CITY OF VANCOUVER

CITY CLERK'S OFFICE
Access to Information & Privacy Division

File No.: 04-1000-20-2025-020

May 6, 2025

s.22(1)

Dear s.22(1)

Re: **Request for Access to Records under the Freedom of Information and Protection of Privacy Act (the "Act")**

I am writing regarding your request of January 9, 2025 under the ***Freedom of Information and Protection of Privacy Act*** for:

> **Record of any (tentative, open, and confirmed) proposals, concepts, or plans that the City is considering, evaluating, or has confirmed in the False Creek South Area for the next 10 years, specifically plans that would affect the leasing of Vancouver's Olympic Line streetcar train tracks beyond December 2026.**

All responsive records are attached. Some information in the records has been severed (blacked out) under s.15(1)(l), s.16(1), s.18.1, s.21(1), and s.22(3)(d) of the Act. You can read or download these sections here: http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/96165_00.

Under Part 5 of the Act, you may ask the Information & Privacy Commissioner to review any matter related to the City's response to your FOI request by writing to: Office of the Information & Privacy Commissioner, info@oipc.bc.ca or by phoning 250-387-5629.

If you request a review, please provide the Commissioner's office with: 1) the request number (2025-020); 2) a copy of this letter; 3) a copy of your original request; and 4) detailed reasons why you are seeking the review.

Yours truly,

Kevin Tuerlings, FOI Case Manager, for

[Signed by Kevin Tuerlings]

Cobi Falconer, MAS, MLIS, CIPP/C
Director, Access to Information & Privacy

If you have any questions, please email us at foi@vancouver.ca and we will respond to you as soon as possible. You may also contact 3-1-1 (604-873-7000) if you require accommodation or do not have access to email.

Encl. (Response Package)

:ma

ENGINEERING SERVICES
Lon LaClaire, M.Eng., P.Eng.
City Engineer/General Manager

MEMORANDUM

December 10, 2024

TO: Mayor and Council

CC: Paul Mochrie, City Manager
Armin Amrolia, Deputy City Manager
Karen Levitt, Deputy City Manager
Sandra Singh, Deputy City Manager
Katrina Leckovic, City Clerk
Maria Pontikis, Chief Communications Officer, CEC
Teresa Jong, Administration Services Manager, City Manager's Office
Mellisa Morphy, Director of Policy, Mayor's Office
Trevor Ford, Chief of Staff, Mayor's Office

FROM: Lon LaClaire
General Manager, Engineering Services

SUBJECT: Unsolicited Proposals to Use City Owned Rail Tracks in South False Creek to Operate Streetcar Trial

RTS #: N/A

The purpose of this memo is to notify Council of unsolicited proposals being developed by private entities to do a streetcar trial on City right-of-way and provide a brief overview of City approach and next steps related to this opportunity. On Wednesday, December 11th, the City will send out a letter to interested private entities with requirements to address for the City to consider a streetcar trial.

Background

The City has long recognized the potential of streetcar service to connect high-density neighbourhoods and key destinations in the South False Creek area. The South False Creek development plan envisions a modified street network but, in the meantime, the existing track infrastructure remains generally intact between Granville Island Station and Olympic Village Station. This infrastructure, that will require some additional upgrades, provides a unique opportunity to temporarily trial a modern streetcar service, aligning with the October 28, 2021, Council's motion to "explore and advance a case for transit service that would connect Olympic Village to the False Creek South Neighbourhood, the Molson site and to Seńáḵw and building off of the current City of Vancouver streetcar policy".

Recently, the City has been approached by three private entities interested in submitting proposals to operate a streetcar along this corridor by leveraging the existing infrastructure for a limited duration trial.

A trial would provide the City with an opportunity to gain valuable insights into modern transit technology and operational efficiencies. These learnings could inform potential future expansions of the system, connecting additional key destinations and enhancing sustainable urban transit options. Importantly, these trials would require minimal effort and resources on the part of the City. The proposed streetcar alignments for trial and potential future extensions are shown in Appendix A

Proponents and City's Role in an Unsolicited Streetcar Trial

The proponents would assume all the key risks associated with this trial, and will be responsible to obtain permitting, install, operate, maintain, fund, and after the trial remove the streetcar and infrastructure as required. The City's role is limited to in-kind support, specifically and limited to, right-of-way provision and staff assistance. No financial support from the City will be provided. At this time, revenue-sharing is not contemplated given the temporary nature of the trial and the City is not prepared to financially contribute.

Interaction with 2026 FIFA World Cup

Proponents expressed interest in operating the streetcar during the 2026 FIFA World Cup. However, staff have undertaken internal engagement and determined that operating during FIFA is not feasible due to advertising restrictions, safety and security requirements, and the minimal benefit it would provide to FIFA's transportation mobility plan. Additionally, the lead time to secure necessary approvals is insufficient to allow for operation during the 2026 FIFA World Cup. As such, any trial will begin no earlier than September 2026.

Other Interest for the Use of the Railway Tracks

A private entity recently reached out to the City with interest in installing a temporary pod hotel using a converted train car installed on the tracks near Olympic Village Station. Staff will consider this proposal in the context of a streetcar trial through a separate process and will get back to Council on this if appropriate. It is possible that both uses may be feasible if the timing allows and requirements are met.

Next Steps

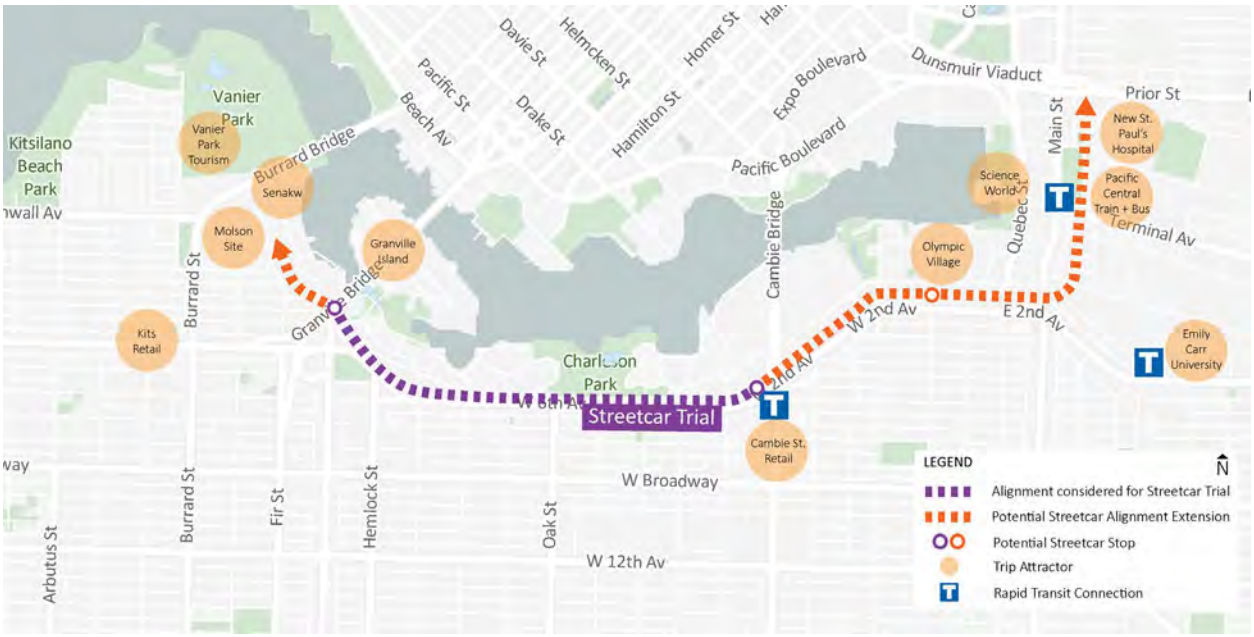
Staff will send a requirement letter to proponents outlining the City's criteria for undertaking a streetcar trial in Vancouver by Wednesday, December 11th, 2024. Proponents will need to submit a proposal that addresses technical, operational, and financial requirements while adhering to regulatory and approval processes. Staff will evaluate submitted proposals, consult with the key stakeholders and with the Musqueam, Squamish and Tsleil-Waututh Nations, and, if appropriate, recommend a proponent to Council for decision. The City will have no obligation whatsoever to accept any proposal or to award any contract because of issuing this requirement letter or receiving any proposals.

If Council is supportive of proceeding with a streetcar trial, the City at that time would undertake a Notice of Intent to Contract and begin negotiations with the proponent. Contracting and approvals from third party entities such as Technical Safety BC would be required before operations could commence.

If you have any questions or require further information, please contact me directly.

Lon LaClaire, M.Eng., P.Eng.
General Manager, Engineering Services
604.873.7336 | lon.laclaire@vancouver.ca

Appendix A - Contemplated Streetcar Alignments



From: Amrolia, Armin
To: O"Donnell, Theresa
Cc: Shillito, Matt; Dobson, Cory; Baas, Chris; Evans, Jerry; Pollard, Ben
Subject: FW: False Creek Transit Line
Date: Thursday, September 29, 2022 11:54:10 AM
Attachments: s.16(1), s.18.1

Hi Theresa – please see attached. s.16(1), s.18.1

s.16(1), s.18.1

Let me know how you think we should proceed.

Armin

From: Dempster, Celeste <Celeste.Dempster@vancouver.ca>
Sent: Thursday, September 29, 2022 11:40 AM
To: Amrolia, Armin <Armin.Amrolia@vancouver.ca>
Subject: FW: False Creek Transit Line

FYI – s.16(1), s.18.1

Celeste Dempster (she/her)
Senior Director, Intergovernmental Relations & Strategic Partnerships
City of Vancouver
celeste.dempster@vancouver.ca
s.15(1)(l)

The City of Vancouver acknowledges that it is situated on the traditional, ancestral unceded territories of the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh (Squamish), and səlilwətaɬ (Tsleil-Waututh) Nations.

From: Joseph, Chalys <Chalys.Joseph@vancouver.ca>
Sent: Monday, September 26, 2022 5:28 PM
To: Dempster, Celeste <Celeste.Dempster@vancouver.ca>
Subject: Re: False Creek Transit Line

Thanks Celeste. s.16(1), s.18.1

I did meet Michelle last week at Jericho meeting! I can include Michelle if you think that's best.

Let me know if if I should adjust the invite for tomorrow.

Thx,

Chalys

Sent from my iPhone

> On Sep 26, 2022, at 5:04 PM, Dempster, Celeste <Celeste.Dempster@vancouver.ca> wrote:
>
> Hi Chalys,
>
> s.16(1), s.18.1
>
> s.16(1), s.18.1
>
> Thanks,
> Celeste
>
> **Celeste Dempster** (she/her)
> Senior Director, Intergovernmental Relations & Strategic Partnerships
> City of Vancouver
> celeste.dempster@vancouver.ca
> s.15(1)(l)
>
> *The City of Vancouver acknowledges that it is situated on the traditional, ancestral unceded territories of the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh (Squamish), and səlilwətaɬ (Tsleil-Waututh) Nations.*
>
> ---
>
> **From:** Joseph, Chalys <Chalys.Joseph@vancouver.ca>
> **Sent:** Monday, September 26, 2022 4:57 PM
> **To:** Dempster, Celeste <Celeste.Dempster@vancouver.ca>
> **Subject:** FW: False Creek Transit Line
>
> Hi Celeste,
>
> s.16(1), s.18.1

Regards,

Chalys

Chalys Joseph, P. Eng, MBA
She|Her|Hers
Branch Manager, Development and Major Projects
Engineering Services, City of Vancouver
320-507 West Broadway
Vancouver, British Columbia, Canada V5Z 0B4

tel 604 873 7629 *tel* s.15(1)(l)
e-mail chalys.joseph@vancouver.ca | www.vancouver.ca

I respectfully acknowledge that I live, work and play in the unceded traditional territories of the xʷməθkʷəy̓əm (Musqueam), Skwxwú7mesh (Squamish), and səlilwətaɬ (Tsleil-Waututh) Coast Salish peoples.

From: Storer, Paul <paul.storer@vancouver.ca>
Sent: Thursday, September 22, 2022 9:29 AM
To: Tamashiro, Kati <Kati.Tamashiro@vancouver.ca>; Joseph, Chalys <Chalys.Joseph@vancouver.ca>; Brown, Steve <Steve.Brown@vancouver.ca>
Subject: FW: False Creek Transit Line

Hi Kati, Chalys, and Steve,

Have you or your teams seen this at all?

Cheers,

Paul

From: Ross, Sarah <sarah.ross@translink.ca>
Sent: Wednesday, September 21, 2022 9:05 PM
To: LaClaire, Lon <lon.laclaire@vancouver.ca>; Storer, Paul <paul.storer@vancouver.ca>
Subject: [EXT] Fwd: False Creek Transit Line

Hey Lon and Paul, could we touch base about this? s.16(1), s.18.1

s.16(1), s.18.1 [redacted]

Cheers,

Sarah

s.16(1), s.18.1

s.16(1), s.18.1

s.16(1), s.18.1

s.16(1), s.18.1

s.16(1), s.18.1

s.16(1), s.18.1

s.16(1), s.18.1

s.16(1), s.18.1

s.16(1), s.18.1

From: "Pate, Megan" <Megan.Pate@vancouver.ca>
To: "Sam Sharp" <sam.s@tdi.uk.com>
CC: "Brown, Steve" <Steve.Brown@vancouver.ca>
"Chui, Thomas" <Thomas.Chui@vancouver.ca>
"Tse, Cindy" <Cindy.Tse@vancouver.ca>
"Corbett, Benjamin" <Benjamin.Corbett@vancouver.ca>
Date: 12/11/2024 10:07:00 AM
Subject: South False Creek Streetcar Proposal - Requirements Letter
Attachments: Streetcar Requirements Letter - Transport Design International - 2024-12-10.pdf

Hi Sam,

Please see the attached final and signed letter regarding the Southeast False Creek Streetcar Proposal. The letter outlines the high-level process that will be followed, trial timing, as well as our specific requirements that will need to be addressed in a complete proposal by interested parties. There are a couple of edits from the draft version.

Please let us know if you have any questions.

Thanks,
Megan

Megan Pate, P.Eng (she/her)
Associate Director
Integrated Projects | City of Vancouver
604-873-7797 | megan.pate@vancouver.ca

CITY OF VANCOUVER | Engineering Services

December 10, 2024

Mr. Sam Sharp
Transport Design International
sam.s@tdi.uk.com

Dear Mr. Sharp:

RE: Southeast False Creek Streetcar Proposal

The City of Vancouver understands that several companies are interested in demonstrating a passenger rail transportation (streetcar) service on a City of Vancouver-owned existing railway corridor in Southeast False Creek. The City has developed the non-binding process as described in this letter to receive and review unsolicited proposals related to the temporary operation (trial) of a streetcar service on its public right of way:

1. Proponents may submit to Engineering Services a proposal outlining how they intend to address the requirements stated in Appendix A of this letter.

2. City staff will review proposals it receives for compliance with the stated requirements and, if the City elects to proceed, select a proponent to further engage with.

3. Before any contracting process can proceed, City staff will need to receive City Council approval for their recommendation to contract and will need to post a Notice of Intent to Contract (NOITC) on the City's procurement website to notify the market and remain fair and transparent.

4. The City and the successful proponent would proceed with contract negotiations. It is expected that the contract will contain additional requirements from Technical Safety BC and other third-party entities that will need to be actioned by the Proponent before operations could commence.

5. If and when a contract has been finalized, the successful proponent would be permitted to commence implementation within the right of way and finalize the requirements to allow operation of the streetcar.

The overall duration of the process described in this letter is dependent on proponent and third-party responsiveness, City resource availabilities and other factors. Based on past experience, the City anticipates this process will take no less than 18 months to complete. More detailed indications on the anticipated timeline are provided in Appendix A for reference only.

The City has determined that it will not support operation of a streetcar during the FIFA World Cup 2026 for a number of factors, including additional challenges for FIFA event planning as well as the potential to jeopardize a successful streetcar trial. Accordingly, interested parties should only proceed to submit a proposal if they are interested in running a trial operation starting no earlier than September 2026.

Appendix A includes the minimum requirements for undertaking a streetcar trial in Vancouver; these requirements are based on the City's understanding at this time and may be amended or supplemented at the City's discretion as the process continues. Further requirements may be determined through work with the local Nations, the Senakw Partnership, or other key stakeholders such as Granville Island. Any proposals received by the City should address these requirements and provide any additional information the proponent deems relevant.

The process described in this letter is not a tender or request for proposals. The City will have no obligation whatsoever to accept any proposal or to award any contract as a result of issuing this letter or receiving any proposals. The submission of a proposal does not create a contract of any kind with the City. The City will have no liability whatsoever for any expenses incurred by a proponent as a result of participating in this process or submitting a proposal. The City reserves the complete right to, at any time, for any reason, modify, amend or cancel the process described in this letter.

Please notify the City by January 10, 2025, whether your company is still interested in submitting a proposal, and when you would expect to be able to provide such a proposal.

Yours truly,

Lon LaClaire, P.Eng.
General Manager, Engineering Service
507 West Broadway, Vancouver, BC V5Z 0B4

Lon.LaClaire@vancouver.ca

cc: Steve Brown, P.Eng., Megan Pate, P.Eng., Cindy Tse, P.Eng., Thomas Chui P.Eng.

Appendix A - Proposal requirements:

1.0 Project Overview

1.1 Intent

1.1.1 Describe the rail transportation service being proposed.

1.1.2 Describe the key objectives and rationale for operating this service, including potential benefits and alignment with City goals.

1.2 Location

1.2.1 Outline the geographic footprint of the project site, clearly showing the extent of all areas that will be affected by the trial.

1.2.2 Outline the property being requested from the City of Vancouver for use during the trial.

1.2.3 Identify any existing infrastructure to be used for the trial, including but not limited to track, platforms, shelters, buildings, and maintenance facilities.

Note to Proponent: Proposals should only use the existing track infrastructure between Olympic Village and Granville Island, with stations at these two locations only.

1.3 Schedule

1.3.1 Provide a detailed project schedule that clearly identifies the following dates:

- Proposal development, review by City and approvals process (City and third party)
- Access to the rail ROW granted to the proponent
- Start and end of revenue service
- Return of the rail ROW to the City

Note to Proponent: The schedule should include the following tasks with City involvement. All durations provided are for planning purposes only. Note that some tasks can be undertaken concurrently, and that the City is unable to guarantee any specific timeline for tasks, nor can predict the outcome of a Council decision:

- City to review and evaluate submitted technical proposal (~1 month)
- If needed: City to provide comments back to proponent, and proponent to provide a revised version
- If needed, City staff review and evaluate revised proposal (~1 month)

- City staff to provide recommendation to City Senior Leadership and Council for decision on the proposal (~1-2 months)

If a proposal is selected (dependant on Council decision), next steps include:

- Notice of Intent to Contact (NOITC) posted indicating successful proponent (~2 weeks)
- Legal negotiation with successful proponent (~3 to 6 months)
- Successful proponent to work with Technical Safety BC to obtain Ministry's Certificate and Operating Permit (~3 to 6 months)
- Successful proponent to begin construction and implementation of proposed streetcar project
- Inspection in advance of operation

1.3.2 Confirm that the project will be limited in duration with defined start and end dates.

Note to Proponent: Proposals to operate a streetcar service indefinitely will not be considered through this process. Proponents are to confirm their desired duration of a trial, recognizing that the City will have final approval of the duration/ timeframe for access to the public right of way.

1.4 Project Team

1.4.1 Identify the key individuals and organizations that will be involved in delivering the project.

1.4.2 Demonstrate that the project team possesses any qualifications necessary to complete the proposed work.

1.4.3 Provide examples of relevant experience highlighting previous successes with similar projects.

2.0 Technical and Operational Requirements

Note to Proponent: All technical and operational requirements are to be signed and sealed by an appropriate professional in the Province of BC.

2.1 Track and Switches

2.1.1 Detail the plans to upgrade the infrastructure from its existing condition to a condition that is suitable for safe and efficient streetcar operation.

2.1.2 Provide details how the crossings meet safety standards, including traffic signal coordination and pedestrian safety measures.

2.1.3 Detail the maintenance, utility servicing, and any necessary upgrades to ensure that the infrastructure is suitable and safe for streetcar operation. Including but not limited to confirmation by third-party utilities on whether additional upgrades are required because of this project. This plan should be reviewed and sealed by a licensed professional railway engineer in B.C.

Note to Proponent: Provide a comprehensive assessment of maintenance, utility servicing, and rehabilitation work required for safe operations on the existing infrastructure.

Also note that, as part of the development plan for the South False Creek area, the existing tracks will be removed and potentially new tracks would be built in a different location.

2.2 Vehicles

2.2.1 Provide details of the proposed vehicles, including propulsion methods and energy sources.

Note to Proponent: Proposals should prioritize zero-emission vehicles in alignment with the City's Climate Emergency Action Plan.

2.2.2 Demonstrate how vehicles and operators will meet Technical Safety BC standards and other applicable certifications. Apply for Minster's certificate and operating permit. Clearly outline steps for obtaining necessary permits.

2.3 Maintenance Facility

2.3.1 Provide detailed plans for any spaces used to conduct regular maintenance on the streetcar vehicles.

2.3.2 Include a thorough condition assessment of any existing structures to be used by a licensed professional structural engineer in B.C.

2.3.3 Include a detailed plan for maintaining/modifying or removing the existing maintenance shed (if the shed or space is required as part of the trial); outline responsibilities for upkeep, potential upgrades, and secure storage for equipment.

2.3.4 Specify how the existing maintenance shed (if intended as part of the trial) will meet seismic standards and regulatory requirements, addressing liability coverage.

2.4 Presentation Center

2.4.1 Include detailed plans for the installation and operation of any facilities that will be used to greet customers, showcase the project, and/or provide

space for staff working on site. Details should include the facility location, layout, visitor access, hours of operation and the proposed installation and removal dates.

2.5 South Coast British Columbia Transit Act (CBCTA) Compliance

2.5.1 Outline a plan and timeline for obtaining approval to operate as an Independent Transit Service from TransLink.

Note to Proponent: City staff understand that TransLink does not have interest in operating this service or incorporating this service under their compass card system.

2.6 Infrastructure Removal Plan

2.6.1 Outline a plan for the removal of all temporary infrastructure and restoration of affected areas at the end of the trial.

Note to Proponent: Proposals should include a focus on environmental preservation and demonstrate how they will leave the rail corridor in existing condition or better at the end of the trial.

3.0 Operating Plan

3.1 Service Levels

3.1.1 Identify the proposed hours of operation, service frequency, operating speed, and travel time between Olympic Village and Granville Island.

3.2 Fare Collection

3.2.1 Describe the fare structure and methods for customer payment.

3.3 Staffing

3.3.1 Identify proposed staffing levels during the trial.

3.3.2 Identify the roles and responsibilities of staff positions during the trial, clearly specifying which positions are expected to be customer-facing and which are not.

3.4 Safety and Security

3.4.1 Describe how the project will ensure the safety and security of streetcar passengers, pedestrians, and other road users

4.0 Community and Stakeholder Relations

4.1 Partner and Stakeholder Coordination

4.1.1 Outline strategies for ongoing communication and collaboration with Musqueam, Squamish and Tsleil-Waututh Nations and stakeholders, ensuring alignment and transparency with TransLink, CMHC Granville Island, and the Seȟáḵw Partnership. Following review of the communication strategies proposed, the City may decide to lead specific engagements depending on the sensitivity of the party or topic.

4.2 Public Engagement

4.2.1 Present intended marketing strategies for the streetcar service.

4.2.2 Describe how members of the public will be able to interact with and provide feedback to the project team, including public engagement opportunities.

4.2.3 Estimate the anticipated positive and negative community impacts of the trial.

4.2.4 Describe how positive and negative community impacts will be measured during operation of the trial.

Note to Proponent: Discuss how positive impacts will be supported and negative impacts will be mitigated.

4.3 Performance Evaluation

4.3.1 Describe a strategy for data collection throughout the trial, focusing on ridership, vehicle performance, maintenance incidents, customer feedback, and community impact.

4.3.2 Describe how the trial's success will be evaluated and presented to the public and stakeholders, including the City.

Note to Proponent: Include commitment to share a final report with performance metrics, operational findings, and recommendations for potential permanent implementation.

5.0 Financial and Operational Responsibility

5.1 Cost and Funding Structure

5.1.1 Provide a clear budget for installation and upgrades of all infrastructure necessary for the trial.

5.1.2 Provide a clear budget for operational and maintenance expenses over the duration of the trial.

5.1.3 Provide a clear budget for the restoration of the rail corridor to its existing condition following the completion of the trial, specifically removal of any added infrastructure.

5.1.4 Confirm that all costs associated with the trial, including installation, operations, maintenance, insurance, and liability, will be covered by the proponent.

Note to Proponent: The City's role is limited to in-kind support, specifically staff assistance. No financial support from the City will be provided.

5.1.5 Confirm that no shared revenue will be provided to the City.

5.1.6 Use of the public right of way typical would require financial compensation to the City or access in the form of a grant. Use of land fees or grants would need to be confirmed by City Council.

Note to Proponent: Staff would like to recommend to Council to provide the right of way access as a grant in exchange for the implementation and operation of the streetcar, however staff cannot guarantee Council will support this recommendation. Proponents are advised to assign contingency for a land use fee.

5.2 Ridership Projects and Feasibility

5.2.1 Provide ridership estimate and data supporting these projections, considering peak hours, daily demand fluctuation, and estimated public interest from residents and visitors.

5.3 Risk and Liability Management

5.3.1 Submit a detailed risk management plan, addressing not limited to public safety, and operational contingencies.

5.3.2 Provide proof of liability insurance to cover any incidents or damages during the trial.

5.3.3 Proponents will be required to indemnify the City for any incidents or damages during the trial.

5.3.4 The City may require performance security in the form of a bond, letter of credit or other instrument to ensure that the City is able to remove equipment and restore the site if the Proponent defaults on its obligations or is unable to complete the requirements of the contract.

From: "Pate, Megan" <Megan.Pate@vancouver.ca>
To: com.vancouver@mea.gov.in
CC: "Tse, Cindy" <Cindy.Tse@vancouver.ca>
"Brown, Steve" <Steve.Brown@vancouver.ca>
"Chui, Thomas" <Thomas.Chui@vancouver.ca>
"Corbett, Benjamin" <Benjamin.Corbett@vancouver.ca>
Date: 12/11/2024 10:10:00 AM
Subject: South False Creek Streetcar Proposal - Requirements Letter
Attachments: Streetcar Requirements Letter - Consulate General of India -2024-12-10.pdf

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Hello Amitabh Ranjan,

I understand that you have expressed interest in potentially operating a streetcar trial in South False Creek and have been connecting with my team member Cindy.
We have put together the attached letter to outline the high-level process that will be followed, trial timing, as well as our specific requirements that will need to be addressed in a complete proposal by interested parties.

Please let us know if you have any questions.

Thanks,
Megan

Megan Pate, P.Eng (she/her)
Associate Director
Integrated Projects | City of Vancouver
604-873-7797 | megan.pate@vancouver.ca

December 10, 2024

s.21(1)

Dear s.21(1)

RE: Southeast False Creek Streetcar Proposal

The City of Vancouver understands that several companies are interested in demonstrating a passenger rail transportation (streetcar) service on a City of Vancouver-owned existing railway corridor in Southeast False Creek. The City has developed the non-binding process as described in this letter to receive and review unsolicited proposals related to the temporary operation (trial) of a streetcar service on its public right of way:

1. Proponents may submit to Engineering Services a proposal outlining how they intend to address the requirements stated in Appendix A of this letter.

2. City staff will review proposals it receives for compliance with the stated requirements and, if the City elects to proceed, select a proponent to further engage with.

3. Before any contracting process can proceed, City staff will need to receive City Council approval for their recommendation to contract and will need to post a Notice of Intent to Contract (NOITC) on the City's procurement website to notify the market and remain fair and transparent.

4. The City and the successful proponent would proceed with contract negotiations. It is expected that the contract will contain additional requirements from Technical Safety BC and other third-party entities that will need to be actioned by the Proponent before operations could commence.

5. If and when a contract has been finalized, the successful proponent would be permitted to commence implementation within the right of way and finalize the requirements to allow operation of the streetcar.

The overall duration of the process described in this letter is dependent on proponent and third-party responsiveness, City resource availabilities and other factors. Based on past experience,

the City anticipates this process will take no less than 18 months to complete. More detailed indications on the anticipated timeline are provided in Appendix A for reference only.

The City has determined that it will not support operation of a streetcar during the FIFA World Cup 2026 for a number of factors, including additional challenges for FIFA event planning as well as the potential to jeopardize a successful streetcar trial. Accordingly, interested parties should only proceed to submit a proposal if they are interested in running a trial operation starting no earlier than September 2026.

Appendix A includes the minimum requirements for undertaking a streetcar trial in Vancouver; these requirements are based on the City's understanding at this time and may be amended or supplemented at the City's discretion as the process continues. Further requirements may be determined through work with the local Nations, the Senakw Partnership, or other key stakeholders such as Granville Island. Any proposals received by the City should address these requirements and provide any additional information the proponent deems relevant.

The process described in this letter is not a tender or request for proposals. The City will have no obligation whatsoever to accept any proposal or to award any contract as a result of issuing this letter or receiving any proposals. The submission of a proposal does not create a contract of any kind with the City. The City will have no liability whatsoever for any expenses incurred by a proponent as a result of participating in this process or submitting a proposal. The City reserves the complete right to, at any time, for any reason, modify, amend or cancel the process described in this letter.

Please notify the City by January 10, 2025, whether your company is still interested in submitting a proposal, and when you would expect to be able to provide such a proposal.

Yours truly,

Lon LaClaire, P.Eng.
General Manager, Engineering Service
507 West Broadway, Vancouver, BC V5Z 0B4

Lon.LaClaire@vancouver.ca

cc: Steve Brown, P.Eng., Megan Pate, P.Eng., Cindy Tse, P.Eng., Thomas Chui P.Eng.

Appendix A - Proposal requirements:

1.0 Project Overview

1.1 Intent

1.1.1 Describe the rail transportation service being proposed.

1.1.2 Describe the key objectives and rationale for operating this service, including potential benefits and alignment with City goals.

1.2 Location

1.2.1 Outline the geographic footprint of the project site, clearly showing the extent of all areas that will be affected by the trial.

1.2.2 Outline the property being requested from the City of Vancouver for use during the trial.

1.2.3 Identify any existing infrastructure to be used for the trial, including but not limited to track, platforms, shelters, buildings, and maintenance facilities.

Note to Proponent: Proposals should only use the existing track infrastructure between Olympic Village and Granville Island, with stations at these two locations only.

1.3 Schedule

1.3.1 Provide a detailed project schedule that clearly identifies the following dates:

- Proposal development, review by City and approvals process (City and third party)
- Access to the rail ROW granted to the proponent
- Start and end of revenue service
- Return of the rail ROW to the City

Note to Proponent: The schedule should include the following tasks with City involvement. All durations provided are for planning purposes only. Note that some tasks can be undertaken concurrently, and that the City is unable to guarantee any specific timeline for tasks, nor can predict the outcome of a Council decision:

- City to review and evaluate submitted technical proposal (~1 month)
- If needed: City to provide comments back to proponent, and proponent to provide a revised version
- If needed, City staff review and evaluate revised proposal (~1 month)
- City staff to provide recommendation to City Senior Leadership and Council for decision on the proposal (~1-2 months)

If a proposal is selected (dependant on Council decision), next steps include:

- Notice of Intent to Contact (NOITC) posted indicating successful proponent (~2 weeks)
- Legal negotiation with successful proponent (~3 to 6 months)
- Successful proponent to work with Technical Safety BC to obtain Ministry's Certificate and Operating Permit (~3 to 6 months)
- Successful proponent to begin construction and implementation of proposed streetcar project
- Inspection in advance of operation

1.3.2 Confirm that the project will be limited in duration with defined start and end dates.

Note to Proponent: Proposals to operate a streetcar service indefinitely will not be considered through this process. Proponents are to confirm their desired duration of a trial, recognizing that the City will have final approval of the duration/ timeframe for access to the public right of way.

1.4 Project Team

1.4.1 Identify the key individuals and organizations that will be involved in delivering the project.

1.4.2 Demonstrate that the project team possesses any qualifications necessary to complete the proposed work.

1.4.3 Provide examples of relevant experience highlighting previous successes with similar projects.

2.0 Technical and Operational Requirements

Note to Proponent: All technical and operational requirements are to be signed and sealed by an appropriate professional in the Province of BC.

2.1 Track and Switches

2.1.1 Detail the plans to upgrade the infrastructure from its existing condition to a condition that is suitable for safe and efficient streetcar operation.

2.1.2 Provide details how the crossings meet safety standards, including traffic signal coordination and pedestrian safety measures.

2.1.3 Detail the maintenance, utility servicing, and any necessary upgrades to ensure that the infrastructure is suitable and safe for streetcar operation. Including but not limited to confirmation by third-party utilities on whether

additional upgrades are required because of this project. This plan should be reviewed and sealed by a licensed professional railway engineer in B.C.

Note to Proponent: Provide a comprehensive assessment of maintenance, utility servicing, and rehabilitation work required for safe operations on the existing infrastructure.

Also note that, as part of the development plan for the South False Creek area, the existing tracks will be removed and potentially new tracks would be built in a different location.

2.2 Vehicles

2.2.1 Provide details of the proposed vehicles, including propulsion methods and energy sources.

Note to Proponent: Proposals should prioritize zero-emission vehicles in alignment with the City's Climate Emergency Action Plan.

2.2.2 Demonstrate how vehicles and operators will meet Technical Safety BC standards and other applicable certifications. Apply for Minster's certificate and operating permit. Clearly outline steps for obtaining necessary permits.

2.3 Maintenance Facility

2.3.1 Provide detailed plans for any spaces used to conduct regular maintenance on the streetcar vehicles.

2.3.2 Include a thorough condition assessment of any existing structures to be used by a licensed professional structural engineer in B.C.

2.3.3 Include a detailed plan for maintaining/modifying or removing the existing maintenance shed (if the shed or space is required as part of the trial); outline responsibilities for upkeep, potential upgrades, and secure storage for equipment.

2.3.4 Specify how the existing maintenance shed (if intended as part of the trial) will meet seismic standards and regulatory requirements, addressing liability coverage.

2.4 Presentation Center

2.4.1 Include detailed plans for the installation and operation of any facilities that will be used to greet customers, showcase the project, and/or provide space for staff working on site. Details should include the facility location, layout, visitor access, hours of operation and the proposed installation and removal dates.

2.5 South Coast British Columbia Transit Act (CBCTA) Compliance

2.5.1 Outline a plan and timeline for obtaining approval to operate as an Independent Transit Service from TransLink.

Note to Proponent: City staff understand that TransLink does not have interest in operating this service or incorporating this service under their compass card system.

2.6 Infrastructure Removal Plan

2.6.1 Outline a plan for the removal of all temporary infrastructure and restoration of affected areas at the end of the trial.

Note to Proponent: Proposals should include a focus on environmental preservation and demonstrate how they will leave the rail corridor in existing condition or better at the end of the trial.

3.0 Operating Plan

3.1 Service Levels

3.1.1 Identify the proposed hours of operation, service frequency, operating speed, and travel time between Olympic Village and Granville Island.

3.2 Fare Collection

3.2.1 Describe the fare structure and methods for customer payment.

3.3 Staffing

3.3.1 Identify proposed staffing levels during the trial.

3.3.2 Identify the roles and responsibilities of staff positions during the trial, clearly specifying which positions are expected to be customer-facing and which are not.

3.4 Safety and Security

3.4.1 Describe how the project will ensure the safety and security of streetcar passengers, pedestrians, and other road users

4.0 Community and Stakeholder Relations

4.1 Partner and Stakeholder Coordination

4.1.1 Outline strategies for ongoing communication and collaboration with Musqueam, Squamish and Tsleil-Waututh Nations and stakeholders,

ensuring alignment and transparency with TransLink, CMHC Granville Island, and the Seȟáḵw Partnership. Following review of the communication strategies proposed, the City may decide to lead specific engagements depending on the sensitivity of the party or topic.

4.2 Public Engagement

4.2.1 Present intended marketing strategies for the streetcar service.

4.2.2 Describe how members of the public will be able to interact with and provide feedback to the project team, including public engagement opportunities.

4.2.3 Estimate the anticipated positive and negative community impacts of the trial.

4.2.4 Describe how positive and negative community impacts will be measured during operation of the trial.

Note to Proponent: Discuss how positive impacts will be supported and negative impacts will be mitigated.

4.3 Performance Evaluation

4.3.1 Describe a strategy for data collection throughout the trial, focusing on ridership, vehicle performance, maintenance incidents, customer feedback, and community impact.

4.3.2 Describe how the trial's success will be evaluated and presented to the public and stakeholders, including the City.

Note to Proponent: Include commitment to share a final report with performance metrics, operational findings, and recommendations for potential permanent implementation.

5.0 Financial and Operational Responsibility

5.1 Cost and Funding Structure

5.1.1 Provide a clear budget for installation and upgrades of all infrastructure necessary for the trial.

5.1.2 Provide a clear budget for operational and maintenance expenses over the duration of the trial.

5.1.3 Provide a clear budget for the restoration of the rail corridor to its existing condition following the completion of the trial, specifically removal of any added infrastructure.

5.1.4 Confirm that all costs associated with the trial, including installation, operations, maintenance, insurance, and liability, will be covered by the proponent.

Note to Proponent: The City's role is limited to in-kind support, specifically staff assistance. No financial support from the City will be provided.

5.1.5 Confirm that no shared revenue will be provided to the City.

5.1.6 Use of the public right of way typical would require financial compensation to the City or access in the form of a grant. Use of land fees or grants would need to be confirmed by City Council.

Note to Proponent: Staff would like to recommend to Council to provide the right of way access as a grant in exchange for the implementation and operation of the streetcar, however staff cannot guarantee Council will support this recommendation. Proponents are advised to assign contingency for a land use fee.

5.2 Ridership Projects and Feasibility

5.2.1 Provide ridership estimate and data supporting these projections, considering peak hours, daily demand fluctuation, and estimated public interest from residents and visitors.

5.3 Risk and Liability Management

5.3.1 Submit a detailed risk management plan, addressing not limited to public safety, and operational contingencies.

5.3.2 Provide proof of liability insurance to cover any incidents or damages during the trial.

5.3.3 Proponents will be required to indemnify the City for any incidents or damages during the trial.

5.3.4 The City may require performance security in the form of a bond, letter of credit or other instrument to ensure that the City is able to remove equipment and restore the site if the Proponent defaults on its obligations or is unable to complete the requirements of the contract.

From: "Sam Sharp" <sam.s@tdi.uk.com>
To: "LaClaire, Lon" <lon.laclaire@vancouver.ca>
CC: "Pate, Megan" <Megan.Pate@vancouver.ca>
"Brown, Steve" <Steve.Brown@vancouver.ca>
"Tse, Cindy" <Cindy.Tse@vancouver.ca>
"Chui, Thomas" <Thomas.Chui@vancouver.ca>
Date: 1/2/2025 2:34:26 AM
Subject: Streetcar Proposal Acknowledgment Letter
Attachments: Vancouver Response Signed.pdf

Dear Lon,

Happy New Year to you and the team at Vancouver City.

Please find attached our formal acknowledgment of the proposal request issued by Megan before the festive period.

We look forward to sharing this with you once completed.

Kind regards

Sam Sharp
Commercial Director
International

TDi TRANSPORT DESIGN INTERNATIONAL
[transportdesigninternational.com]

M: +44(0)7376 708 654
T: +44(0)204 526 1330
www.transportdesigninternational.com [transportdesigninternational.com]
LinkedIn [linkedin.com] | Twitter [twitter.com] | YouTube [youtube.com]
BSI Certified: ISO 9001, ISO 14001, ISO 45001

Dear Lon,

Re: Acknowledgment and Acceptance of Proposal Process for Streetcar Service Development

We are writing to formally acknowledge and confirm TDI Greenway's interest in submitting a proposal for the development of the passenger rail transportation (streetcar) service on the City of Vancouver-owned railway corridor in Southeast False Creek, as outlined in your letter dated December 9th, 2024.

After carefully reviewing the process and requirements described, we are pleased to inform you that we intend to proceed with the submission of a proposal in accordance with the outlined terms and conditions.

We understand and acknowledge the legally non-binding nature of this process, as well as the City's commitment to a fair and transparent evaluation. Our team is fully committed to addressing the requirements set out in Appendix A of your letter, and we will ensure that our proposal provides all relevant information as requested, along with any additional details that may enhance the project's feasibility and benefits.

We are aware of the timeline and the expected duration of the process, and we anticipate that our proposal will be ready for submission in February 2025. We also acknowledge that any contract awarded which may include our proposal will be subject to approval by the City Council and will involve subsequent negotiations regarding specific operational requirements and compliance with relevant third-party entities.

Thank you for this opportunity. We look forward to working with the City of Vancouver to explore the development of this exciting transportation project.

Yours sincerely,

Sam Sharp
Commercial Director International

From: "Parker, Dan" <Dan.Parker@vancouver.ca>
To: "Newman, Andrew" <Andrew.Newman@vancouver.ca>
CC: "Tse, Cindy" <Cindy.Tse@vancouver.ca>
Date: 10/18/2024 2:59:58 PM
Subject: Streetcar proposal
Attachments: TDI Introduction.pdf
Vancouver Doc.pdf

Hi Andrew,

The City has been engaged by two separate international entities with unsolicited proposals to reinstate the Olympic streetcar line in conjunction with FIFA in 2026. I understand that at least one (if not both) will utilize what is know as Very Light Rail (VLR) technology employing self-powered battery electric cars with what appears to be temporary platforms at each end, a maintenance shed (potentially using the existing one) and fast chargers infrastructure to be installed for the cars. The existing City owned railbed and rails will be used. s.16(1), s.18.1 Science World to the east, but the ini al focus will be on this exis ng Olympic line. I've a ached some documenta on which outlines one of the proposals.

STAGE ONE OLYMPIC LINE ROUTE AND INFRASTRUCTRURE REQUIRED
Serviced by Revolution VLR

I have been engaged by staff in regards to potential options for validating the use of this corridor for this streetcar. There are several street crossings, but the majority of the lands are Capital Fund / PEF and as such RES should certainly be included in the overall conversation as the administrators of these parcels. The team would be happy to hear your feedback on this proposal and thoughts on appropriate validation of the use of the lands (potential license agreement?).

Thanks,
Dan

Dan Parker, BCLS | City Surveyor | Associate Director
Land Survey Branch | Engineering Services | City of Vancouver
604.873.7327 | dan.parker@vancouver.ca

TRANSPORT DESIGN INTERNATIONAL

VERY LIGHT RAIL
MASS TRANSIT SOLUTIONS

REINSTATEMENT OF VANCOUVERS OLYMPIC LINE | JULY 2024

Creating Partnerships & Connecting communities across our world with sustainable transport solutions

CONTENTS

ABOUT US

TDI Group is a technology company that develops transport solutions in Very Light Rail (VLR) and Guided Light Transit (GLT) sectors. We are specialists in the design and innovation of cutting-edge vehicles with the very latest technology in light-weighting, disruptive propulsion systems and zero-emission batteries.

Our route into the UK rail market is in place, with a manufacturing supply agreement with leading rolling stock operating company (Eversholt Rail) for supply of Revolution VLR vehicles.

In the last three years, the TDI Team has expanded its build capability to deliver various vehicle programmes and is in the process of scaling up capacity and developing the ecosystem to support growth in this emerging sector.

