan region, there are many external forces that will have potential impacts on Metro Vancouver. For many forces, we have a pretty good idea of scale of impact and how they are likely to unfold. For others, we know the impacts will likely be significant, but we have less ability to predict exactly how these impacts will play out in our region.

For the scenario building exercise, **25** external forces were identified. The external forces include emerging trends in technology, the economy, society, the environment, the nature of work and more. Both impact and variability for each external force were explored – looking at the degree to which each force is likely to impact the region as well as the variability in how and when the impacts may unfold.

## 25 external forces considered:

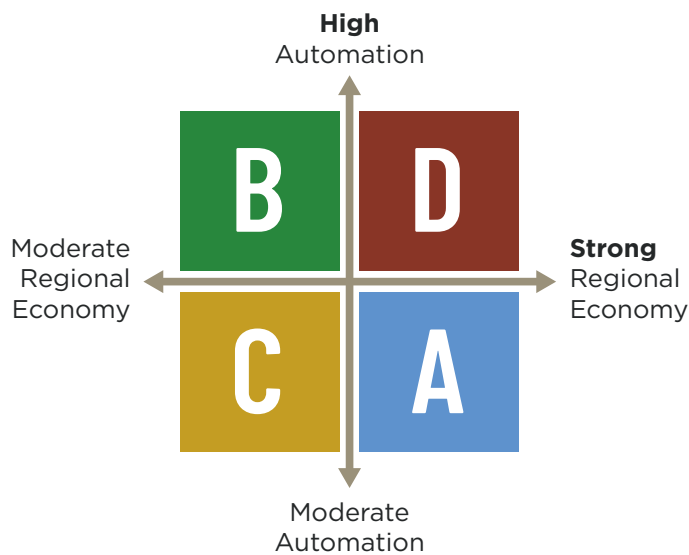
1. 3D Printing
2. Advanced Building Construction Technology
3. Aging Population / Changing Demographics
4. Agricultural Productivity & Food Security
5. Artificial Intelligence & Autonomous Things
6. Biotechnology & Gene Therapy
7. Changing Attitudes & Preferences
8. Climate Change & Natural Hazards
9. E-Commerce & Blockchain
10. Electric Mobility
11. Federal Immigration Policy
12. Federal Infrastructure Funding
13. Gig Economy & Precarious Employment
14. Global Outsourcing & Re-shoring
15. Green Energy Transition
16. Internet of Things & Digital Connectivity
17. Local Government's Growing Role
18. Nanomaterials
19. Quantum Computing
20. Real Estate Market Dynamics
21. Shared-Use Mobility
22. Sharing / Platform Economies
23. Shifting Global Economy & Trade
24. Urbanization
25. Virtual Reality / Augmented Reality

## The Four Scenarios

The external forces were then grouped together into the two categories of forces with the **highest impact** and the **highest degree of variability**. These categories helped shape the four scenarios described below. The two categories are:

**Automation & Technology** - which will likely have profound impacts across every sector of the economy, but in ways that we cannot yet reliably predict; and

**Economy & Trade**, which is entering a period of greater uncertainty driven by changes in technology and global political developments.



- A** Current economic, growth and development trends continue
- B** Automation-driven job losses and outmigration result in a regional economy in decline
- C** Barriers to global trade spur a more self-sufficient regional economy
- D** Automation drives a new economic boom led by new creative and knowledge sectors

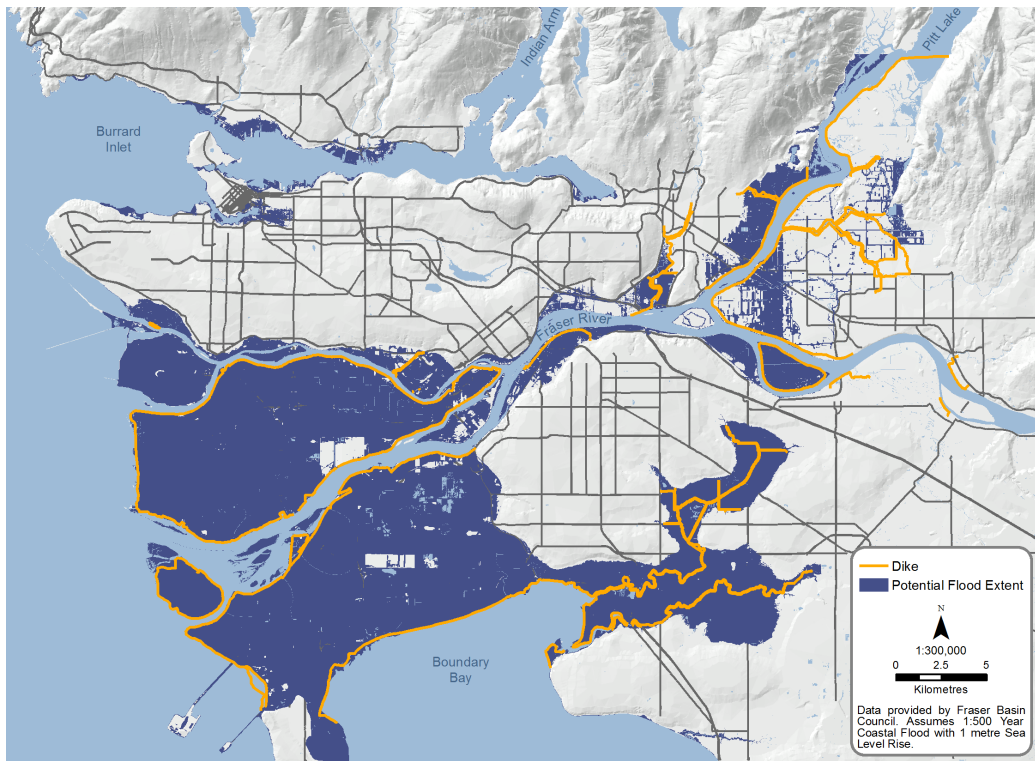
# Climate Change

Climate change is one of the greatest challenges of our time, and one that is already impacting the world and our region. In Metro Vancouver we are experiencing hotter and drier summers and warmer, wetter winters - both trends which are expected to become more severe. Detailed climate change projections have been completed for the region and significant work is underway to understand the impacts, including increased flood risk.