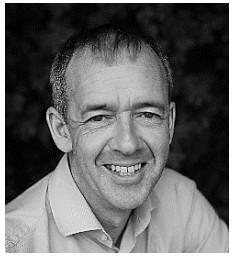
TDI TEAM & COVENTRY VLR

RVLR APPROACHING LEVEL CROSSING AT TDI DEMO FACILITY

OUR TEAM

Rupert Symons
Managing Director

s.22(3)(d)



Gary Connel
Chief Financial Officer

s.22(3)(d)

Sam Sharp
Commercial Director International

s.22(3)(d)

Paul Salkeld
Head of Developments

s.22(3)(d)

Geoff Newman
Chief Operations Officer

s.22(3)(d)

Shaun O'Brien
Director

s.22(3)(d)

Oversight Team

Sam Wauchope
Chairman (Non-Exec)

s.22(3)(d)

Tim Jenkins
Non-Exec

s.22(3)(d)

Jorgen Gustaffson
Non-Exec

s.22(3)(d)

VEHICLE PROJECTS

Over 30 Years Experience | 135 Projects in 12 Countries

COVENTRY VLR
Vehicle Design & Build

HCP TRAM
Vehicle Design & Build

MINITRAM
Vehicle Design & Build

CRRC
Passenger Environment

BESPOKE VLR
Vehicle Design & Build

LONDON UNDERGROUND
Passenger Environment

AUSRAIL
Vehicle Design

Vision Tram
Bespoke Build

BESPOKE VLR
Vehicle Design & Build

WHAT IS VERY LIGHT RAIL?

Very light rail (VLR) is a disruptive technology solution for the rail industry with the vision to deliver lightweight, energy efficient rail vehicles offering low manufacturing and operational costs

- The Revolution VLR trains (RVLR) developed by TDI Group can be deployed on existing branch lines at <60% of the costs of heavy rail – delivering reliable, high quality passenger experiences at the lowest possible cost of system implementation and operation and with the potential to remove over 100 tonnes of CO2e per year from a typical 10km branch line on the rail network.
- TDI Group used it's Urban VLR technology to develop the country's first VLR tram for the ground-breaking Coventry City scheme.
- TDI Group deploys Battery-as-a Service model in all TDI vehicles to reduce up front costs and optimize battery life.

Traditional Heavy Rail Cost =	VLR Cost =
25m -50m/km	<£10 /km


RVLR CARRYING PASSENGERS AT RAIL LIVE 2022


COVENTRY VLR TRAM ON TEST TRACK


LYNC RAIL IN URBAN ENVIRONMENT

STAGE ONE OLYMPIC LINE ROUTE AND INFRASTRUCTRURE REQUIRED

Serviced by Revolution VLR

PRE-SERIES FULLY ELECTRIC RVLR AT STATION

REVOLUTION **VLR**

Revolution VLR is the development of next generation, 'very light rail' technology. A key aim of the vehicle is to facilitate low-cost connectivity of regional and rural areas. Revolution VLR is fundamental to the provision of integrated and sustainable, short range public transport systems both now and in the future.

Infrastructure
Very Light Rail

Environment
Branch & Freight Line

System
Segregated

Configuration
Single & Multi Car

RVLR SPECIFICATIONS

Diesel Hybrid & All Electric Variants

Model:	RV100
Propulsion:	Electric on-board battery systems
Passengers:	120 (single car format)
Wheelchair space:	compliant to Rail vehicle accessibility standards 2010
Laden weight :	34000kg
Dimensions:	18500 x 2780 x 3800H
Door opening:	855 x 1905mm (H)
Speed:	100kph (60mph)
A/C:	Full HVAC
Construction :	Composite bodyshell, recycled carbon fibre

RVLR TECHNICAL OVERVIEW

1. Bodyshell

- Welded steel chassis
- Interchangeable composite side panels
- Aluminium/composite cabs and roof

2. Battery-only propulsion

- Zero emissions operation
- Battery-only versions
- Lineside fast charging system
- Optimised performance with unlimited vehicle range

3. Bogie suspension

- Passenger comfort and vehicle stability
- Proven robustness and durability
- Targeted mass reduction features
- All-electric braking

4. Bidirectional (two cabs)

- Maximised operational flexibility
- Excellent field of view to facilitate safe line-of-sight operation
- Simple, intuitive controls and displays
- Revisions to lower cab front and lighting in line with feedback

5. Reconfigurability

- Straightforward adaptation to stakeholder requirements, including changes to seating/luggage/bicycle storage etc.

CLEANTEC

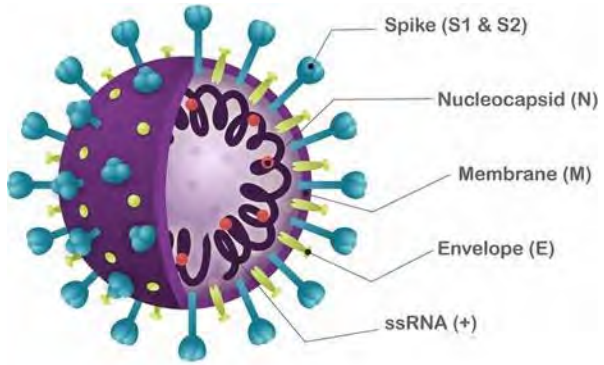
Ionised Air & Antimicrobial Coatings

Since the beginning of the Covid-19 pandemic many people have been, or may feel, hesitant about taking public transport, due to the perceived risk of picking up viruses from areas such as the grab-poles on trains, buses and trams, which are the principal point of contact.

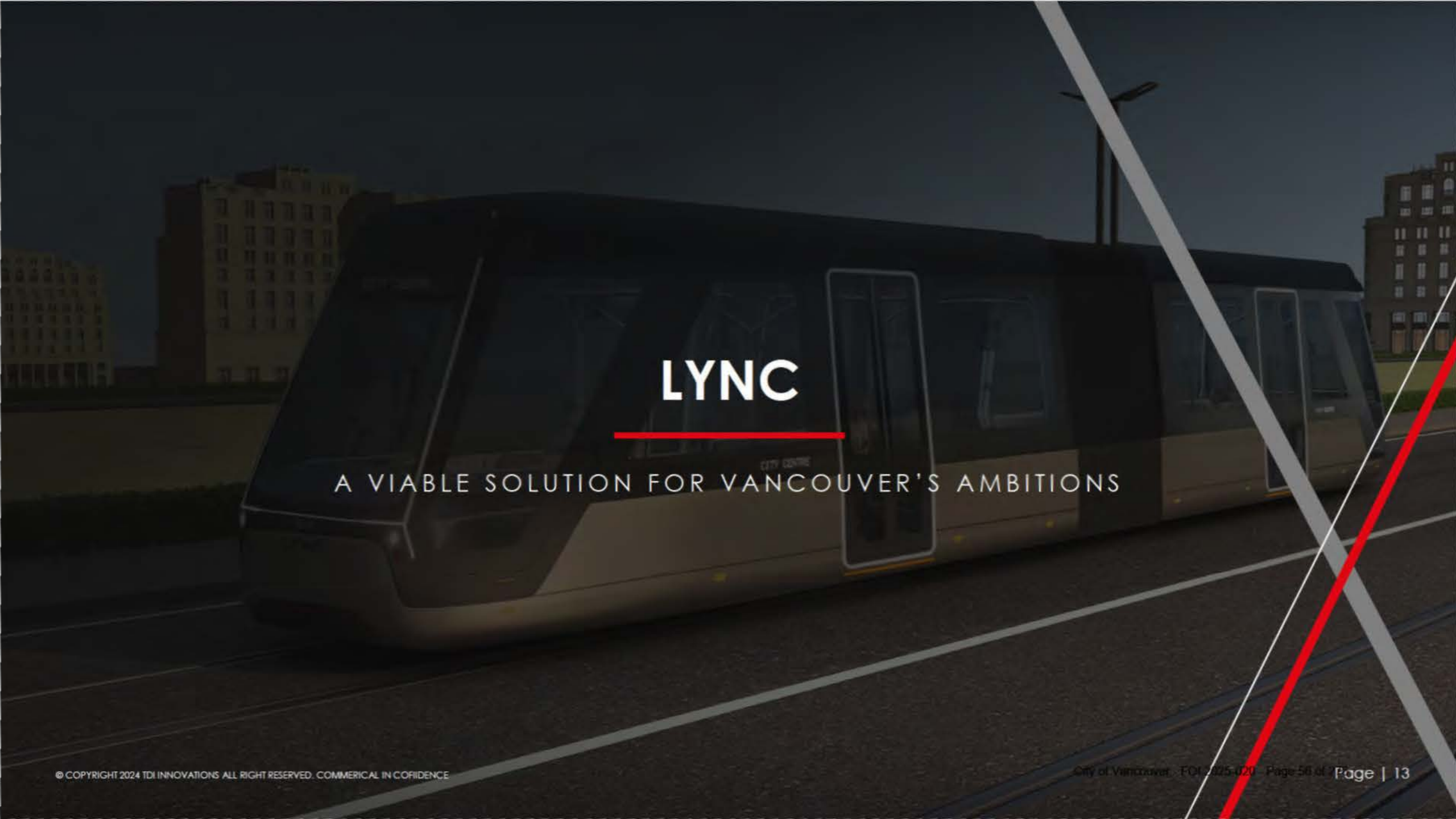
Antimicrobial coatings can be used to limit surface viruses and ionisation products filter ‘dirty’ air to maintain a ‘clean’ passenger environment.

- Effective ionisation levels can be compared to those measured at a waterfall
- In the air, bipolar ionisers will seek out and neutralise virus i.e. SARS-CoV-2 and agglomerate all dust, odours, fumes and pollens where they are easily captured in filtration or fall to the floor
- All pathogens on surfaces are neutralised reducing the need for expensive disinfecting
- Ionisers can work standalone or as a complementary system alongside UV and HEPA filtration
- Ionisation has an immediate effect on neutralising virus particulates

Within 15 minutes, pathogens will have been neutralised



SARS-CoV-2



LYNC SPECIFICATIONS

Battery Powered

Model:	Lync City 3 car model
Propulsion:	Lithium Ion Battery
Passengers:	174 (maximum load)
Wheelchair	Yes Low-level entry
Laden weight :	42,128.00kg at Crush load 174 passengers)
Dimensions:	2.0m x 26.5m x 3.20 H
Door opening:	900mm
Speed:	35kph-22mphMaximum speed 88kph-55mph
A/C:	Full HVAC
Construction :	Composite bodyshell, with aluminium chassis

LYNC TECHNICAL OVERVIEW

1. Design

- Composite bodyshell, with aluminium chassis
- Stylish driving cabs for bi-directional operation
- Modular vehicle assembly design approach
- Seating configuration to suit client requirements
- Recycled/recyclable material included

2. Battery-only propulsion

- Lithium-Ion Titanate or phosphate batteries
- AC traction motors
- Three phase invertors
- Emission free

3. Interior

- Anti-bacterial coatings included
- Airborne virus countermeasures (including Covid)
- Filtered HVAC air provided
- Insulation and heat recovery built-in

4. Bidirectional

- Maximised operational flexibility
- Bi-directional on both rail and road versions for high manoeuvrability and fast terminus turnaround

5. Navigation

- Rail or Wire in ground guidance system
- Low-cost installation
- Future proofed for a fully autonomous operation

PROPOSED LYNC STREETCAR ON RAIL

THE BENEFITS

THE BENEFITS A VERY LIGHT VEHICLE CAN BRING TO THE CITY

Thoughts from our visit to Vancouver

To undertake the proposed master plan in a single project would obviously be detrimental to the city in terms of congestion, and prohibitive in funding that would be required. What came from our various meetings is that the Olympic line reinstatement is a popular choice. We have also identified two further sections at each end of the line that would be of benefit to the City and its communities.

Stage One - Olympic Line, which has great support from Granville Island

s.21(1)

s.21(1)

s.21(1)

ECONOMIC BENEFITS

ECONOMIC BENEFITS AND OPPORTUNITES

LOCAL MANUFACTURING CENTRE (LMC)

A major sustainable initiative for TDI is our Local Manufacturing Centre or LMC concept. This concept will aid investment in several UK wide “local” economies, for both short and long term, futures. This will be done by:

- Local Supply chain
- Labour model
- Advanced build & manufacturing system

Productivity

Local Economic Benefit

Environmental & Traffic Issues

De-carbonisation

THANK YOU

PIONEERS IN MASS MOBILITY

T: 024 7527 1831 | INFO@TDI.UK.COM

WWW.TRANSPORTDESIGNINTERNATIONAL.COM

TDi / INNOVATIONS

Revolution VLR – Vancouver Olympic Line

Battery Electric Railcar Unit

Contents

1 Introduction

This document has been created to detail the technical specification and characteristics of the Revolution VLR vehicle.

TDI is a UK based technology company and a leading pioneer of Very Light Rail ("VLR") technology and its deployment with Battery-Electric power solutions. The team are specialists in the design, innovation, and manufacture of cutting-edge vehicles with the very latest technology in light-weighting, disruptive propulsion systems and zero-emission batteries.

This document should be read in conjunction with other, more detailed and topic focused documents which have been prepared to support TDI's proposal to the City of Vancouver (CoV).

2 Revolution VLR – Battery Electric Railcar

2.1 Overview

Revolution VLR is a battery electric railcar unit that offers several advantages over traditional diesel-powered trains. Revolution VLR is designed and built as a lightweight innovative modern rail vehicle that enables more cost-effective rail infrastructure and fast mobilization.

Figure 1 Revolution VLR

Revolution VLR has many technological advantages and operational benefits a brief summary is noted below:

2.1.1 Environmentally Friendly

Revolution VLR does not rely on fossil fuels such as coal or diesel. Revolution VLR operates using rechargeable batteries, which means they emit no exhaust gases during operation so supporting toward net zero carbon targets.

2.1.2 Infrastructure Flexibility

Revolution VLR does not require expensive infrastructure such as continuous electric ground rails or overhead catenary systems. Instead, it uses localized fast charging stations that allow seamless scheduled operation. This enables RVLR to be more adaptable for use on various rail networks and existing infrastructures but in

particular on new and rural routes. Infrastructure requirements are much reduced and scaled back to conventional rail.

2.1.3 Reduced Noise pollution & Vibration

Revolution VLR is quieter than diesel multiple units (DMUs) and locomotive-hauled trains. With less noise pollution there is the opportunity to offer vehicle services that may otherwise be restricted particularly around urban areas.

2.1.4 Commercial Viability

Revolution VLR has been specifically designed as a cost-effective solution for commuter connectivity. This lower capital cost is achieved by the designs low weight and 'line of sight' operational characteristics meaning any deployment of an RVLR solution requires less costly rail and infrastructure investment. Less weight means less loading on infrastructure and 'line of sight' operation means less sophistication in the signaling systems.

The on-board battery capacity can be tailored to suit the operational duty cycle. That way the battery system can be run efficiently without the need to be carrying excessive expensive equipment.
Revolution VLR is fitted with 'in station' rapid charger technology enabling a vehicle to be 'topped up' during passenger stop dwell time in specific stations on route.

The rapid charge system can readily connect to solar and other renewable energy sources.

2.1.5 Commuter Friendly

Revolution VLR is well-suited for commuter routes providing a very high standard for the passenger journey experience. The interior design is adaptable to meet operational requirements. Incorporating flexible seating layouts, with options for variable seat pitching, tables and luggage management.
The interior ambiance is enhanced with carefully system managed lighting and air-conditioning that optimize energy efficiencies but follow accepted rail vehicle standards for performance.

The vehicles dynamic performance characteristics are as can be seen in the specification which shows a torque performance that more than meets the demands of passenger service for acceleration and deceleration.
The passenger capacity and operational characteristics point the vehicle market as being intended for short to medium distance travel. The ability to run efficiently on opportunity charging does however support longer service operations if so, required in and expanding system.

In summary, Revolution VLR trains combine environmental benefits, infrastructure flexibility, and reduced noise levels, making them an excellent cost-effective solution for any modern rail transportation system.

2.2 Operation Efficiencies

The Revolution VLR vehicle range is designed for low-cost maintenance both from a parts, labour and infrastructure view.

TDIs analysis and review on using Revolution VLR in a UK operational model show significant reduction in running and maintenance costs. This reduction over a typical operational life cycle in the UK can be as much as 50% depending on the environment in which RVLR operates.

In addition, when considering any new route openings, the normal infrastructure investment is significantly reduced. The economic benefits against traditional operations are therefore easy to justify the implementation of this type of vehicle which can encourage and enable operations in places that would be unfunded otherwise.

Providing operational compatibility has been assessed and approved these vehicles can be quickly adopted into existing infrastructures and rail networks. The charging points are optimized for each specific route and can be installed at termini or most

likely to a stations architecture(lineside) with minimal demand to electrical infrastructure.

TDI VLR rapid charge systems can be either linked directly to the station electrical infrastructure or to renewable energy sources.

2.3 Vehicle Suitability

2.3.1 Performance & Passenger Comfort

TDI have done initial modelling on the Olympic line Route and can confirm that the Revolution VLR vehicle configuration can achieve the operational requirements.

2.3.2 Infrastructure Impact

The battery Vehicles are intended for use on 1435 mm gauge tracks. Electrical charging equipment fitted to the vehicle, or the infrastructure will be assessed for compatibility within the local gauging requirements.

The vehicle height is 3792mm above ARL in tare condition.

The vehicle floor height is 1150mm ARL in Tare condition and 1092mm in crush condition.
The vehicles are compatible with platform offsets outlined in GIRT7073 (nominally be 730mm on straight track and curves higher than 360m radius). Assessment for compatibility within the local gauging requirements will be carried out.

The vehicles are compliant to UK Passenger Gauge 1 and the Lower Sector Vehicle Gauge as outlined in GE/RT8073. This is demonstrated through the application of GM/RT2173 and RIS-8273-RST

The vehicle can traverse:
o Horizontal curves to a minimum of 70m radius with passengers.
o Horizontal curves to a minimum of 65m radius in depots/sidings without passengers.
o Vertical curves to a minimum of 200m radius with passengers.

The vehicles will be compatible with ground-based train detection systems (e.g., Track Circuits) or for Track Circuit Assisters.

The axle load is commensurate with the overall vehicle mass which is low. Axle load is an interface parameter between the vehicle and the infrastructure, which is reported in combination with the axle spacing, with the train length and with the

maximum allowed speed for the vehicle on the considered line - during the compatibility assessment.
Against network rails 'Route Availability' scale the RVLR vehicles are classed as RA0 which is the lowest categorisation. The scale is RA1(less than 12t) to RA10 (less than 25.4t).
Axle weight in tare being 6.175t and laden 8.52t.

The low weight has been calculated to offer 27% less wear impact on the rails in the compared to a like-for-like DMU. This not only reduces vehicle maintenance requirements (wheels etc.) but also reduces the overall infrastructure maintenance costs as well as noise pollution.

2.4 Compliance

The standards compliance for RVLR in the UK is a combination of mainline railway national technical and operational safety standards and specifications (where deemed appropriate) and also includes other standards such those applicable to Trams, Highways and Road Vehicles where these are deemed to manage the appropriate level of risk.
Typically operations require an Office of Road and Rail (ORR) safety certificate to be issued to the Transport Undertaking. As such a full Technical File will be required to help support the Safety Verification process, ICP review and CSM-REA process must demonstrate that the risks identified for operation on the routes are effectively managed.
The vehicles will be fully homologated/certified before delivery – following the process outlined by the relevant Transport Undertaking.

This will include:
-Safety Verification process, with ICP review, as outlined in ROGS
- CSM-REA application and with As Bo certification.

The manufacturer has engaged xxxxxx which has undertaken a verification process according to the requirements of RIS-2700-RST. This process will: (a) Confirm that the vehicle, as designed, complies with the applicable requirements (design conformity), and (b) Confirm that the vehicle has manufactured in accordance with the verified design (construction conformity).

The manufacturer can share copies of: (a) the output of the Assessment Party design examination process (e.g. clause-by-clause checklists); and (b) Assessment Party Production QMS audit reports.
The Assessment Party will issue one Attestation Statement, with supporting Technical File and Assessment Report at the conclusion of the verification process.

For implementation into countries outside the UK the appropriate safety certification will be implemented via that countries rail authority or its designated body.

The compatibility assessment process will be undertaken to assure of appropriate acceptance can be obtained.

The local railways 'Compatibility team' and or 'Product Assessment Team' will be part of the review process.

3 Revolution VLR Vehicle Specification

3.1 Overview

The Revolution Very Light Rail (RVLR) vehicle has been developed as a revolutionary lightweight rail vehicle using cutting edge materials, robust modern technology and manufacturing processes. This enables the vehicles to be operated at a reduced cost for both infrastructure and rolling stock.

This has been achieved through a combination of innovative design and development tailored to meet specific route requirements primarily for operation on urban commuter lines (for operation on railway infrastructure for local, rural and shuttle services).

Adapting the vehicle to local conditions is inherent in the VLR design. For BEMU operations, the main vehicle architecture will be the same, the only fundamental difference will be the number of battery modules fitted to the underside of the chassis. This allows for vehicle range flexibility and adaptability across a number of lines and network topographies.

3.2 Product Range

The vehicle RVLR model range includes battery or hybrid propulsion systems. The modular design approach allows for ease of configuration of drive system components as well as those in the passenger environment.

3.3 General Specification Details

Model options	RV100E-100kph(62mph) RV60E - 60kph (37.2mph)
Passengers	56 seats plus standing – crush load approx. 116
Accessibility	compliant to Rail vehicle accessibility standards 2010
Laden weight	34,050kg (crush load per carriage)
Dimensions	19,420(L) x 2780(W) x 3800(H) per carriage Over couplers 19420mm
Floor height	Nominally 1150mm ARL to suit existing platform infrastructure
Bogie Spacing	Dedicated bogie sets for MGR. Spacing center's 12m
Door opening	Single 855 x 1905mm (H) / Double 1300mm x 1905mm
Air Conditioning	Two-off roof mounted units, providing in excess of 40kW of cooling
Construction	Composite bodyshell, recycled carbon fiber

Battery Packs	Electric on-board battery systems Operating at s.21(1) s.21(1)
Drive system	Brushless, permanent magnet motors. Water cooled
Wheel sets	Ø720mm, wheel wear 30mm, profile P8 or P12 or agreed
Operating temperature	All electrical and mechanical systems shall maintain full functionality at up to 55° within humidity of 0.011kg/kg dry air 23% relative humidity
Gradients	The vehicle drive systems will be capable of gradient nominally of 1.5% with maximum short periods of 4%

For more details refer to document s.21(1)

3.4 Configuration

The Revolution vehicle format with a driving cab at each end is configurable to a degree and that's down to its modular design.

RVLR vehicle consists of a base vehicle that allows for adaptation to suit the market requirements in terms of route and operational profiles. It will, as stated allow for flexible passenger seating configurations and support operator requirements with a limited number of optional features.
For example, additional elements such as track brakes, luggage stacks and cycle storage will be some of the add on features.

The standard layout has 56 seats plus wheelchair space and capacity for standing passengers. Crush capacity is around 116. Seat pitches shown 770mm minimum with additional room at the 6 'Priority' seats.

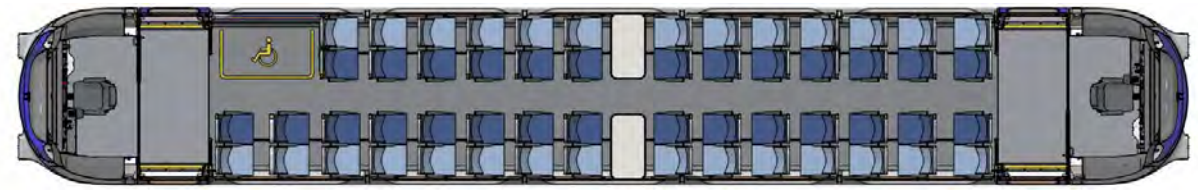


Figure 2 Revolution Section Layout of the front carriage

Figure 3 Passenger Interior

For the complete specification please see Appendix 3, 4 and 5.

4 s.21(1)

4.1 Overview

The propulsion Battery, as an individual component, is the single highest purchase cost and the most variable during the vehicle's life cycle. To give certainty around these costs, TDI issues a s.21(1) agreement with all our vehicle contracts. TDI have identified this as the most optimal and most cost-effective solution for operation. Having a s.21(1) solution also protects the operator from rapid changes in battery technology.

4.1.1 Economic & Operational Risks

- Market Overview - The battery market and supply chain are evolving rapidly and the demand for battery solutions is exceptionally high, so pricing elasticity is exceptionally low at present. This is likely to be a key challenge for the next three to five years.

- Technology Overview - Battery chemistry, charging capability, battery life and battery power characteristics will each be very different within the next five years. The rate of technological development in this sector is significant as de-carbonization of transport drives R&D expenditure across the full spectrum of transport modes.

- Operational Overview - The critical factors affecting battery life include average cell temperature; discharge depth; and charge/discharge cycles as well as operational use requirements, such as charging cycle time and power requirements for each journey.

These factors are likely to lead to significant cost and technological changes over the next five to ten years. TDI is addressing these issues as follows:

- Universal Interface for RVLR - TDI is building as much flexibility into the battery package for RVLR by developing a Universal Interface so that RVLR is "chemistry-agnostic" when selecting the battery type. This supports future proofing of the system as battery technologies progress.

- Battery Development - TDI is developing a longer-term solution by working with a battery supplier to develop a battery specification for RVLR specifically using an s.21(1) battery and s.21(1) anode (for faster charging). This approach will allow TDI to build a reliable supply chain, adopting the latest technology with anticipated cost savings.

- Annual Costs - The purpose is to provide transparent and equitable costs for managing the battery degradation over its projected life. The costs will be reviewed annually and adjusted based on degradation of the battery. This approach includes performance monitoring of the battery against the vehicle operation to advise and maximize the usage and therefore increase the battery life span.

4.2 Battery Specifications

The vehicle has 'infinite' range if there are short burst charging stations along the route. A train might need to travel over 400km per day, which would require upwards of 800kWHr capacity. This is not currently achievable using a single battery on a single charge. The use of a lineside charging station means there is economy and flexibility in the vehicle operations.

TDI has selected the most reliable and powerful Lithium Chemistry (Lithium Titanate) offering fast charging and charge dynamics best suited to a rail application. The final solution to battery selection is linked to operating conditions, track geography, environment and of course route characteristics. Rather than struggling for range the approach is to deploy rapid and frequent charging and importantly how the technology/solution is employed.

To minimize battery top-up requirements, RVLR uses the drive motors to provide regenerative energy during braking – this gives additional range. In addition to

recharging the battery this also eliminates the need for auxiliary systems like hydraulics and pneumatics, saving weight, space, power, cost and complexity.

Keeping the battery topped up without affecting service can be achieved by using TDI line side charging technology.

4.3 Line Side Charging

TDI simulations for commuter use show that any battery will need to be topped up during the daily operating cycle. Indicative results suggest that the average gradient on the outward journey is taxing on the system, but the RVLR regenerative braking supports the state of charge on the return journey. The air conditioning on 4 carriages is nonetheless a significant draw on the battery in hot weather but demand is optimized by the control systems to reduce energy losses.

The optimal strategy is to maintain as constant a level of charge as possible. This can be achieved by using the TDI Line Side Charging technology where a Revolution VLR vehicle can accept charge while the passengers disembark/board at terminus stations, all without affecting the timetable.

Provisional assessment of a past case study route (return)suggests s.21(1) per route for the railcar unit.

Depending on vehicle speed, an estimated 3-4 minutes of charging will be required for end-to-end-journey– around s.21(1) charge rate. s.21(1) can be provided by either an extended s.21(1)

Slower charge will be possible (in proportion) if time permits e.g. overnight/mid-day breaks.

s.21(1)

The trainset would take top-up charge at convenient station stops(statically) most likely to be at each end station or at mid points. So, whilst passengers are boarding or alighting.

The top-up charge is supplied via station-based line side units containing a bank of batteries from which the train is charged. After the train has departed, the lineside batteries are slowly re-charged, thereby reducing the need for sudden high demand from the shore supply. The battery bank can feed direct from the grid or via a conventional 3-phase connection. This protects the station infrastructure from needing to cope for excessively high-power demand.

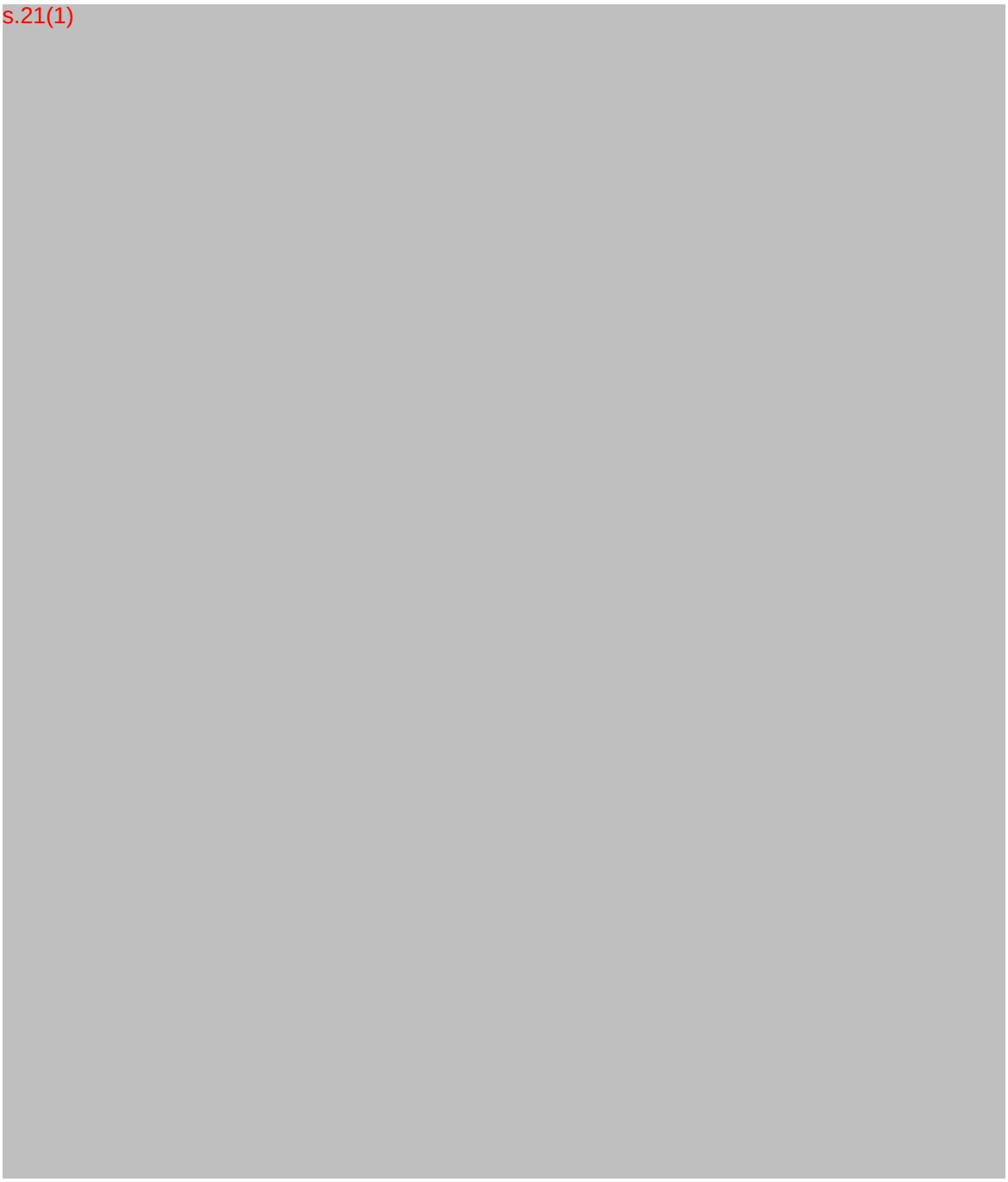
The lineside charging installation and operation will comply with:

a) The Electricity at Work Regulations 1989
b) BS EN 50121:5:2017 +A1:2019 Railway applications. Electromagnetic compatibility. Emission and immunity of fixed power supply installations and apparatus
c) Suite of BS EN 50124: Railway applications. Insulation coordination.
d) BS EN 60204-1:2018 Safety of machinery. Electrical equipment of machines General requirements and the Machinery Directive 2006/42/EC Safety of Machinery
e) Suite of BS EN 50122: Railway applications. Fixed installations. Electrical safety, earthing, and the return circuit.
f) Suite of BS EN 50123: Railway applications. Fixed installations. D.C. switchgear

A number of other guide documents and standards is identified through the Common Safety Method – Risk assessment - and other documents is identified which are more pertinent to the application battery charging in public locations.

The Supplier will ensure that the new Lineside Charger equipment is compatible with all adjacent and neighbouring railway infrastructure and rail vehicles.

s.21(1)

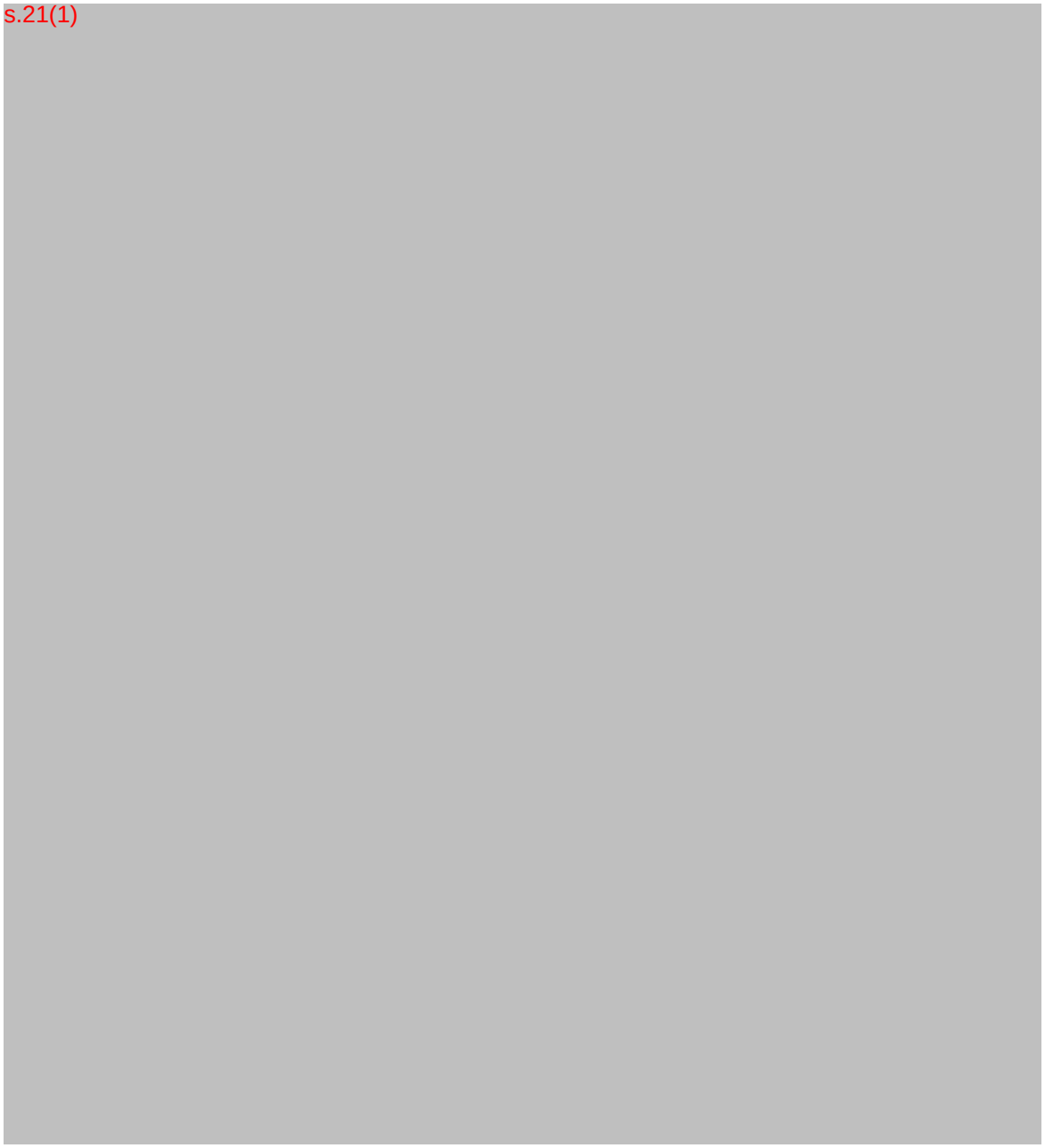


The lineside charging unit can be linked to local solar generation or other renewable sources to trickle charge feed the unit to offset grid power demand.

The lineside charging unit also offers a benefit of T2G – Train-2-grid – Power at the ready. Lineside battery banks can export power to the grid during blackouts, adding security to the local community.

5 Appendix 1: Revolution VLR

s.21(1)



6 Platform and Maintenance Shed

Make huge asset life savings and future proof your station infrastructure.
With almost a billion passenger rail journeys made in the UK each year, the stations where people start and end their journeys are a key focus for improvements to the passenger experience. Changes to rolling stock require longer platforms, whilst Victorian platform canopy installations and pedestrian footbridges require replacement or refurbishment as they reach the end of their service life.

With a best-in-class reputation for delivering on even the most challenging rail projects, we supply sustainable low-maintenance composite product solutions that play their part in helping run a safe and efficient railway for passengers.

Tackling station safety issues of platform gaps and stepping distances.
The modular GRP Dura Platform allows contractors to replace or overlay onto damaged or subsided platforms a low maintenance, modular, lightweight, height adjustable structure that enhances safety and can reduce any PTI gaps to comply with current standards, improving the passenger experience.

Dura Platform complies with Network Rail specifications, boasting unparalleled efficiency in platform installation and a remarkable reduction of up to 65% in installation time. Our most popular variant is Dura Platform 40, which serves as the foundation for two installation methods, depending on your project needs. Our GRP/Steel Hybrid Platform solution is primarily for new platforms and extensions, which achieves overlays and re-gauging with ease.

thermo insulated temporary warehouse buildings are the ideal choice for sensitive storage, portable warehouse requirements or workshop buildings and public facilities such as supermarkets or leisure buildings. The thermo roof features a double-layered inflatable roof system engineered from industrial grade PVC fabric.

Once inflated it minimises condensation, helps temperature control and reduces any structural noise, making the insulated temporary buildings ideal for goods or equipment that require protection from condensation or low temperatures. Their excellent insulation properties, functionality and durability make them an attractive alternative to more traditional permanent warehouses or industrial buildings.

Standard insulated temporary warehouses range in width from 5.00 m – 30.00 m, with lengths that are unlimited in 5.00 m increments and wall heights from 4.20 m to 6.20 m. A wind load of 0.5 kN/m² (=102 km/h) and a snow load of 1.5 kN/m² (=100 kg) are achievable.

From: "Pate, Megan" <Megan.Pate@vancouver.ca>
To: "Stephen Kong" <Sk@thinkecopower.com>
CC: "Tse, Cindy" <Cindy.Tse@vancouver.ca>
"Chui, Thomas" <Thomas.Chui@vancouver.ca>
"Corbett, Benjamin" <Benjamin.Corbett@vancouver.ca>
"Brown, Steve" <Steve.Brown@vancouver.ca>
Date: 12/11/2024 10:05:00 AM
Subject: Streetcar Trial - Letter of City Requirements
Attachments: Streetcar Requirements Letter - Thinkeco Power In - 2024-12-10.pdf

Hi Stephen,

Please see the attached letter regarding the Southeast False Creek Streetcar Proposal. The letter outlines the high-level process that will be followed, trial timing, as well as our specific requirements that will need to be addressed in a complete proposal by interested parties.

Please let us know if you have any questions.

Thanks,
Megan

Megan Pate, P.Eng (she/her)
Associate Director
Integrated Projects | City of Vancouver
604-873-7797 | megan.pate@vancouver.ca

December 10, 2024

s.21(1)

Dear s.21(1)

RE: Southeast False Creek Streetcar Proposal

The City of Vancouver understands that several companies are interested in demonstrating a passenger rail transportation (streetcar) service on a City of Vancouver-owned existing railway corridor in Southeast False Creek. The City has developed the non-binding process as described in this letter to receive and review unsolicited proposals related to the temporary operation (trial) of a streetcar service on its public right of way:

1. Proponents may submit to Engineering Services a proposal outlining how they intend to address the requirements stated in Appendix A of this letter.

2. City staff will review proposals it receives for compliance with the stated requirements and, if the City elects to proceed, select a proponent to further engage with.

3. Before any contracting process can proceed, City staff will need to receive City Council approval for their recommendation to contract and will need to post a Notice of Intent to Contract (NOITC) on the City's procurement website to notify the market and remain fair and transparent.

4. The City and the successful proponent would proceed with contract negotiations. It is expected that the contract will contain additional requirements from Technical Safety BC and other third-party entities that will need to be actioned by the Proponent before operations could commence.

5. If and when a contract has been finalized, the successful proponent would be permitted to commence implementation within the right of way and finalize the requirements to allow operation of the streetcar.

The overall duration of the process described in this letter is dependent on proponent and third-party responsiveness, City resource availabilities and other factors. Based on past experience, the City anticipates this process will take no less than 18 months to complete. More detailed indications on the anticipated timeline are provided in Appendix A for reference only.

City of Vancouver, Engineering Services
Projects and Development Services, Integrated Projects
507 West Broadway
Vancouver, British Columbia V5Z 0B4 Canada
604-871-6730
vancouver.ca

The City has determined that it will not support operation of a streetcar during the FIFA World Cup 2026 for a number of factors, including additional challenges for FIFA event planning as well as the potential to jeopardize a successful streetcar trial. Accordingly, interested parties should only proceed to submit a proposal if they are interested in running a trial operation starting no earlier than September 2026.

Appendix A includes the minimum requirements for undertaking a streetcar trial in Vancouver; these requirements are based on the City's understanding at this time and may be amended or supplemented at the City's discretion as the process continues. Further requirements may be determined through work with the local Nations, the Senakw Partnership, or other key stakeholders such as Granville Island. Any proposals received by the City should address these requirements and provide any additional information the proponent deems relevant.

The process described in this letter is not a tender or request for proposals. The City will have no obligation whatsoever to accept any proposal or to award any contract as a result of issuing this letter or receiving any proposals. The submission of a proposal does not create a contract of any kind with the City. The City will have no liability whatsoever for any expenses incurred by a proponent as a result of participating in this process or submitting a proposal. The City reserves the complete right to, at any time, for any reason, modify, amend or cancel the process described in this letter.

Please notify the City by January 10, 2025, whether your company is still interested in submitting a proposal, and when you would expect to be able to provide such a proposal.

Yours truly,

Lon LaClaire, P.Eng.
General Manager, Engineering Service
507 West Broadway, Vancouver, BC V5Z 0B4

Lon.LaClaire@vancouver.ca

cc: Steve Brown, P.Eng., Megan Pate, P.Eng., Cindy Tse, P.Eng., Thomas Chui P.Eng.

Appendix A - Proposal requirements:

1.0 Project Overview

1.1 Intent

1.1.1 Describe the rail transportation service being proposed.

1.1.2 Describe the key objectives and rationale for operating this service, including potential benefits and alignment with City goals.

1.2 Location

1.2.1 Outline the geographic footprint of the project site, clearly showing the extent of all areas that will be affected by the trial.

1.2.2 Outline the property being requested from the City of Vancouver for use during the trial.

1.2.3 Identify any existing infrastructure to be used for the trial, including but not limited to track, platforms, shelters, buildings, and maintenance facilities.

Note to Proponent: Proposals should only use the existing track infrastructure between Olympic Village and Granville Island, with stations at these two locations only.

1.3 Schedule

1.3.1 Provide a detailed project schedule that clearly identifies the following dates:

- Proposal development, review by City and approvals process (City and third party)
- Access to the rail ROW granted to the proponent
- Start and end of revenue service
- Return of the rail ROW to the City

Note to Proponent: The schedule should include the following tasks with City involvement. All durations provided are for planning purposes only. Note that some tasks can be undertaken concurrently, and that the City is unable to guarantee any specific timeline for tasks, nor can predict the outcome of a Council decision:

- City to review and evaluate submitted technical proposal (~1 month)
- If needed: City to provide comments back to proponent, and proponent to provide a revised version
- If needed, City staff review and evaluate revised proposal (~1 month)
- City staff to provide recommendation to City Senior Leadership and Council for decision on the proposal (~1-2 months)

If a proposal is selected (dependant on Council decision), next steps include:

- Notice of Intent to Contact (NOITC) posted indicating successful proponent (~2 weeks)
- Legal negotiation with successful proponent (~3 to 6 months)
- Successful proponent to work with Technical Safety BC to obtain Ministry's Certificate and Operating Permit (~3 to 6 months)
- Successful proponent to begin construction and implementation of proposed streetcar project
- Inspection in advance of operation

1.3.2 Confirm that the project will be limited in duration with defined start and end dates.

Note to Proponent: Proposals to operate a streetcar service indefinitely will not be considered through this process. Proponents are to confirm their desired duration of a trial, recognizing that the City will have final approval of the duration/ timeframe for access to the public right of way.

1.4 Project Team

1.4.1 Identify the key individuals and organizations that will be involved in delivering the project.

1.4.2 Demonstrate that the project team possesses any qualifications necessary to complete the proposed work.

1.4.3 Provide examples of relevant experience highlighting previous successes with similar projects.

2.0 Technical and Operational Requirements

Note to Proponent: All technical and operational requirements are to be signed and sealed by an appropriate professional in the Province of BC.

2.1 Track and Switches

2.1.1 Detail the plans to upgrade the infrastructure from its existing condition to a condition that is suitable for safe for streetcar operation.

2.1.2 Provide details how the crossings meet safety standards, including traffic signal coordination and pedestrian safety measures.

2.1.3 Detail the maintenance, utility servicing, and any necessary upgrades to ensure that the infrastructure is suitable and safe for streetcar operation. Including but not limited to confirmation by third-party utilities on whether

additional upgrades are required because of this project. This plan should be reviewed and sealed by a licensed professional railway engineer in B.C.

Note to Proponent: Provide a comprehensive assessment of maintenance, utility servicing, and rehabilitation work required for safe operations on the existing infrastructure.

Also note that, as part of the development plan for the South False Creek area, the existing tracks will be removed and potentially new tracks would be built in a different location.

2.2 Vehicles

2.2.1 Provide details of the proposed vehicles, including propulsion methods and energy sources.

Note to Proponent: Proposals should prioritize zero-emission vehicles in alignment with the City's Climate Emergency Action Plan.

2.2.2 Demonstrate how vehicles and operators will meet Technical Safety BC standards and other applicable certifications. Apply for Minster's certificate and operating permit. Clearly outline steps for obtaining necessary permits.

2.3 Maintenance Facility

2.3.1 Provide detailed plans for any spaces used to conduct regular maintenance on the streetcar vehicles.

2.3.2 Include a thorough condition assessment of any existing structures to be used by a licensed professional structural engineer in B.C.

2.3.3 Include a detailed plan for maintaining/modifying or removing the existing maintenance shed (if the shed or space is required as part of the trial); outline responsibilities for upkeep, potential upgrades, and secure storage for equipment.

2.3.4 Specify how the existing maintenance shed (if intended as part of the trial) will meet seismic standards and regulatory requirements, addressing liability coverage.

2.4 Presentation Center

2.4.1 Include detailed plans for the installation and operation of any facilities that will be used to greet customers, showcase the project, and/or provide space for staff working on site. Details should include the facility location, layout, visitor access, hours of operation and the proposed installation and removal dates.

2.5 South Coast British Columbia Transit Act (CBCTA) Compliance

2.5.1 Outline a plan and timeline for obtaining approval to operate as an Independent Transit Service from TransLink.

Note to Proponent: City staff understand that TransLink does not have interest in operating this service or incorporating this service under their compass card system.

2.6 Infrastructure Removal Plan

2.6.1 Outline a plan for the removal of all temporary infrastructure and restoration of affected areas at the end of the trial.

Note to Proponent: Proposals should include a focus on environmental preservation and demonstrate how they will leave the rail corridor in existing condition or better at the end of the trial.

3.0 Operating Plan

3.1 Service Levels

3.1.1 Identify the proposed hours of operation, service frequency, operating speed, and travel time between Olympic Village and Granville Island.

3.2 Fare Collection

3.2.1 Describe the fare structure and methods for customer payment.

3.3 Staffing

3.3.1 Identify proposed staffing levels during the trial.

3.3.2 Identify the roles and responsibilities of staff positions during the trial, clearly specifying which positions are expected to be customer-facing and which are not.

3.4 Safety and Security

3.4.1 Describe how the project will ensure the safety and security of streetcar passengers, pedestrians, and other road users

4.0 Community and Stakeholder Relations

4.1 Partner and Stakeholder Coordination

4.1.1 Outline strategies for ongoing communication and collaboration with Musqueam, Squamish and Tsleil-Waututh Nations and stakeholders,

ensuring alignment and transparency with TransLink, CMHC Granville Island, and the Seȟáḵw Partnership. Following review of the communication strategies proposed, the City may decide to lead specific engagements depending on the sensitivity of the party or topic.

4.2 Public Engagement

4.2.1 Present intended marketing strategies for the streetcar service.

4.2.2 Describe how members of the public will be able to interact with and provide feedback to the project team, including public engagement opportunities.

4.2.3 Estimate the anticipated positive and negative community impacts of the trial.

4.2.4 Describe how positive and negative community impacts will be measured during operation of the trial.

Note to Proponent: Discuss how positive impacts will be supported and negative impacts will be mitigated.

4.3 Performance Evaluation

4.3.1 Describe a strategy for data collection throughout the trial, focusing on ridership, vehicle performance, maintenance incidents, customer feedback, and community impact.

4.3.2 Describe how the trial's success will be evaluated and presented to the public and stakeholders, including the City.

Note to Proponent: Include commitment to share a final report with performance metrics, operational findings, and recommendations for potential permanent implementation.

5.0 Financial and Operational Responsibility

5.1 Cost and Funding Structure

5.1.1 Provide a clear budget for installation and upgrades of all infrastructure necessary for the trial.

5.1.2 Provide a clear budget for operational and maintenance expenses over the duration of the trial.

5.1.3 Provide a clear budget for the restoration of the rail corridor to its existing condition following the completion of the trial, specifically removal of any added infrastructure.

5.1.4 Confirm that all costs associated with the trial, including installation, operations, maintenance, insurance, and liability, will be covered by the proponent.

Note to Proponent: The City's role is limited to in-kind support, specifically staff assistance. No financial support from the City will be provided.

5.1.5 Confirm that no shared revenue will be provided to the City.

5.1.6 Use of the public right of way typical would require financial compensation to the City or access in the form of a grant. Use of land fees or grants would need to be confirmed by City Council.

Note to Proponent: Staff would like to recommend to Council to provide the right of way access as a grant in exchange for the implementation and operation of the streetcar, however staff cannot guarantee Council will support this recommendation. Proponents are advised to assign contingency for a land use fee.

5.2 Ridership Projects and Feasibility

5.2.1 Provide ridership estimate and data supporting these projections, considering peak hours, daily demand fluctuation, and estimated public interest from residents and visitors.

5.3 Risk and Liability Management

5.3.1 Submit a detailed risk management plan, addressing not limited to public safety, and operational contingencies.

5.3.2 Provide proof of liability insurance to cover any incidents or damages during the trial.

5.3.3 Proponents will be required to indemnify the City for any incidents or damages during the trial.

5.3.4 The City may require performance security in the form of a bond, letter of credit or other instrument to ensure that the City is able to remove equipment and restore the site if the Proponent defaults on its obligations or is unable to complete the requirements of the contract.

From: "Jasper Dikmans" <jjdikmans@gmail.com>
To: "Beveridge, Justin" <Justin.Beveridge@vancouver.ca>
"Newman, Andrew" <Andrew.Newman@vancouver.ca>
Date: 9/10/2024 9:39:02 AM
Subject: Streetcar
Attachments: Proposal - ChooChoo Pod Hotel.pdf

Hi Andrew and Justin,

I hope all is well.

Coincidentally, at an event last week I ran into a colleague of yours from Economic Development, Larissa Blumenschein. She asked me to put together a proposal document, which I just finished - please see attached. I thought you might want to see it too.

Have you heard anything from Building Code since we last connected Justin?

Thank you. Kind regards,

Jasper

Pod Hotel Proposal

By Jasper J. Dikmans

Table of contents

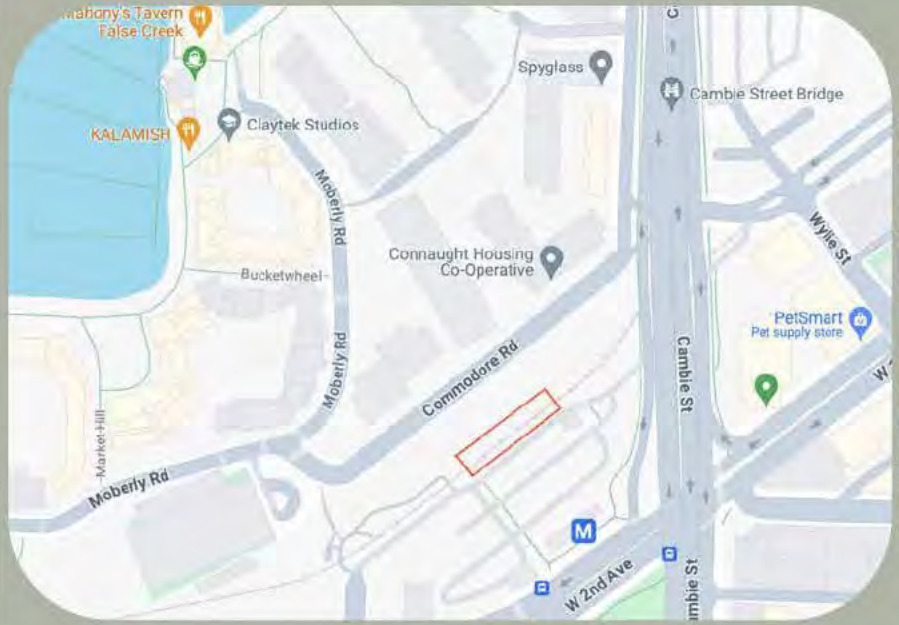
Introduction

The “Olympic Line”, part of the City of Vancouver’s Downtown Historic Railway, was a 1.8-kilometer streetcar service between Olympic Village station and Granville Island, launched for the 2010 Winter Olympics. After just 8 weeks, the service was shut down on March 21, 2010, due to a lack of available funds. The track and the former stops still exist — but they haven’t been used or maintained for the past 14 years. Multiple feasibility studies have been conducted over these years to resurrect the service, but the verdict is that that’s unrealistic because of high cost and better public transit alternatives.

Introduction, continued

Yet, this doesn't have to be the end of it. The Olympic Line has the potential to serve the City of Vancouver in a different way, by facilitating (temporary) hotel accommodations: The Olympic Line's train tracks can accommodate a standard 85" passenger railroad car, redeveloped as a pod hotel with a capacity of up to 58 beds. With space available to accommodate up to 9 carriages across the two stations and parts of the 1.8 km line, there's the potential to increase that to to 522 beds. This innovative approach is a hyper cost and time efficient way to tackle Vancouver's shortage of affordable hotel rooms — the projected timeline to have the first pod hotel up-and-running is just under 6 months.

Location



By Jasper J. Dikmans

Location - Past, Present

By Jasper J. Dikmans

Location - Future

By Jasper J. Dikmans

Location - Future

By Jasper J. Dikmans

Location - Future

By Jasper J. Dikmans

Location - Future

By Jasper J. Dikmans

Location - Future

By Jasper J. Dikmans

“Spruce” Night Train Concept

Developed by design consultancy 2050 Lab, the Spruce concept is a carriage design where all pods are located at an angle, resembling a spruce tree silhouette. This nature-inspired solution makes it possible to optimize the cabin space and make it more comfortable for each guest. The sleeping spaces are longer and the aisle between them wider. Each pod in the railway car is a well-thought personal space that has everything needed for a comfortable stay: A lie-flat twin bed, a place for clothes and luggage, a personal table, individual lighting, and device chargers. The Spruce design offers a new level of comfort at affordable rates.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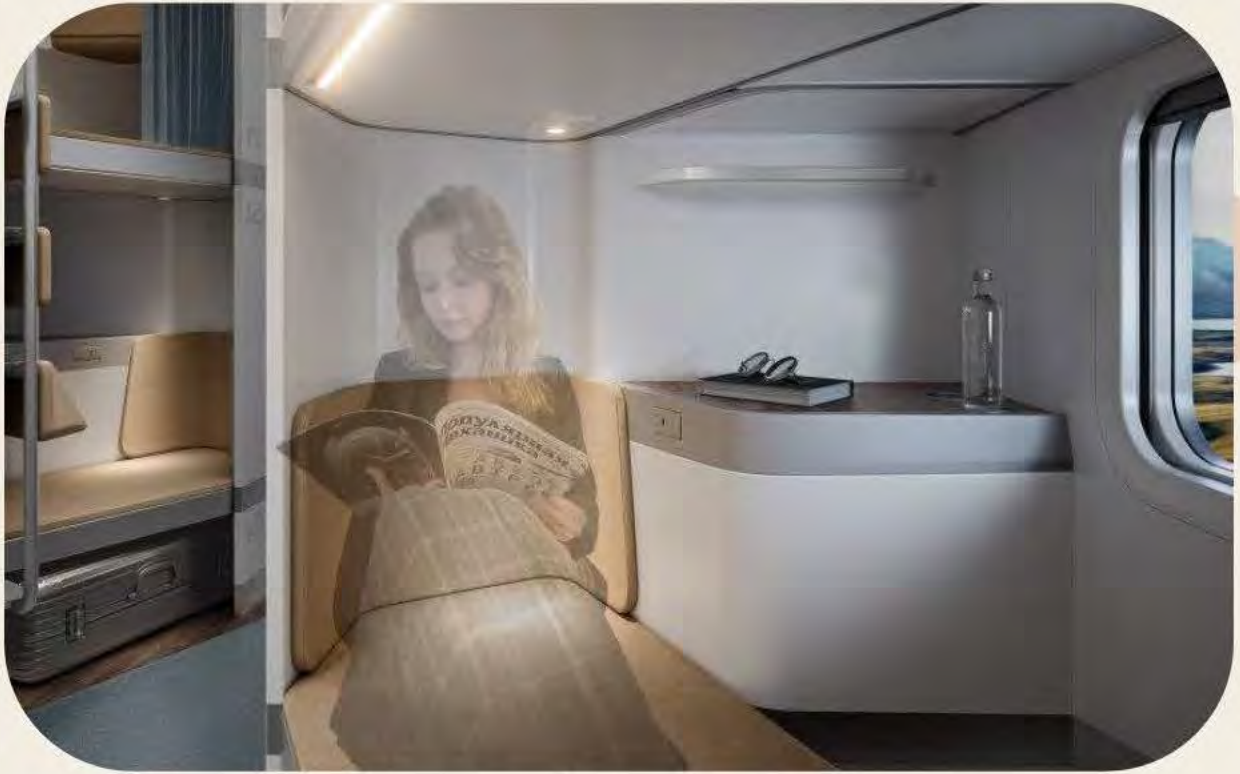
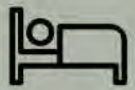


Features

Capacity

Each carriage can accommodate up to 58 guests



Amenities

Onboard toilets, showers, HVAC, and 24-hour front desk

Fire Safety

Smoke alarms, fire extinguishers, sprinkler system, and 2 ways out of every pod

Accessibility

A wheelchair accessible pod, toilet, and shower per carriage

Other Considerations

Earthquake Safety

The train carriages are made of steel. A high resistance and ductile material, steel frame construction has demonstrated its capacity to resist severe seismic events, making it the indisputable choice for seismic-resistant construction. In addition, the carriages' suspension system can absorb and mitigate shocks from seismic activity. The Pod Hotel train carriages being low-rise "buildings" obviously adds to their earthquake safety.

Thank you!

Do you have any questions?

Jasper J Dikmans
2-857 East 8th Avenue, Vancouver BC
jjdikmans@gmail.com
604 328 6719

SOUTH FALSE CREEK TRANSIT MARKET RESEARCH STUDY

Study Report

January 2025

Executive Summary

Through market research, analysis, and surveys in addition to travel demand modelling outputs, this market research study is designed to help the City gain a better understanding of the potential uptake and unique travel markets for a streetcar service though South False Creek. The study also explores what factors influence people's desire to use the service. The results of this study are intended for use by City of Vancouver staff to inform the future planning and design of a potential South False Creek transit service.

SURVEY KEY FINDINGS

Survey results indicate a strong interest in a potential transit service through South False Creek. Roughly three-quarters of all survey respondents indicated a moderate to high likelihood of using the service, with a slightly higher likelihood of use amongst women. The likelihood of using the service did not vary significantly by age or geography (i.e. City of Vancouver neighbourhood residents versus Metro Vancouver residents), with one exception: residents of South False Creek reported the highest overall likelihood of use. The highest-ranking factors influencing the attractiveness of a streetcar service are travel time, service frequency, and cost. Survey respondents are generally unwilling to pay an additional fare (above the standard transit fare); however, respondent's tolerance to pay a little bit more for the streetcar increases slightly if the fee is automatically deducted from a Compass Card. This aligns with the finding that more than two-thirds of all respondents would combine the streetcar trip with other transit modes, most commonly SkyTrain. Finally, two-thirds of all survey respondents indicated a moderate to strong likelihood of using a demonstration streetcar service during the 2026 FIFA World Cup.

TRANSPORTATION DEMAND MODELING KEY FINDINGS

To complement the 2019 City of Vancouver Streetcar Feasibility Study, travel demand modelling was conducted to estimate ridership for 2035 and 2050 under different sensitivity scenarios. The travel demand model forecasts 4.7 million annual riders in 2035 and 5.7 million streetcar riders in 2050 under default assumptions; however, very few of these are new transit trips. The model predicts that the streetcar will have very little impact to overall mode share. In 2035, 30% of riders are projected to be tourists, which increases to 40% in 2050. Modelling also shows a high sensitivity to fare prices. If the streetcar requires a unique ticket and additional fare, the forecasted ridership for all travel markets decreases between 13% and 28%.

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1. Introduction

A downtown streetcar system has been explored by the City of Vancouver since the 1990's, culminating in an approved alignment in 1999. In 2005, an updated analysis was conducted, which included a review of similar systems worldwide, research into the tourism and recreational market, a design and layout study, a comparative review of the streetcar system relative to local bus routes, and a ridership forecast.

Between the late 1990's until the early 2010's a heritage service was operated along the corridor, primarily as a tourism service. For two months in early 2010, modern streetcar vehicles were run along the corridor as part of a demonstration project in conjunction with the Olympic and Paralympic games.

Throughout much of the 2010's, there was no activity along the South False Creek railway corridor, although the potential to introduce LRT service along the corridor was considered as part of a combination option for SkyTrain and LRT to service central Broadway and UBC.

An updated feasibility study for the streetcar was completed in 2019, which included a technical assessment of alignment and facilities, ridership forecasts, a cost estimate, a phasing strategy and exploration of funding approaches. With respect to ridership forecasting, the study applied a travel demand model (the Regional Transportation Model) to estimate peak hour ridership, and then applied expansion factors based on observed ridership patterns on two bus routes that parallel the corridor. The study also identified that the segment between Arbutus Station and Main Street – Science World was likely the most suitable initial phase of implementation.

Over the course of the preceding decades, a re-emerging theme in the discussion of the streetcar system has been to what degree it should be considered a public transportation service, an urban design or economic development amenity, and/or a tourist attraction. Since the previous study in 2019, several initiatives have either been developed or have advanced, all of which could potentially affect the use of the streetcar as a conventional transit service:

- Major new development and area plans that will increase land use intensity and trip-making:
    - Sen̓áḵw,
    - Molson site,
    - Broadway Plan (known to be upcoming based on the Supportive Policies Agreement signed in 2018, but not yet in place),
    - South False Creek renewal,
    - New St. Paul's Hospital (planned, but now under construction).
- An increased interest in examining opportunities to reduce (or even remove) vehicular traffic on Granville Island – which could potentially be made feasible through improvements to transit service.
- Major transit investments, which could both complement and/or compete with a streetcar:
    - Broadway Subway Project (planned at the time, but now under construction),
    - Millennium Line UBC extension: technology and general route now confirmed, with further planning underway.

1.1 Study Purpose

The purpose of this assignment was to conduct a market research study to help the City gain a better understanding of the potential travel markets for a streetcar service though South False Creek. The study also explores what factors influence people's desire to use the service. Ultimately, the information generated by this study will help the City subsequently determine if the project should pursue further planning and design work, and which delivery model is best suited.

1.2 Background Information

Several sources of background information were reviewed for this study, including:

- *Vancouver Subarea Model (VanSAM) 3.0 Final Report*, March 2024, prepared by ISL Engineering and Land Services Ltd. and Acuere Consulting Ltd. on behalf of the City of Vancouver.
- *2022 Vancouver Transportation Fall Survey*, July 2023, prepared by R.A. Malatest & Associated Ltd and Associated Engineering Ltd. on behalf of the City of Vancouver.
- *Broadway Plan*, 2022, prepared by the City of Vancouver.
- *City of Vancouver Streetcar Feasibility Study*, November 2019, prepared by Mott MacDonald, Dialog and Steer on behalf of the City of Vancouver.
- *False Creek South Multi-Modal Transportation Assessment Summary Report*, October 2019, prepared by Urban Systems Ltd. on behalf of the City of Vancouver.
- *Granville Island 2040: Transportation Strategy*, 2018, prepared by Canada Mortgage and Housing Corporation.

1.3 General Approach

Our approach to obtaining the input necessary to help the City understand the potential demand of various travel markets for a future South False Creek transit service involves four primary processes. They are described in further detail in the following methodology section, and include:

- Pre-survey background information collection and travel market definition
- Development and implementation of a survey program
- Survey results post-processing
- Modelling analysis using a travel demand model

Table 1.1 described the approach for using one or more of these processes to address each of the questions identified by the City in the RFS. The primary focus of this assignment was the survey, however for some activities we have applied a travel demand model to complement and supplement the survey results. In particular, the application of a travel demand model allows for the simultaneous testing of several major changes (e.g. new prospective customers living in new developments, a new streetcar, SkyTrain extensions) that would be challenging to ask of survey respondents.

TABLE 1.1: STUDY APPROACH TO ADDRESS KEY QUESTIONS

QUESTIONS	PRE-SURVEY	SURVEY	POST-SURVEY	TRAVEL DEMAND MODEL
How many people would potentially use a transit service in the area?	Define travel markets and potential catchment areas. Use any available existing information (Census, employee surveys, tourism market research etc. to estimate market sizes.	Surveys to ask people what their trip purpose is, trip origin and destination etc.	Where applicable, weight/scale sample responses based on known demographic proportions.	Use VanSAM trip production / trip attraction outputs by trip purpose) to estimate potential changes in market sizes over time.
What are the demographics and characteristics of these user groups?	Collect Census information for area residents. Leverage any other available data source to collect demographic information on workers, visitors etc.	Collect demographic info from survey respondents.	Where applicable, weight/scale sample responses based on known demographic totals.	
Of these people, what portion would choose to use the streetcar? *Note: approach to this question relies on inputs from subsequent question.*		Ask if/how they would consider using the streetcar, under what circumstances, and how often?	Where applicable, weight/scale sample responses based on known demographic totals.	Use VanSAM to develop year forecasts (for non-tourist markets). Incorporate survey findings on streetcar perceptions into model.
How attractive is the streetcar service as compared to other modes?	Collect and assess boarding and alighting data on existing transit (e.g. Route 50). Ideally as disaggregated as possible to see seasonality, time of day etc. by stop.	Ask respondents why they choice the mode they did? If they didn't take transit, why not? If they did, what would they improve? Ask about priorities for improved service (speed, reliability, frequency, waiting areas, level boarding, circulation within vehicle/		Use VanSAM to develop forecasts. Provide estimates of % of trips diverted from autos, % diversion from transit, % new trips etc. Generate volume difference plots.
What other destinations or alignments should or need to be considered? *Note: 2019 study already lays out potential alignments; don't anticipate trying to second-guess the long-term network by adding new routes etc. through additional technical analysis.*		Ask an open-ended question to collect responses.		

QUESTIONS	PRE-SURVEY	SURVEY	POST-SURVEY	TRAVEL DEMAND MODEL
Are potential riders willing to pay a fare in addition to TransLink fare and how much?		Ask a question. Consider framing question as a special zone similar to the YVR Add Fare or West Coast Express where there is an extra cost, but it is "hidden" in your Compass Card stored value, and the payment process is seamless.		Use VanSAM to model a special/additional fare.
What are the ideal operating hours and frequency?	Review trip start and end times in Trip Diary, Vancouver Transportation survey, and/or bus route APC data.	Ask what would be the maximum time you would be willing to wait for a streetcar? How would this compare to buses? What would influence your willingness to wait?		Review forecasts to confirm that crowding penalties aren't diverting ridership due to service being overcapacity; if so, improve service and re-run analysis.
Is it important to be integrated into the Compass system or with other transportation modes?		Ask a question. Can use AquaBus/False Creek Ferries as an example of both a separate fare and separate fare media.		

2. System Overview

The *2019 City of Vancouver Streetcar Feasibility Study Report* provides the most recent comprehensive review of a potential downtown streetcar network and is shown in ***Figure 2.1*** – noting that the report includes several sub-variations on sections of the alignment. The streetcar was assumed to operate using two service routes:

- From Broadway and Arbutus Street to Chilco Street, via False Creek South, Southeast False Creek/Olympic Village, Crosstown, Gastown, and Coal Harbour. This route would provide connections with the SkyTrain system at the future Arbutus Station, Olympic Village Station, Main Street-Science World Station, and Waterfront Station. The short segment of this route running between Granville Island and Cambie Street (without the Sitka Square stop) formed the streetcar demonstration project that operated during the Olympic and Paralympic Winter Gates in early 2010.
- Thornton Street to Granville Street, via the False Creek Flats, Northeast False Creek and Yaletown. This route would provide connections with the SkyTrain system at the future Great Northern Way-Emily Carr Station, Main Street-Science World Station, Stadium-Chinatown Station, and Yaletown-Roundhouse Station.

Each route was assumed to operate with 8-minute service headways in the AM and PM peak hours, and 16-minute headways in the middays – noting that this results in 4 minute and 8 minute combined headways in the peak hours and midday, respectively, on the short section of track near the east end of False Creek that is used by both routes.

FIGURE 2.1: POTENTIAL DOWNTOWN STREETCAR NETWORK, INCLUDING FALSE CREEK FLATS EXTENSIONS (SOURCE: CITY OF VANCOUVER STREETCAR FEASIBILITY STUDY, 2019)

Although not implicitly included in the scope of the *City of Vancouver Streetcar Feasibility Study* which focused more on the Metro Core area, futureproofing for potential future streetcar extension was also included in the Arbutus Greenway planning process, as shown in ***Figure 2.2***.

FIGURE 2.2: POTENTIAL ARBUTUS GREENWAY EXTENSION (SOURCE: CITY OF VANCOUVER, 2020)

The 2019 *City of Vancouver Streetcar Feasibility Study* identified that the minimum initial phase would run between Granville Island and Cambie Street (i.e. the same route as the 2010 demonstration service), but that ideally a first phase would run from Arbutus Station in the west to Main Street-Science World in the east.

Subsequent to the completion of the previous study, the Sen̓áḵw development led by Squamish Nation has been advanced, with the first phases now under construction near the south end of the Burrard Street Bridge. Upon full build-out, the development is expected to include approximately 6,000 residential units (of which 20% are anticipated to be affordable units), 900 vehicle parking stalls and 4,500 bicycle parking stalls.

As shown in the figures above, the previous streetcar planning process assumed that at Granville Island the streetcar alignment would turn towards the south to connect to the Arbutus Greenway. However, as the former railway corridor extends towards Sen̓áḵw, there is also an opportunity to extend the streetcar towards that development.

An updated version of the preferable first phase from the 2019 study was assumed, where in the streetcar would run from a station at Sen̓áḵw (rather than Arbutus Station) in the west to Main-Street Science World in the east, as shown in ***Figure 2.3***.

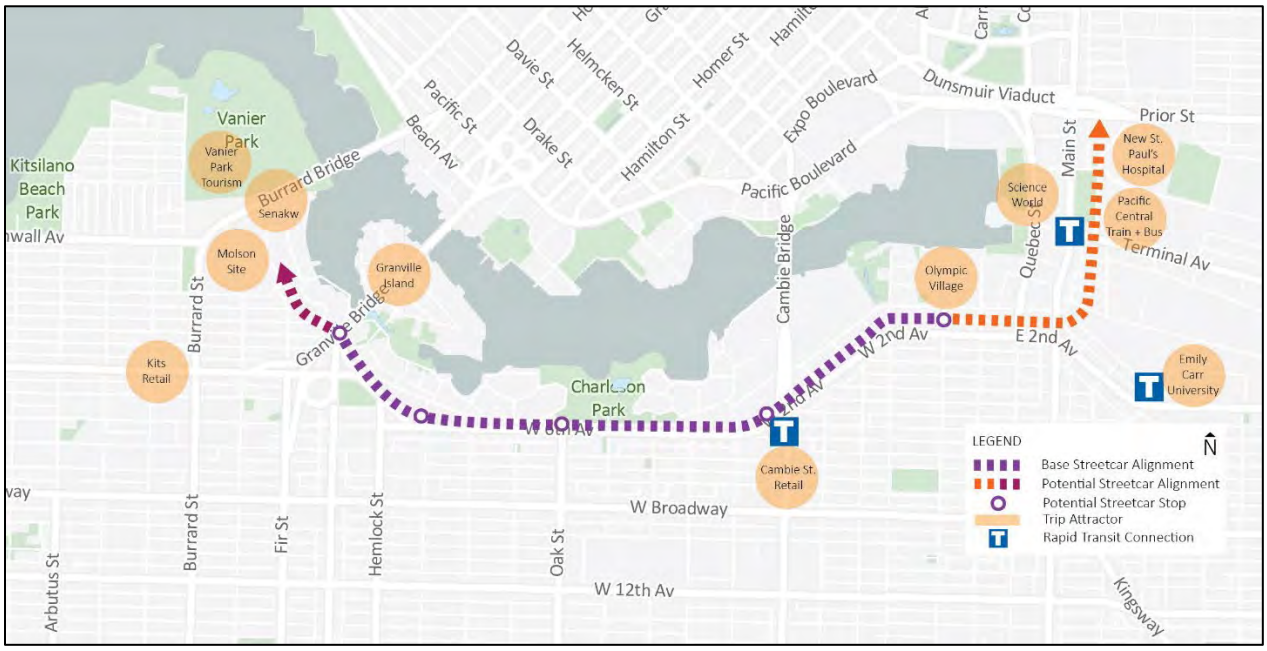


FIGURE 2.3: ASSUMED INITIAL SERVICE ROUTE

3. Travel Market Definitions

The study area / potential market for the streetcar service was identified by defining a 600-metre walkshed for the study area, as shown in ***Figure 3.1***. This walkshed value is consistent with TransLink's planning guidelines for RapidBus corridors, representing an in-between value that is less than the 800-meter walkshed for SkyTrain and more than the 400-meter walkshed for local buses.

FIGURE 3.1: ASSUMED INITIAL SERVICE ROUTE AND WALKSHED

The five key travel markets for the streetcar service are defined in ***Table 3.1*** and summarized below. It is possible for an individual to belong to more than one travel market.

- Residents
- Workers
- Visitors
- Tourists
- Through-Trips

TABLE 3.1: TRAVEL MARKET DEFINITIONS

TRAVEL MARKET	DEFINITION	RELATION TO VANSAM TRIP PURPOSE	EXAMPLE TRIPS
Residents	People who live within the study area	Production: Home-based purposes (Work, School, University, Shopping, Personal Business, Social, Escort).	A resident of Olympic Village commutes to downtown for work in the AM, and returns home in the PM.
Workers	People who work or attend post-secondary educational institutions within the study area.	Attraction: Work and University Full-Time Equivalent.	A resident of Richmond commutes to their job on Granville Island mid-afternoon, and then returns home at night.
Visitors	Residents of Greater Vancouver who travel to the study area for non-work-related trip purposes (e.g. shopping, recreation etc.).	Production: Non-home-based purposes Attraction: Home-based purposes (School, Shopping, Personal Business, Social, Escort) and non-home-based purposes.	A resident of Richmond visits a relative who lives on the Fairview slopes.
Tourists	Out of town (i.e. beyond Greater Vancouver) persons who travel to the study area.	Not included in the model.	A tourist travels to Granville Island to explore the public market.
Through-Trips	Trips that are simply passing through the study area – but not travelling to, from or within the study area.	Cannot be estimated at a daily level; only peak hours.	A post-secondary student who lives near Brentwood Town Centre in Burnaby passes through the area on the Route 84 bus on their way to UBC after transferring from the Millennium Line.

Table 3.2 provides travel market sizes for base year conditions. Note that tourism data represents 2019 values, according to available room-night demand data. Further detail on travel market sizes, including 2035 and 2050 forecasts, is available in ***Appendix D***.

TABLE 3.2: TRAVEL MARKET SIZES (2017 BASE YEAR)

MARKET	UNIT	VALUE
Residents	Daily trips	89,837
Workers	Daily trips	98,290
Visitors	Daily trips	254,480
Tourists	Annual room-night demand / 365	18,900

4. Market Research Survey Approach

To gauge interest in a potential new transit service in the South False Creek area across each of the travel markets, two surveys were conducted – an online panel survey and an intercept survey. Surveys were undertaken by Mustel Group on behalf of Parsons. The surveys are designed to help the City of Vancouver better understanding the demand for a potential transit service and factors that may influence its usage.

4.1 Survey Instruments

The two survey formats target different travel markets. While both surveys are designed for residents, workers, and visitors to the South False Creek area, the online survey is exclusive to Metro Vancouver residents and the intercept survey allows for respondents from outside the region (i.e. the tourist market). Through trips are addressed in both the online and intercept surveys but note that the response rate for through trips on the intercept survey is likely a small percentage of total respondents given the nature of the survey locations. ***Table 4.1*** summarizes the travel markets targeted by the different survey formats.

TABLE 4.1: TRAVEL MARKETS TARGETED BY SURVEY FORMATS

TRAVEL MARKET	ONLINE PANEL SURVEY	INTERCEPT SURVEY
Residents	Yes	Yes
Workers	Yes	Yes
Visitors	Yes	Yes
Tourists	No	Yes
Through-Trips	Yes	Yes*

*Likely small base size

Both survey methods have unique benefits and limitations. Through trips were the most difficult travel market to capture through the surveys. The Olympic Village intercept survey location (see Section 4.3 for more information) resulted in the highest proportion of through trips. Online survey respondents that were asked about their last trip to the area may not consider a trip that passed through the area for their response. Additionally, the nature of the intercept survey allows for more flexibility of responses, as survey administrators asked open-ended and follow-up questions. Conversely, the online survey does not provide this same flexibility, as respondents were given a list of pre-defined responses, with the option to provide additional information. Finally, while the online survey purposefully targets different Metro Vancouver municipalities, it does not sample from distinct neighbourhoods within the City of Vancouver (i.e., South False Creek residents). Survey results represent a small percentage of South False Creek residents.

4.2 Survey Questionnaires

This section provides a high-level overview of the survey questions. The complete online and intercept questionnaires can be found in ***Appendix A*** and ***Appendix B***, respectively, and were developed jointly by Parsons and Mustel.

ONLINE SURVEY

The online questionnaire consists of 20 questions. The first two questions ask details about the respondent's last trip to the area, including the origin/destination, purpose, and modes used. The next six questions are designed to gauge interest in the streetcar service and to understand how respondents would use the service. The next five questions ask specifics about the streetcar service and factors that would affect its usage. The final seven questions collect demographic information about the respondent.

Maps of the area showing the proposed streetcar alignment, the walkshed of the service, and existing and future rapid transit routes were provided. A tabular comparison of the streetcar service versus the existing bus route 50 provided respondents with key performance metrics of the two technologies, including travel time, station amenities, and boarding.

INTERCEPT SURVEY

The intercept survey consists of 28 questions and follows a similar structure to the online questionnaire. The first eleven questions ask about the respondent's trip to the location where they are surveyed (including origin/destination, purpose and modes), their typical travel patterns to this location, and their public transit use. The remaining questions are the same as the online questionnaire, asking about streetcar interest, usage, factors impacting usage, and respondent demographics. The same maps and tables from the online questionnaire are provided in the intercept for context.

4.3 Survey Methodology

This section describes the process of administering the two survey formats, including the target audiences, sample sizes, and methods for delivering the surveys.

ONLINE SURVEY

The online panel survey was administered to a sample of 1,200 Metro Vancouver residents, as summarized in ***Table 4.2***. Residents were disproportionately sampled to ensure all areas were adequately represented and to collect an oversampling of residents within the City of Vancouver. Respondents were screened based on their area of residence, age, and most recent visit to the South False Creek area, creating a group of respondents who, a) are residents of Metro Vancouver, b) are at least 18 years of age, and c) have visited the area within the past 12 months.

TABLE 4.2: SAMPLE SIZE BY LOCATION - ONLINE SURVEY

AREA OF RESIDENCE	BASE SIZE
Total	**1,200**
City of Vancouver	500
South False Creek	28*
Burnaby/New Westminster	125
North Shore	125
Northeast	125
Southwest	125
Southeast	200

*Small base size

Table 4.2 summarizes the sample size of each region. The sample was weighted to match the Canada Census on the basis of age and gender within the region to bring the total sample into proper proportion on relative populations.

INTERCEPT SURVEY

The intercept survey was conducted at three locations within the South False Creek area:

- Science World: On Terminal Avenue outside the northwest entrance to the Main Street Science World SkyTrain Station and in and around Science World.
- Olympic Village Station/Olympic Village: On West 2nd Avenue outside the Olympic Village SkyTrain Station and in and around Olympic Village Square.
- Granville Island: At the northwest corner of the West 2nd Avenue and Anderson Street entrance to Granville Island and at various high traffic areas on Granville Island.

Surveys were conducted among residents, workers, visitors, tourists, and those passing through the area from August 14th to 23rd between the hours of 8:30am and 7pm. A $5 gift card was given to respondents as a token of thanks for their time. Multilingual interviewing was used as needed.

Table 4.3 lists the number of surveys performed at each location. A total of 530 online surveys were collected; 64% were completed on weekdays and 36% on the weekend. The survey was conducted as randomly as possible. Steps were taken by interviewers to ensure a random selection of respondents and an even distribution of interviews across the time period and study area.

TABLE 4.3: SAMPLE SIZE BY LOCATION - INTERCEPT SURVEY

AREA OF RESIDENCE	BASE SIZE
Total	**530**
Science World	177
Olympic Village/SkyTrain	174
Granville Island	179

5. Survey Findings

This section provides an overview of the findings from both the online and intercept surveys, noting common trends and key differences in the findings from the different survey formats. Full survey responses are provided in **Appendix C**.

5.1 Existing Travel Patterns and Choices

The initial survey questions were designed to gauge an understanding of the respondents' travel choices on their trip(s) to the South False Creek area and factors that may influence their decision to travel to the area. The key findings from those questions are summarized here.

MODE SHARE

As shown in ***Figure 5.1***, intercept survey respondents most commonly report transit (SkyTrain, bus, or SeaBus) as one of the modes used on their last trip to the area, followed by walking and private vehicle. Note that respondents were permitted to select more than one travel mode, therefore percentages in ***Figure 5.1*** represent the total number of times a mode was selected relative to the total number of survey respondents and can exceed 100%. Transit was also the most common *primary* mode of travel amongst intercept respondents (45%). By travel markets, visitors from other parts of Metro Vancouver were the most likely to travel to the area by transit.

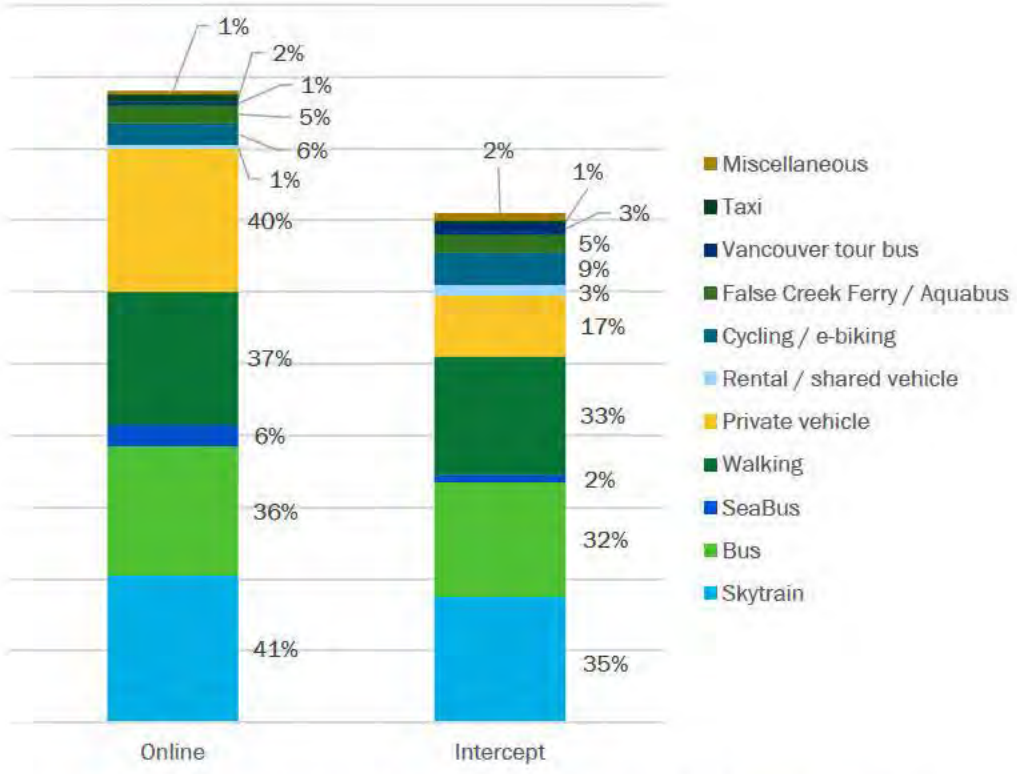


FIGURE 5.1: MODE SHARE ON MOST RECENT TRIP TO STUDY AREA (ONLINE AND INTERCEPT)

The online survey provides similar findings. Transit also the most common travel mode reported by respondents, followed by private vehicle and walking. Roughly one quarter of respondents travelled exclusively by transit, while another 30% combined transit with another mode. By market segment, workers were most likely to use transit to access the area, while visitors and through travelers were most likely to use private vehicles.

Both online and intercept results indicate that visitors under the age of 35 were most likely to use transit, and residents, as expected, are most likely to walk to the area (74%).

REASONS FOR CHOOSING TRANSIT

Intercept respondents were asked about their reasons for selecting transit over other travel modes on their trip to the survey location. Lower costs and shorter travel times were the top reasons (38% each), followed by a lack of access to other travel modes. These responses did not differ significantly by travel market segments or demographics.

FREQUENCY OF TRAVEL AND INFLUENCE OF TRAVEL OPTIONS

On the online survey, 40% of all respondents reportedly visit the area monthly or more often, with 20% visiting weekly and 5% visiting daily. The intercept survey reports even higher percentages (64%) of respondents who travel to the area monthly or more often, but 78% of tourists visit less often than yearly. On both surveys, frequent visitors to the area are much more likely to be from the City of Vancouver and to live or work (or both) in the area.

Propensity to visit the study for each travel market is summarized in ***Figure 5.2*** and ***Figure 5.3*** for the online survey and intercept survey, respectively.