There is a higher level of confidence projecting climate change impacts for the region between now

and 2050. As a result, all four scenarios presented assume that the impacts of climate change will reflect the higher end of accepted global (International Panel on Climate Change) and local (Pacific Climate Impacts Consortium) projections.

Globally, the impacts of climate change have been seen to lead to an increasing number of water shortages, crop failure and food shortages, flooding, famine and armed conflict. These factors are likely to result in increased number of migrants seeking to come to Canada and the region.



Potential Coastal Flood Extent (with a 1 Metre Sea Level Rise)<sup>1</sup>

Regionally, anticipated local climate change impacts could include:

- Rising sea levels and faster snow melt increasing the risk of flooding in low-lying areas, especially those along the coast and the Fraser River;
- More extreme rainfall events, especially during the wettest parts of the year, increasing the risk of localized flooding in streets, businesses and homes;
- Increased strain on the region's existing water supply during times of the year when there are high temperatures and water is in high demand;
- Native species of plants, trees, and animals that have historically thrived in the region will be impacted. Rising temperatures will shift the types of crops that can be grown; rising temperatures may also increase pest and disease issues;
- Warmer winters with less ice and frost may improve road safety and increase opportunities to walk and cycle; and
- An increased number and duration of summer wildfires will impact air quality in the region, affecting the health of the community and may reduce the desire to walk and cycle.

Of the climate change impacts anticipated in this region, flooding will have the greatest potential to impact land use and transportation systems. The map above shows the potential extent of a major coastal flood event assuming one metre of sea level rise.

While the above climate impacts are embedded in all four scenarios, each scenario has different assumptions around the ability to afford measures to adapt to climate impacts.

## Understanding the Scenarios

To help illustrate how the region could get from the present day to each of the four different futures presented in the scenarios, the following pages offer conceptual storylines describing fictional, but plausible paths that could lead the world and the region into each of these four different futures.

Each scenario is driven by a different set of assumptions that impact the region's population growth, where people live and work, their type of employment, income, and how they move around. Metro Vancouver and TransLink collaborated with partners and subject matter experts and conducted research to ensure that the scenarios are reasonable, internally consistent, and plausible given current data, research and thinking.


**This exercise is not about choosing a preferred future,** or about proposing a set of policy actions. The purpose of the project is to describe and understand divergent but possible futures for the region to the year 2050. The results will help us and decision makers better understand and prepare for the potential challenges and opportunities in each future.

To that end, each of the four scenarios assumes that existing policies, regulations, and investments remain consistent with *Metro Vancouver 2040: Shaping our Future*, and the Mayors' *10-Year Vision for Transit and Transportation*.



## Four Possible Futures Compared—2050 Scenarios

Each indicator is defined in Appendix A: Detailed Scenario Summary Table

Indicator	Today	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D
 Regional Population	<b>2.57</b> million	<b>+40%</b> (3.6 million)	<b>-0%</b> (2.6 million)	<b>+20%</b> (3.1 Million)	<b>+80%</b> (4.6 million)
 Distribution of People	--	More dispersed	More concentrated	No change	--
 Total Jobs	<b>1.34</b> million	<b>+35%</b> (1.8 million)	<b>-20%</b> (1.1 million)	<b>+10%</b> (1.5 Million)	<b>+60%</b> (2.1 million)
 Distribution of Jobs	--	More concentrated	More concentrated	More dispersed	More dispersed
 Unemployment Rate	<b>4.3%</b>	No change	↑↑	No change	↓
 Median Household Income	<b>\$73,000</b>	↑	↓	↓	No change
 Income Equality	--	↓	↓↓	↑	No change
 Trip Demand	<b>2.7</b> trips per person/day	↑	↓	↑	↓
 Trip Length	Average length <b>10km</b>	↑	↓	↑	↓
 Share of Personal Vehicles that are Automated	None	<b>50%</b>	<b>50%</b>	<b>30%</b>	<b>70%</b>
 Mode Share	Single Occupant Vehicle: 57% Other: 43%	SOV: ↑↑ Other: ↓↓	SOV: ↓ Other: ↑	SOV: ↓ Other: ↑	SOV: ↓ Other: ↑
 Federal Government Funding	--	↑	↓	↓	↑

SCENARIO  
**A**

**Current economic, growth and development trends continue**

Globally by 2050, artificial intelligence and automation have had significant, diverse impacts on economic competitiveness and employment across sectors and countries. Some countries have harnessed AI to enhance their workforces while others, whether due to caution, popular opposition, or limited investment resources, have incorporated automation in more limited ways.

In the region by 2050, automation is common in repetitive, labour-intensive jobs such as farming, primary manufacturing, and in many retail and service industries. The trends we see today will continue to materialize as expected.

Improved productivity from automation and continued growth in consumer demand overseas results in increasing global trade through the Metro Vancouver Gateway. Regional goods movement also continues to grow because of economic and population growth, regionally, and the steady growth in e-commerce and just-in-time deliveries. Privately-owned automated vehicles (AVs) become more common in the region.