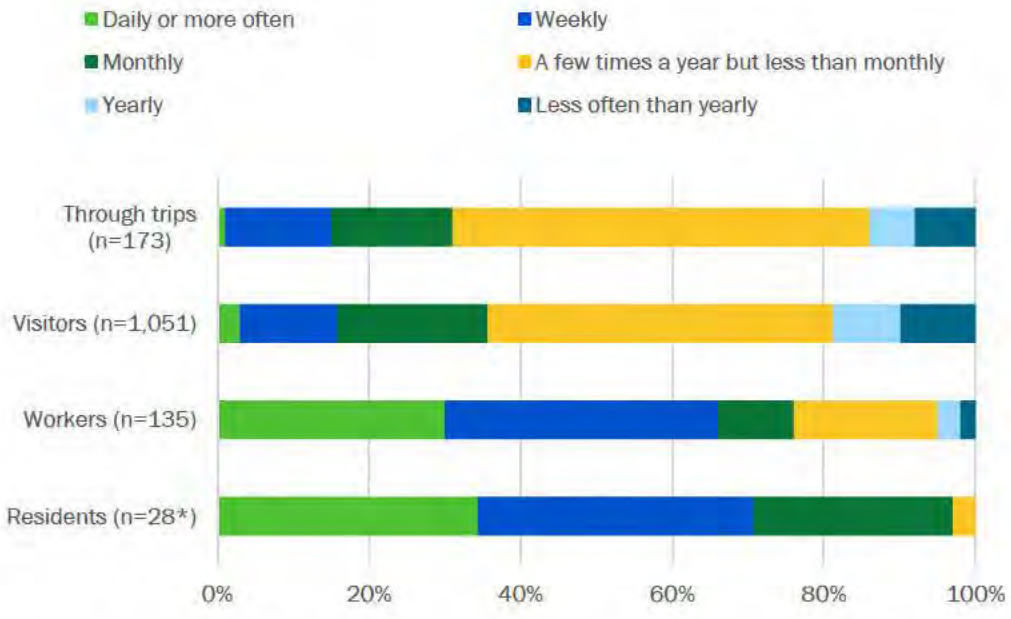


FIGURE 5.2: FREQUENCY OF TRAVEL TO STUDY AREA BY TRAVEL MARKET (ONLINE SURVEY)

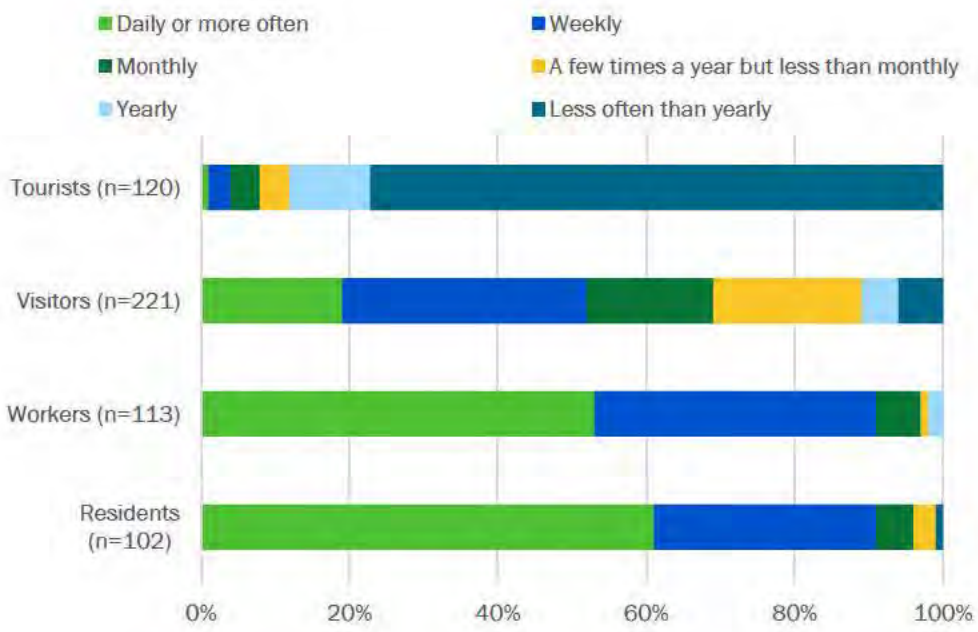


FIGURE 5.3: FREQUENCY OF TRAVEL TO STUDY AREA BY TRAVEL MARKET (INTERCEPT SURVEY)

Online survey respondents were asked about the impact of travel ease to the area on their choice to travel there. 84% of respondents said that their choice to travel to the area was at least somewhat influenced by their ability to easily travel there. Respondents from Burnaby and New Westminster were most influenced by this factor, while respondents from the Southeast and Southwest regions of Metro Vancouver were less influenced. Regular transit users are somewhat more likely to be influenced by this factor. Those most influenced are considerably more likely to use the proposed streetcar service.

5.2 Streetcar Interest and Usage

The next portion of the questionnaires described the potential transit service and ask specifics about the respondents' interest in the service and potential usage patterns. This section summarizes key findings from these questions.

STREETCAR INTEREST

A majority of all (both online and intercept) survey respondents indicated that they would use the South False Creek streetcar service if it existed. 83% of respondents on the intercept survey said they are likely to use it, including 58% who are very likely to use it. Similar results are seen on the online survey, where 72% are likely to use it, including 34% who are very likely. The percentage likelihood to use the service by travel market segment is illustrated in ***Figure 5.4***.

From the intercept survey, visitors from the City of Vancouver and other regions of Metro Vancouver are equally likely to use the potential service, while South False Creek area residents are most likely to use it. Women are slightly more likely to use the streetcar than men (87% versus 79%), but there are no notable differences by age. By travel market, residents and workers are most likely to use the service. There are no statistically significant

differences in use likelihood based on income, party size, or working status. Those who never use transit are least likely to use the service, but this group represents a small base of respondents.

Results from the online survey are similar to the intercept with minor demographic differences. Respondents aged 18-34 are most likely to use the service, but those under 65 are also more likely to use the service than those above the age of 65. Visitors from Burnaby/New Westminster, the City of Vancouver, and the southwest Metro Vancouver region were most likely to use the service, while North Shore residents were least likely. Much like the intercept results, the online survey results show that women are slightly more likely than men to use the service (74% versus 69%). Findings from the two surveys by travel market are summarized in ***Figure 5.4***. Residents and workers are more likely to use it than visitors or through travelers, and regular transit users are much more likely to use the service than those who use transit less often or never.

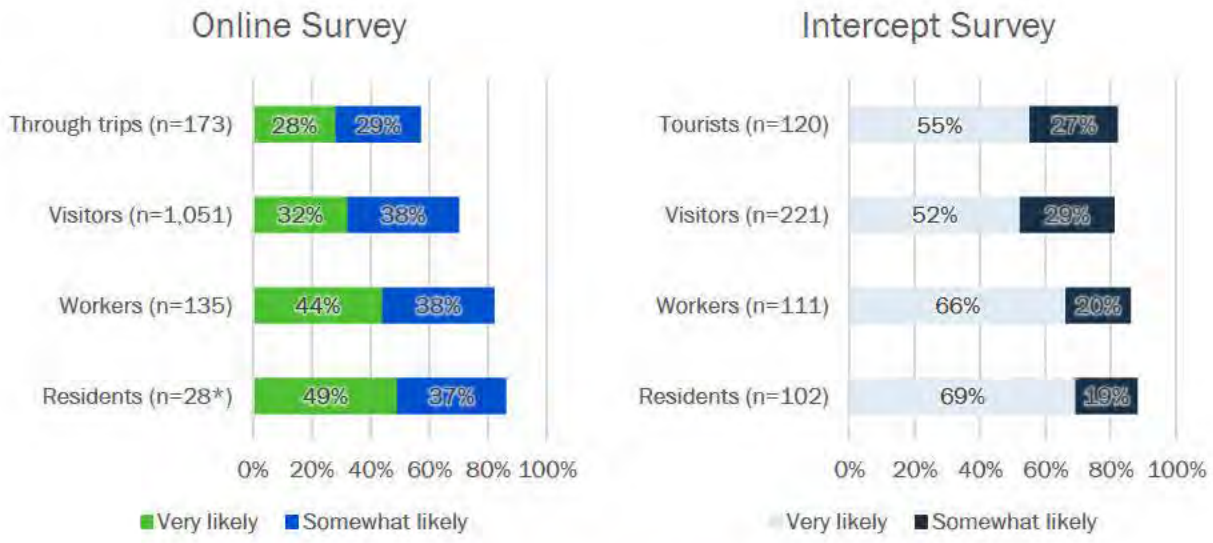


FIGURE 5.4: LIKELIHOOD TO USE STREETCAR BY TRAVEL MARKET SEGMENT (ONLINE AND INTERCEPT)

If the respondent indicated they were unlikely to use the streetcar service, both surveys asked about the reasons for the unlikelihood, with the most common reason being that they don't travel to the area often enough. Other common reasons were that it is not an applicable travel route or that there are better travel options through the area, or simply that the respondent does not typically use transit.

POTENTIAL USE FREQUENCY

On the intercept survey, over half of respondents who were likely to use the streetcar service reported that they would use it at least weekly, with 16% using it daily. Workers would be the most frequent users, followed by South False Creek area residents. A significant portion of residents from outside the City of Vancouver are still likely to use the service regularly. Those who currently travel to the area by transit, walking, or cycling would use the service most frequently when compared to other modes. Demographic characteristics do not lead to a statistically significant variation in usage frequency.

Online survey respondents would use the service less frequently than intercept survey respondents. Only 18% of all online respondents would use it weekly or more often. Potential usage would be most frequent amongst residents and regular transit users.

OTHER DESIRED ALIGNMENTS

Survey respondents were asked about their preferred locations for a potential extension of the streetcar service—the results of which are summarized in ***Figure 5.5***. Respondents were permitted to select more than one location; therefore, the reported percentages represent the total number of times a location was selected by the total number of responses and can therefore sum to more than 100%. Additionally, in the online survey, respondents were presented with a list of possible alignments whereas the intercept question was asked in an open-ended manner. This distinction likely influenced respondents to select multiple destinations more often in the online survey.

Intercept survey respondents most commonly listed
Stanley Park, Kitsilano, Point Grey, UBC, and Yaletown were the most popular locations to go to via the streetcar identified by intercept survey respondent. Residents of the City of Vancouver most commonly selected Kitsilano, Point Grey, and UBC, and are more likely to want the streetcar extended south to Broadway along Arbutus, while tourists are most interested in an extension to Stanley Park.

Online survey respondents listed Stanley Park and Kitsilano, Point Grey, and UBC as top areas for extension of the streetcar service. Like the intercept sample, City of Vancouver residents are most likely to want a streetcar extension south to connect to the Broadway Subway. Residents and workers are more likely to mention extending the line to Yaletown or the West End.

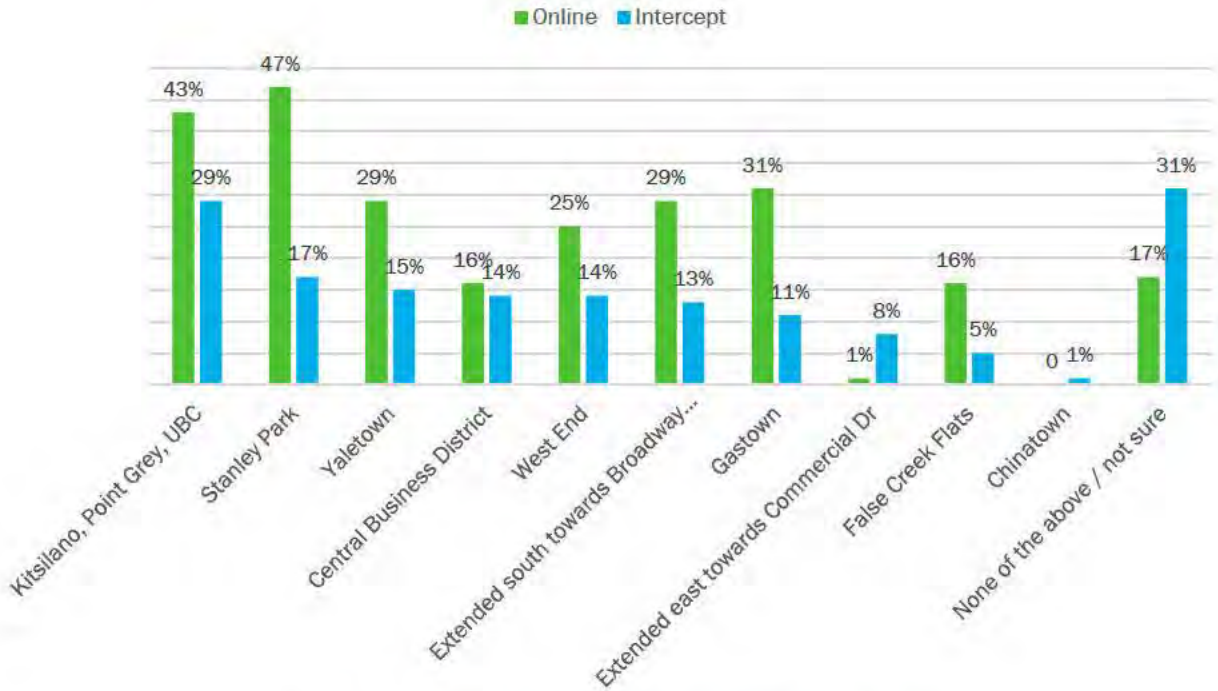


FIGURE 5.5: DESIRED STREETCAR ALIGNMENTS (ONLINE AND INTERCEPT)

5.3 Influences on Usage

The final group of questions asked for details about how respondents would like the potential transit service to operate. The key findings are summarized here.

SERVICE FEATURES IMPACTING USE

Survey respondents were given a list of service features that may impact their choice to use the streetcar and asked to prioritize the list. ***Figure 5.6*** illustrates the percentage of top prioritizations each factor received.

The top service feature mentioned on the intercept survey was travel time, followed closely by service frequency and the cost of the fare. On the online survey, cost of the fare was selected most frequently, followed by travel time, service frequency, and the ability to pay the fare using a Compass Card. Different travel market segments do not show significant variation in responses, nor do demographics or likelihood to use the service. The integration of the payment into the Compass system, however, is more important to regular transit users and residents of the study area.

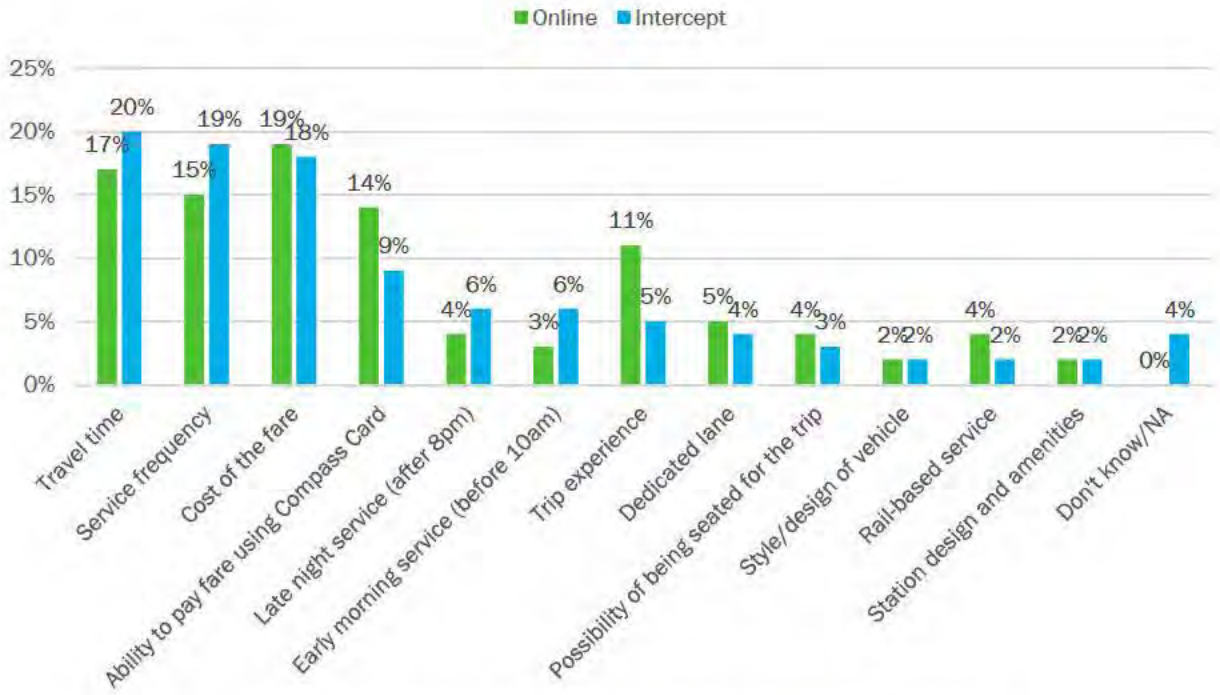


FIGURE 5.6: SERVICE FEATURES IMPACTING STREETCAR USE (INTERCEPT AND ONLINE)

When analyzing the features that ranked most often in the top five, the top four service features mentioned by respondents are consistent between surveys: travel time, service frequency, fare cost, and the ability to pay fare using a Compass Card. The fifth most selected feature on the intercept survey was late night service, and on the online it was trip experience.

On the intercept survey, respondents who had travelled to the area by transit or bicycle ranked early morning service slightly higher, as did residents under 45 and workers. Late night service was prioritized more often by visitors under 45 years of age. Residents more commonly prioritized trip experience, while visitors and tourists prioritized travel time more than other markets. Respondents who frequently use transit ranked the ability to pay by Compass Card and late-night service higher than respondents who use rarely use transit.

On the online survey, respondents who had most recently travelled to the area by private vehicle were more likely to prioritize service frequency and trip experience, while service frequency and travel time tended to be more important for the visitor and through trip travel markets.

WILLINGNESS TO PAY

Respondents were asked about their willingness to pay a fare for the streetcar service, and the amount they would be prepared to pay. These results are shown in *Figure 5.7*.

When asked about their willingness to purchase a separate ticket to board the streetcar, only 30% of intercept respondents and 37% of online respondents indicated that they are willing to do so. Respondents who are likely to use the service are also more willing to purchase a separate ticket than those who are unlikely to use the service (32% intercept, 42% online), but results do not show significant variation between market segments or demographics.

Intercept survey respondents most commonly said they would be willing to pay $3-$4 for a single fare on the streetcar service (38%), followed closely by $2-$3 (33%). Responses are relatively consistent across market segments and demographics. Respondents who are likely to use the service are generally more willing to pay slightly more than those who are unlikely to use the service.

Online survey respondents most commonly said they would be willing to pay $2-$3 for a single fare (39%), followed equally by $1-$2 (22%) and $3-$4 (22%). There is no significant difference in responses by market segments or demographics, however, like the intercept survey findings, respondents who are likely to use the service are willing to pay slightly more than those who are unlikely to use the service (41% at $2-$3, 25% at $3-$4).

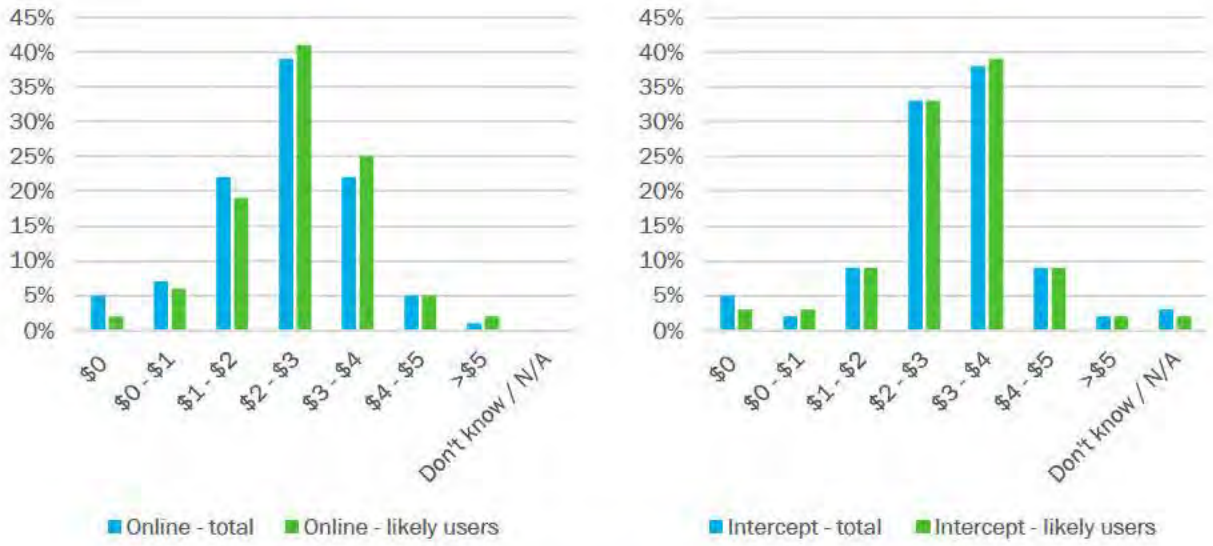


FIGURE 5.7: AMOUNT RESPONDENTS ARE WILLING TO PAY FOR A SINGLE FARE (ONLINE AND INTERCEPT)

For those unwilling to purchase a separate ticket, they were asked if they would be willing to pay an additional fee that was automatically subtracted from their Compass Card. 45% of intercept respondents and 39% of online respondents indicated they would be willing to pay the fee, while a majority of respondents on both surveys said they would still not be willing to pay additional fees on top of TransLink's base fare.

WILLINGNESS TO WAIT

When asked about the maximum time they would be willing to wait for a streetcar, the most common response was 5 to 10 minutes (40% of intercept respondents and 44% of online respondents). A further 26% of intercept respondents are willing to wait up to 15 minutes, while the second most common response on the online survey was 3 to 5 minutes, at 34%. Generally, intercept respondents were more willing to wait longer for a streetcar than online respondents. Responses are mostly consistent across demographics, but visitors and tourists are willing to wait slightly longer for a streetcar than residents and workers.

PREFERRED SERVICE HOURS

While desired service hours of the streetcar service varied across surveys, there was consistently higher reported potential use between 9am and 9pm, rather than early morning or late-night service. The 9am to 12pm timeslot was most commonly selected in the intercept survey, and 12pm to 6pm was the most common response on the online survey. Early morning service (6am to 9am) was more popular on the intercept survey, with 32% of respondents indicating potential use at that time, compared to just 12% of online respondents. Residents and workers were most likely to use early morning service than other market segments, and workers are most likely to use the streetcar service after 9pm. Visitors under the age of 55 are more likely to use the streetcar after 6pm than those over 55.

COMBINATION WITH OTHER MODES

Most respondents (online and intercept) are likely to combine the use of the streetcar service with another transit mode, most commonly SkyTrain, followed by bus. Both current frequent users of transit and non-transit users indicate they would combine the streetcar service with other transit modes, indicating a potential overall increase in transit use.

5.4 World Cup Demonstration Streetcar

Roughly two-thirds of all respondents stated that they are likely to use a streetcar service during the 2026 FIFA World Cup if it were offered, including 70% of intercept survey respondents and 67% of online survey respondents. The distribution of responses on both the online and intercept surveys is summarized in ***Figure 5.8***.

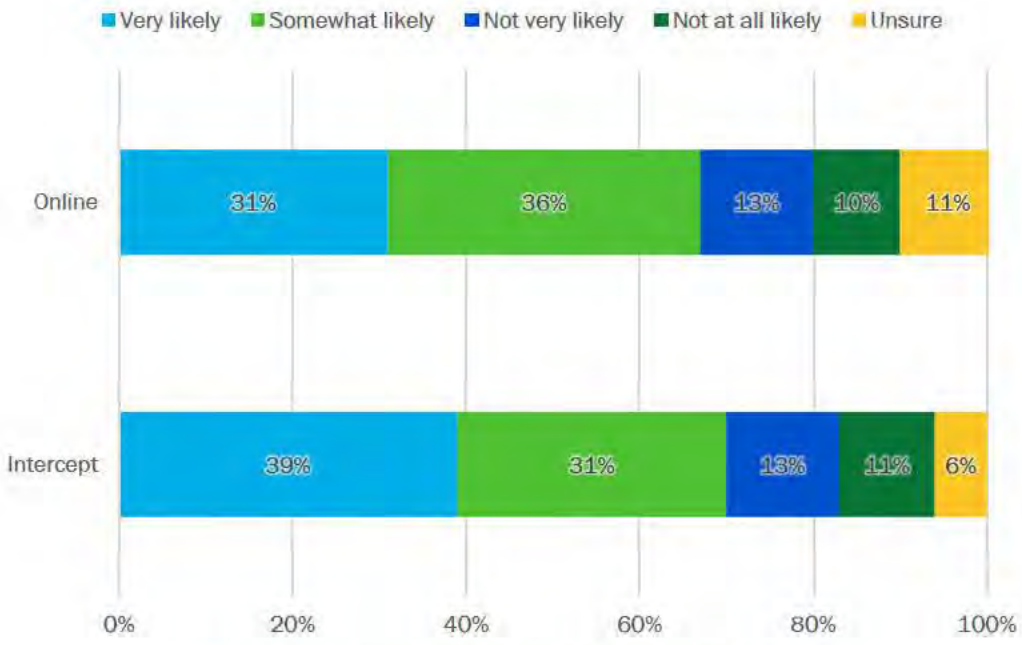


FIGURE 5.8: LIKELIHOOD TO USE WORLD CUP DEMONSTRATION STREETCAR

Based on intercept results, residents of the South False Creek area are more likely to use a demonstration streetcar service than other travel markets (79% versus 66-68%), and those travelling in a party (i.e. 2 or more) are slightly more likely to use the service than those travelling alone. There is no notable difference by age or gender.

Based on online results, respondents under 65 years of age are slightly more likely than those over 65 to use a demonstration streetcar service, especially those under 35. Likelihood to use the service does not vary significantly by gender or area of residence. Those who travel by transit at least once per week are much more likely to use the service, as well as those who live or work in the South False Creek area.

6. Supplementary Analysis

The online and intercept surveys provide insights into attitudes, perceptions and interest in a streetcar system along the corridor, and herein are complemented with ridership estimates for a range of potential scenarios. The primary tool for ridership analysis is VanSAM, which captures ridership relating to the residents, workers, visitors and through-trips markets. Potential tourism-related ridership is captured separately. The ridership estimates provided herein are intended to provide an indicative range of ridership levels and context on how factors may influence ridership potential. However, these estimates are not considered to be "investment-grade" forecasts for a service.

The proposed streetcar system coded into the VanSAM model is shown in ***Figure 6.1***.

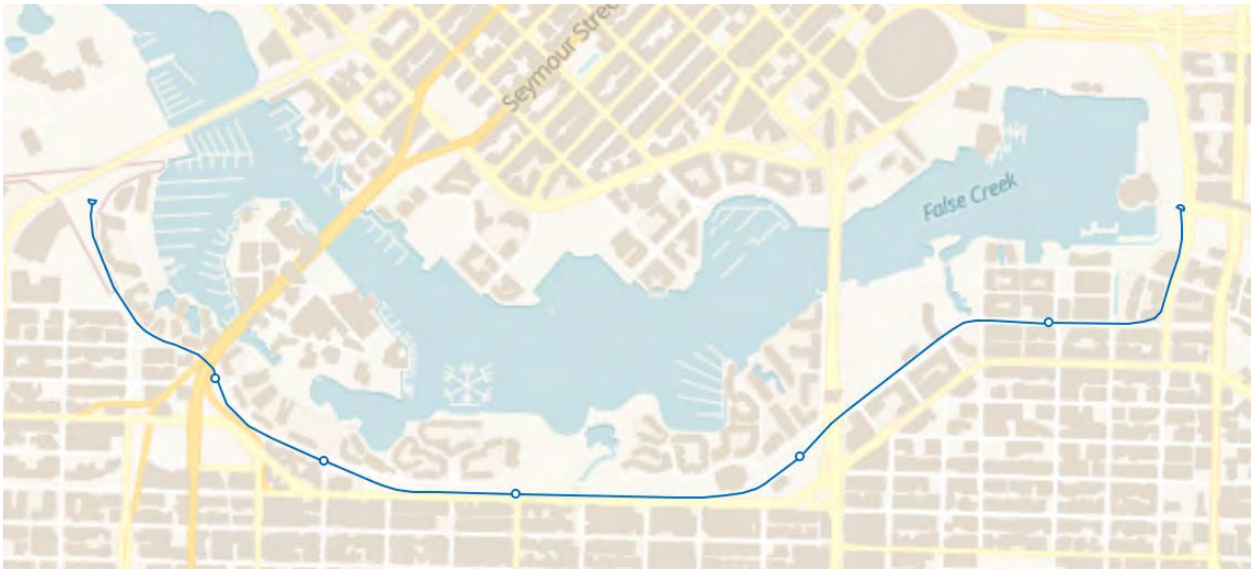


FIGURE 6.1: STREETCAR SYSTEM CODING

6.1 Modelled Ridership Scenarios

Several ridership scenarios were developed for assessments, as summarized in ***Table 6.1***.

All model scenarios assume a service level of 8-minute headways in each direction. As outlined in the discussion of passenger willingness to wait, 5–10-minute wait times were the most common threshold for respondents, and therefore an 8-minute headway was selected as an appropriate assumption for modelling. While some respondents would prefer shorter (3-5 minute) waits, this is likely to result in a service that is heavily under-capacity and likely to not be a financially sustainable service level.

TABLE 6.1: VANSAM RIDERSHIP FORECASTING SCENARIO DEFINITIONS

SCENARIO	SCENARIO ASSUMPTIONS
Base Case	• No build. No streetcar.
Streetcar Default	• Fares fully integrated with TransLink network (no added fare). • Streetcar coded as mode 'f' (LRT) in VanSAM. Affects modal attractiveness and perception of in-vehicle time. • Modal hierarchy in RTM/VanSAM goes SkyTrain -> LRT -> BRT -> Bus • TransLink 10-Year Priorities network, which includes UBCx. • Daily/annual expansion using general TransLink numbers.
Technology Perception Sensitivity	• As shown in ***Figure 5.6***, the most important considerations for willingness to use a streetcar are tangible travel features (travel times, cost, etc.) rather than intangible benefits of a streetcar relative to a bus. Therefore, this scenario assumes that people do not see the streetcar as a significant improvement relative to a high-quality bus service. • Streetcar coded as mode 'g' (BRT), which has a lower modal attractiveness and longer perceived in-vehicle time than mode 'f' (LRT). • Otherwise, same as streetcar default scenario.
UBCx Sensitivity	• Remove UBCx (line ends at Arbutus); replace with Arbutus->UBC B-Line at 2-minute headways. • Otherwise, same as streetcar default scenario.
Fare Sensitivity	• Treat the streetcar as a separate system, with $2.50 fares. Note that the implementation of this is imperfect, and the results should be treated as indicative only. • Otherwise, same as streetcar default scenario.
Parking Cost Sensitivity	• Set study area zones to have an average parking cost equivalent to the maximum value recognized in the model (nominally, $10). • Otherwise, same as streetcar default scenario.

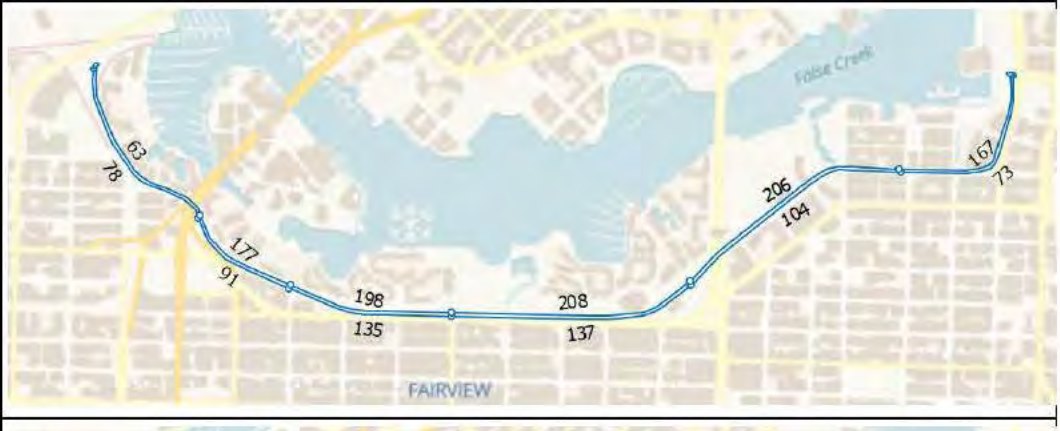
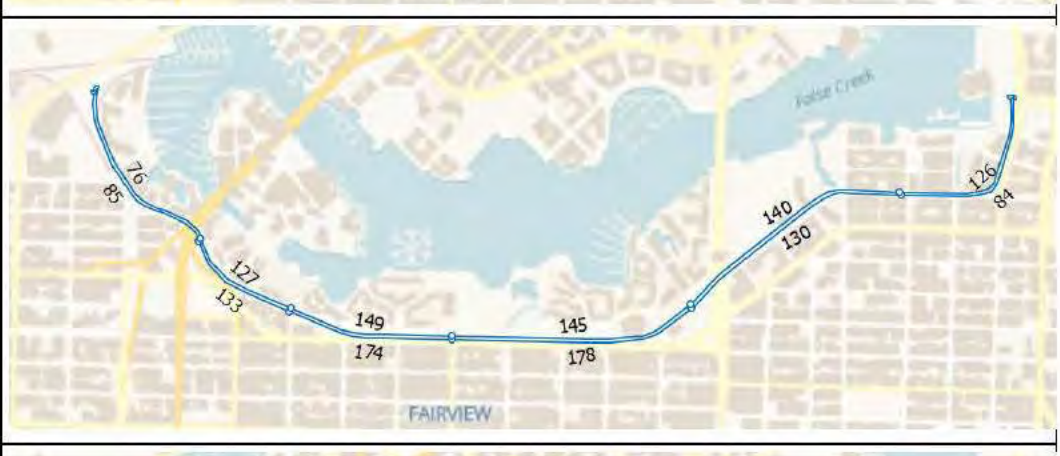
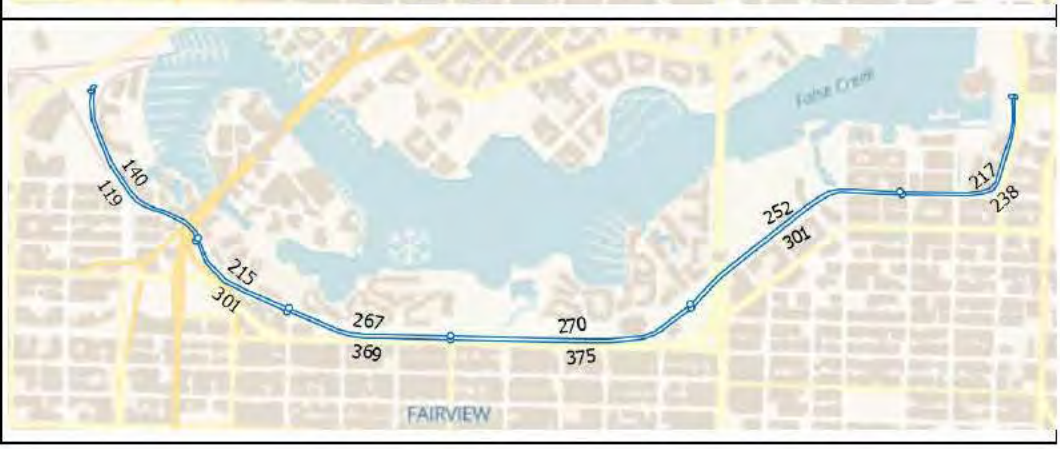
6.2 Analysis of Modelled Ridership

Key findings from the modelled scenarios are summarized below.

LINK LOADS

Link loads for the Streetcar Default scenario are shown in ***Table 6.2*** below. At the 8-minute headways assumed in the analysis, the link provides a planning capacity of 1,275 persons per hour per direction (pphpd). At this service level, overcrowding is not anticipated to be a concern during regular weekday operations. While these forecasts do not include the incremental ridership from the tourist market, it is anticipated that this ridership would likely be distributed throughout the day, and concentrated on the weekends.

TABLE 6.2: 2035 STREETCAR DEFAULT PEAK HOUR LINK-LOAD VOLUMES

HOUR	RIDERSHIP VOLUMES
AM Peak Hour	
MD Peak Hour	
PM Peak Hour	

Forecasted peak-point-peak-direction link loads for each ridership scenario are summarized in ***Table 6.3*** below. In all scenarios ridership is anticipated to be well within the capacity of the streetcar system (1,275 pphpd).

TABLE 6.3: 2035 PEAK DIRECTION RIDERSHIP (PPHPD) BY SCENARIO

SCENARIO	AM	MD	PM
Streetcar Default	208	178	375
Technology Perception Sensitivity	152	112	278
UBCx Sensitivity	217	184	399
Fare Sensitivity	131	171	360
Parking Cost Sensitivity	225	186	400

USAGE PATTERNS

During the trip assignment stage in VanSAM, trip purposes (which are used to infer travel markets, as summarized previously in ***Table 3.1***) are not retained, and therefore it is not possible to classify streetcar riders by travel market (i.e. residents, workers, visitors). However, a select line analysis can be undertaken for the streetcar line to identify the overall trip patterns of people using the streetcar. A select line analysis for the 2035 AM peak hour Streetcar Default scenario is shown in ***Figure 6.2***. As shown, much of the ridership on the streetcar consists of "streetcar-only" trips, although the streetcar is also largely being used as a "first mile / last mile" connection that links Sen̓áḵw, Granville Island and (to a lesser extent) South False Creek to the Canada Line at Olympic Village Station and the Expo Line at Main Street-Science World station. Very few trips to/from the west of the streetcar corridor are observed, suggesting limited utility for through-trips.

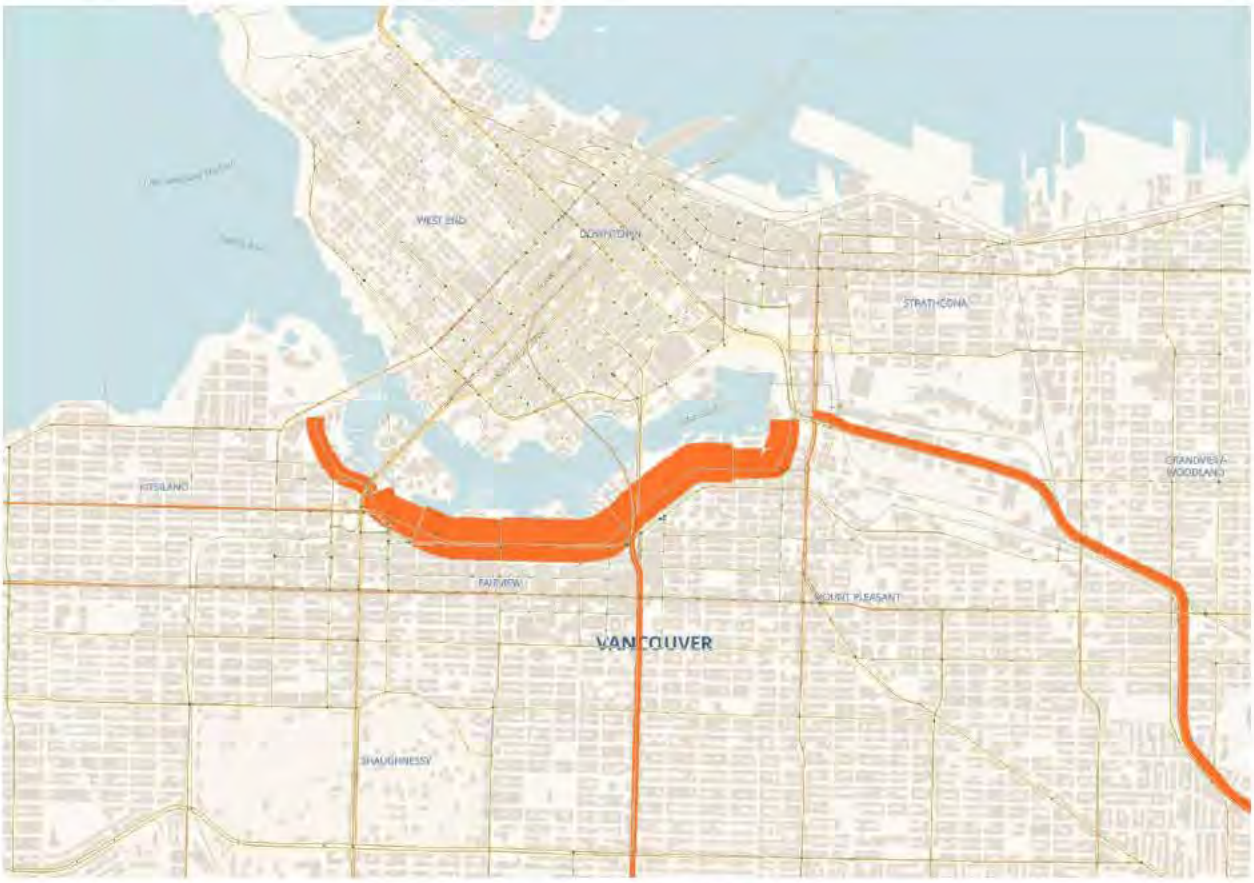


FIGURE 6.2: SELECT LINE ANALYSIS (2035 AM PEAK HOUR)

A transit ridership volume difference plot is shown in ***Figure 6.3***. As shown, ridership (persons per hour) decreases on parallel bus Route 50, and there is a very minor decrease along Broadway Subway/UBCx. Small decreases are also observed along SkyTrain routes onto the downtown peninsula.

FIGURE 6.3: VOLUME DIFFERENCE PLOT (2035 AM PEAK HOUR)

MODE SHARE

The 2035 changes to daily trips by mode are summarized in ***Figure 6.4*** for all scenarios. As shown, the residential market mode share does not change between scenarios, suggesting that streetcar trips would otherwise be taken by existing transit services and is not generating new transit trips.

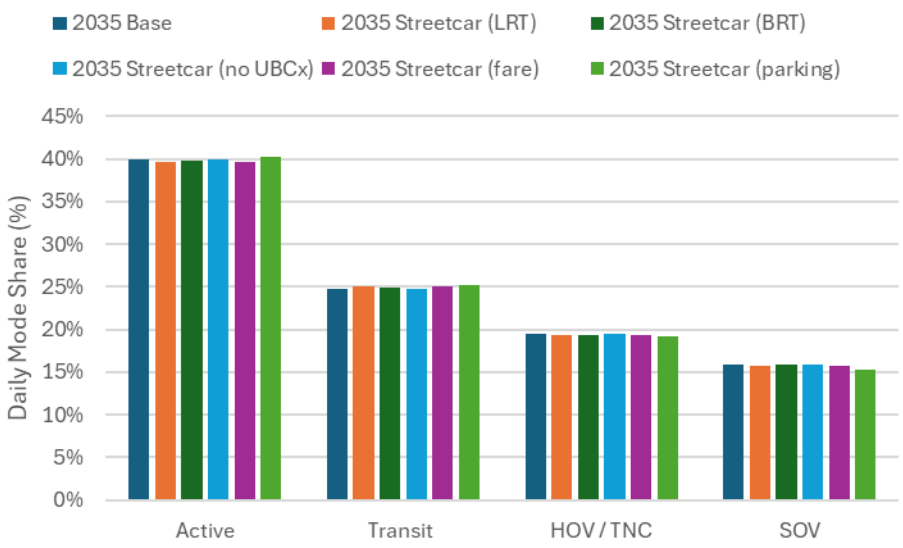


FIGURE 6.4: FORECASTED 2035 MODE SHARE IN STUDY AREA (RESIDENT TRAVEL MARKET) BY SCENARIO

However, when average daily trips are examined more closely, the following differences between scenarios as compared to existing conditions are observed (see ***Figure 6.5***):

- The 2035 Streetcar (parking) scenario has the greatest increase in rail ridership (972), has the greatest decrease in single occupant vehicle trips (-720) and is the only scenario under which both active and transit (bus and rail) trips increase (380 and 641, respectively).
- Rail ridership increases by 855-972 in the following three scenarios: Streetcar Default, Fare Sensitivity, and Parking Cost scenarios.
- The UBCx scenario is the only scenario under which rail trips decrease (rail includes both streetcar and SkyTrain).

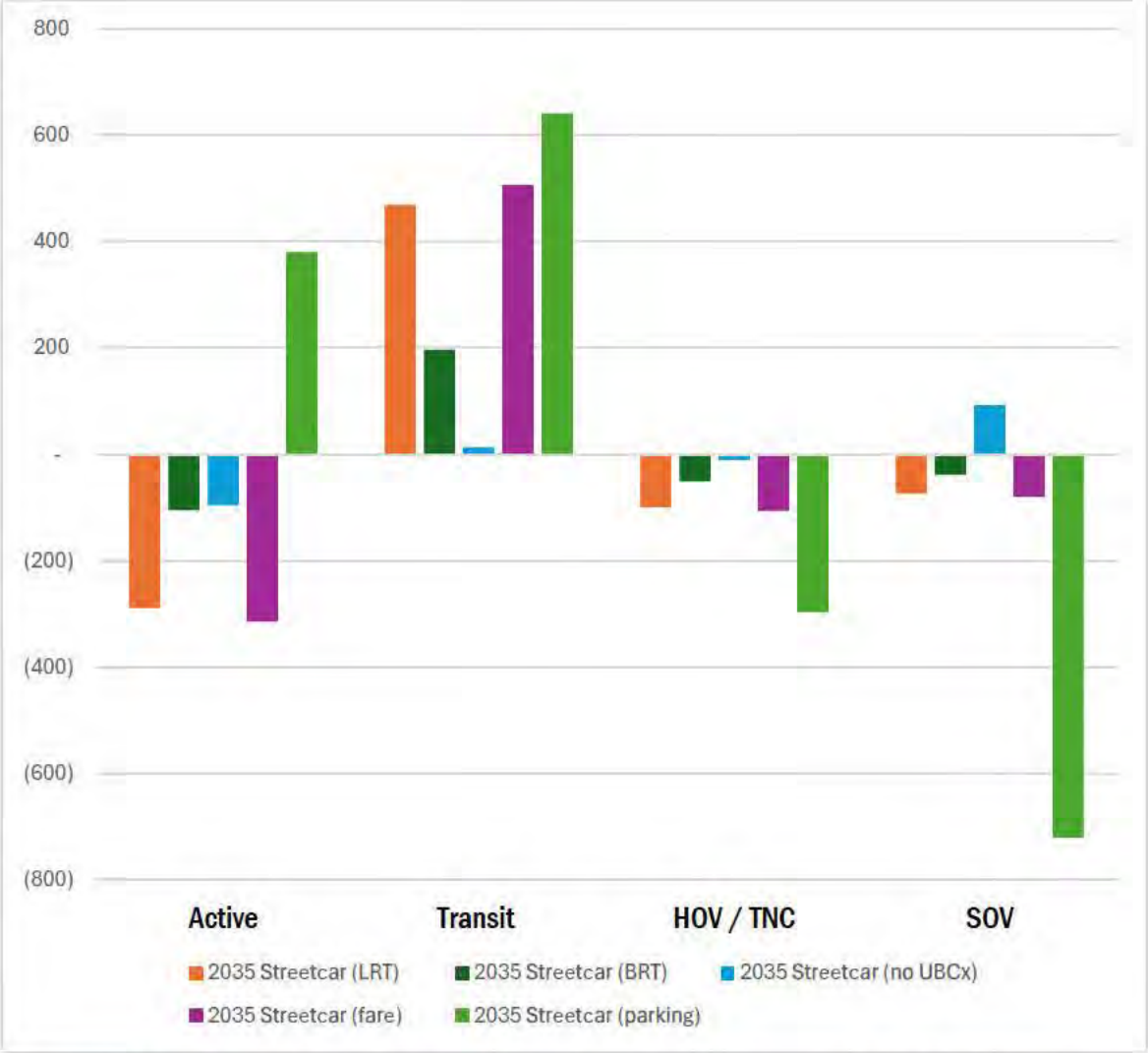


FIGURE 6.5: 2035 CHANGE IN MODE RELATIVE TO THE BASE CASE IN STUDY AREA (RESIDENT TRAVEL MARKET) BY SCENARIO

AUTO VOLUMES

While the overall mode share for the area did not change significantly, potential impacts to auto volumes at the western end of the streetcar corridor (i.e. the areas near Sen̓áḵw and Granville Island) were reviewed specifically by examining peak-hour volumes on the centroid connectors shown in ***Figure 6.6*** below. Overall, in the Streetcar Default scenario it was found that there is a limited (1-2%) decrease in total volumes within each time period relative to the Base Case.

When parking costs were set to a maximum in the study area, potential impacts to auto volumes on the aforementioned centroid connectors decreased by 9% - 13% in 2035. This suggests that achieving changes in more share to the study area requires both supply (e.g. new streetcar) and demand (e.g. higher parking costs) measures.

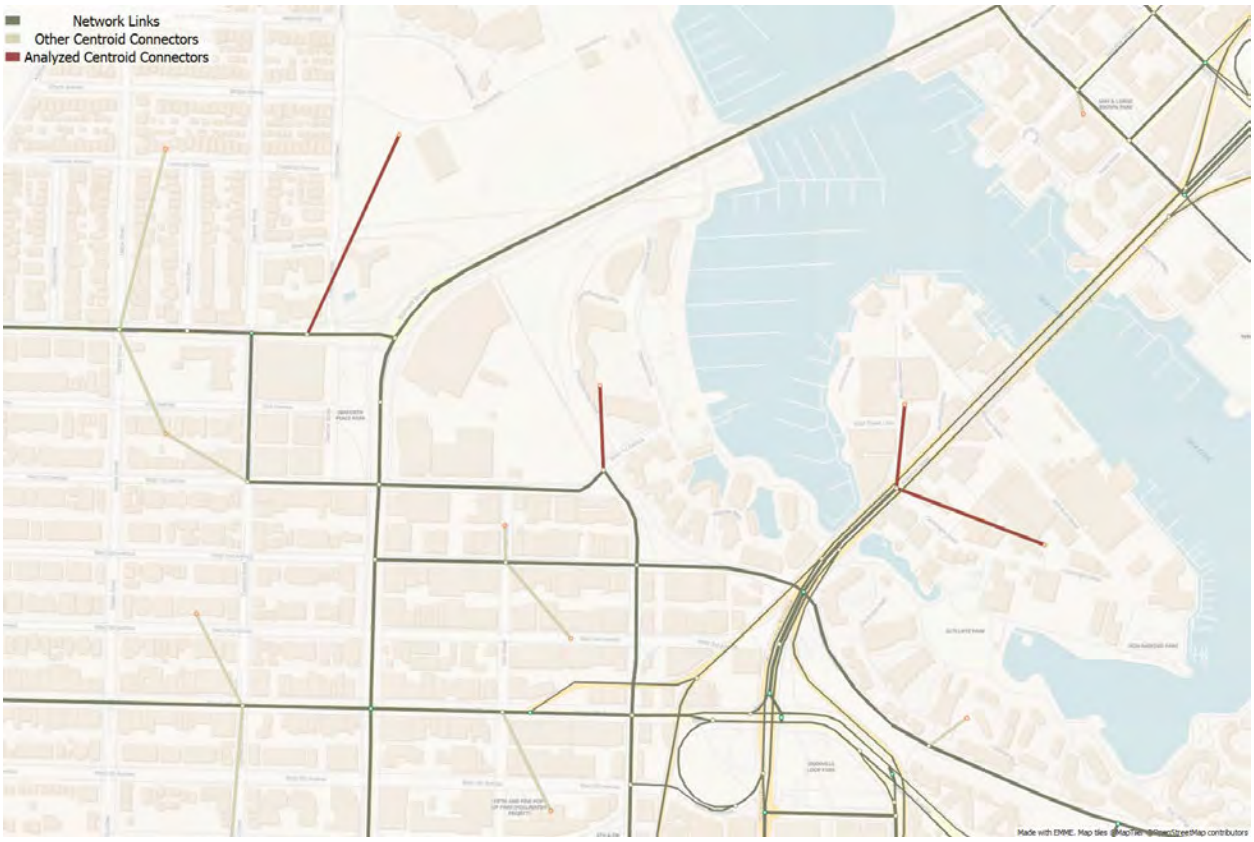


FIGURE 6.6: SELECT CENTROID CONNECTORS FOR AUTO VOLUME COMPARISONS

FARE STRUCTURES

Under the Fare Sensitivity Scenario, where each streetcar trip costs $2.50 and is not integrated with the Compass Card system, streetcar ridership decreases by 13% - 28%. Streetcar-only ridership (~ 47% - 65% of all transit trips) is unaffected, as these riders are still paying a similar fare as they would have anyways. However, the percentage of multi-transit trips (e.g., streetcar and bus or SkyTrain) decreases by 31% - 56% as these passengers must pay an additional fare to use the streetcar. This finding suggests that the attractiveness of the streetcar as part of a larger transit network is heavily contingent on fare integration with the TransLink fare system.

The number of muti-transit trips including streetcar decreases because passengers would have to pay an additional fare, therefore the number of streetcar only trips increases proportionately (65% - 77%) (actual number of trips remains constant).

6.3 Tourist Travel Market

As noted previously, VanSAM does not capture the tourist market because the model is ultimately based on the TransLink Trip Diary which also does not collect travel information from tourists.

As described in ***Appendix D***, detailed information on tourist volumes specifically within the study area is challenging to identify. Therefore, the proportions of each travel market from the intercept survey were used to

calculate the relative size of tourists from amongst all people in the study area. It is acknowledged that there are some limitations to this approach:

- It relies on intercept attempts being relatively random (i.e. the surveys were not deliberately targeting people who "look like a tourist" versus "look like a local"). The survey methodology applied for this study did endeavor to provide random intercepts.
- It assumes that intercepted people are equally likely to respond across market segments.
- It assumes that the areas where intercept surveys were conducted are representative of the study area as a whole. However, a deliberate decision was made to focus on areas that would be more likely to be directly serviced by the streetcar – which are also locations that may be more likely to have tourist activity (e.g. a given person intercepted/interviewed at Granville Island is proportionately more likely to be a tourist than would have likely been the case if intercepts had been conducted at the interception of 11th Avenue and Oak Street, which is also within the walkshed of the streetcar service).

Based on the intercept survey, 120 of the 556 respondents, or 22%, were tourists. Given that the intercept surveys were conducted in more "touristy" areas parts of the study area, it is necessary to focus on the number of tourists in these areas in order to avoid overestimating overall tourist activity for the whole study area.

For this analysis, Granville Island was identified as the primary area of focus for potential tourist activity:

- Other parts of the study corridor that may contain large tourist attractions (e.g. Science World) are well serviced by other forms of transit, and for many tourists the streetcar may not necessarily provide a significant improvement in accessibility. In contrast, Granville Island is only serviced by local buses (as well as passenger ferries on False Creek); therefore, the streetcar represents a more significant improvement in accessibility by transit.
- Other parts of the study area (e.g. South False Creek) are primarily residential, and tourism-related activity in this area is more likely to consist of sightseeing by walking or cycling along the seawall. In this instance, the streetcar may be less of an attractive option as using the streetcar defeats the purpose of this sightseeing activity altogether.

As the focus for the tourism market was Granville Island, the total number of trips to Granville Island (across all markets) was collected from CMHC. As identified in ***Appendix D***, approximately 6.15 million visitors to Granville Island were recorded in 2019. Based on the assumption that both tourism and local visitors to Granville Island exhibit a similar level of seasonality, it is assumed that 22% of all trips are tourists, and is a representative year-round. Based on this assumption, the total estimated tourist share for Granville Island trips is shown in ***Table 6.4***.

TABLE 6.4: ESTIMATED SIZE OF TOURIST MARKET

YEAR	ANNUAL VOLUME
2019 Total Granville Island Trips	6.15M
2024 Estimated Proportion of Trips that are Tourists	22%
2019 Estimated Total Granville Island Tourist Trips	1.3M

The propensity for tourists to ride a new streetcar was assessed using the responses provided in the intercept survey. The following assumptions were made:

- Tourist respondents that said they were "Very Likely" to ride the streetcar were assumed to have an 80% likelihood of actually using the streetcar.
- Tourist respondents that said they were "Somewhat Likely" to ride the streetcar were assumed to have an 40% likelihood of actually using the streetcar.
- Of the tourists who would actually ride the streetcar, it is assumed that each of these tourists would generate an average of 1.5 boardings; this captures the impacts of some tourists choosing to use the streetcar for a roundtrip (i.e. two boardings), while others use it for a one-way trip and then use another mode to depart the area (i.e. a passenger ferry in False Creek, walking along the seawall etc.).

The resultant estimate of tourism ridership potential is shown in ***Table 6.5***.

TABLE 6.5: TOURISM RIDERSHIP POTENTIAL

RESPONSE CATEGORY	PROPORTION OF SURVEY RESPONDENTS	ASSUMED QUANTITATIVE LIKELIHOOD OF USING STREETCAR	ASSUMED BOARDINGS PER TOURIST USER
Very Likely	55%	80%	1.5
Somewhat Likely	27%	40%	1.5
Other / Less Likely	18%	0%	1.5
		Weighted Average Potential Boardings Per Tourist	0.82
		2019 Estimated Tourist Market	1.3M
		2019 Estimated Potential Annual Tourist Boardings	1.1M

Finally, it is necessary to convert the 2019 estimate to a 2035 and 2050 estimate. For this analysis, the trends in bed-nights summarized in ***Appendix D*** was used as a proxy for growth in overall tourism activity on Granville Island. These values assume that sufficient hotel or overnight accommodation capacity would be developed to capture this market growth; as the *Economic Analysis of Hotel Supply and Projected Demand in Metro Vancouver, 2023 to 2050* report notes, in the absence of increased supply of rooms this tourism activity would be foregone – and by extension, so would potential tourist boardings of the streetcar. The resultant estimate of tourist boardings is shown in ***Table 6.6***.

TABLE 6.6: POTENTIAL TOURISM MARKET ANNUAL STREETCAR BOARDINGS (ROOM-NIGHT SUPPLY UNCONSTRAINED)

YEAR	ESTIMATED ROOM-NIGHT DEMAND	RELATIVE CHANGE	ESTIMATED POTENTIAL ANNUAL TOURIST BOARDINGS	COMMENTS
2019	6.9M	-	1.1M	Use 2019 numbers as a basis
2035	9.45M	+37%	1.5M	Average of 2030 and 2040 values
2050	13.9M	+101%	2.2M	

While some sensitivity scenarios (i.e. UBCx and parking cost sensitivity) are not anticipated to affect tourism volumes, the following scenarios are anticipated to have an impact:

- Technology perception sensitivity: As noted in Section 5.3, service features impacting use did not vary significantly between travel markets. With a reduced modal preference for the streetcar, modelled

ridership for the residents, workers and visitors travel markets decreased 53%. Therefore, a similar value (50%) was applied to the tourist market.

- Fare sensitivity: As noted in Section 5.3, willingness to pay did not vary significantly between travel markets. With standalone fares, modelled ridership for resident, worker and visitor travel markets decreased 13% - 28%. Therefore, an average value (20%) was applied to the tourist market.

The annual tourist market ridership for 2035 and 2050 is shown in Table 6.7 and Table 6.8. It is acknowledged that the analysis herein does not assume any induced tourism trips (i.e. people who ride the streetcar because it is a sightseeing activity but would not have been in the area otherwise). There is potential for such trips; however, the pedestrian water taxis in False Creek provide access to more destinations with greater sightseeing potential.

6.4 Forecasted Streetcar Ridership

Peak-hour ridership volumes from VanSAM were converted to daily and annualized values using the SkyTrain expansion factors used by TransLink for forecasting purposes. Annual tourism ridership estimates are added to this total in order to develop estimates of annual streetcar ridership potential across a range of scenarios. The resultant forecasts are provided in ***Table 6.7*** and ***Table 6.8*** for the 2035 and 2050 horizon years, respectively.

TABLE 6.7: 2035 FORECASTS BY SCENARIO

SCENARIO	"LOCAL" RESIDENT/WORKER/VISITOR MARKETS					ANNUAL TOURIST MARKET	TOTAL ANNUAL
	AM	MD	PM	DAILY	ANNUAL		
2035 Streetcar Default	511	561	983	9,520	3.2M	1.5M	4.7M
Technology Perception Sensitivity	249	266	516	4,670	1.5M	0.7M	2.2M
UBCx Sensitivity	570	595	1062	10,220	3.4M	1.5M	4.9M
Fare Sensitivity	368	483	860	8,050	2.7M	1.2M	3.9M
Parking Cost Sensitivity	540	587	1042	10,010	3.3M	1.5M	4.8M

TABLE 6.8: 2050 FORECASTS BY SCENARIO

SCENARIO	"LOCAL" RESIDENT/WORKER/VISITOR MARKETS					ANNUAL TOURIST MARKET	TOTAL ANNUAL
	AM	MD	PM	DAILY	ANNUAL		
2050 Streetcar Default	548	632	1081	10,570	3.5M	2.2M	5.7M
Technology Perception Sensitivity	257	231	468	4,220	1.4M	1.1M	2.5M
UBCx Sensitivity	589	673	1161	11,300	3.7M	2.2M	5.9M
Fare Sensitivity	419	547	970	9,110	3.0M	1.8M	4.8M
Parking Cost Sensitivity	575	662	1140	11,100	3.7M	2.2M	5.9M

6.5 Comparison with Precedent Services on the Corridor

A comparison of ridership was undertaken against the two recent precedent services that have operated along the same corridor: the Olympic Demonstration Line and the Downtown Historic Railway.

2010 OLYMPICS DEMONSTRATION LINE

The most analogous precedent to the service considered herein is the streetcar demonstration line (named the Olympic Line) which operated between Olympic Village Station and Granville Island for approximately two months in 2010 – noting that the demonstration project served a shorter corridor and fewer stops than the service considered herein. The streetcar ran with six-minute headways for approximately 18 hours per day.

Over the course of its 60-day operation the service averaged 9,200 boardings per day, and during the Olympic Games, average daily ridership more than doubled (18,600). The Olympic Line streetcar demonstration reached a daily record of over 25,000 boardings and 2,500 boardings per hour. Therefore, while the Olympic Line demonstration project proves that a streetcar service has the capacity to move 25,000, ridership levels observed during the Olympic Games do not reflect typical long-term conditions.

However, since the demonstration line ran for a two-month period that included the Olympic Games, the Paralympic Games as well as periods where no games were running, the non-Olympic Games volumes can nonetheless provide a useful point of reference. Ridership volumes from the Olympic demonstration project are summarized in ***Table 6.9*** below. As shown, outside of the period when the Olympics were occurring, ridership averaged 5,400 boardings per day - or roughly 30% of the amount of average daily boardings observed when the Olympic Games were running.

TABLE 6.9: 2010 OLYMPIC STREETCAR DEMONSTRATION RIDERSHIP ANALYSIS

FACTOR	VALUE
Total Streetcar Operating Days	60 days
Average Daily Ridership During Olympic Games	18,600 boardings
Total Days outside of Olympic Games	43 days
Days of Olympic Games	17 days
Total Streetcar Ridership	550,000 boardings
Total Ridership During Olympic Games	316,200 boardings
Total Ridership Outside of Olympic Games	233,800 boardings
Average Daily Ridership outside of Olympic Games	5,400 boardings

It is noted that the streetcar was free during the demonstration period, which would provide a "best case" scenario for capturing ridership. Integration with the existing TransLink fare structure (i.e. no "net" cost for riders who are already using transit) is likely the closest scenario (named Streetcar Default) considered in this study.

DOWNTOWN HISTORIC RAILWAY

Prior to the 2010 Olympic Demonstration streetcar project, the Vancouver Downtown Historic Railway operated along the corridor. Beginning service in July of 1998, one streetcar ran between Granville Island and W 6th Ave/Moberly St on the weekends in summer (typically from May to mid-October) and for special events. In its first year, the streetcar carried 8,242 passengers. The service continued and expanded to two cars, recording 12,589 riders in 1999 at a fare of $2.00. In July 1999, the route was extended east to W 1st Ave/Ontario St, and the route was later extended to the Main Street-Science World SkyTrain station. The service continued to operate as described until 2011, though it did not operate in 2010 due to the introduction of the Olympic Demonstration streetcar.

Estimating daily ridership based on the assumed weekend service days between May and mid-October, the service recorded roughly 250 boardings per day in 1999. Unlike the Olympic demonstration line, the Downtown Historic Railway had a fare of $2.00, providing a more comparable scenario to the assumed base case for the proposed streetcar service. However, given the limited service days and hours, it is not a like-versus-like comparison for all travel markets defined in this study.

While this data provides a useful precedent analysis of a streetcar service in South False Creek, many variables differ between the Downtown Historic Railway service and the proposed transit service analyzed in this study. It is therefore not a like-versus-like comparison—ridership on the Downtown Historic Railway should not be used as a proxy for estimating ridership on the proposed South False Creek streetcar.

6.6 Sensitivities / Uncertainties

The supplementary analysis summarized above highlights the impact of various measures or conditions on ridership. Additional considerations affecting ridership potential are noted below.

TOURISM MARKET SIZE

Estimating the tourism market size within the study area is challenging. In the event that other agencies were to undertake tourist exit surveys (e.g. for departing tourists at YVR, cruise ships etc.) that query where tourists have visited while staying in Vancouver, these surveys could be used to help refine the estimate of the proportion of tourists to the region that visit the study area. Additionally, as noted above, the tourism market potential is contingent on the ability of the region to provide capacity to accommodate more overnight stays. In the absence of growth in hotel room supply, it is likely that tourism-related ridership would remain similar to the estimated 2019 potential, rather than increasing to the 2035 and 2050 values.

TOURISM MARKET ADVERTISING / MARKETING

Tourism-related ridership is contingent on tourist awareness of the streetcar line. Ensuring that appropriate information / marketing materials are provided (e.g., on travel websites, brochures in hotels etc.) is critical for increasing awareness of the service.

DEMAND-SIDE MEASURES

The analysis largely focused on increasing transportation supply through the introduction of a streetcar and the corresponding potential ridership on streetcar. Success of transit services in general and including the streetcar is improved with complementary supply-side measures. For example, increases in parking rates on Granville Island and the surrounding area (or even elimination of passenger vehicles from Granville Island altogether) have the potential to generate additional ridership. This was tested through the Parking Cost Sensitivity scenario, but related effects of this policy may not have been fully captured. Notably, the Sen̓áḵw development is providing approximately 900 parking stalls for 6,000 residents, representing a significant new travel market of people that will largely not have access to a personal automobile. While this additional population is considered in the forecasting, in practice there is likely to be a level of self-selection of people who choose to live in Sen̓áḵw that enjoy a car-free/-lite lifestyle that the model cannot fully capture, and who may be more willing to use the streetcar.

7. Summary of Findings for Key Questions

Ridership, travel market size and all other estimates contained herein should be interpreted through the lens of the strengths and limitations of the data collection tools used for this study. This data is one of many inputs to be considered in future planning work and should be supplemented with additional data. It should not be relied upon for goal or target setting (e.g., ridership estimates) nor for determining whether the service will be viable.

The results are not definitive, but rather indicative of potential use and market uptake. Data limitations and uncertainties are described throughout the document, with a few key considerations listed below:

- The survey sample size of certain markets (residents, through trips) is small, and survey data does not provide absolute volumes of riders.
- Model uncertainties and sensitivities are described in ***Section 6.6 - Sensitivities / Uncertainties*** and include additional, real-world factors that may change ridership results from what is forecasted by the model.
- The impacts of concentrated growth in South False Creek are only captured by the model. The survey captures data from the behaviors and attitudes of current travel markets, whereas the model forecasts future ridership by market.
- In addition, modelling results are based on defined streetcar service levels, whereas service levels are not provided in the survey. Service levels are one of the most influential factors in a person's trip decision-making, leading to variability in survey responses due to each respondent's unique interpretation of the future streetcar service levels.

A summary of findings to the research questions for the South False Creek Transit Market Research Study are provided in ***Table 7.1***.

TABLE 7.1: SUMMARY OF FINDINGS FOR KEY QUESTIONS

QUESTIONS	FINDING
How many people would potentially use a transit service in the area?	The majority of survey respondents are somewhat or very likely to use a potential transit service along the proposed route (83% from intercept, 72% from online). From the travel demand model default scenario (no additional fare), the estimated annual streetcar ridership is 4.7 million in 2035, increasing to 5.7 million in 2050. ***Table 3.2*** provides indicative values of the total market sizes. As mentioned below (and in ***Figure 5.4***) the travel markets with the greatest potential ridership are residents and workers.
What are the demographics and characteristics of these user groups?	Based on survey results, the likelihood to use the service is slightly higher amongst women than men (87% versus 79%), but no difference in willingness to use by age was noted. The likelihood does not significantly differ between areas of residence (CoV vs. Metro Vancouver), but residents of the South False Creek area report the strongest likelihood to use the service. Those who never use transit are the least likely to use the service. The modelled ridership forecast for 2035 represents roughly a 30/70 split of tourist versus resident/worker/visitor trips, whereas the 2050 ridership forecast consists of nearly 40% tourist trips.
Of these people, what portion would choose to use the streetcar?	Under default assumptions, the streetcar is not modelled to result in a significant overall mode change, but rather draws much of its ridership from other transit services. Demand management measures (e.g. parking pricing) would help increase transit mode share.

QUESTIONS	FINDING
How attractive is the streetcar service as compared to other modes.	The modelled streetcar ridership draws in part from other transit modes, including Route 50, and some parts of the SkyTrain network. However, many trips are also streetcar-only trips. More frequent service and less crowding were two of the most important transit improvements identified by survey respondents, selected by roughly one in five respondents.
What other destinations or alignments should or need to be considered?	Kitsilano, Point Grey, and UBC and Stanley Park are the most commonly selected alternative destinations for the streetcar by survey respondents.
What are the ideal operating hours and frequency?	9 AM to 9 PM was identified as the preferred operating hours for most of the travel markets; however, the residential travel market prefers that the streetcar begins service at 6 AM. When asked about the maximum time they would be willing to wait for a streetcar, the most common response was 5 to 10 minutes (40% of intercept respondents and 44% of online respondents). Therefore, a headway of 8 minutes (or a frequency of 7.5 buses every hour) is included in the model which falls in between the minimum and maximum time customers would be willing to wait. Should demand justify more frequency, service can be increased to a headway of 5 minutes.
Are potential riders willing to pay a fare in addition to TransLink fare and how much?	Streetcar attractiveness is heavily contingent on fare integration with the TransLink fare system. Based on survey results, most respondents indicated they are not willing to pay a separate fare, although respondents who are more likely to use the service are also more likely to be willing to pay a separate fare. Modelling suggests that a separate $2.50 fare would decrease ridership by 13% - 28%. The introduction of a streetcar fare is not shown to impact streetcar-only trips, but it is estimated to reduce multi-transit trips (e.g., streetcar and bus or SkyTrain) by 31% - 56%.
Is it important to be integrated into the Compass system or with other transportation modes?	The streetcar has a significant self-contained market; however, fare integration with the Compass Card System is a key consideration for a sizeable proportion of the ridership: ▪ Providing fare integration with TransLink's Compass Card is important, as both survey responses and modelling analysis found that separate fares deter TransLink riders from adding the streetcar onto their trip. ▪ From the customer's perspective, the streetcar would be seen as one of several modes of the transit system (e.g. included in transit system maps, route planning software, Compass Card, etc.), even if, operationally, it is independent from TransLink. ▪ The ability to pay the streetcar fare using a Compass Card is one of the top 5 factors that would impact survey respondents' decision to use the streetcar. ▪ Approximately one-third of all respondents would be willing to pay a separate fee to board the streetcar, but willingness to pay an additional fee increases if it can be deducted from a Compass Card. ▪ More than two-thirds of all respondents would combine the streetcar trip with other transit modes, most commonly SkyTrain.
What is the appetite for a demonstration streetcar service during the FIFA 2026 World Cup?	About two-thirds of all survey respondents stated that they are likely to use a demonstration streetcar service during the 2026 FIFA World Cup. Residents and workers are more likely than other travel markets to use the service. The online survey indicates a slightly higher likelihood of use amongst those under 65 years of age, especially those under 35 years of age.

The findings from the market research surveys and the supplementary travel demand modelling indicate a strong interest in a potential transit service in the South False Creek area and high ridership forecasts. The survey findings indicate support for the service from existing travel markets and the modelling shows high ridership by future populations under the defined growth scenario. Survey results do not vary widely by travel market. Modelling indicates high forecasted usage by tourists, but minimal through trips. Both analyses show high sensitivity to transit service fare pricing. Survey results indicate a desire for the potential streetcar service to be integrated with the region's existing transit system, including payment methods and transfer options. Additionally, model results do not indicate a significant mode shift because of the new streetcar service, rather a swap from one transit mode to another, including streetcar-only trips.

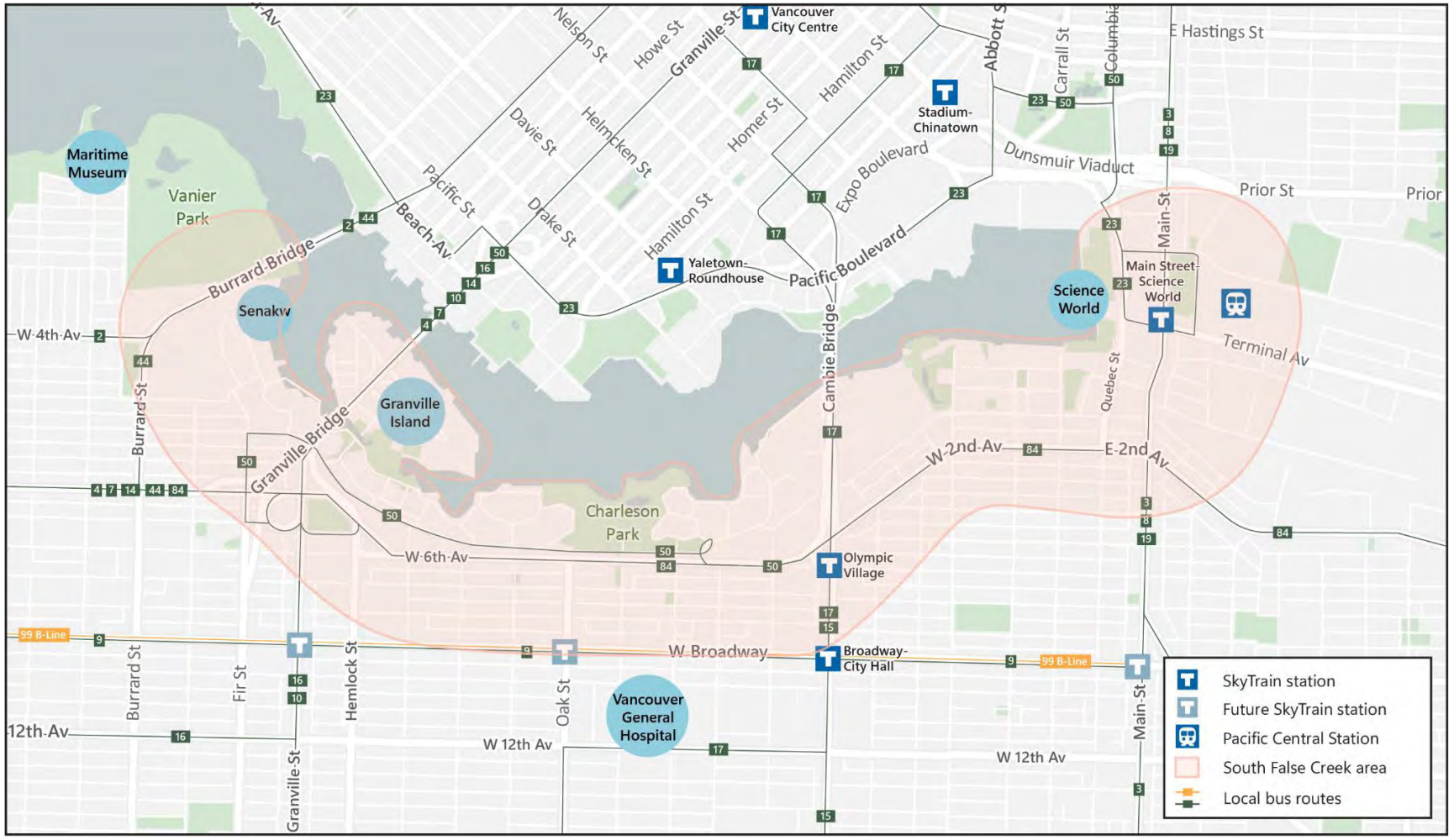
Appendix A

Online Panel Survey Questionnaire

Online survey

South False Creek Survey Area

The map below shows the study area around a potential new transit service running along the south side of False Creek in the City of Vancouver.



1. When was the last time you visited the South False Creek area highlighted on the map?
    - ❑ Within the last month
    - ❑ Within the last six months
    - ❑ Within the last year
    - ❑ More than a year ago THANK & TERMINATE

2. On your most recent trip to the South False Creek area:

    a. Where did you begin your trip?
        - ○ Vancouver/UEL
        - ○ West End
        - ○ Downtown
        - ○ Strathcona
        - ○ Grandview-Woodland
        - ○ Hastings-Sunrise
        - ○ West Point Grey
        - ○ Kitsilano
        - ○ Fairview
        - ○ Mount Pleasant
        - ○ Dunbar-Southlands
        - ○ Arbutus Ridge
        - ○ Shaughnessy
        - ○ South Cambie
        - ○ Riley Park
        - ○ Kensington-Cedar Cottage
        - ○ Renfrew-Collingwood
        - ○ Kerrisdale
        - ○ Oakridge
        - ○ Marpole
        - ○ Sunset
        - ○ Victoria-Fraserview
        - ○ Killarney
        - ○ UBC/UEL
    - ❑ Anmore
    - ❑ Belcarra
    - ❑ Bowen Island
    - ❑ Burnaby
    - ❑ Coquitlam
    - ❑ Delta
    - ❑ Langley (Township or City)
    - ❑ Lions Bay
    - ❑ Maple Ridge
    - ❑ New Westminster
    - ❑ North Vancouver (City or District)

- ❑ Pitt Meadows
- ❑ Port Coquitlam
- ❑ Port Moody
- ❑ Richmond
- ❑ Surrey
- ❑ Tsawwassen
- ❑ West Vancouver
- ❑ White Rock
- ❑ Other (please specify): _____

b. Did you begin your trip from your home?

- ❑ Yes
- ❑ No

c. What was your final destination?

- ❑ Granville Island
- ❑ False Creek Community Centre
- ❑ Science World
- ❑ Olympic Village Station
- ❑ Hinge Park
- ❑ Charleson Park
- ❑ Other destination within the South False Creek area, please specify
- ❑ Destination outside the South False Creek area, please specify

d. What was the purpose of your trip?

- ❑ Returning home
- ❑ Travel to work
- ❑ Work-related travel
- ❑ Travel to school
- ❑ Dining
- ❑ Recreation
- ❑ Tourism
- ❑ Social
- ❑ Shopping
- ❑ Personal business (e.g. bank, dentist, etc.)
- ❑ Pick up a passenger
- ❑ Drop off a passenger
- ❑ Other, please specify

e. What modes of transportation did you use on your trip? Please check all that apply.

- ❑ Walking
- ❑ Cycling/e-biking
- ❑ Transit bus
- ❑ SkyTrain
- ❑ SeaBus
- ❑ Private vehicle
- ❑ Rental/shared vehicle (i.e. Evo, Mobi, etc.)
- ❑ Taxi
- ❑ False Creek Ferry / Aquabus
- ❑ Vancouver tour bus
- ❑ Other, please specify

f. How often do you travel to/from a destination within the South False Creek area?

- ❑ Multiple times per day
- ❑ Daily
- ❑ Weekly
- ❑ Monthly
- ❑ A few times a year but less than monthly
- ❑ Yearly
- ❑ Less often than yearly

g. To what extent does your ability to travel <u>easily</u> to the South False Creek area influence your choice to travel there?

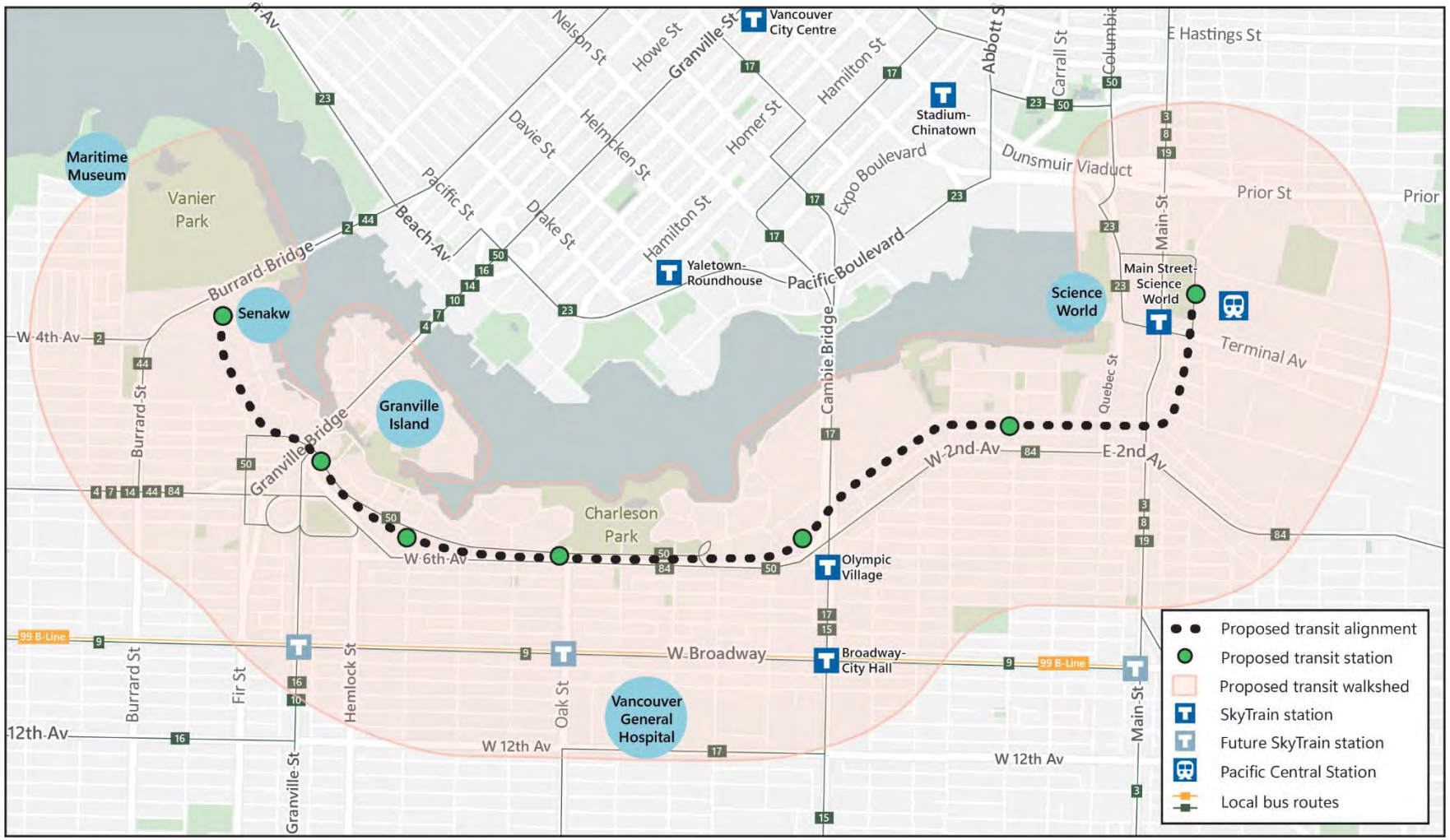
- ❑ Greatly influences my choice
- ❑ Moderately influences my choice
- ❑ Slightly influences my choice
- ❑ Does not influence my choice

h. How often do you typically travel by public transit? (including TransLink buses, SkyTrain, SeaBus, West Coast Express, or HandyDart)

- ❑ At least 5 days per week
- ❑ 2-4 days per week
- ❑ One day per week
- ❑ Two or three days per month
- ❑ One day per month or less
- ❑ I do not use public transit
- ❑ Prefer not to answer

Proposed South False Creek (SFC) Streetcar Service

The City of Vancouver is exploring opportunities to improve transit service along the south side of False Creek. To support this work, the City is seeking to understand how and why people use transit in the area. The map below shows a proposed streetcar service through South False Creek. Please take a moment to review the map before moving on.



The following table provides a comparison of bus service and streetcar service through the South False Creek transit corridor.

Please take a moment to review the information and answer the questions below.

	Transportation Technologies		
		Bus (route 50)	**Streetcar / very light rail**
Key Metrics	**Description**	 Typical bus used on Metro Vancouver routes	 Rail-based cars operating on tracks either in a railway corridor
	Mixed traffic or dedicated lane	Shares travel lane with vehicle traffic	Operates on its own tracks in a dedicated lane or corridor
	Representative travel time (Olympic Village Station – Granville Island)	8.5 minutes	3-4 minutes
	Typical Station / stop amenities	• Shelter • Maps • Bench	• Shelter • Maps • Level boarding • Ticket vending machines • Arrival display board
	Boarding	Low-floor, kneeling	Level boarding

3. How likely are you to use the proposed South False Creek streetcar service? Please refer to map and table again if needed.
    - ❑ Very likely
    - ❑ Somewhat likely
    - ❑ Not very likely
    - ❑ Not at all likely
    - ❑ Not sure

    IF 'NOT AT ALL LIKELY' OR 'NOT VERY LIKELY', ASK QUESTION 4 THEN SKIP QUESTIONS 5 AND 6.

    IF 'NOT SURE', 'SOMEWHAT' OR 'VERY LIKELY' SKIP QUESTION 4.

4. Please briefly explain why you are not likely to use the South False Creek streetcar service.
    - ❑ I do not travel to this area often enough
    - ❑ Not an applicable travel route
    - ❑ I do not typically use transit
    - ❑ There are better travel options through the area
    - ❑ Travel time is too long
    - ❑ I would want a guaranteed seat
    - ❑ Other (please specify) _____

    SKIP TO QUESTION 7

5. How often would you use the South False Creek streetcar service?
    - ❑ Rarely
    - ❑ Monthly
    - ❑ Weekly
    - ❑ Daily
    - ❑ Not sure

6. Would you combine the use of the South False Creek streetcar service with any other public transit modes?
    - ❑ Yes
    - ❑ No

    If yes, please list which modes.
    - ❑ SkyTrain
    - ❑ Bus
    - ❑ SeaBus
    - ❑ Other (please specify) _____

7. To better serve your travel needs, to what other areas in the City of Vancouver would you like to see the streetcar service go?
    - ❑ Kitsilano, Point Grey, UBC
    - ❑ Extend south / connect to Broadway Subway / Arbutus Corridor
    - ❑ Yaletown
    - ❑ West End

- ❑ Central Business District
- ❑ Gastown
- ❑ Stanley Park
- ❑ False Creek Flats
- ❑ Other (please specify) _____
- ❑ None of the above/not sure

8. During the 2010 Olympics, a demonstration streetcar provided service between Olympic Village and Granville Island. If a similar service were to be provided during the 2026 FIFA World Cup, how likely would you be to use it?
    - ❑ Very likely
    - ❑ Somewhat likely
    - ❑ Not very likely
    - ❑ Not at all likely
    - ❑ Not sure

Service Levels and Pricing

9. Please rank the following factors based on how strongly they would impact your decision to use the South False Creek streetcar service (choose your top five and rank them 1 to 5, where 1 has the strongest impact).
    ___ Cost of the fare
    ___ Service frequency
    ___ Travel time
    ___ Ability to pay fare using Compass card
    ___ Early morning service (before 10am)
    ___ Late night service (after 8pm)
    ___ Style/design of streetcar
    ___ Dedicated lane
    ___ Rail-based service
    ___ Station design and amenities
    ___ Possibility of being seated for the trip
    ___ Trip experience (e.g. comfort, ample personal space, level / step-free boarding, etc.)