Overall, the region continues to focus growth in urban centres and corridors, in line with current regional and local plans. Clusters of specialized creative industries and labour, in the areas of film, social media or high-value food and beverage production, are increasingly distributed throughout Metro Vancouver.

IMPLICATIONS

INDICATOR	TODAY	SCENARIO A
Regional Population	2.57 million	+40% (3.6 million)
Distribution of People	--	More dispersed
Total Jobs	1.34 million	+35% (1.8 million)
Distribution of Jobs	--	More concentrated
Unemployment Rate	4.3%	No change
Median Household Income	\$73,000	↑
Income Equality	--	↓
Trip Demand	2.7 trips per person/day	↑
Trip Length	Average length 10km	↑
Share of Personal Vehicles that are Automated	None	50%
Mode Share	Single Occupant Vehicle: 57% Other: 43%	SOV: ↑↑ Other: ↓↓
Federal Gov't Funding	--	↑

## OPPORTUNITIES AND CHALLENGES

Automation improves job productivity and creates new jobs in some sectors, but impacts low-income workers and small businesses.

- New jobs in technology, creative, and care provider professions are created.
- The region's population increases at historical rates through strong immigration.
- Automation disproportionately impacts lower-income workers predominantly performing repetitive mechanical tasks.
- Small businesses are less able to adopt automation due to the costs, and some struggle to keep pace with larger corporations.

Autonomous vehicles increase traffic congestion, but also allow driving time to be more productive.

- Automated vehicles add efficiency to the transportation system as vehicles are smaller and can communicate with each other.
- Gridlock persists as many AVs travel empty without passengers, and road supply is still limited. Longer travel distances combined with regional population growth continues to increase traffic congestion and overcrowding on roads and transit.

- People are generally less concerned about the congestion, as in-vehicle time becomes usable for work, sleep, or entertainment.
- Walking and cycling decreases, partly as a safety precaution with the significant uptick of vehicles on the road.

People choose or are forced to seek housing outside the region and commute longer distances.

- Continuing challenges with housing affordability lead to more people living in more affordable places like the Fraser Valley, Sea-to-Sky corridor, the Sunshine Coast and even Vancouver Island.
- The region continues to be an attractive place to live, however the cost of living and housing remains high, particularly in urban centres.

People continue to locate in flood prone areas which increases vulnerability.

- Population continues to grow in flood prone areas which increases vulnerability during flooding from rivers and due to sea level rise.



**SCENARIO**  
**B**

**Automation-driven job losses and outmigration result in a regional economy in decline**

Globally by 2050, automation is common across most economic sectors. Artificial intelligence (AI) and advanced robotics are regular parts of the workplace. Workers move beyond repetitive, labour-intensive jobs into professions like teaching, healthcare delivery, and research & development. No job types are left untouched by AI and robots.

In the region by 2050, automation in the workplace has resulted in significant job displacement. A small number of foreign companies have automated entire supply chains in BC's abundant natural resources sector in the areas of forestry, mining, and oil and gas. From resource extraction to shipping, a small number of workers will do the work that previously employed thousands. Similarly, in retail and services, companies have continued to automate most jobs and online retailing continues to dominate local businesses.

While the owners and investors of the major companies operating in BC have profited, overall wealth in the region has declined. Median household income has decreased due to limited and precarious employment opportunities for most people. This also has created an unbalanced trade market, with far more wealth and goods leaving the region, compared to what is being invested and consumed locally. There is a higher volume of export-oriented goods movement traffic through the region, primarily of raw materials shipping overseas. There is less regionally-focused economic activity, and so local goods movement is primarily oriented around consumer goods and e-commerce deliveries. There is an increasing share of automated trucks on the road, as there is still significant movement of goods from the few companies that have automated their supply chains.

With decreased employment and wealth in the region, there is less trip demand and congestion. Transport equity is of concern, with an increased emphasis on transit, but limited ability to provide transit services across the region due to decreased government funding.

IMPLICATIONS

INDICATOR		TODAY	SCENARIO B
	Regional Population	2.57 million	~0% (2.6 million)
	Distribution of People	--	More concentrated
	Total Jobs	1.34 million	-20% (1.1 million)
	Distribution of Jobs	--	More concentrated
	Unemployment Rate	4.3%	↑↑
	Median Household Income	\$73,000	↓
	Income Equality	--	↓↓
	Trip Demand	2.7 trips per person/day	↓
	Trip Length	Average length 10km	↓
	Share of Personal Vehicles that are Automated	None	50%
	Mode Share	Single Occupant Vehicle: 57% Other: 43%	SOV: ↓ Other: ↑
	Federal Gov't Funding	--	↓

## OPPORTUNITIES AND CHALLENGES

With lower population and employment, the region struggles to provide essential services.

- With fewer employment opportunities available, regional population growth slows as immigration rates decrease sharply. In addition, residents move to other regions / provinces with lower costs of living and better employment opportunities.
- A high proportion of remaining residents are over 65 years old, and the labour force shrinks. The aging population requires additional services, including higher demands on the health care system. But a reduced tax base decreases investments in social programming and reduces benefits and services for retirees.
- With declining population and employment, reduced government revenues make climate change adaptation more challenging.

Housing affordability improves, but wealth inequity persists.

- Slower population growth allows the housing supply to catch up with demand and housing prices stabilize.
- Income inequality remains high owing to precarious employment and low wages for the majority. Automated production increases value to the regional economy, but there are fewer jobs and

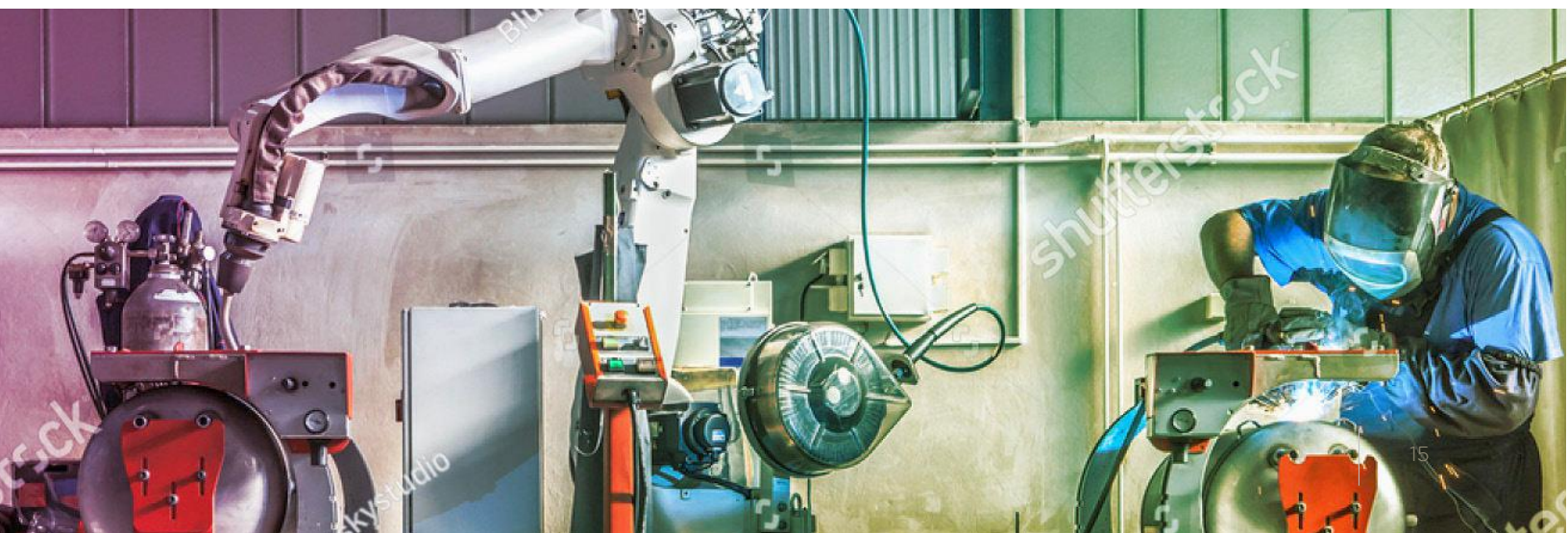
lower incomes, and most wealth is captured by a limited few.

There is less travel throughout the region, but some individuals need to travel a lot more.

- With decreased employment and wealth in the region, there are fewer trips occurring. However, some workers travel significantly more, tying multiple contract jobs together in a day.
- Trips to multiple jobs are generally undertaken by a reduced-service transit system or by privately-owned automated vehicles.
- Some lower-income households require owning a vehicle to work multiple jobs.

Automation allows for cheaper goods production and movement.

- There is a higher volume of export-oriented goods movement traffic through the region, primarily of raw materials shipping overseas.
- Local goods movement is primarily oriented around e-commerce deliveries. There are more automated trucks on the road, as there is still significant movement of goods from the companies that have automated their supply chains.



**SCENARIO**  
**C**

**Barriers to global trade spur a more self-sufficient regional economy**

Globally by 2050, in response to discontent about rising unemployment and income inequality, many countries adopt policies that restrict trade and limit immigration. These political shifts, combined with technological developments such as 3D printing, support the return of manufacturing to Canada, but in the form of smaller, more localized production. Small-scale artisans, makers, and producers deploy automation to enhance their productivity.

In the region by 2050, there is an increased pressure to diversify the economy as the region has previously relied on international trade for many goods and services. Some trade continues, though heavy tariffs make importing and exporting more expensive.

A decline in global inter-connectedness changes how business is conducted. Changes to global immigration policies reduce opportunities for migrants seeking refuge from climate change impacts. Canada continues to rely on immigration and it remains a driver of growth in Metro Vancouver. Median household income is relatively flat, with a higher cost of goods due to new import tariffs and a weakened Canadian dollar. Economic growth continues at a sustained pace.

With less global trade, there is greater incentive to transition to a more sustainable circular economy that uses fewer resources and produces less waste. Access to imported goods and services are impacted. New technologies such as automation and 3D printing are leveraged, enabling local manufacturing and more distributed production. Many local workers are required to shift their occupations, particularly those who worked for companies elsewhere in the world, as well as those who worked in jobs dependent on international trade. Short-term contract work (i.e. gig work) is more common.

There are fewer truck kilometres travelled on the road owing to less global trade and more integrated regional production. There is a lower AV adoption rate due to lack of global investment here and limited manufacturing capabilities to advance the technology within Canada.

**IMPLICATIONS**

INDICATOR	TODAY	SCENARIO C
Regional Population	2.57 million	+20% (3.1 Million)
Distribution of People	--	--
Total Jobs	1.34 million	+10% (1.5 Million)
Distribution of Jobs	--	More dispersed
Unemployment Rate	4.3%	No change
Median Household Income	\$73,000	↓
Income Equality	--	↑
Trip Demand	2.7 trips per person/day	↑
Trip Length	Average length 10km	↑
Share of Personal Vehicles that are Automated	None	30%
Mode Share	Single Occupant Vehicle: 57% Other: 43%	SOV: ↓ Other: ↑
Federal Gov't Funding	--	↓

## OPPORTUNITIES AND CHALLENGES

Protecting agricultural land becomes more essential.