10. How much are you willing to pay for a single ride fare on the South False Creek streetcar service? (For reference, TransLink's one-way, one-zone adult cash fare is $3.20 as of July 2024)
    - ❑ $0 (must be free for me to use it)
    - ❑ $0 – 1
    - ❑ $1 – 2
    - ❑ $2 – 3
    - ❑ $3 – 4
    - ❑ $4 – 5
    - ❑ >$5

11. If you transfer from a TransLink bus/train, would you be willing to purchase a separate ticket / fee to board the South False Creek streetcar service (like the Aquabus or False Creek Ferry fare, for example)?
    - ❑ Yes
    - ❑ No
      IF NO Would you be willing to pay an additional fee if it were automatically subtracted from your Compass Card balance? (like the YVR AddFare feature, for example)
        - ○ Yes
        - ○ No

12. What is the maximum time you would be willing to wait for the South False Creek streetcar?
    - ❑ 3 minutes or less
    - ❑ 3 to 5 minutes
    - ❑ 5 to 10 minutes

- ❑ 10 to 15 minutes
- ❑ 15 – 20 minutes
- ❑ 20 minutes or more

13. During what hours would you be most likely to use the South False Creek streetcar service?
    - ❑ 6am – 9am
    - ❑ 9am – 12pm
    - ❑ 12pm – 3pm
    - ❑ 3pm – 6pm
    - ❑ 6pm – 9pm
    - ❑ 9pm – 12am

Demographic Information

14. What age range do you belong to?
    - ❑ 0 – 17 years **TERMINATE**
    - ❑ 18 – 24 years
    - ❑ 25 – 34 years
    - ❑ 35 – 44 years
    - ❑ 45 – 54 years
    - ❑ 55 – 64 years
    - ❑ 65 – 74 years
    - ❑ 75+ years
    - ❑ Prefer not to answer

15. What best describes your gender?
    - ❑ Man
    - ❑ Woman
    - ❑ Non-binary
    - ❑ Prefer to self-describe

      _____
    - ❑ Prefer not to say

16. Where is your home residence?
    - ❑ BC
    - ❑ Vancouver/UEL
        - ○ West End
        - ○ Downtown
        - ○ Strathcona
        - ○ Grandview-Woodland
        - ○ Hastings-Sunrise
        - ○ West Point Grey

- Kitsilano
- Fairview
- Mount Pleasant
- Dunbar-Southlands
- Arbutus Ridge
- Shaughnessy
- South Cambie
- Riley Park
- Kensington-Cedar Cottage
- Renfrew-Collingwood
- Kerrisdale
- Oakridge
- Marpole
- Sunset
- Victoria-Fraserview
- Killarney
- UBC/UEL

❑ Greater Vancouver
- Anmore
- Belcarra
- Bowen Island
- Burnaby
- Coquitlam
- Delta
- Langley (Township or City)
- Lions Bay
- Maple Ridge
- New Westminster
- North Vancouver (City or District)
- Pitt Meadows
- Port Coquitlam
- Port Moody
- Richmond
- Surrey
- Tsawwassen
- West Vancouver
- White Rock

❑ Fraser Valley
❑ Vancouver Island
❑ BC Interior / North
❑ Other
❑ Canada, outside of BC

- ❑ USA
- ❑ Europe
- ❑ Asia
- ❑ Mexico/Central/South America
- ❑ Africa/Middle East
- ❑ Australia/New Zealand

ASK IF Q16=Fairview, Kitsilano, or Mount Pleasant

16b. Do you live in the South False Creek area?

- ❑ Yes
- ❑ No

17. Which of the following applies to you? Select all that apply.
    - ❑ Work full-time (30+ hours per week)
    - ❑ Work part-time (less than 30 hours per week)
    - ❑ Student full-time
    - ❑ Student part-time
    - ❑ Unemployed
    - ❑ Looking after home/family
    - ❑ Retired
    - ❑ Other

ASK IF "WORK FULL TIME/PART TIME" IN Q17

18. Do you work in the South False Creek area? (i.e. the area highlighted on the map) Please click here to view map
    - ❑ Yes
    - ❑ No
    - ❑ Prefer not to answer

19. Which of the following ranges best describes your household's total income last year? (Please consider all sources of income for all household members, before taxes)
    - ❑ $0 to less than $25,000
    - ❑ $25,000 to less than $50,000
    - ❑ $50,000 to less than $75,000
    - ❑ $75,000 to less than $100,000
    - ❑ $100,000 to less than $150,000
    - ❑ $150,000 or more
    - ❑ Prefer not to answer

20. Are your travel options limited due to a long-term physical condition, mental condition, or health problem?
    - ❑ Yes

- ❑ No
- ❑ Prefer not to say

IF YES, ASK QUESTION 21

21. If you are comfortable, please specify the condition.

Appendix B

Intercept Survey Questionnaire

Intercept survey

Note: Anticipate conducting surveys near Granville Island, Science World, Olympic Village Station area.

Introduction: *Hello, my name is [INTERVIEWER] of Mustel Research Group, and we are conducting a brief survey on behalf of the City of Vancouver regarding a proposed new transit service in this area. The survey will take about 6 to 8 minutes to complete and as a thank you for your time and opinions, we are providing a $5 coffee card to all participants.*

Existing Travel Patterns and Behaviours

1. To start, do you live in Metro Vancouver or are you visiting from elsewhere?
   - ❍ Metro Vancouver resident
   - ❍ Visiting from elsewhere

2. How did you travel here today? If more than one mode is mentioned, prompt for main mode – the mode used to travel the longest distance.
   - ❑ Walking
   - ❑ Cycling/e-biking
   - ❑ Transit bus
   - ❑ SkyTrain
   - ❑ SeaBus
   - ❑ Private vehicle
   - ❑ Rental/shared vehicle (i.e. Evo, Mobi, etc.)

     2a. If you drove, did you:
     - ❑ Park the car? (On-street or in a parking lot)
     - ❑ Get dropped off?
   - ❑ Taxi
   - ❑ False Creek Ferry / Aquabus
   - ❑ Vancouver tour bus
   - ❑ Other, please specify

3. Did you use any other modes of transportation on your trip to this location today? If so, please specify which. (*i.e. the mode you used to travel the second longest distance*)
   - ❑ No other mode used
   - ❑ Walking
   - ❑ Cycling/e-biking
   - ❑ Transit bus
   - ❑ SkyTrain
   - ❑ SeaBus
   - ❑ Private vehicle
   - ❑ Rental shared vehicle (i.e. Evo, Mobi, etc.)

     3a. If you drove, did you:

- ❑ Park the car? (On-street or in a parking lot)
- ❑ Get dropped off?

- ❑ Taxi
- ❑ False Creek Ferry / Aquabus
- ❑ Vancouver tour bus
- ❑ Other, please specify

If any transit modes were selected, proceed with questions 4 and 5.

If no transit modes were selected, proceed with question 6.

4. Why did you choose transit over other travel modes?
   - ❑ Shorter travel time
   - ❑ Lower cost
   - ❑ To avoid parking challenges or costs
   - ❑ Lower environmental impact
   - ❑ Enjoy taking transit
   - ❑ Lack of access to other travel modes
   - ❑ Other (please specify) _____

5. What could have been better about the trip?
   - ❑ Shorter travel time
   - ❑ More reliable service
   - ❑ Improved passenger amenities
   - ❑ Less crowding / pass-ups (i.e. not able to board due to full bus/train/SeaBus)
   - ❑ Improved accessibility / ease of boarding and alighting (i.e. getting on/off vehicles)
   - ❑ Improved trip comfort
   - ❑ Other (please specify) _____
   - ❑ Nothing in particular

6. Please briefly explain why you did not use any transit modes for your trip.
   - ❑ Travel time is too long
   - ❑ Lack of access to high-quality transit/no transit near trip origin
   - ❑ Multiple transfers would be necessary / confusing trip
   - ❑ Lack of trip comfort (e.g. do not want to stand up for a long-distance)
   - ❑ Dislike using transit / negative perceptions of transit
   - ❑ Prefer other modes (e.g. walk/drive/cycle)
   - ❑ Did not know if transit was available
   - ❑ Other (please specify) _____

7. Where did you begin your trip?
   - ○ Vancouver/UEL
   - ○ West End
   - ○ Downtown
   - ○ Strathcona

- Grandview-Woodland
- Hastings-Sunrise
- West Point Grey
- Kitsilano
- Fairview
- Mount Pleasant
- Dunbar-Southlands
- Arbutus Ridge
- Shaughnessy
- South Cambie
- Riley Park
- Kensington-Cedar Cottage
- Renfrew-Collingwood
- Kerrisdale
- Oakridge
- Marpole
- Sunset
- Victoria-Fraserview
- Killarney
- UBC/UEL

- ❑ Anmore
- ❑ Belcarra
- ❑ Bowen Island
- ❑ Burnaby
- ❑ Coquitlam
- ❑ Delta
- ❑ Langley (Township or City)
- ❑ Lions Bay
- ❑ Maple Ridge
- ❑ New Westminster
- ❑ North Vancouver (City or District)
- ❑ Pitt Meadows
- ❑ Port Coquitlam
- ❑ Port Moody
- ❑ Richmond
- ❑ Surrey
- ❑ Tsawwassen
- ❑ West Vancouver
- ❑ White Rock
- ❑ Other (please specify): _____

b. Did you begin your trip from your home?

- ❑ Yes
- ❑ No

If yes, skip question 23.

8. Is this your final destination?
    - ❑ Yes
    - ❑ No

      If no, please state your final destination.
        - ❑ Elsewhere in the South False Creek area
        - ❑ Granville Island
        - ❑ False Creek Community Centre
        - ❑ Science World
        - ❑ Olympic Village Station
        - ❑ Hinge Park
        - ❑ Charleson Park
        - ❑ Other, please specify
        - ❑ *Repeat geographic options from Q7*

9. What is the purpose of your trip (i.e. why are you here)?
    - ❑ Travel to work
    - ❑ Work-related travel
    - ❑ Travel to school
    - ❑ Dining
    - ❑ Recreation
    - ❑ Tourism
    - ❑ Social
    - ❑ Shopping
    - ❑ Personal business (e.g. bank, dentist, etc.)
    - ❑ Pick up a passenger
    - ❑ Drop off a passenger
    - ❑ Passing through the area
    - ❑ Other (please specify) _____

10. How often do you travel to/from this location?
    - ❑ Multiple times per day
    - ❑ Daily
    - ❑ Weekly
    - ❑ Monthly
    - ❑ A few times a year but less than monthly
    - ❑ Yearly
    - ❑ Less often than yearly
    - ❑ First-time visitor

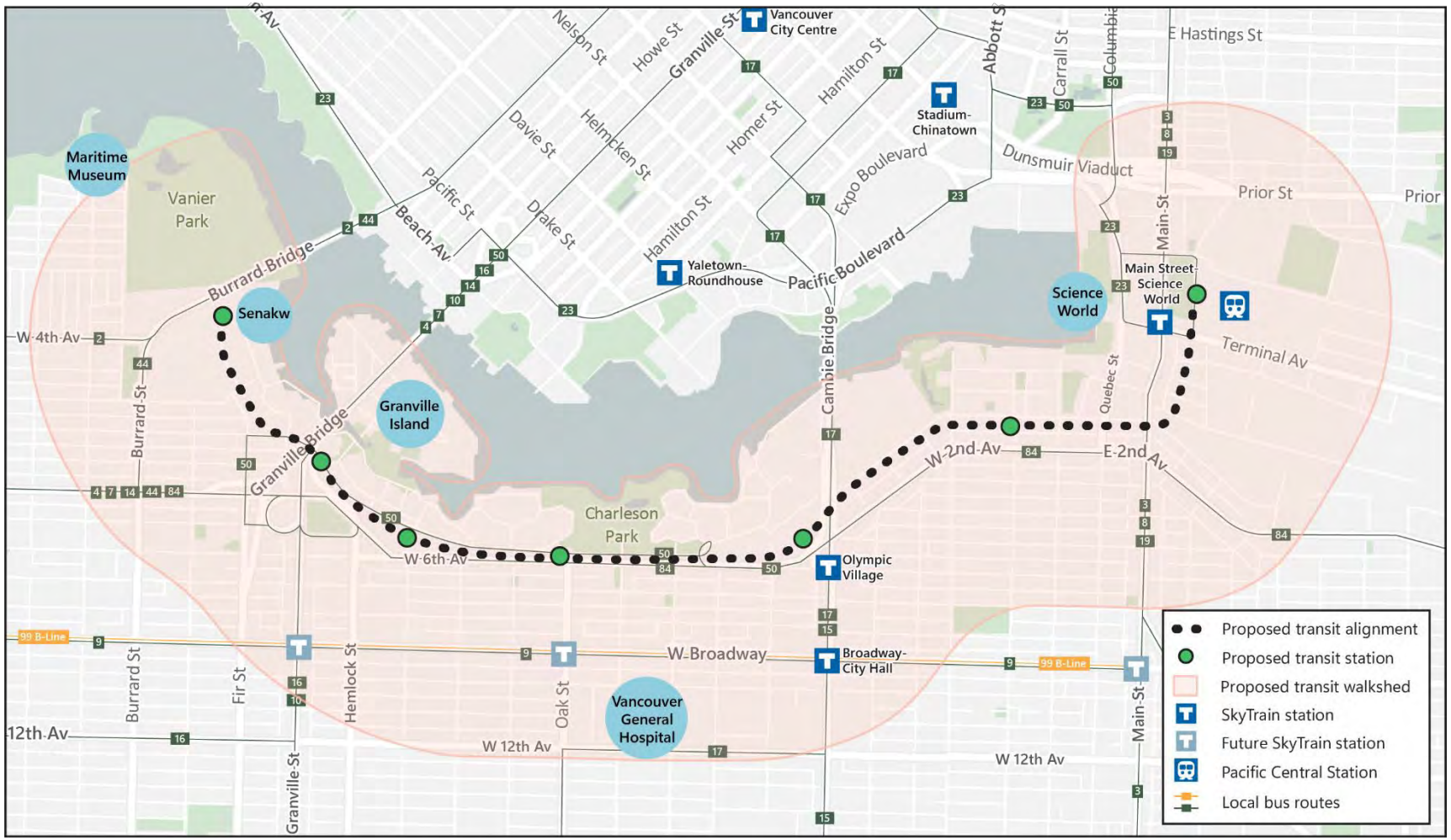
SKIP IF "Visiting from elsewhere" in Q1

11. How often do you typically travel by public transit?

- ❑ At least 5 days per week
- ❑ 2-4 days per week
- ❑ One day per week
- ❑ Two or three days per month
- ❑ One day per month or less
- ❑ I do not use public transit
- ❑ Prefer not to answer

Proposed South False Creek (SFC) Streetcar Service

The City of Vancouver is exploring opportunities to improve transit service along the south side of False Creek. To support this work, the City is seeking to understand how and why people use transit in the area. The map below shows a proposed streetcar service through South False Creek. SHOW ROUTE TO RESPONDENT



This table provides a comparison of bus service and streetcar service through the South False Creek transit corridor. Please take a moment to review the information before we continue.

	Transportation Technologies		
		Bus (route 50)	**Streetcar / very light rail**
Key Metrics	**Description**	 Typical bus used on Metro Vancouver routes	 Rail-based cars operating on tracks either in a railway corridor
	Mixed traffic or dedicated lane	Shares travel lane with vehicle traffic	Operates on its own tracks in a dedicated lane or corridor
	Representative travel time (Olympic Village Station – Granville Island)	8.5 minutes	3-4 minutes
	Typical Station / stop amenities	• Shelter • Maps • Bench	• Shelter • Maps • Level boarding • Ticket vending machines • Arrival display board
	Boarding	Low-floor, kneeling	Level boarding

12. If a streetcar service like this existed, how likely are you to use it? REFER RESPONDENT BACK TO MAP AND TABLE IF NEEDED
    - ❑ Very likely
    - ❑ Somewhat likely
    - ❑ Not very likely
    - ❑ Not at all likely
    - ❑ Not sure

If answered Question 12 not at all likely/not very likely, ask Question 13, then jump to question 16.

If answered Question 12 somewhat/very likely (or not sure), jump to Question 14 and proceed.

13. Please briefly explain why you are not likely to use this streetcar service.
    - ❑ I do not travel to this area often enough
    - ❑ Not an applicable travel route
    - ❑ I do not typically use transit
    - ❑ There are better options for travel through the area
    - ❑ Travel time is too long
    - ❑ I would want a guaranteed seat
    - ❑ Other (please specify)

14. How often would you use this streetcar service?
    - ❑ Rarely
    - ❑ Monthly
    - ❑ Weekly
    - ❑ Daily
    - ❑ Not sure

15. Would you combine the use of the South False Creek streetcar service with any other transit modes?
    - ❑ Yes
    - ❑ No

    If yes, please list which modes.
    - ❑ SkyTrain
    - ❑ Bus
    - ❑ SeaBus
    - ❑ Other (please specify)

16. To better serve your travel needs, to what other areas in the City of Vancouver would you like to see this streetcar service go?
    - ❑ Kitsilano, Point Grey, UBC
    - ❑ Extend south / connect to Broadway Subway / Arbutus Corridor
    - ❑ Yaletown
    - ❑ West End
    - ❑ Central Business District

- ❑ Gastown
- ❑ Stanley Park
- ❑ False Creek Flats
- ❑ Other (please specify)
- ❑ None of the above/Not sure

17. During the 2010 Olympics, a demonstration streetcar provided service between Olympic Village and Granville Island. If a similar service were to be provided during the 2026 FIFA World Cup, how likely would you be to use it?
    - ❑ Very likely
    - ❑ Somewhat likely
    - ❑ Not very likely
    - ❑ Not at all likely
    - ❑ Not sure

Service Levels and Pricing

18. Please rank the following factors based on how strongly they would impact your decision to use the South False Creek streetcar service. Choose your top five and rank them 1 to 5, where 1 has the strongest impact. SHOW RESPONDENT SCREEN

    ___ Cost of the fare
    ___ Service frequency
    ___ Travel time
    ___ Ability to pay fare using Compass Card
    ___ Early morning service (before 10am)
    ___ Late night service (after 8pm)
    ___ Style/design of streetcar___ Dedicated lane
    ___ Rail-based service
    ___ Station design and amenities
    ___ Possibility of being seated for the trip
    ___ Trip experience (e.g. comfort, ample personal space, level / step-free boarding, etc.)

19. How much are you willing to pay per person for a single ride fare on this streetcar service? (For reference, TransLink's one-way, one-zone adult cash fare is $3.20 as of July 2024)
    - ❑ $0 (must be free for me to use it)
    - ❑ $0 – 1
    - ❑ $1 – 2
    - ❑ $2 – 3
    - ❑ $3 – 4
    - ❑ $4 – 5
    - ❑ >$5

20. If you transfer from a TransLink bus/train, would you be willing to purchase a separate ticket / fee to board this streetcar service (like the Aquabus or False Creek Ferry fare, for example)?
    - ❑ Yes
    - ❑ No

      IF NO Would you be willing to pay an additional fee if it were automatically subtracted from your Compass Card balance? (like the YVR AddFare feature, for example)
      - ○ Yes
      - ○ No

21. What is the maximum time you would be willing to wait for the South False Creek streetcar?
    - ❑ 3 minutes or less
    - ❑ 3 to 5 minutes
    - ❑ 5 to 10 minutes
    - ❑ 10 to 15 minutes
    - ❑ 15 – 20 minutes

- ❑ 20 minutes or more

22. During what hours would you be most likely to use this streetcar service?
    - ❑ 6am – 9am
    - ❑ 9am – 12pm
    - ❑ 12pm – 3pm
    - ❑ 3pm – 6pm
    - ❑ 6pm – 9pm
    - ❑ 9pm – 12am

Demographic Information

Finally, we just have a few demographic questions that we'll use to categorize the responses.

23. Including you, how many people are in your trip party on this visit?

    Please share the gender and age range of everyone in your party, beginning with yourself.

    - ❑ 0 – 17 years
    - ❑ 18 – 24 years
    - ❑ 25 – 34 years
    - ❑ 35 – 44 years
    - ❑ 45 – 54 years
    - ❑ 55 – 64 years
    - ❑ 65 – 74 years
    - ❑ 75+ years
    - ❑ Prefer not to answer

    - ❑ Male
    - ❑ Female
    - ❑ Non-binary
    - ❑ Prefer not to say
    - ❑ Prefer to self-describe

SKIP IF Q7=METRO VANCOUVER AND Q7B=YES

24. Where is your home residence?
    - ❑ BC
        - City of Vancouver/UEL
            - *Repeat categories from Q7*
        - Greater Vancouver
            - *Repeat categories from Q7*
        - Fraser Valley
        - Vancouver Island
        - BC Interior / North
        - Other
    - ❑ Canada, outside of BC
    - ❑ USA

- ❑ Europe
- ❑ Asia
- ❑ Mexico/Central/South America
- ❑ Africa/Middle East
- ❑ Australia/New Zealand

ASK IF Q24=Fairview, Kitsilano, or Mount Pleasant OR (Q7= Fairview, Kitsilano, or Mount Pleasant AND Q7b=YES)

Q24b Do you live in the South False Creek area?

Yes

No

25. Which of the following apply to you? Select all that apply.
    - ❑ Work full-time (30+ hours per week)
    - ❑ Work part-time (less than 30 hours per week)
    - ❑ Student full-time
    - ❑ Student part-time
    - ❑ Unemployed
    - ❑ Looking after home/family
    - ❑ Retired
    - ❑ Other

ASK IF "WORK FULL TIME/PART TIME" IN Q17

26. Do you work in the South False Creek area? (i.e. the area highlighted on the map) SHOW MAP AGAIN IF NEEDED
    - ❑ Yes
    - ❑ No
    - ❑ Prefer not to answer

27. Which of the following ranges best describes your household's total income last year? (Please consider all sources of income for all household members, before taxes)
    - ❑ $0 to less than $25,000
    - ❑ $25,000 to less than $50,000
    - ❑ $50,000 to less than $75,000
    - ❑ $75,000 to less than $100,000
    - ❑ $100,000 to less than $150,000
    - ❑ $150,000 or more
    - ❑ Prefer not to answer

28. Are your travel options limited due to a long-term physical condition, mental condition, or health problem?
    - ❑ Yes
    - ❑ No
    - ❑ Prefer not to say

If yes:

If you are comfortable, please specify the condition.

Appendix C

Survey Responses

August 2024

South False Creek Streetcar Survey

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Table of Contents

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Introduction & Methodology

Introduction

- On behalf of the City of Vancouver, Parsons commissioned Mustel Group to conduct market research to help the City better understand the demand for a potential streetcar service in the South False Creek area, and the factors that may influence its usage.
- The research findings are intended to be used by the City to determine if the project should pursue further planning and design work.

Methodology

- To achieve the objectives of this study, two surveys were conducted: an online panel survey among residents of Metro Vancouver, and an intercept survey among visitors to the South False Creek area.

Online Survey

- A disproportionate sampling plan was used to ensure all areas were adequately represented and to allow for the oversampling of City of Vancouver residents.
- Respondents were screened on the basis of the following criteria:
  - **Area of residence** – must reside within Metro Vancouver
  - **Age** – must be at least 18 years of age
  - **Last visit to South False Creek area** – must be within the past 12 months

- A total of 1,200 online surveys were collected, with the following distribution by area of residence and related margins of error at the 95% level of confidence:

Area of Residence	Base Size	Margin of Error*
Total Metro Vancouver	1,200	+/- 2.8%
City of Vancouver	500	+/- 4.4%
South False Creek (SFC)	28**	+/- 18.5%
Burnaby/New Westminster	125	+/- 8.8%
North Shore	125	+/- 8.8%
Northeast	125	+/- 8.8%
Southwest	125	+/- 8.8%
Southeast	200	+/- 6.9%

* *Caution small base size

- NB: Margin of error applies to random probability samples and therefore is presented a guide only.
- The sample was weighted to match Canada census on the basis of age and gender within region to bring the total sample into proper proportion based on relative populations.

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Introduction & Methodology (cont.)

Methodology (cont'd)

Intercept Survey

- The intercept survey was conducted among visitors to the South False Creek area, including residents, workers, visitors, tourists, and those passing through.
- Interviews were carried out at the following three locations along the proposed False Creek streetcar corridor:
  - ***Science World***
    On Terminal Avenue outside the Northwest entrance to the Main Street Science World SkyTrain Station and in and around Science World.
  - ***Olympic Village Station/Olympic Village***
    On West 2nd Ave outside the Olympic Village SkyTrain Station, and in and around Olympic Village Square.
  - ***Granville Island***
    On the Northwest corner of West 2nd Ave and Anderson Street entrance to Granville Island and at various high traffic areas on Granville Island.
- Surveys were conducted via tablet and all respondent were offered a $5 gift card as a token of thanks for their time and opinions.
- Multi-lingual interviewing staff were used to address the potential for tourists or visitors not comfortable responding to a survey in English to participate.
- Data collection was completed between August 14 and 23.
- To ensure visitors of all types were intercepted during the fieldwork period, Mustel Group interviewed from Monday to Sunday between the hours of 8:30 a.m. and 7:00 p.m.
- A total of 530 online surveys were collected, with 64% completed on weekdays and 36% on the weekend.
- The distribution of responses by surveying location are shown below, with associated margins of error at the 95% level of confidence:

Location	Base Size	Margin of Error
Total	530	+/- 4.3%
Science World	177	+/- 7.4%
Olympic Village/Skytrain	174	+/- 7.4%
Granville Island	179	+/- 7.3%

- An intercept survey of this nature is carried out as randomly as possible. Steps taken include random selection of persons approached by interviewers, and an even distribution of interviews across the full time period and study area.
- Data tables for both surveys were delivered under separate cover and the questionnaires used are appended to this report.
- Both surveys were designed by Parsons in collaboration with Mustel Group.

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Main RFP Questions

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Q1 – Q3: Potential Users of Streetcar Service

Q1: How many people would potentially use a transit service in the area?
Q2: What are the demographics and characteristics of these user groups?

Visiting patterns and characteristics of potential users:

- In the intercept survey, nearly two-thirds visit the South False Creek area monthly or more often (64%), with about one-quarter visiting weekly (26%), and roughly the same number visiting daily or more often (28%).
- In the online survey, approximately four-in-ten visit monthly or more often (40%), including one-in-five who visit at least weekly (21%), and about one-in-twenty who visit at least daily (6%).
- Those who visit more frequently (at least once per week), tend to be from the City of Vancouver, with residents and those working in the South False Creek visiting most often.
- Overall, approximately half of all visitors to the South False Creek area used public transit to access the South False Creek area (51% in the intercept and 54% in the online survey). Lower cost and shorter travel time are the top reasons for choosing transit over other modes, each mentioned by more than one-third of respondents (38% in each), followed by lack of access to other travel modes (27%).
- The ability to travel easily to the area at least somewhat influenced approximately eight-in-ten visitors (84%), with roughly three-in-ten stating it moderately influences their choice (31%) and roughly the same number stating it greatly influences their choice (30%) to travel to the area.

Q3: Of these people, what portion would choose to use the streetcar?

- Overall, the majority surveyed would use the South False Creek streetcar service if it existed, including 83% in the intercept survey and 72% in the online survey.

Intercept Survey

- By area, City residents and those from other parts of Metro Vancouver are equally likely to use a streetcar service, with approximately eight-in-ten mentioning they would use it if it existed (83% among City residents and 84% among other MV residents).

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Q1 – Q3: Potential Users of Streetcar Service

Intercept Survey (cont'd)

- Those living in the South False Creek area are the most likely to use it, on average, with 87% likely, including two-thirds who are "very" likely (69%).
- Women are slightly more likely than men to use the streetcar (87% versus 79% of men).
- Among travel segments, residents and workers are the most likely to use this streetcar service, on average (87% and 85% total likely, respectively).

Online Survey

- By age, 18-34s are the most likely to use the service on average (78% compared with 57 – 74% among those 35+), and those under 65 are somewhat more likely to use the service compared with those 65 years of age and older (68 to 78% among 18-64s versus 57% among those 65+)
- Likelihood to use varies somewhat by area, with Burnaby/New Westminster, City of Vancouver, and Southwest residents most likely to use the service, and North Shore residents least likely to.
- As in the intercept survey, Women are slightly more likely than men to use the service (74% versus 69% total likely).
- Regular transit users are much more likely to use the service than those who use transit less often or never (84% among 5x/week users, 83% among 1+/week users vs 68% among those who use transit less often, and just 44% among those who never use transit).

Projected Frequency of Use:

- Among those in the intercept sample likely to use the streetcar service (83%), about half (55%), would use it at least weekly, and 16% daily. Workers would be the most frequent users, with almost one-in-three (29%) using daily and 76% using weekly. And naturally those living in Vancouver, particularly in the False Creek area, would be the most regular users. However, even a significant proportion of those living in the region outside the city would use the service regularly (43% at least once a week).
- By contrast, those in the online sample would use the service less frequently, with about one-in-five using it weekly or more often (18%), four-in-ten using it monthly (40%), and one-quarter using it less often (24%). A further 18% are unsure how often they would use it. Residents and regular transit users are more likely to use the service at least weekly (44% and 35%, respectively).

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Q4: How Attractive is the Streetcar Compared to Other Modes?

Q4: How attractive is the streetcar service as compared to other modes?

- More frequent service and less crowding/pass-ups top the list of improvements transit users would like to see, noted by approximately one-in-five each (22% and 21%, respectively), followed by more reliable service (17%).
- Among those in the intercept survey who did not use transit to travel to the South False Creek area (n=259), roughly one-half mentioned that they did not use it because they prefer other travel modes (48%).
- In terms of other alignments or destinations that visitors would like to see, the top mentions include Stanley Park and Kitsilano, Point Grey, and UBC.
- Among those unlikely to use the South False Creek streetcar service (n=84 intercept and n=313 online), the most common reason is "I do not travel to this area often enough", mentioned by about half. Other common reasons include that it's "not an applicable travel route", "there are better travel options through the area", and "I do not typically use transit", with the latter mentioned more often in the online survey versus the intercept.
- When asked to rank Residents place a higher value on trip experience than other travel segments (43% compared with 23 to 35% among all other travel segments, excluding through trips*).
- Visitors and tourist tend to prioritize travel time over other travel segments (65% and 67% compared with 42 to 56% among all other segments, exclusive through trips*).

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Q5: Other Streetcar Destinations and Alignments

Q5: What other destinations or alignments should or need to be considered?

- Findings differed somewhat between the intercept and online survey, with those completing the online survey mentioning Stanley Park most often as a destination that should be considered (47%), and those in the intercept sample mentioning Kitsilano, Point Grey, and UBC most often (29%).

Intercept Survey

- Residents of the City of Vancouver are the most likely to mention Kitsilano, Point Grey, and UBC (33% compared with 21% among those from other areas of Metro Vancouver and 25% among those visiting from elsewhere), and more likely than others to want the line extended south to the Broadway subway, along the Arbutus corridor.
- Those visiting from out of town are most interested in seeing the line extend to Stanley Park (30% compared with 14% in CoV and 12% in other MV municipalities).

Online Survey

- Stanley Park and Kitsilano, Point Grey, UBC top the list of other areas visitors would like to see the streetcar service go (47% and 43%, respectively).
- Other common mentions – noted by at least one-quarter each – include Gastown (31%), extending the line south to the Broadway subway along the Arbutus Corridor (29%), Yaletown (29%), and the West End (25%).
- As in the intercept sample, City of Vancouver residents are most likely to mention extending the line south to the Broadway subway line (36% compared with 20 – 26% across all other areas).
- By Travel Segment, residents and workers are more likely to mention extending the line to Yaletown or the West End.

NB: In the online survey, respondents were presented with a list of destinations and possible alignments on screen, whereas in the intercept survey, the question was asked in an open-ended manner. This likely influenced respondents to select multiple destinations (or destinations they may not have considered) more often in the online survey.

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Q6 – Q8: Factors Influencing Decision to Use Streetcar

Q6: Are potential riders willing to pay a fare in addition to TransLink fare and how much?

- Only 30% in the intercept survey and 37% in online survey would be willing to pay a separate fee/fare to board the streetcar service. However, if the amount were to be deducted from their Compass Card, visitors are far more likely to use the service (45% in the intercept and 39% in the online among those who were unwilling to pay a separate fare/fee).
- The most common amount stated when asked how much the would be willing to pay for a single ride fare on the streetcar service is in the $2 to $4 range with 33% of intercept respondents/ 39% online respondents citing $2-$3, and 38% intercept/22% online saying $3-$4.
- Responses are relatively consistent by segments but note that likely users of the streetcar service in the online survey would be prepared to pay slightly more than non-users.
- Cost of fare was among the top 3 factors impacting the decision to use the streetcar service in the intercept and online survey, and the top mention in the online survey.

Q7: What are the ideal operating hours and frequency?

- Visitors are most likely to use the streetcar service between 9 am and 9 pm with peak usage hours between 9 am and 6 pm (the intercept survey indicates peak usage hours are from 9 am to 12 pm, while the online survey shows the most common usage time as between 12 pm and 6 pm).
- Residents and workers are more likely to use the early morning service than other travel segments (40% and 41% respectively vs 28% in each of the visitor and tourist segments), and workers are the most likely to use the late service, 9 pm to 12 pm (21% vs 10 to 12% among others).
- About six-in-ten are willing to wait up to 10 minutes for a streetcar (63%), with most willing to wait 5 to 10 minutes (40%). A further one-quarter are willing to wait 10 to 15 minutes (26%), and about one-in-ten are okay with waiting for longer than 15 minutes (10%), with findings relatively consistent across demographic characteristics.

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Q6 – Q8: Factors Influencing Decision to Use Streetcar

Q8: Is it important to be integrated into the compass system or with other transportation modes?

- The ability to use a Compass Card to pay for the streetcar service was in the top 5 factors that would impact the decision to use the streetcar (mentioned by 59% online and 39% on the intercept and ranked high among regular transit users and local residents).
- The majority of those likely to use the streetcar service, including 76% in the intercept survey and 84% from the online survey, would combine the trip with other transit modes, most commonly Skytrain. This group includes both current transit and non-transit or infrequent users.
- As noted earlier, roughly one-third (30% in the intercept survey and 37% in online survey) would be willing to pay a separate fee or fare to board the streetcar service, but willingness to pay this fee increases if it can be deducted from a Compass Card.

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Q9: Appetite for a Demonstration Streetcar During World Cup

Q9: What is the appetite for a demonstration streetcar service during the FIFA 2026 World Cup?

- Overall, about two-thirds are likely to use a streetcar service during the FIFA World Cup, including 70% in the intercept survey and 67% in the online survey.

Intercept

- On average, those living in the South False Creek area are more likely to use a demonstration streetcar service than those who live elsewhere (79% total likely compared with 66 – 68% in other areas).
- Those travelling in a party (2 or more) are slightly more likely to use this service when compared with those travelling alone (76% versus 67%, respectively).
- There is no notable difference in likelihood to use by age or gender.

Online

- Those under 65 years of age are somewhat more likely than those 65 plus to use this service if it existed, especially those under 35 years of age.
- Frequent transit users – those who travel by transit at least once per week – are much more likely to use this service, as are those who live or work in the SFC area.
- Likelihood to use does not vary significantly by gender or areas of residence.

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Detailed Findings

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Mode Share

	Total Intercept (530) %	Total Online (1,200) %
Transit	51	54
SkyTrain	*35*	*41*
Transit bus	*32*	*36*
SeaBus	*2*	*6*
Walking	33	37
Private Vehicle	17	40
Parked (on-street or in parking lot)	*15*	-
Dropped off	*2*	-
Rental/ shared vehicle	3	1
Dropped off	*2*	-
Parked (on-street or in parking lot)	*1*	-
Cycling/ e-biking	9	6
False Creek Ferry / Aquabus	5	5
Vancouver Tour bus	3	1
Taxi	1	2
Miscellaneous	2	1

Intercept Q.2) How did you travel here today?
Intercept Q.3) Did you (or will you) use any other modes of transportation on your trip to this location today?
Online Q.2e) On your most recent trip to the South False Creek area: What modes of transportation did you use on your trip?

- Overall, transit was the most common travel mode used to access the South False Creek area, with approximately half travelling by transit (51% in the intercept and 54% in the online survey).
- Among transit users, Skytrain was the most popular mode, followed by bus.
- Intercept Survey:
  - Transit was the most common main mode of travel (45%), followed by walking (26%), and private vehicle (15%).
  - Total transit use, including main mode and secondary mode, is 51%.
  - Among the remaining travel modes, approximately one-quarter walked (26%), roughly one-in-five travelled by private or rented/shared vehicle (19%), and a further one-in-twenty travelled by bicycle (6%).
  - About four-in-ten used more than one mode of travel to access the South False Creek area (40%), with transit being the most common second mode (23%).
- Online Survey:
  - Transit was the most common mode of travel (54%), followed by private vehicle (40%), and walking (37%).
  - Approximately one-quarter travelled to South False Creek exclusively by transit (24%) and three-in-ten travelled by transit combined with another mode:
    - 6% travelled by transit and vehicle
    - 24% travelled by transit and other mode other than private vehicle.
  - Approximately half used multiple modes (49%).

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Mode Share (cont'd)

	Total Intercept (530) %	Total Online (1,200) %
Transit	51	54
SkyTrain	*35*	*41*
Transit bus	*32*	*36*
SeaBus	*2*	*6*
Walking	33	37
Private Vehicle	17	40
Parked (on-street or in parking lot)	*15*	-
Dropped off	*2*	-
Rental/ shared vehicle	3	1
Dropped off	*2*	-
Parked (on-street or in parking lot)	*1*	-
Cycling/ e-biking	9	6
False Creek Ferry / Aquabus	5	5
Vancouver Tour bus	3	1
Taxi	1	2
Miscellaneous	2	1

Intercept Q.2) How did you travel here today?
Intercept Q.3) Did you (or will you) use any other modes of transportation on your trip to this location today?
Online Q.2e) On your most recent trip to the South False Creek area: What modes of transportation did you use on your trip?

Intercept survey:

- Visitors from other parts of Metro Vancouver were the most likely to travel by transit (75% compared with 41% from City of Vancouver and 53% from elsewhere), as were those under 35 years of age (78% among 18-24s and 61% among 25-34s compared with 27 to 51% among other age groups).
- As would be expected, residents were the most likely to walk to the area, with nearly three-quarters doing so (74% compared with 4% to 48% of those visiting from other areas).

Online survey:

- Workers are the most likely to access the area by transit and Visitors and those travelling through are the most likely to travel by private vehicle.
- By age, visitors under 35 years of age are more likely than those 35+ to travel to the area by transit (75% among 18-24s and 73% among 25-34s vs 34 – 58% among those 35 years of age and older).

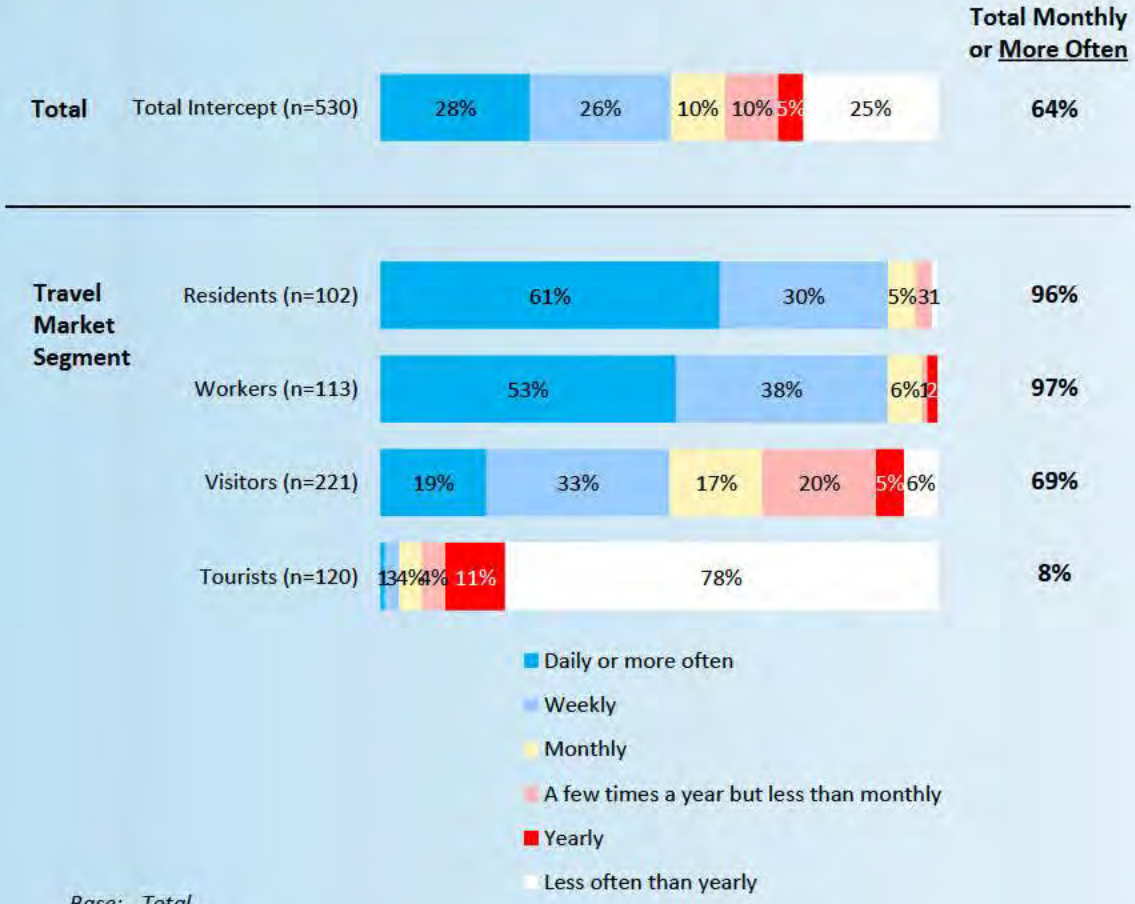
Reason For Choosing Transit Over Other Travel Modes

Base: Total used public transit Intercept (n=272)

- Visitors who travelled to the South False Creek area by transit in the intercept survey (54%) were asked why they chose transit over other travel modes.
- Lower cost and shorter travel time are the top reasons for choosing transit, each mentioned by more than one-third of respondents (38% in each), followed by lack of access to other travel modes (27%).
- There are no notable differences by demographic characteristics or travel segments.

Intercept Q.4) Why did you choose to use a {Transit Used} over other travel modes?

Frequency Of Travel To South False Creek Area: Intercept



- In the intercept survey, nearly two-thirds visit monthly or more often (64%), with about one-quarter visiting weekly (26%), and roughly the same number visiting daily or more often (28%).
- Those who visit more frequently (at least once per week), tend to be from the City of Vancouver, with residents of the South False Creek visiting most often.