- Regional food supply may be compromised by increased trade barriers. Agricultural lands become more important in meeting the region's food needs as the cost of food imports increase.
- Climate change impacts may further stress the ability to produce food and threaten food security in the region.

Repurposing industrial lands.

- With less need for port and trade-enabling lands, demand for locally-serving commercial and industrial land increases along with local production.

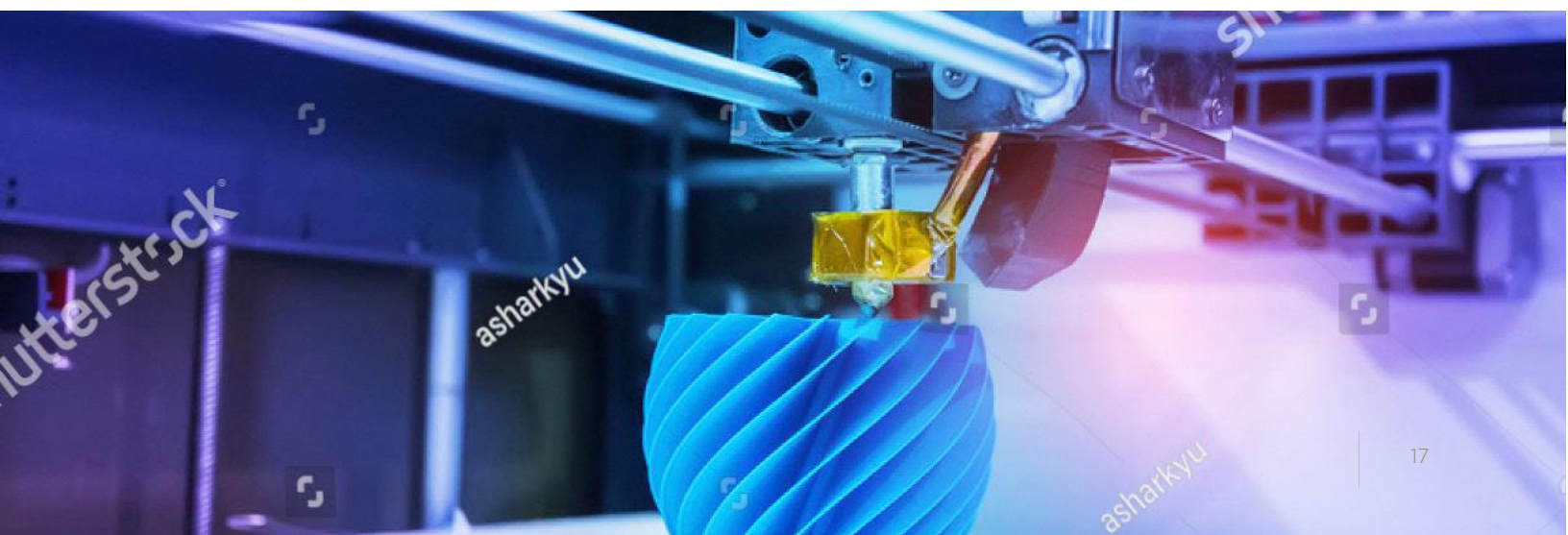
Motor vehicle travel becomes more expensive and shared-use travel increases.

- Motorized vehicle travel is relatively more expensive due to rising fuel costs, and there is a lower AV adoption due to lack of global investment here and limited manufacturing capabilities to advance the technology within Canada.

- At the same time, there is a greater focus on self-reliance and low-cost solutions that leads to an increase in demand for active and shared-use modes.

Housing becomes more affordable and infrastructure becomes overbuilt.

- With slowing population growth, housing affordability improves in the region, as housing supply catches up with demand and recalibrates to local wages.
- Existing infrastructure becomes overbuilt relative to the reduction in global trade, especially marine-based trade infrastructure. Provincial and national trade increases, requiring more land-based trade infrastructure.



SCENARIO

**D**

**Automation drives a new economic boom led by new creative & knowledge sectors**

Globally by 2050, advances in digital connectivity and immersive technologies like virtual reality have reshaped where people choose to live and work. It is common to live in one region while working for a company elsewhere in the world. Major advances in zero-marginal-cost renewable energy systems combined with high levels of automation across most sectors dramatically improves productivity and consumption and global trade increases accordingly.

In the region by 2050, Metro Vancouver remains an attractive place to live relative to much of the world and is sought after for its livability. It continues to attract a larger share of a now highly mobile global workforce welcomed to Canada through a more ambitious federal immigration policy. While population and employment both grow significantly as a result, much of the primary work that people do is for larger knowledge and creative sector companies headquartered elsewhere in the world.

A type of guaranteed income system administered at the national level ensures that all residents in the region have their basic needs met especially as some workers displaced by automation struggle to find a new job in emerging sectors. Jobs in this new economy are more distributed around the region – closer to peoples’ homes resulting in somewhat shorter commutes. The increase in wealth also means that some people choose to privately own AVs but many more choose to subscribe to their mobility needs as a service, taking advantage of the many shared-use options.

There is an increase in on-demand delivery of goods and services, reducing personal trips but increasing local delivery traffic. There are also more (non-work related) discretionary trips resulting from the increased wealth in the region.

IMPLICATIONS

INDICATOR		TODAY	SCENARIO D
	Regional Population	2.57 million	+80% (4.6 million)
	Distribution of People	--	--
	Total Jobs	1.34 million	+60% (2.1 million)
	Distribution of Jobs	--	More dispersed
	Unemployment Rate	4.3%	↓
	Median Household Income	\$73,000	No change
	Income Equality	--	No change
	Trip Demand	2.7 trips per person/day	↓
	Trip Length	Average length 10km	↓
	Share of Personal Vehicles that are Automated	None	70%
	Mode Share	Single Occupant Vehicle: 57% Other: 43%	SOV: ↓ Other: ↑
	Federal Gov't Funding	--	↑



## OPPORTUNITIES AND CHALLENGES

Growing population and changing work locations increases demand on infrastructure and services.

- Significant population growth provides more resources for major infrastructure upgrades. These resources greatly help to adapt to climate change and invest in transportation.
- At the same time, infrastructure like roads, stormwater management and sewage treatment struggle to match the pace of population growth.
- Distributed work locations require more distributed infrastructure to support it through expanding transportation networks, utilities, fibre optics and high-speed internet.

Housing affordability and income equality issues persist.

- The increase in professional global workers that call Metro Vancouver home contributes to a higher average income, while the median household income remains relatively flat.
- However, significant population growth and a higher share of high-income earners results in continued housing affordability issues. This is further exacerbated with an increased wage gap between professional workers and those with lower incomes, driving more social equity challenges.

Congestion and overcrowding continue but is more spread throughout the day.

- People use shared mobility for most of their travel, which, despite the significant population growth, results in relatively similar traffic congestion to decades prior.
- Global workers operate on other time zones for companies headquartered elsewhere, reducing peak travel congestion in the region, but also require more 24-hour services. The 9-5 work pattern is still seen but is less emphasized from previous decades.
- With decreased vehicle traffic, particularly at peak periods, parts of the road network (and parking lots) are repurposed for higher and better uses, creating opportunities for wider sidewalks, and protected cycling lanes.








## Next Steps

The Long-Range Growth and Transportation Scenarios project considers a range of external forces, identifying and exploring those which are likely to have the most significant and least predictable impacts on the future of the region. The scenarios focus on external forces related to economic change, automation and technology, and our changing climate, each with implications for population, employment, where people live and how they travel. Moving forward, TransLink and Metro Vancouver are now better positioned to shape a more resilient vision for growth and transportation in the region and to begin updating or drafting new long-term transportation and growth management plans.

**PHOTO PLACEHOLDER**

## Appendix A: Detailed Scenario Summary Table

Indicator	TODAY	A	B
 Regional Population <sup>2</sup>	<b>2.57</b> million	<b>+40%</b> (3.6 MILLION) Population increases with increasing job opportunities. The pace of population growth roughly matches existing trends.	<b>~0%</b> (2.6 MILLION) Population remains stable as natural increases are offset by outmigration driven by fewer employment opportunities and more severe climate change impacts relative to other parts of Canada.
 Distribution of People <sup>3</sup>	--	<b>MORE DISPERSED</b> People spread out in an ongoing search for affordability as AVs make travelling easier.	<b>MORE CONCENTRATED</b> People concentrate near urban centres, as travel by vehicle is an added cost.
 Total Jobs <sup>4</sup>	<b>1.34</b> million	<b>+35%</b> (1.8 MILLION) Repetitive tasks are increasingly automated. More complex tasks requiring interpersonal skills like social services or healthcare delivery continue to grow. Overall, job growth roughly matches population growth.	<b>-20%</b> (1.1 MILLION) There is a decrease in employment in many sectors across the region due to automation displacing jobs including in retail, service, and knowledge-based positions.
 Distribution of Jobs <sup>5</sup>	--	<b>MORE CONCENTRATED</b> Growth in retail, service, and knowledge-based jobs increases demand for workers in urban centres and corridors.	<b>MORE CONCENTRATED</b> Jobs are primarily located in urban centres and corridors. Some office and institutional employment remain outside these areas.
 Unemployment Rate	<b>4.3%</b>	<b>NO CHANGE</b> (4.3%) The unemployment rate remains relatively stable as new positions offset the jobs lost to automation. The prevalence of short-term contract work (gig work) continues to increase.	<b>↑↑</b> Unemployment increases significantly due to automation. Short-term contract-based employment becomes far more prevalent.

C	D
<p><b>+20%</b> (3.1 MILLION)</p> <p>Slower growth occurs in the region due to changing global immigration policies.</p>	<p><b>+80%</b> (4.6 MILLION)</p> <p>Population increases, driven by the region's attractiveness, increases in the federal immigration rate and increased labour mobility.</p>
<p>--</p> <p>There is limited change to where people choose to live in the region. There is densification in urban centres and along corridors, and enough mix for more suburban and rural living.</p>	<p>--</p> <p>People select housing where it is available. With less commuting, there is less incentive to live close to employment hubs and centres.</p>
<p><b>+10%</b> (1.5 MILLION)</p> <p>Some jobs are lost with decreased global trade, but other jobs are created to develop a more diversified regional economy. There is also a push for local manufacturing. Service and knowledge sectors remain unchanged from today.</p>	<p><b>+60%</b> (2.1 MILLION)</p> <p>Repetitive tasks are increasingly automated. There is a significant increase in "professional" workers as workers choose where they live to suit their lifestyle, and then digitally connect for work to companies located elsewhere.</p>
<p><b>MORE DISPERSED</b></p> <p>Local manufacturing and added industrial activity lead to a more dispersed distribution of jobs.</p>	<p><b>MORE DISPERSED</b></p> <p>More people work from home, cafes, or co-working locations, and there is a shift away from office towers and business parks among the professional class.</p>
<p><b>NO CHANGE</b> (4.3%)</p> <p>While the rate of unemployment does not change, there is growing underemployment. Workers resort to taking on multiple gigs to make ends meet.</p>	<p>↓</p> <p>There is less unemployment with more global workers coming to the region. This increases demand in the service sector.</p>