Base: Total

Intercept Q.10) How often do you travel to/from this location?
Online Q.2f) How often do you travel to/from a destination within the South False Creek area?
**Caution small base size*

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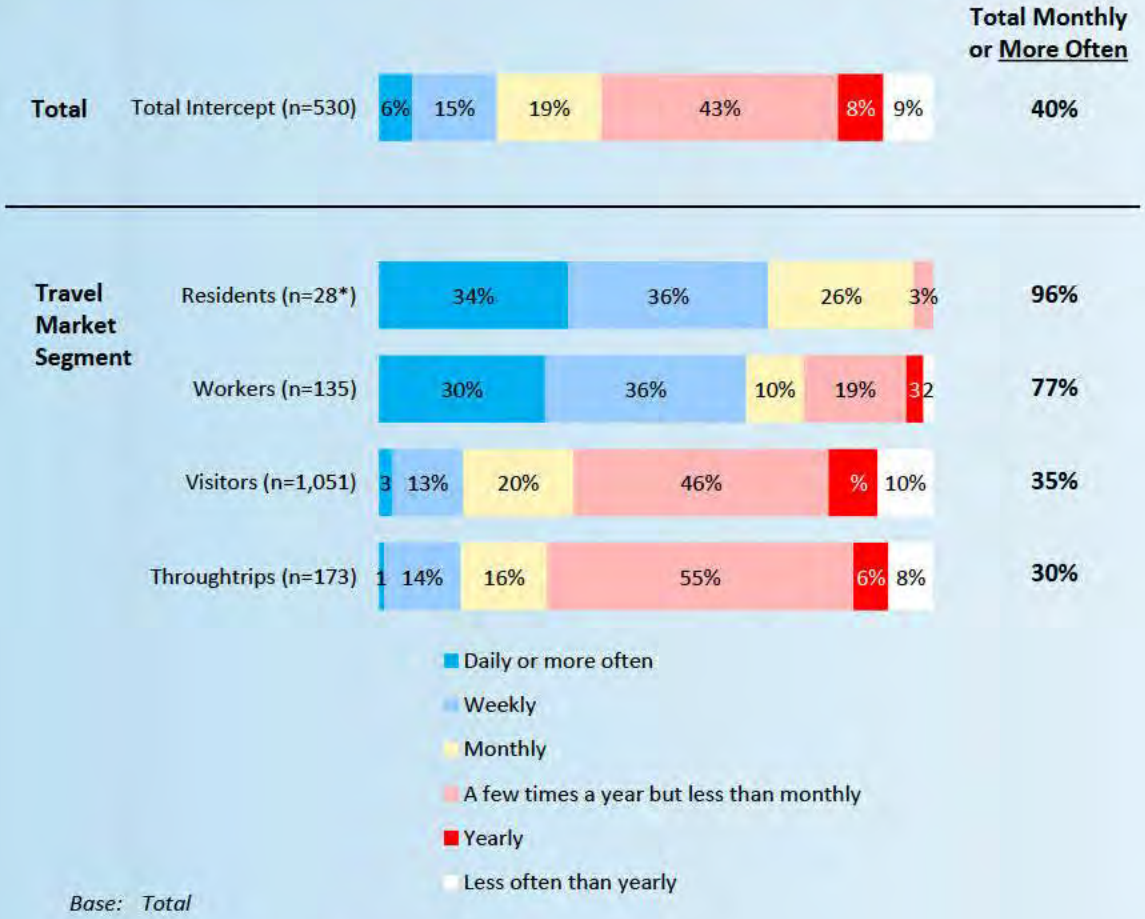
Frequency Of Travel To South False Creek Area: Online

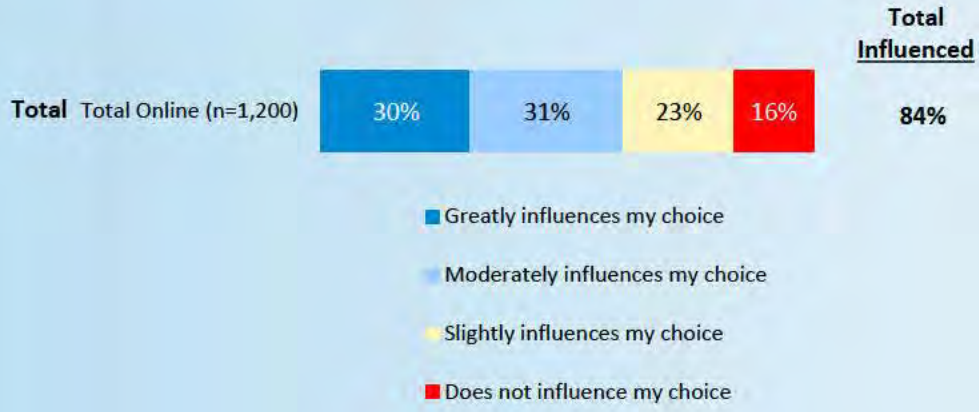


- In the online survey, approximately four-in-ten visit monthly or more often (40%), including one-in-five who visit at least weekly (21%), and about one-in-twenty who visit at least daily (6%).
- Frequent visitors – those who visit weekly or more often – are much more likely to be from the City of Vancouver and tend to live or work in the area (or both).

Base: Total

Intercept Q.10) How often do you travel to/from this location?
Online Q.2f) How often do you travel to/from a destination within the South False Creek area?
**Caution small base size*

Influence of Ease of Travel on Choice to Travel to Area



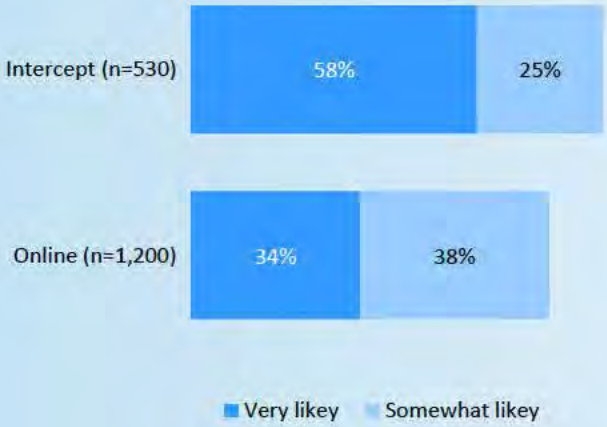
	Total Influenced
Total	84%

- Respondents in the online survey were asked to what extent their ability to travel easily to the South False Creek area influences their choice to travel there.
- For most visitors, the ability to travel to the area easily at least somewhat influences their choice to travel there (84%). This includes three-in-ten whose decision to travel to the area is moderately influenced by this factor and roughly the same number who are greatly influenced by it.
- Those visiting from Burnaby or New West are most influenced by this factor, with 43% mentioning that it greatly influences their choice to travel to the South False Creek area.
- Ease of travel had less of an influence for those visiting from the Southwest and Southeast parts of Metro Vancouver.
- Regular transit users are somewhat more likely to be influenced by this factor than those who use transit less frequently or never.
- Those most influenced by this factor are considerably more likely to use the proposed transit service than those less influenced (73% very likely among greatly or moderately influenced vs 27% among those who are slightly influenced or not at all).

Base: Total Online

Online Q.2g) To what extent does your ability to travel easily to the South False Creek area influence your choice to travel there?

Likelihood of Using Streetcar Service: Overall

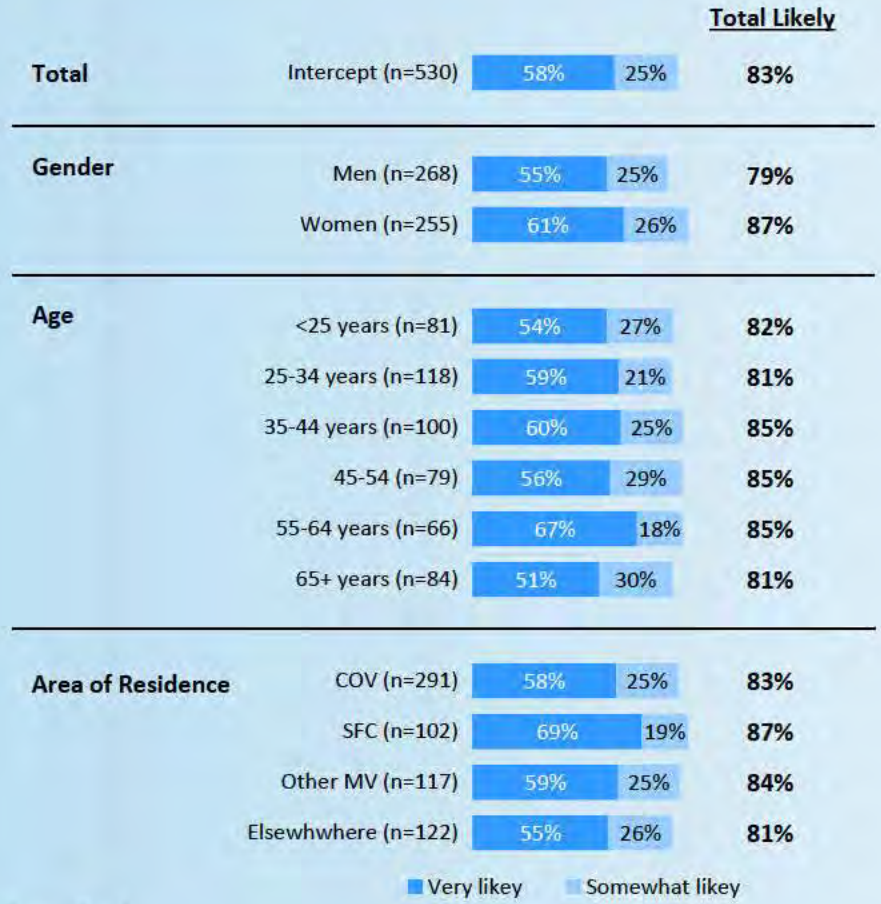


- Overall, the majority surveyed would use the South False Creek streetcar service if it existed.
- In the intercept survey, approximately eight-in-ten say they are likely to use it (83%), including more than half who are "very" likely to use it (58%); similarly, in the online survey, about seven-in-ten are likely to use it (72%), including one-third who are "very" likely to do so.

Base: Total

Intercept Q.12) If a streetcar service like this existed, how likely are you to use it?
Online Q.3) How likely are you to use the proposed South False Creek streetcar service?

Likelihood of Using Streetcar Service: Intercept



- By area, City residents and those from other parts of Metro Vancouver are equally likely to use a streetcar service, with approximately eight-in-ten mentioning they would use it if it existed (83% among City residents and 84% among other MV residents).
- Those living in the South False Creek area are the most likely to use it, on average, with 87% likely, including two-thirds who are "very" likely (69%).
- Women are slightly more likely than men to use the streetcar (87% versus 79% of men).
- There is no notable difference in likelihood to use by age.

Base: Total

Intercept Q.12) If a streetcar service like this existed, how likely are you to use it?
Online Q.3) How likely are you to use the proposed South False Creek streetcar service?

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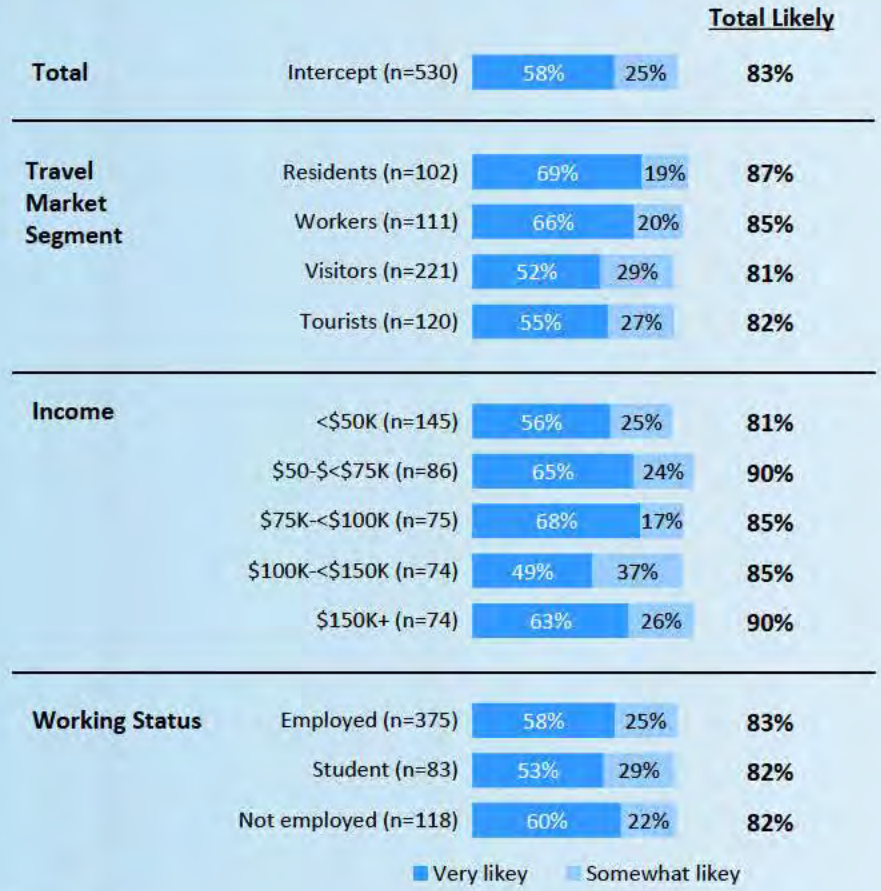
Likelihood of Using Streetcar Service: Intercept (cont'd)



- Among travel segments, residents and workers are the most likely to use this streetcar service, on average (87% and 85% total likely, respectively).
- There are no statistically significant differences in likelihood to use based on income, party size, or working status.

Base: Total

Intercept Q.12) If a streetcar service like this existed, how likely are you to use it?
Online Q.3) How likely are you to use the proposed South False Creek streetcar service?

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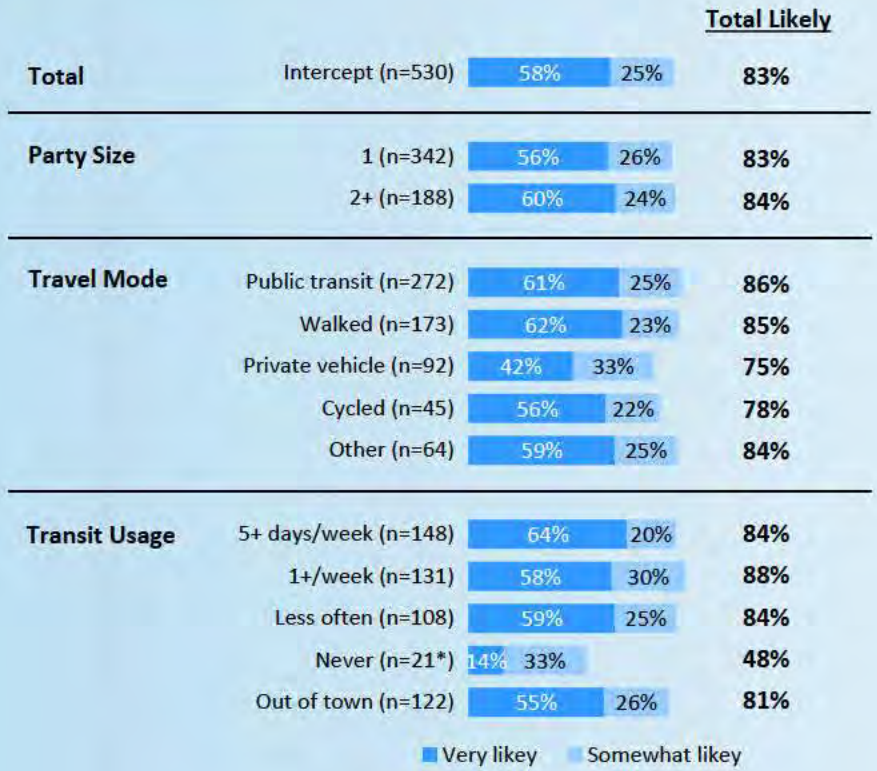
Likelihood of Using Streetcar Service: Intercept (cont'd)



- Interpret with caution due to small base size: By transit usage, those who never use transit are the least likely to use the streetcar service.

Base: Total

Intercept Q.12) If a streetcar service like this existed, how likely are you to use it?
Online Q.3) How likely are you to use the proposed South False Creek streetcar service?
**Caution small base size*

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Likelihood of Using Streetcar Service: Online

		Very likey	Somewhat likey	Total Likely
Total	Online (n=1,200)	34%	38%	**72%**
Gender	Male (n=595)	33%	36%	**69%**
	Women (n=597)	35%	40%	**74%**
Age	18-24 years (n=107)	32%	41%	**73%**
	25-34 years (n=219)	35%	46%	**81%**
	35-44 years (n=233)	36%	39%	**74%**
	45-54 (n=194)	36%	37%	**73%**
	55-64 years (n=197)	37%	30%	**68%**
	65+ years (n=250)	28%	29%	**57%**
Area of Residence	COV (n=500)	37%	38%	**75%**
	SFC (n=28)	49%	37%	**86%**
	Burnaby/ New West (n=125)	49%	30%	**79%**
	North Shore (n=125)	32%	26%	**58%**
	North East (n=125)	26%	42%	**69%**
	South West (n=125)	27%	49%	**76%**
	South East (n=200)	28%	39%	**67%**

Base: Total

- Findings from the online survey are similar to the intercept survey with minor demographic differences.
- By age, 18-34s are the most likely to use the service on average (78% compared with 57 – 74% among those 35+), and those under 65 are somewhat more likely to use the service compared with those 65 years of age and older (68 to 78% among 18-64s versus 57% among those 65+)
- Likelihood to use varies somewhat by area, with Burnaby/New Westminster, City of Vancouver, and Southwest residents most likely to use the service, and North Shore residents least likely to.
- As in the intercept survey, Women are slightly more likely than men to use the service (74% versus 69% total likely).

Intercept Q.12) If a streetcar service like this existed, how likely are you to use it?
Online Q.3) How likely are you to use the proposed South False Creek streetcar service?

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Likelihood of Using Streetcar Service: Online (cont'd)

				Total Likely
Total	Online (n=1,200)	34%	38%	**72%**
Travel Market Segment	Residents (n=28*)	49%	37%	**86%**
	Workers (n=135)	44%	38%	**83%**
	Visitors (n=1,051)	32%	38%	**70%**
	Through trips (n=173)	28%	29%	**57%**
Income	<$50K (n=184)	37%	43%	**80%**
	$50-$<$75K (n=191)	41%	35%	**76%**
	$75K-<$100K	31%	45%	**76%**
	$100K-<$150K (n=259)	37%	36%	**73%**
	$150K+ (n=225)	31%	33%	**64%**
Working Status	Employed (n=823)	36%	40%	**76%**
	Student (n=89)	30%	43%	**73%**
	Not employed (n=360)	29%	32%	**61%**

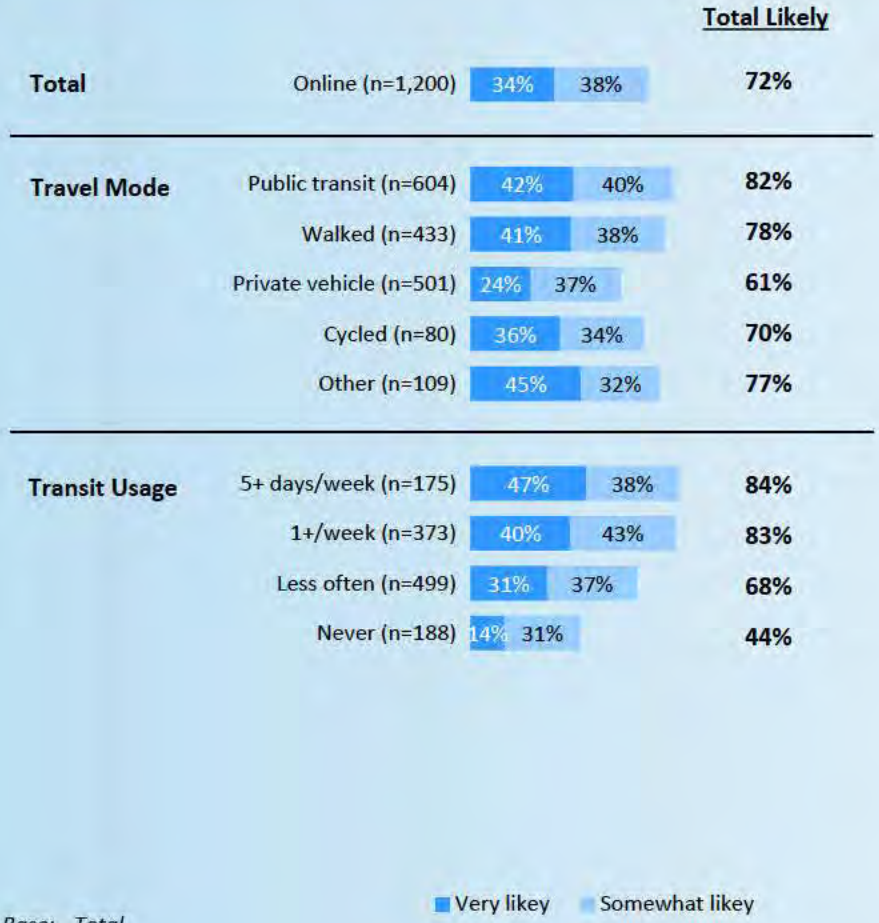
Very likey Somewhat likey

Base: Total

- By travel segments, residents and workers are more likely to use the service than visitors or those travelling through the area.
- Those currently employed or students are more likely use the service than those not employed.
- Residents earning more than $150K per year are the least likely to use a streetcar service.

Intercept Q.12) If a streetcar service like this existed, how likely are you to use it?
Online Q.3) How likely are you to use the proposed South False Creek streetcar service?
**Caution small base size*

Likelihood of Using Streetcar Service: Online (cont'd)



- Those travelling by private vehicle are somewhat less likely to use the service vs those travelling by other means (61% vs 70 to 82% among other modes).
- Regular transit users are much more likely to use the service than those who use transit less often or never (84% among 5x/week users, 83% among 1+/week users vs 68% among those who use transit less often, and just 44% among those who never use transit).

Base: Total

Intercept Q.12) If a streetcar service like this existed, how likely are you to use it?
Online Q.3) How likely are you to use the proposed South False Creek streetcar service?

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Reasons For Not Using South False Creek Streetcar:

Base: Total "not at all likely" or "not very likely" to use proposed South False Creek streetcar service	Total Intercept (84) %	Total Online (313) %
I do not travel to this area often enough	46	56
Not an applicable travel route	30	21
There are better travel options through the area	29	24
I do not typically use transit	16	35
Travel time is too long	6	5
I would want a guaranteed seat	6	5
No comment	1	-

Intercept Q.13) Please briefly explain why you are not likely to use not likely to use this streetcar service.
Online Q.4) Please briefly explain why you are not likely to use the South False Creek streetcar service.

- Among those unlikely to use the South False Creek streetcar service (n=84 intercept and n=313 online), the most common reason is "I do not travel to this area often enough", mentioned by about half.
- Other common reasons include that it's "not an applicable travel route", "there are better travel options through the area", and "I do not typically use transit", with the latter mentioned more often in the online survey versus the intercept.

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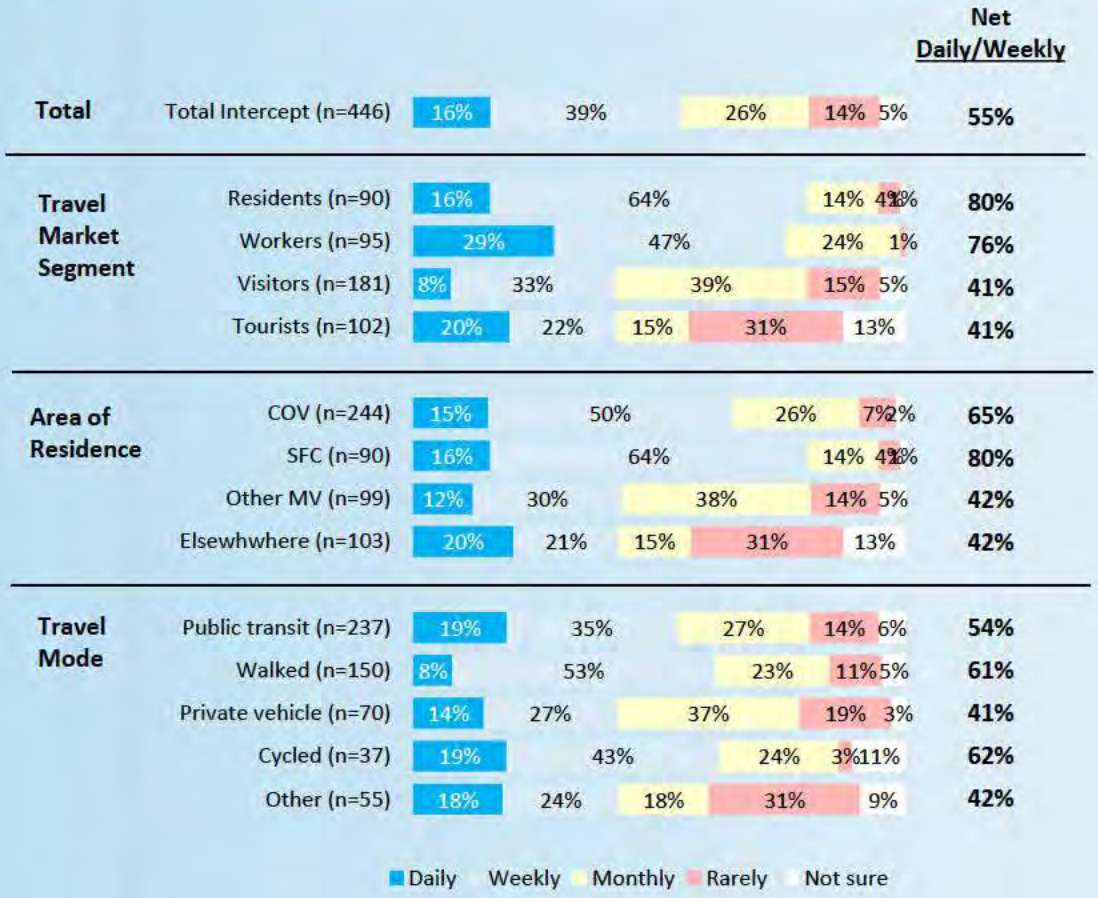
Projected Streetcar Usage Frequency: Intercept



- Respondents interviewed in the intercept survey who were very or somewhat likely to use the streetcar service were asked how frequently they expected to use the service. Over half, 55%, would use it at least weekly, and 16% daily.
- Worker would be the most frequent users, with almost one-in-three (29%) using daily and 76% using weekly.
- And naturally those living in Vancouver, particularly in the False Creek area, would be the most regular users. But even a significant proportion of those living in the region outside the city would use the service regularly (43% at least once a week).
- Those currently travelling by transit, walking or cycling would be the most frequent users.
- Usage does not vary by other demographic characteristics such as gender and age.

Base: Total would use South False Creek streetcar

Intercept Q.14) How often would you use this streetcar service?
Online Q.5) How often would you use the South False Creek streetcar service?

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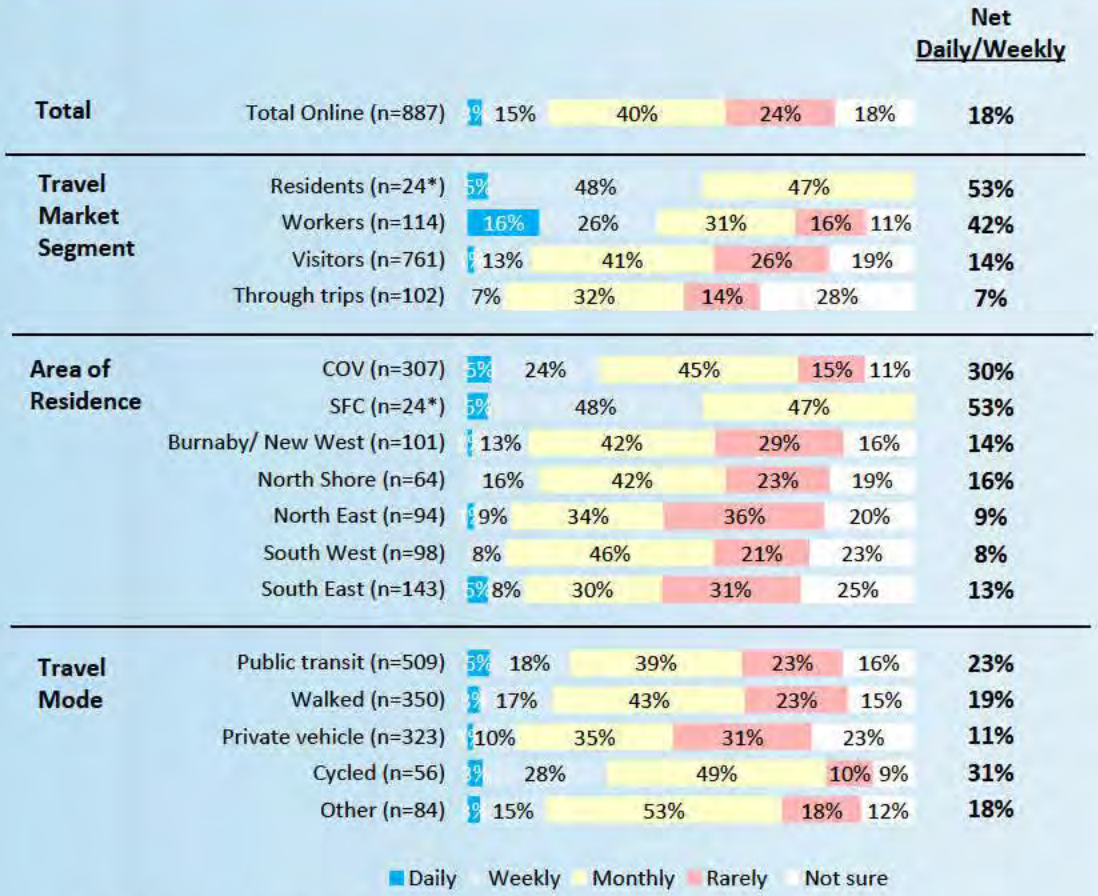
Projected Streetcar Usage Frequency: Online



- Past year visitors to the False Creek area likely to use the streetcar service would tend to use it monthly or less often. Only 18% would use it at least weekly. Usage is highest among:
  - Residents, both those working and not working (44% at least weekly); and
  - Regular transit users (35% of those who use transit 5 days a week of more often would use the streetcar service at least weekly).

Base: Total would use South False Creek streetcar

Intercept Q.14) How often would you use this streetcar service?
Online Q.5) How often would you use the South False Creek streetcar service?
**Caution small base size*

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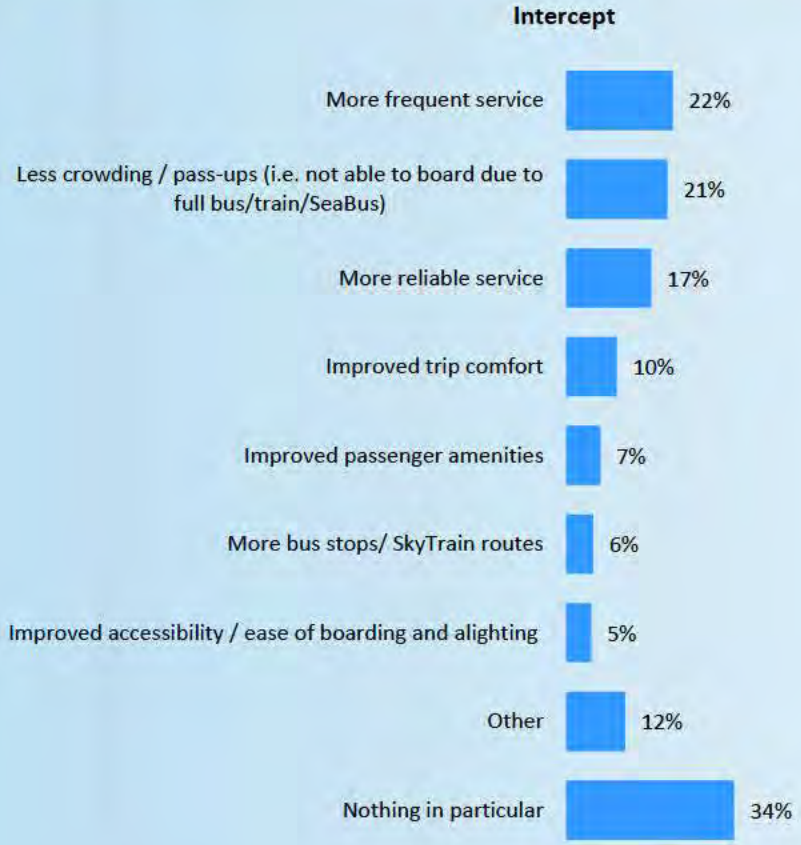
Improvements To Transit



- Respondents in the intercept survey who travelled to the area via transit (n=272) were ask what could have been better about their transit trip.
- More frequent service and less crowding/pass-ups top the list of improvements transit users would like to see, noted by approximately one-in-five each, followed by more reliable service.
- A further one-in-ten mention improved trip comfort and 7% mention improved passenger amenities.

Base: Total used public transit Intercept (n=272)

Intercept Q.5) What could have been better about the {Transit Used} trip?

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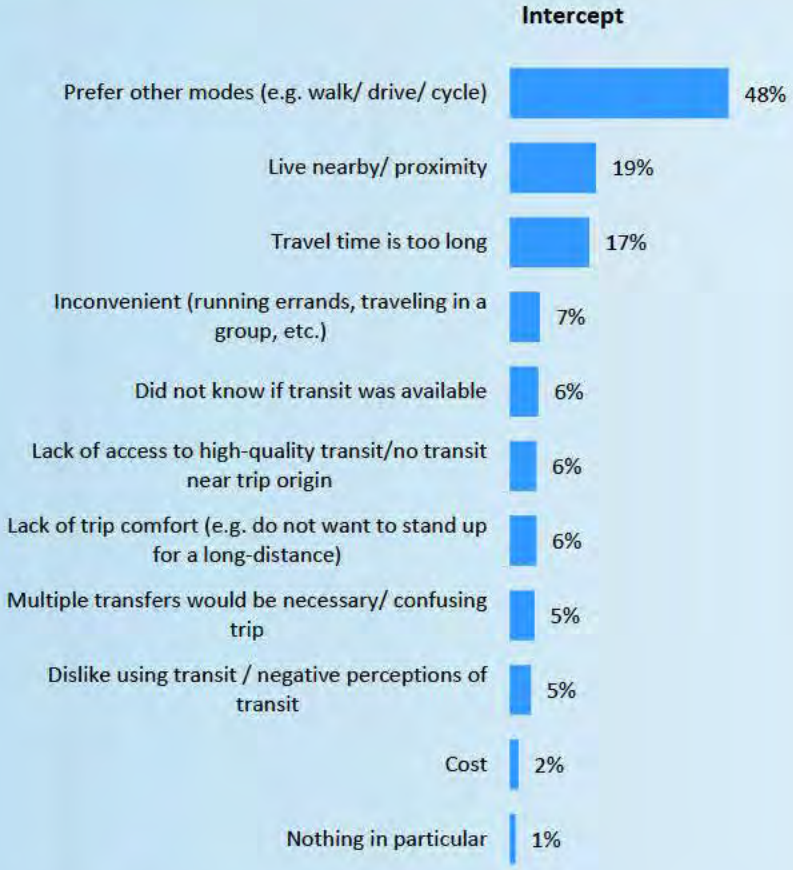
Reasons For Not Using Transit



- Among those in the intercept survey who did not use transit to travel to the South False Creek area (n=259), roughly one-half mentioned that they did not use it because they prefer other travel modes (48%).
- Other common reasons include that they live nearby (19%) and the travel time is too long (17%).

Base: Total did not use public transit Intercept (n=259)

Intercept Q.6) Please briefly explain why you did not use any transit modes for your trip.

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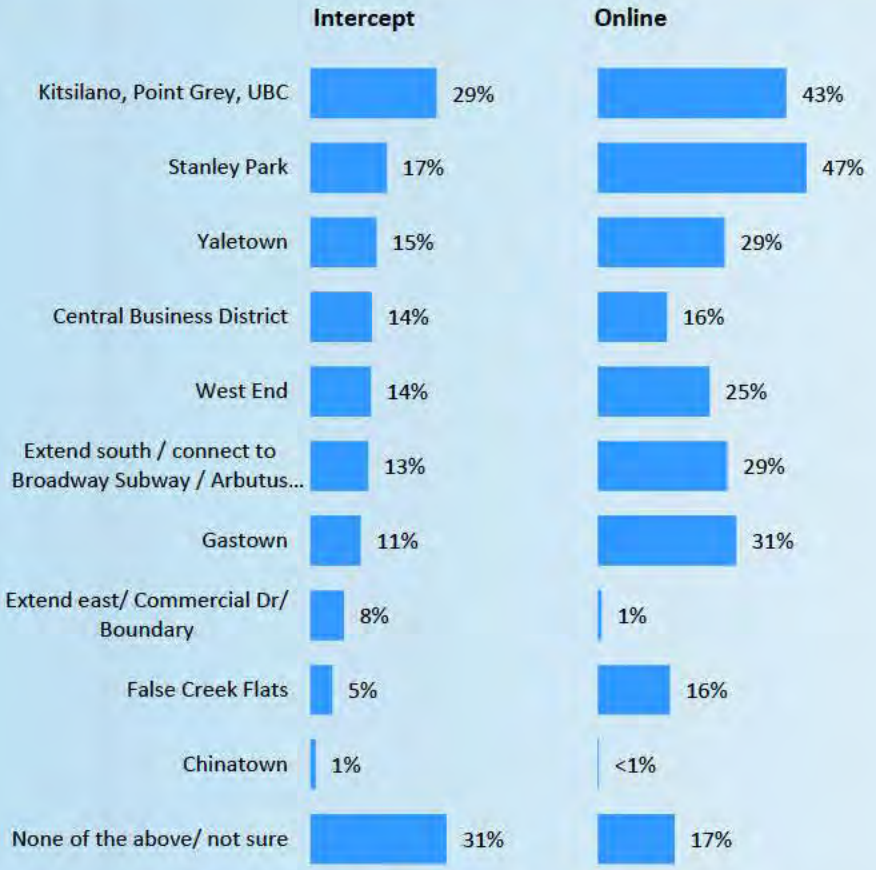
Other Streetcar Destinations and Alignments

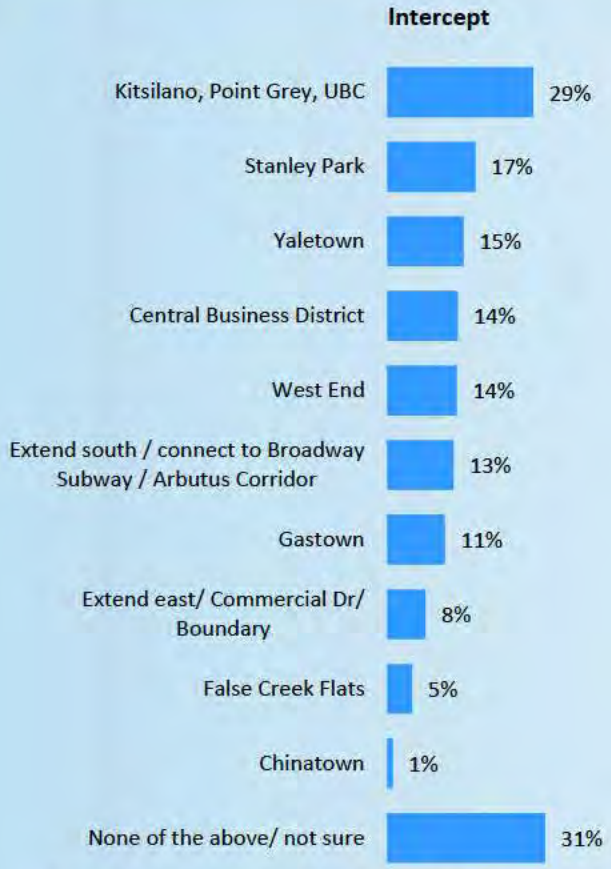


Base: Total Intercept (n=530), Online (n=1,200)

- Findings differed somewhat between the intercept and online survey, with those completing the online survey mentioning Stanley Park most often as a destination that should be considered (47%), and those in the intercept sample mentioning Kitsilano, Point Grey, and UBC most often (29%).
- *NB: In the online survey, respondents were presented with a list of destinations and possible alignments on screen, whereas in the intercept survey, the question was asked in an open-ended manner. This likely influenced respondents to select multiple destinations (or destinations they may not have considered) more often in the online survey.*

Intercept Q.16) To better serve your travel needs, to what other areas in the City of Vancouver would you like to see the streetcar service go?
Online Q.7) To better serve your travel needs, to what other areas in the City of Vancouver would you like to see the streetcar service go?

Other Streetcar Destinations or Alignments: Intercept

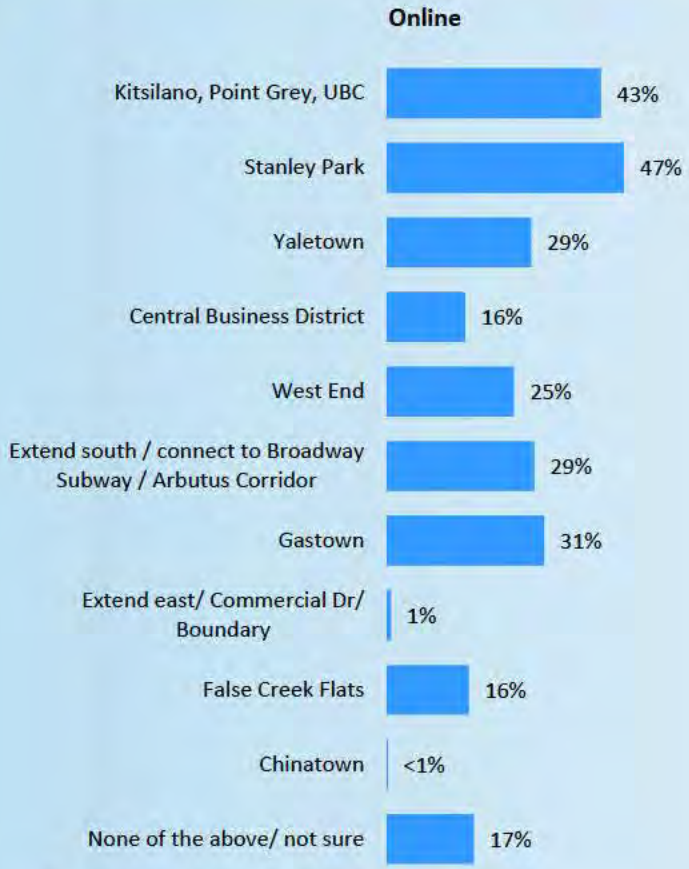


- When asked about other destinations for the streetcar, Kitsilano, Point Grey, and UBC is at the top of the list (29%), followed by Stanley Park (17%) and Yaletown (15%).
- Residents of the City of Vancouver are the most likely to mention Kitsilano, Point Grey, and UBC (33% compared with 21% among those from other areas of Metro Vancouver and 25% among those visiting from elsewhere), and more likely than others to want the line extended south to the Broadway subway, along the Arbutus corridor.
- Those visiting from out of town are most interested in seeing the line extend to Stanley Park (30% compared with 14% in CoV and 12% in other MV municipalities).

Base: Total Intercept (n=530), Online (n=1,200)

Intercept Q.16) To better serve your travel needs, to what other areas in the City of Vancouver would you like to see the streetcar service go?
Online Q.7) To better serve your travel needs, to what other areas in the City of Vancouver would you like to see the streetcar service go?

Other Streetcar Destinations or Alignments: Online



- Stanley Park and Kitsilano, Point Grey, UBC top the list of other areas visitors would like to see the streetcar service go (47% and 43%, respectively).
- Other common mentions – noted by at least one-quarter each – include Gastown (31%), extending the line south to the Broadway subway along the Arbutus Corridor (29%), Yaletown (29%), and the West End (25%).
- As in the intercept sample, City of Vancouver residents are most likely to mention extending the line south to the Broadway subway line (36% compared with 20 – 26% across all other areas).
- By Travel Segment, residents and workers are more likely to mention extending the line to Yaletown or the West End.

Base: Total Intercept (n=530), Online (n=1,200)

Intercept Q.16) To better serve your travel needs, to what other areas in the City of Vancouver would you like to see the streetcar service go?
Online Q.7) To better serve your travel needs, to what other areas in the City of Vancouver would you like to see the streetcar service go?