## Appendix A: Detailed Scenario Summary Table (continued)

Indicator	TODAY	A	B
<p>Median Household Income<sup>6</sup></p>	\$73,000	<p>Median income increases for some with the increase in automation and more 'high tech' jobs, but in general average wages have not increased or kept pace with the cost of living. Lower-income workers performing repetitive tasks are impacted by automation adoption.</p>	<p>Median income decreases with fewer employment opportunities. Automation reduces the bargaining power of most professions.</p>
<p>Income Equality<sup>7</sup></p>	--		
<p>Trip Demand<sup>8</sup></p>	2.7 trips per person/day	<p>Private AVs and robo-taxis result in more trips being taken. A more dispersed population leads to longer trip distances.</p>	<p>With decreased employment and decreased overall wealth, there are fewer work-based trips, and fewer discretionary trips in the region. Some trip-linking occurs for those who travel to multiple jobs in a day. Trip lengths decrease with people and jobs more concentrated in urban centres.</p>
<p>Trip Length<sup>9</sup></p>	Average length 10km		
<p>Share of Personal Vehicles that are Automated<sup>10</sup></p>	None	50% AVs become more common across the region and beyond.	50% AVs become more common across the region and beyond.
<p>Mode Share<sup>11</sup></p>	Single Occupant Vehicle: 57% Other: 43%	SOV: ↑↑ Other: ↓↓ Availability of AVs allow people to use their time for work, sleep, or for entertainment. Slow travel times are not an issue. Walking and cycling are less preferred with the high amounts of vehicle traffic and congestion on the roads.	SOV: ↓ Other: ↑ With decreased employment and wealth in the region, more people travel by transit, walking and cycling. Vehicle mode share decreases, shared AVs are more frequent, again to save cost.
<p>Federal Government Funding<sup>12</sup></p>	--	<p>A relatively strong economy with stable employment provides ample resources.</p>	<p>Unemployment Stagnant population growth and declining employment, along with a shrinking labour force, reduces funding.</p>

C	D
<p> ↓       ↑</p> <p>There is less global investment in the region, reduced trade and higher import tariffs meaning higher costs of goods due to reduced comparative advantage. This places downward pressure on income in the region. Housing affordability and income equality improves with less demand.</p>	<p> No change       No change</p> <p>An increase in the professional class results in mean incomes increasing and the median household incomes remaining relatively flat. Housing affordability and income equality does not improve due to an increased wage gap between professional and lower-income workers.</p>
<p> ↑       ↑</p> <p>There is a slight increase in travel with some workers combining multiple jobs in a day. Trip lengths increase due to more dispersed job locations.</p>	<p> ↓       ↓</p> <p>There is a major decrease in work-related trips and length of most trips with more people working from home or nearby.</p>
<p>30%</p> <p>There is lower adoption of AVs due to lack of global investment and limited manufacturing of AVs within Canada.</p>	<p>70%</p> <p>There is high adoption AVs with the advancement of technology and growth of the knowledge sector.</p>
<p>SOV: ↓ Other: ↑</p> <p>Lower incomes lead to a preference for active and shared-use modes.</p>	<p>SOV: ↓ Other: ↑</p> <p>There are fewer owned vehicles. Transit becomes highly used as it reflects more of a ride-share style. Walking and cycling to nearby amenities are more popular.</p>
<p>↓</p> <p>Slow population and employment growth limits the availability of resources available.</p>	<p>↑</p> <p>A relatively strong economy with a large employed population supports an increase in funding.</p>

# Appendix B: Key Facts Supporting Scenario Development

## Automation

- Increasing automation is anticipated to increase productivity by up to 1.4% annually over the next 50 years, with many companies already witnessing a growth in jobs after adopting robotics technologies.<sup>i ii</sup>
- Jobs without specific mental or creative skill requirements are most likely to be automated, followed by manufacturing agricultural, forestry, and fishery jobs. Highly-specialized, highly-skilled jobs in science, technology, engineering, and mathematics (STEM) are anticipated to be among the least automatable.<sup>iii iv v vi</sup>

## Global Trade and Economy

- “Gig work” describes the shift to more short-term employment. While some may prefer more freedom, gig work is also characterized by those working multiple jobs that are often low paid, temporary, and provides limited benefits, shifting risk from the employer to the employee or contractor.<sup>vii</sup>
- Between 2011 and 2016, Canada added close to 1 million workers to its labour force, 90% of who were immigrants. With decreased immigration, Canada would face constrained economic growth and increased social costs.<sup>viii</sup>
- More than three-quarters of Canada’s exports are traded with the United States.<sup>ix</sup>
- BC currently produces approximately half of all food consumed here. Agricultural production would need to increase substantially to feed everyone in the Province and Metro Vancouver region.<sup>x</sup>
- Companies in Canada are moving towards an agile workforce with more flexibility and a less conventional workplace – 20 to 30% of workforce is “non-traditional” already. It’s anticipated that this trend will continue with improved technology and connectivity.<sup>xi xii</sup>

## Transportation

- Autonomous vehicle adoption could reach -50% by 2050 with many researchers anticipating an increase in vehicle kilometres travelled and possibly more congestion as a result.<sup>xiii xiv xv</sup>
- Off-peak delivery studies have shown a decrease in congestion and travel time savings for road users, and reduced time and cost-saving for carriers when compared to daytime deliveries.<sup>xvi</sup> As automation adoption increases, it is anticipated that transport jobs will be among those highest at risk of automation and could see 50% automation by mid-2030s.<sup>xvii</sup>
- The Japanese government started the “Telework Days” initiative in Tokyo, in an effort to ease congestion during the 2020 Olympics.<sup>xviii</sup> In 2018, 300,000 workers took part in the initiative, leading to a -3% average decrease in commuters.<sup>xix</sup>
- Car ownership is decreasing in Metro Vancouver and more Canadians are choosing public transit as their primary mode of commute, representing a near 60% increase since 1996.<sup>xx XXI</sup>

## Housing

- High demand and low supply of housing continue to drive up housing prices around the world, particularly in metropolitan regions such as Vancouver, Toronto, Hong Kong and London.<sup>xxii</sup> Some cities in Canada, such as Edmonton and Montreal, have managed to bring in more supply to balance rising prices and combat rising affordability issues.<sup>xxiii</sup>



## Endnotes

1. Flood extent data was provided by the Fraser Basin Council as part of the Lower Mainland Flood Management Strategy. The scenario assumes a 1:500 Annual Exceedance Probability Stillwater ocean state and a 0.6 metre wave allowance with 1 metre of sea level rise (flood level 4.40 GSC). Topographic data obtained from a variety of sources was used to create a Digital Elevation Model (DEM) for the study area. The DEM horizontal resolution was 5 metres. The flood levels are based on a generalized water surface. The accuracy of the flood extent boundary is limited by the resolution of the DEM and the flood level assumptions. The maps are intended for an overview level assessment of flood vulnerabilities described by NHC et al. (2015). They do not represent floodplain mapping and should not be used as such. Northwest Hydraulic Consultants Ltd. (NHC), assisted by Thurber Engineering Ltd. (TEL), carried out an overview assessment of 74 dikes in the Lower Mainland to evaluate the level of protection provided by the dikes and to identify major deficiencies. The work formed a desktop study utilizing information from BC Ministry of Forests, Lands and Natural Resource Operations (MFLNRO), various Diking Authorities and existing reports. No field investigations were carried out. More information on the Lower Mainland Flood Management Strategy can be found at [https://www.fraserbasin.bc.ca/water\\_flood.html](https://www.fraserbasin.bc.ca/water_flood.html)

2. Assumptions for regional population in 2050 account for changes to immigration and in-migration, as well as natural increase and mortality. The percentage change by 2050 is relative to the closest census year (2016).

3. Distribution of People captures the expected housing location choices of people that live in Metro Vancouver. The distribution of people can either be more concentrated or more dispersed: A more concentrated distribution refers to a general trend towards people locating more centrally around key

nodes and corridors across the region, whereas a more dispersed distribution refers to a general trend towards people locating in less central parts of the region.

4. Total Jobs is aligned with how Statistics Canada captures these in the Census. This measures employed persons and does not differentiate between part and full-time employment. Assumptions for total jobs numbers in 2050 relate to the regional population size as well as the broader economic conditions described in each scenario. The percentage change by 2050 is relative to the closest census year (2016).

5. Total Jobs is aligned with how Statistics Canada captures these in the Census. This measures employed persons and does not differentiate between part and full-time employment. Assumptions for total jobs numbers in 2050 relate to the regional population size as well as the broader economic conditions described in each scenario. The percentage change by 2050 is relative to the closest census year (2016).

6. Median Household Income marks the mid-point in a distribution of income for households in Metro Vancouver. The directional change presented in the table indicates a change from a median household income of \$73,000 for the closest census year (2016).

7. Income Inequality represents the extent to which incomes are unevenly distributed across the population. An increase in income inequality suggests a greater disparity between the households with the highest income relative to households with the lowest income. A decrease in income inequality suggests greater equality across income earners in the population.

8. Trip Demand captures the average number of trips that a person makes on a typical day. The trip demand presented for today reflects the results of the TransLink 2011 Regional Trip Diary (results of the 2017 Regional Trip Diary were being tabulated at the time of writing).

9. Trip Lengths reflect the average distance of travel in Metro Vancouver across all trip purposes and modes. The length of a trip can be indicative of the modes of transportation suitable for accomplishing a specific trip. While shorter trips may be more conducive to active modes such as walking and cycling, longer trips may be more easily completed by motorized modes of transportation such as public transit or automobile. The average trip length presented for today reflects the results of the TransLink 2011 Regional Trip Diary (results of the 2017 Regional Trip Diary were being tabulated at the time of writing).

10. Share of Personal Vehicles that are Automated refers to the expected degree to which personal and private vehicles are automated vehicles (AVs). The Society of Automotive Engineers (SAE) has set out a six-level standard (0 to 5) to describe the levels of driving automation (SAE J3016). Level 0 refers to no automation while level 5 refers to full automation. Each subsequent level in the standard represents a passing of responsibility from driver to automated driving system. Low levels of automation (1 to 2) already exist in vehicles on roads today in the form of driver assistance systems such as automated braking/acceleration, lane-centering, and adaptive cruise control. In the context of this work, AVs is used to describe only vehicles that are highly automated (levels 4 and 5). Level 4 is characterized as full automation under limited conditions and geographical locations, while level 5 is characterized as full automation under all conditions everywhere.

11. Mode Share captures the proportion of trips made in Metro Vancouver using the various modes of transportation available (e.g. auto, transit, cycle, walk), represented as a percentage. The mode share values presented for today reflect the results of the TransLink 2011 Regional Trip Diary (results of the 2017 Regional Trip Diary were being tabulated at the time of writing). SOV vs Other [Shared & Active Modes] captures the proportion of trips made in Metro Vancouver using single occupant vehicles (SOV) against other modes (shared & active modes), represented as a percentage. The values presented for today reflect the results of the TransLink 2011 Regional Trip Diary (results of the 2016 Regional Trip Diary were being tabulated at the time of writing).

12. Federal Government Funding captures the estimated amount of funding provided by the Federal government for infrastructure projects and service delivery within Metro Vancouver. Generally this is assumed to reflect the state of the national economy and the revenue generated by the Federal government from various taxes and fees.

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