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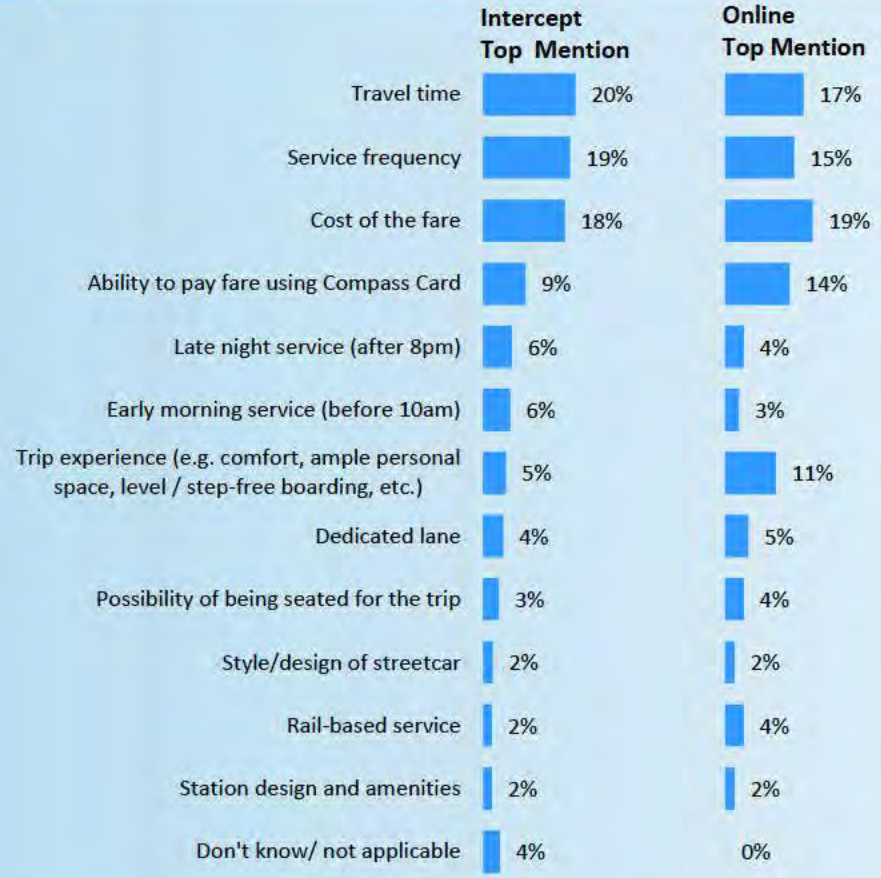
Streetcar Service and Feature Ranking: Top Mention

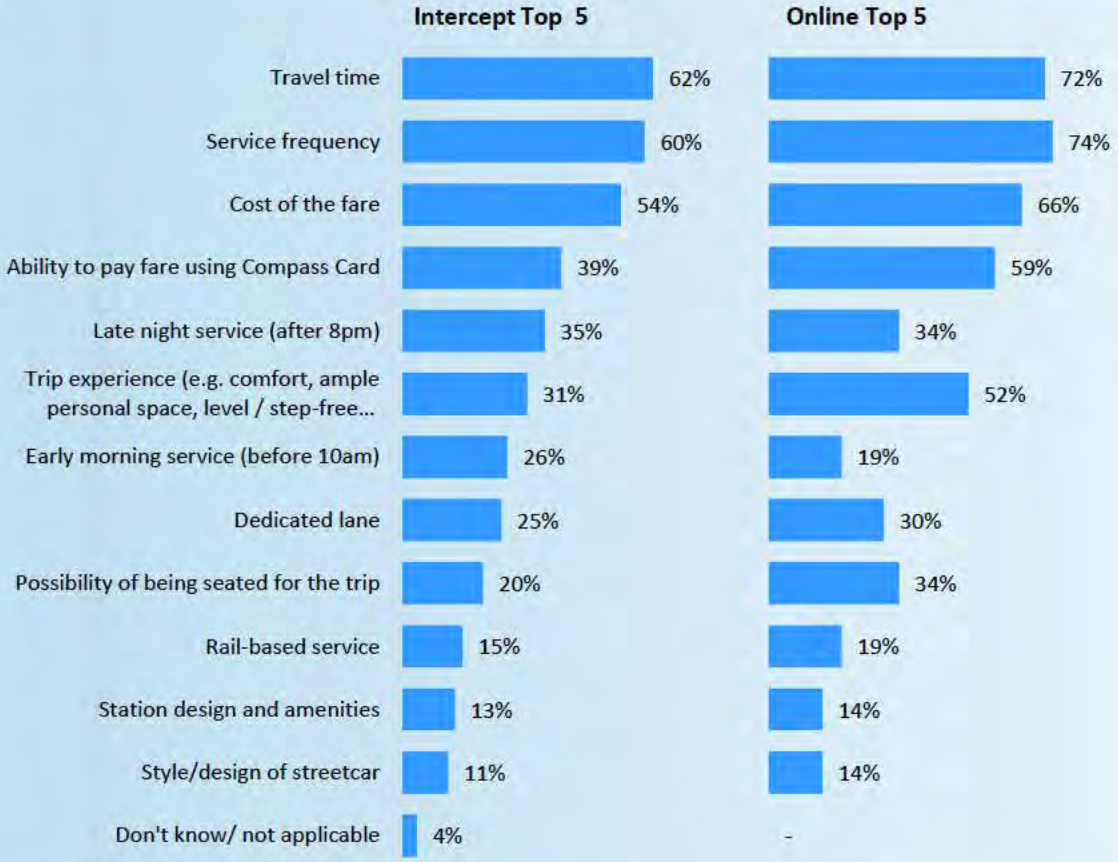


- Travel time, followed closely by service frequency are the top two factors that impact decision to use the streetcar service. Cost of the fare follows closely behind as the third most important consideration.
- Rounding out the list are the ability to use a Compass Card, and trip experience.
- The findings do not vary significantly by segments, demographic characteristics or likelihood to use the service, but as would be expected, ability to use a Compass card is more important to transit users and local residents.

Base: Total Intercept (n=530), Online (n=1,200)

Intercept Q.18a-l) Please rank the following factors based on how strongly they would impact your decision to use the South False Creek streetcar service (choose your top five and rank them 1 to 5, where 1 has the strongest impact).
Online Q.9) Please rank the following factors based on how strongly they would impact your decision to use the South False Creek streetcar service (choose your top five and rank them 1 to 5, where 1 has the strongest impact).

Streetcar Service and Feature Ranking: Top 5



- Overall, four the five top attributes are shared between the intercept and online surveys, with travel time, service frequency, cost of fare, and ability to pay fare using Compass Card being the top factors likely to impact visitors' decision to use the streetcar service.
- Late night service emerged as the 5th ranked factor in the intercept, while trip experience was the 5th ranked factor in the online survey.

Base: Total Intercept (n=530), Online (n=1,200)

Intercept Q.18a-l) Please rank the following factors based on how strongly they would impact your decision to use the South False Creek streetcar service (choose your top five and rank them 1 to 5, where 1 has the strongest impact).
Online Q.9) Please rank the following factors based on how strongly they would impact your decision to use the South False Creek streetcar service (choose your top five and rank them 1 to 5, where 1 has the strongest impact).

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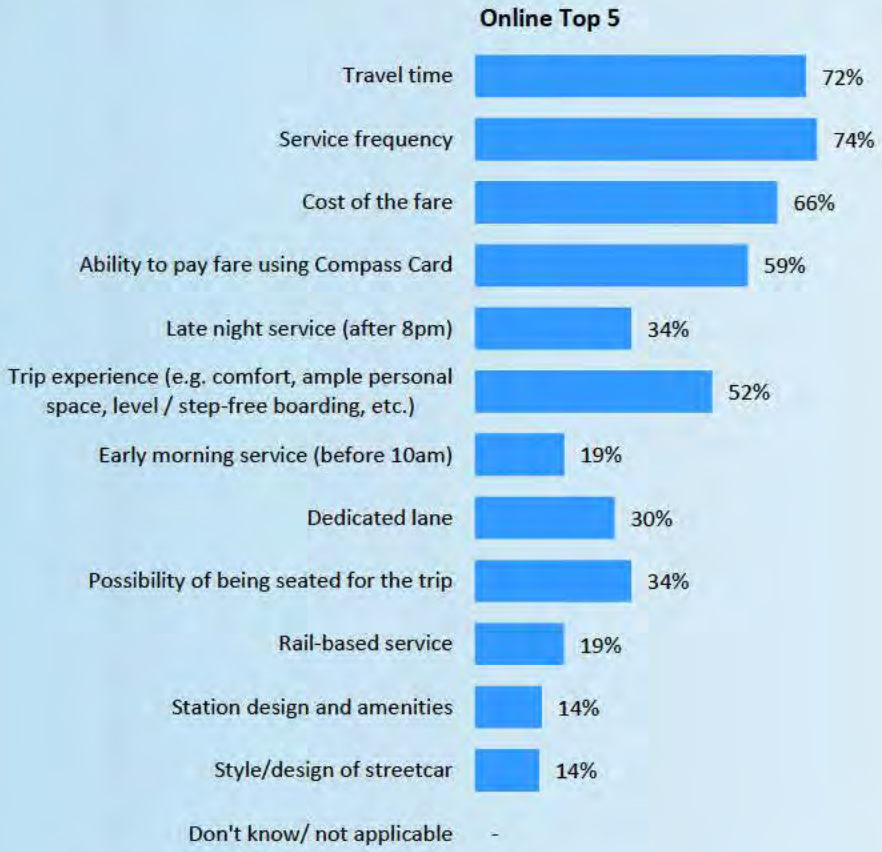
Streetcar Service and Feature Ranking: Online Top 5



- Service frequency and travel time tend to be more important to the visitor and through trip travel segments.
- By mode, those who travelled to the area using a private vehicle are more likely to prioritize service frequency and trip experience compared to those using other travel modes.
- Higher income households (those earning more than $100K) are more likely to prioritize service frequency more than households earning less than $100K.

Base: Total Intercept (n=530), Online (n=1,200)

Intercept Q.18a-l) Please rank the following factors based on how strongly they would impact your decision to use the South False Creek streetcar service (choose your top five and rank them 1 to 5, where 1 has the strongest impact).
Online Q.9) Please rank the following factors based on how strongly they would impact your decision to use the South False Creek streetcar service (choose your top five and rank them 1 to 5, where 1 has the strongest impact).

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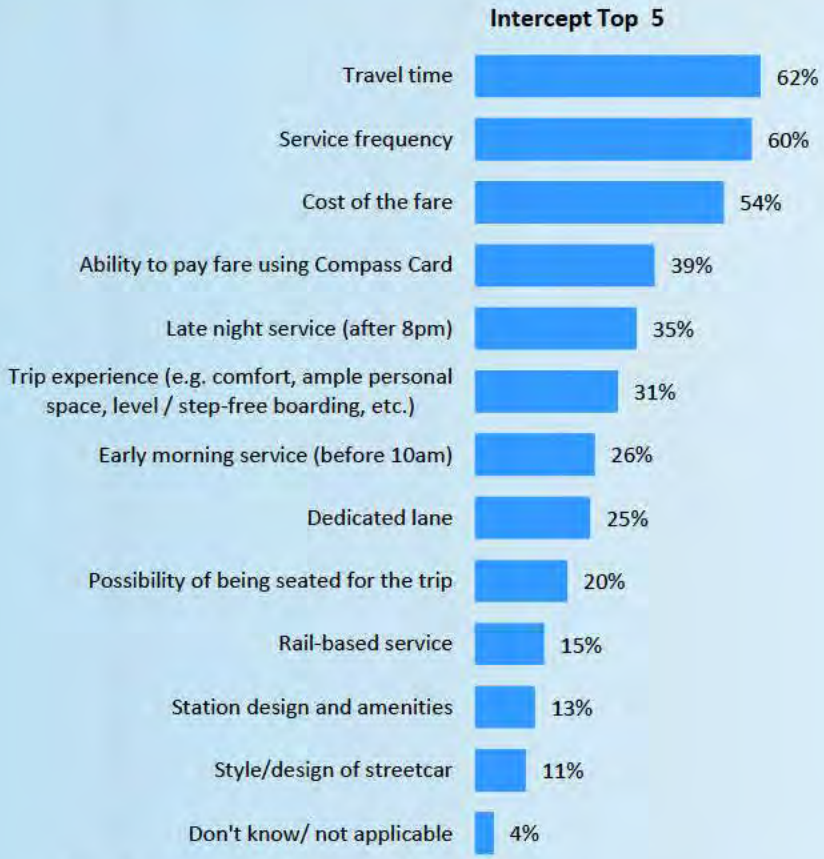
Streetcar Service and Feature Ranking: Intercept Top 5



Base: Total Intercept (n=530), Online (n=1,200)

- Those who travelled by public transit or cycled to the area tend to rank early morning service higher than those who travelled by other modes, as do residents under 45 years of age and those in the worker travel segment.
- Late night service is ranked highest by visitors under 45 years of age, and especially by those under 25 years of age (64% compared with 14 to 44% among all other age groups).
- Residents place a higher value on trip experience than other travel segments (43% compared with 23 to 35% among all other travel segments, excluding through trips*).
- Visitors and tourist tend to prioritize travel time over other travel segments (65% and 67% compared with 42 to 56% among all other segments, exclusive through trips*).
- Heavy transit users (5+ days/week) tend to rank ability to pay by compass card and late-night service higher than those who use transit less often.
- **only 3 through trips in the intercept sample.*

Intercept Q.18a-l) Please rank the following factors based on how strongly they would impact your decision to use the South False Creek streetcar service (choose your top five and rank them 1 to 5, where 1 has the strongest impact).
Online Q.9) Please rank the following factors based on how strongly they would impact your decision to use the South False Creek streetcar service (choose your top five and rank them 1 to 5, where 1 has the strongest impact).

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Amount Willing To Pay For Fare: Intercept

- The most common amount stated when asked how much the would be willing to pay for a single ride fare on the streetcar service is in the $2 to $4 range with 33% of intercept respondents/ 39% online respondents citing $2-$3, and 38% intercept/22% online saying $3-$4.
- Responses are relatively consistent by segments but note that likely users of the service in the online survey would be prepared to pay slightly more than non-users.

Base: Total Intercept (n=530), Online (n=1,200)

Intercept Q.19) How much are you willing to pay for a single ride fare on the South False Creek streetcar service? (For reference, TransLink's one-way, one-zone adult cash fare is $3.20 as of July 2024)
Online Q.10) How much are you willing to pay for a single ride fare on the South False Creek streetcar service? (For reference, TransLink's one-way, one-zone adult cash fare is $3.20 as of July 2024)

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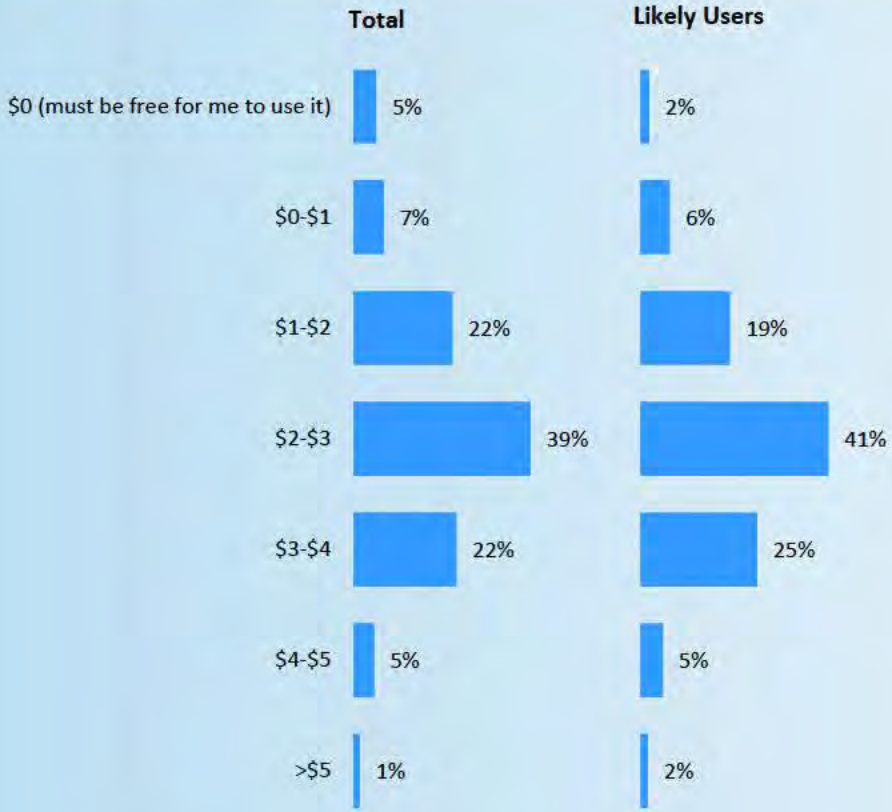
Amount Willing To Pay For Fare: Online



Base: Total Intercept (n=530), Online (n=1,200)

Intercept Q.19) How much are you willing to pay for a single ride fare on the South False Creek streetcar service? (For reference, TransLink's one-way, one-zone adult cash fare is $3.20 as of July 2024)
Online Q.10) How much are you willing to pay for a single ride fare on the South False Creek streetcar service? (For reference, TransLink's one-way, one-zone adult cash fare is $3.20 as of July 2024)

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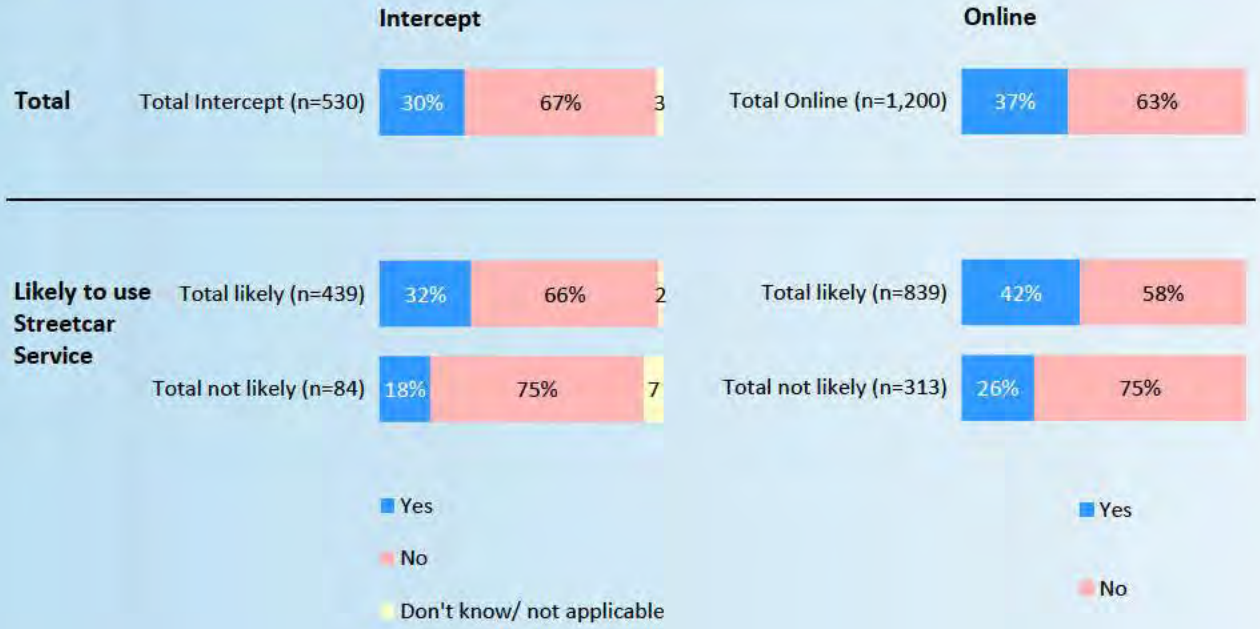
Willing To Purchase Separate Ticket



- Only 30% in the intercept survey and 37% in online survey would be willing to pay a separate fee or fare to board the streetcar service (similar to the False Creek ferry).
- Again, results are consistent by market segments and current transit usage. But those likely to use the service are more willing to purchase a separate ticket than non-users (32% intercept/42% online).

Base: Total

Intercept Q.20a) If you transfer from a TransLink bus/train, would you be willing to purchase a separate ticket / fee to board the South False Creek streetcar service (like the Aquabus or False Creek Ferry fare, for example)?
Online Q.11a) If you transfer from a TransLink bus/train, would you be willing to purchase a separate ticket / fee to board the South False Creek streetcar service (like the Aquabus or False Creek Ferry fare, for example)?

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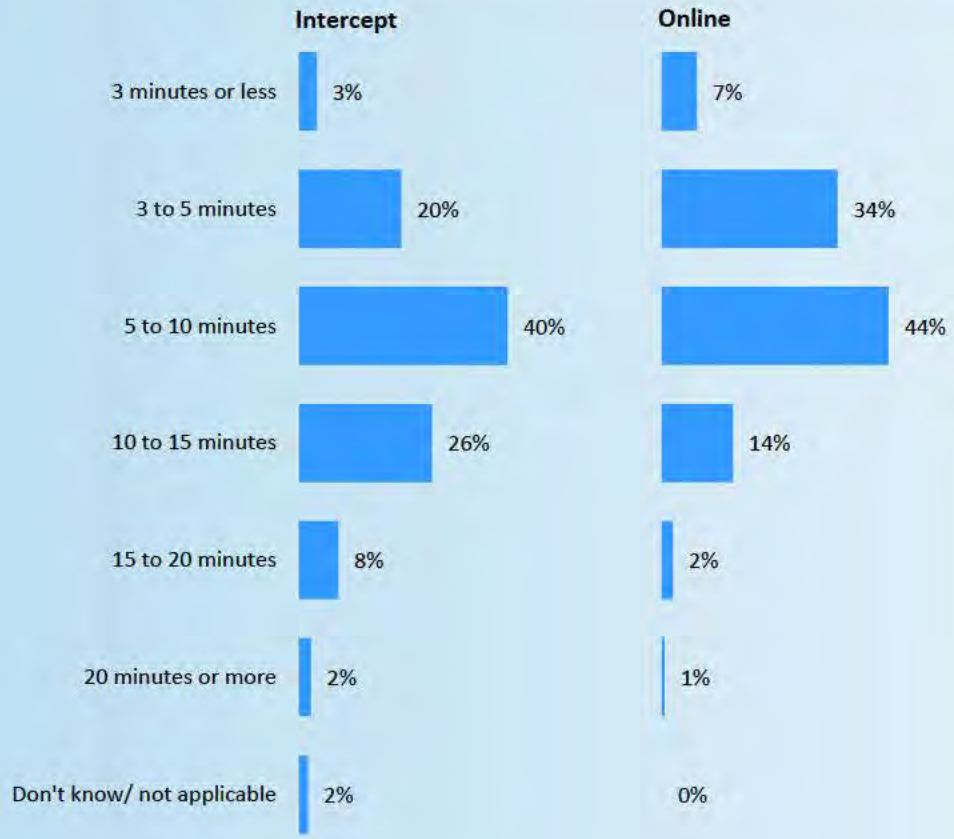
Maximum Time Willing To Wait



- Visitors were asked to provide the maximum amount of time they would be willing to wait for the South False Creek Streetcar service.
- About six-in-ten are willing to wait up to 10 minutes for a streetcar (63%), with most willing to wait 5 to 10 minutes (40%). A further one-quarter are willing to wait 10 to 15 minutes (26%), and about one-in-ten are okay with waiting for longer than 15 minutes (10%).
- The findings are mostly consistent across demographic characteristics, and in terms of travel market segments, visitors and tourists are willing to wait a little longer for the streetcar than residents and workers.

Base: Total Intercept (n=530), Online (n=1,200)

Intercept Q.21) What is the maximum time you would be willing to wait for the South False Creek streetcar?
Online Q.12) What is the maximum time you would be willing to wait for the South False Creek streetcar?

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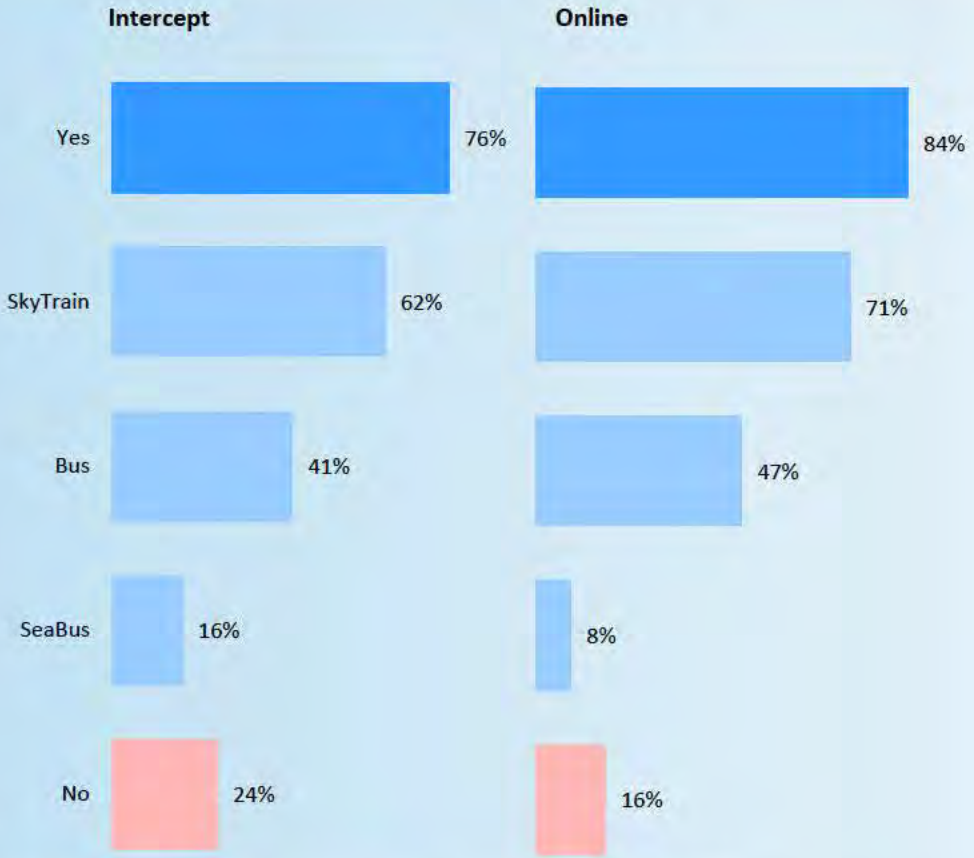
Hours Of Use

- Visitors were asked during what hours they would most likely use the streetcar service.
- Hours differed somewhat between surveys, but usage was consistently higher between 9 am and 9pm, with 9 am to 12 pm being the most common hours visitors are likely to use the streetcar in the intercept survey and 12 pm to 6 pm being the most common in the online survey.
- The early morning timeslot (6 am to 9 am) was more popular in the intercept sample with nearly one-third mentioning they would use the streetcar during that period (32%), compared to just over one-in-ten in the online sample (12%)
- Visitors under 55 years of age are more likely to use the streetcar service after 6 pm than those 55 and older.
- Residents and workers are more likely to use the early morning service than other travel segments (40% and 41% respectively vs 28% in each of the visitor and tourist segments), and workers are the most likely to use the late service (9 pm to 12 pm) than other travel segments (21% vs 10 to 12% among others).

Base: Total Intercept (n=530), Online (n=1,200)

Intercept Q.22) During what hours would you be most likely to use the South False Creek streetcar service?
Online Q.13) During what hours would you be most likely to use the South False Creek streetcar service?

Combine Streetcar With Other Public Transit Modes

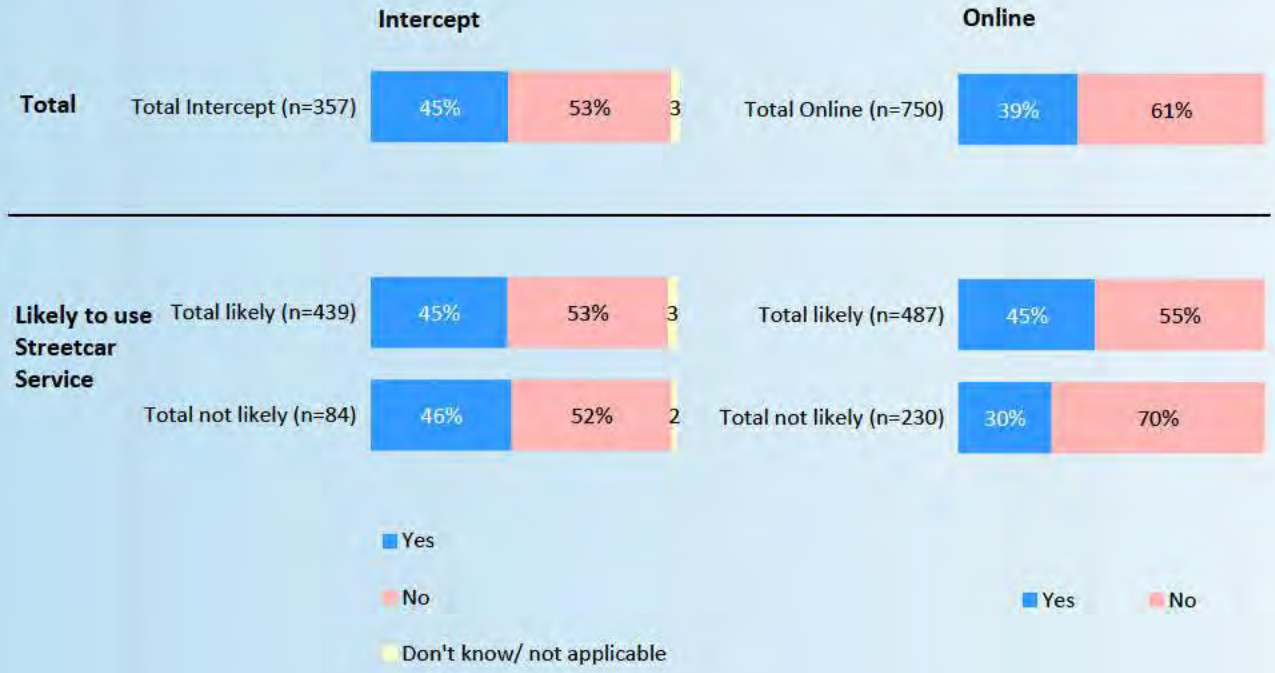


- The majority of those likely to use the streetcar service, including 76% in the intercept survey and 84% from the online survey, would combine the trip with other transit modes, most commonly Skytrain followed by the bus.
- This group includes both current transit and non-transit or infrequent users indicating potential increased use of transit, an added benefit of the streetcar service.

Base: Total would use South False Creek streetcar Intercept (n=446), Online (n=887)

Intercept Q.15) Would you combine the use of the South False Creek streetcar service with any other transit modes?
Online Q.6) Would you combine the use of the South False Creek streetcar service with any other public transit modes?

Willing To Pay Additional Fee



- Those unwilling to pay an additional fee were asked if they would be willing to pay the extra fee is it was automatically subtracted from their Compass Card balance. A total of 45% of this group in the intercept survey and 39% of those in the online survey then would be willing to pay the fee.
- Those likely to use the streetcar service in the online survey are more accepting of the fee under this scenario (no difference in results among intercept respondents).

Base: Total not willing to purchase a separate ticket/ fee to board the South False Creek service Intercept (n=357), Online (n=750)

Intercept Q.20b) Would you be willing to pay an additional fee if it were automatically subtracted from your Compass Card balance? (like the YVR AddFare feature, for example)
Online Q.11b) Would you be willing to pay an additional fee if it were automatically subtracted from your Compass Card balance? (like the YVR AddFare feature, for example)

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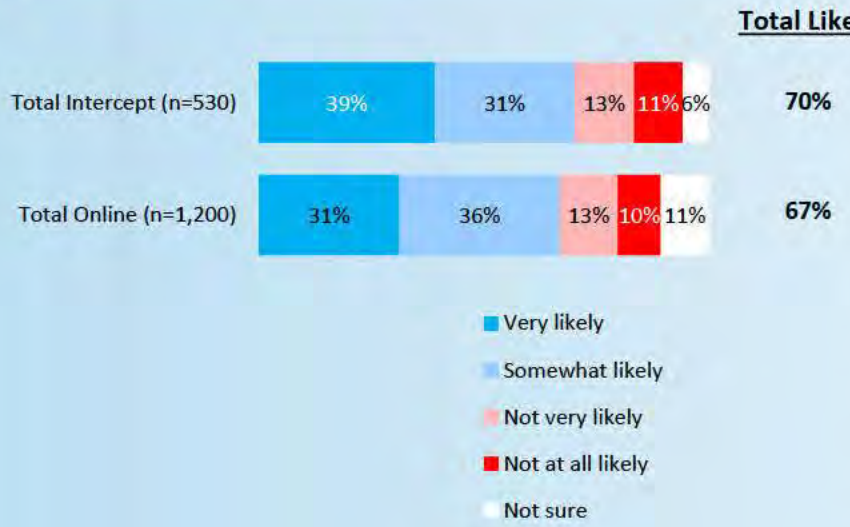
Likelihood of Using Demonstration Streetcar During World Cup



- Overall, about two-thirds are likely to use a streetcar service during the FIFA World Cup, including 70% in the intercept survey and 67% in the online survey.

Intercept:

- On average, those living in the South False Creek area are more likely to use a demonstration streetcar service than those who live elsewhere (79% total likely compared with 66 – 68% in other areas).
- Those travelling in a party (2 or more) are slightly more likely to use this service when compared with those travelling alone (76% versus 67%, respectively).
- There is no notable difference in likelihood to use by age or gender.

Online:

- Those under 65 years of age are somewhat more likely than those 65 plus to use this service if it existed, especially those under 35 years of age.
- Likelihood to use does not vary significantly by gender or areas of residence.
- Frequent transit users – those who travel by transit at least once per week – are much more likely to use this service, as are those who live or work in the SFC area.

Base: Total

Intercept Q.17) During the 2010 Olympics, a demonstration streetcar provided service between Olympic Village and Granville Island. If a similar service were to be provided during the 2026 FIFA World Cup, how likely would you be to use it?
Online Q.8) During the 2010 Olympics, a demonstration streetcar provided service between Olympic Village and Granville Island. If a similar service were to be provided during the 2026 FIFA World Cup, how likely would you be to use it?

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Demographics

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Demographic Profile

	Total Intercept (530) %	Total Past Year Online (1,200) %	Total Cross section Online (1,708) %
Gender			
Man	51	50	48
Woman	48	49	51
Non-binary	1	1	1
Prefer not to say	<1	<1	-
Age			
0 - 17 years	1	-	-
18 - 24 years	14	-	-
25 - 34 years	22	-	--
18 -34 years	-	34	29
35 - 44 years	19	19	17
45 - 54 years	15	16	16
55 - 64 years	13	15	10
65 - 74 years	12	9	14
75+ years	4	7	9
Prefer not to say	<1	-	-

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Demographic Profile

	Total Intercept (530) %	Total Online (1,200) %
Household income		
$0 to less than $25,000	13	4
$25,000 to less than $50,000	14	12
$50,000 to less than $75,000	16	17
$75,000 to less than $100,000	14	16
$100,000 to less than $150,000	14	21
$150,000 or more	14	18
Prefer not to answer	14	11
Employment		
Employed	71	72
Work full-time (30+ hours per week)	56	57
Work part-time (less than 30 hours per week)	16	15
Student	16	10
Student full-time	12	6
Student part-time	4	4
Not employed	11	26
Retired	16	18
Unemployed	5	5
Looking after home/family	2	4
Work in South False Creek area		
Yes	30	15
No	70	83

Demographic Profile (cont'd)

	Total Intercept (530) %	Total Online (1,200) %
Limited travel options due to health		
Yes	6	9
Physical (i.e. surgery, paralysis)	4	5
Mental (i.e. anxiety, autism)	1	1
Prefer not to say	1	4
No	93	89
Prefer not to answer	1	2

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Intercept

	Total (530) #
Location	
Science World	117
Olympic Village	174
Granville Island	179
Date	
Weekday	132
August 14	53
August 15	79
August 19	98
August 20	90
August 23	18
Weekend	192
August 17	93
August 18	99

	Total (530) #
Time of day	
Before 10am	67
10am -10:59am	58
11am -11:59am	59
12pm -12:59pm	46
1 pm - 1:59pm	88
2 pm - 2:59pm	63
3 pm - 3:59pm	35
4 pm - 4:59pm	46
5 pm - 5:59pm	37
6 pm - 6:59pm	31

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Travel Market Segments

Travel Market Segments

- The following key travel market segments were analyzed in this report:
  - **Residents:** People living within the study area (defined as being within the walkshed of a likely streetcar station). Currently, this would primarily consist of Olympic Village / Southeast False Creek, False Creek South and Fairview, and east Kitsilano.
  - **Workers:** People working, conducting business and/or studying within the study area.
  - **Visitors:** Local (i.e. Metro Vancouver) residents living outside of the study area but visiting the area for non-work purposes such as shopping or recreation.
  - **Tourists:** Out of town individuals who are visiting the area for sightseeing, shopping or recreation.
  - **Through-trips:** People passing through the area with neither an origin nor a destination within the study area but who could hypothetically use the streetcar as part of their journey.
- The demographic characteristics of each segment are outlined in the following 4 slides.

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Characteristics of Travel Markets Segments: Intercept

		Residents	Workers
Gender	Men (n=50)	49%	Men (n=60) 53%
	Women (n=52)	51%	Women (n=51) 45%
Age	<25 years (n=4*)	4%	<25 years (n=18*) 16%
	25-34 years (n=14*)	14%	25-34 years (n=25*) 22%
	35-44 years (n=24*)	24%	35-44 years (n=34*) 30%
	45-54 (n=14*)	14%	45-54 (n=18*) 16%
	55-64 years (n=20*)	20%	55-64 years (n=14*) 12%
	65+ years (n=26*)	26%	65+ years (n=4*) 4%
Income	<$50K (n=25*)	25%	<$50K (n=31) 35%
	$50-$<$75K (n=10*)	10%	$50-$<$75K (n=23*) 20%
	$75K-<$100K (n=17*)	17%	$75K-<$100K (n=14*) 12%
	$100K-<$150K (n=19*)	19%	$100K-<$150K (n=17*) 15%
	$150K+ (n=15*)	15%	$150K+ (n=19*) 17%
Travel Mode	Public transit (n=23*)	23%	Public transit (n=52) 46%
	Walked (n=75)	74%	Walked (n=25*) 20%
	Private vehicle (n=7*)	7%	Private vehicle (n=22*) 20%
	Cycled (n=8*)	8%	Cycled (n=13*) 12%
	Other (n=7*)	7%	Other (n=1*) 1%
Transit Usage	5+ days/week (n=26*)	26%	5+ days/week (n=44) 40%
	1+/week (n=37)	36%	1+/week (n=32) 29%
	Less often (n=34)	33%	Less often (n=27*) 25%
	Never (n=5*)	5%	Never (n=7*) 6%
Total	Total (n=102)	19%	Total (n=113) 21%

Base: Intercept Total Residents (n=102), Workers (n=113), Visitors (n=221), Tourists (n=120)
Online Total Residents (n=28), Workers (n=135), Visitors (n=1,051), Through trips (n=173)
**Caution small base size*

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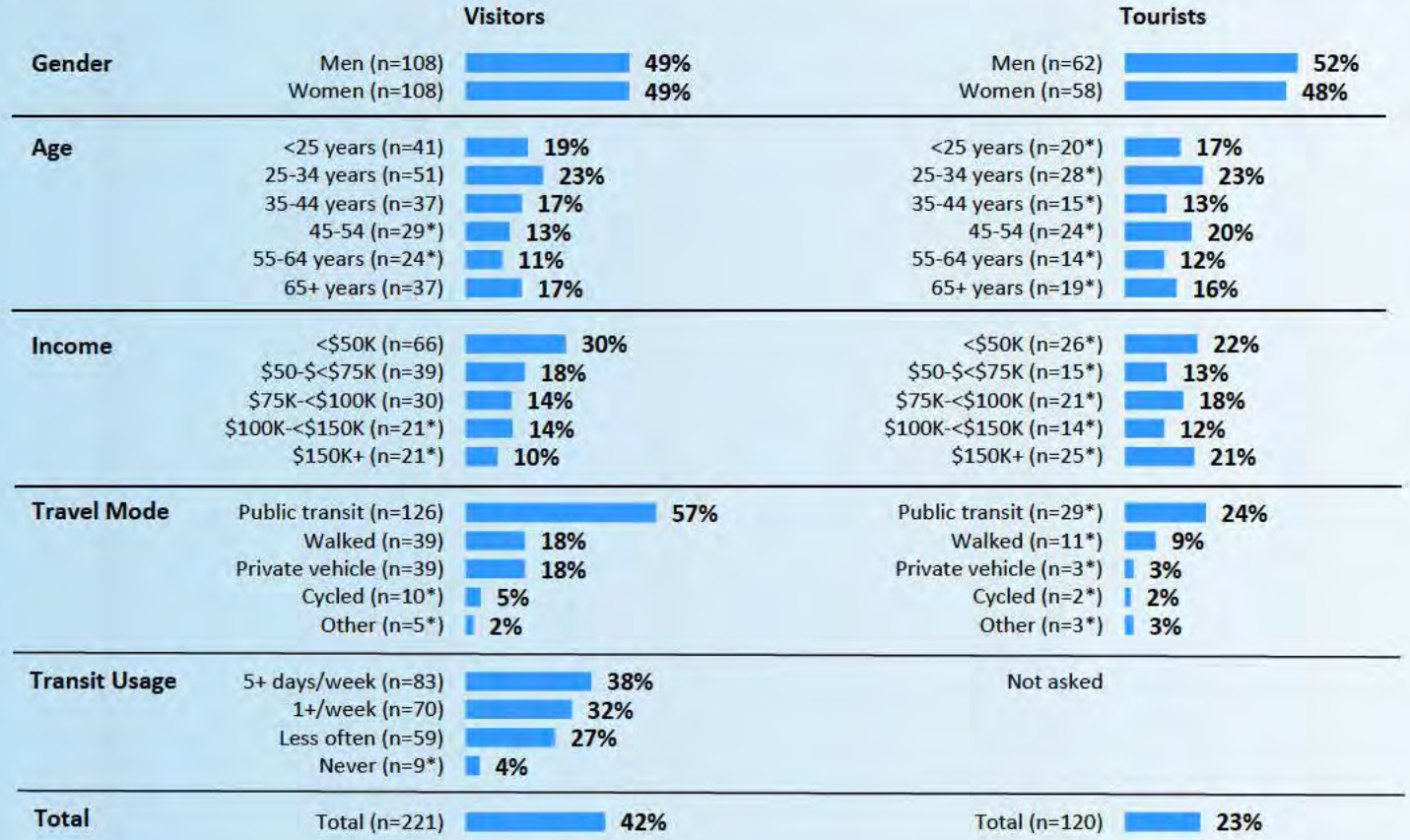
Characteristics of Travel Markets Segments: Intercept (cont'd)



Base: Intercept Total Residents (n=102), Workers (n=113), Visitors (n=221), Tourists (n=120)
Online Total Residents (n=28), Workers (n=135), Visitors (n=1,051), Through trips (n=173)
**Caution small base size*

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Characteristics of Travel Markets Segments: Online

		Residents		Workers
Gender	Men (n=7*)	32%	Men (n=72)	55%
	Women (n=15*)	68%	Women (n=59)	45%
Age	18-24 years (n=1*)	4%	18-24 years (n=13*)	10%
	25-34 years (n=3*)	16%	25-34 years (n=45)	35%
	35-44 years (n=4*)	17%	35-44 years (n=36)	28%
	45-54 (n=2*)	7%	45-54 (n=19)	15%
	55-64 years (n=2*)	11%	55-64 years (n=16*)	12%
	65+ years (n=10*)	44%	65+ years (n=2*)	2%
Income	<$50K (n=4*)	17%	<$50K (n=31)	24%
	$50-$<$75K (n=2*)	11%	$50-$<$75K (n=15*)	11%
	$75K-<$100K (n=3*)	15%	$75K-<$100K (n=23*)	18%
	$100K-<$150K (n=3*)	15%	$100K-<$150K (n=28*)	21%
	$150K+ (n=5*)	24%	$150K+ (n=24*)	18%
Travel Mode	Public transit (n=8*)	39%	Public transit (n=86)	65%
	Walked (n=12*)	57%	Walked (n=46)	35%
	Private vehicle (n=5*)	25%	Private vehicle (n=39)	30%
	Cycled (n=2*)	8%	Cycled (n=10*)	7%
	Other (n=3*)	11%	Other (n=9*)	7%
Transit Usage	5+ days/week (n=2*)	12%	5+ days/week (n=30)	23%
	1+/week (n=10*)	27%	1+/week (n=64)	49%
	Less often (n=9*)	42%	Less often (n=26*)	20%
			Never (n=11*)	8%
Total	Total (n=28*)	2%	Total (n=135)	11%

Base: Intercept Total Residents (n=102), Workers (n=113), Visitors (n=221), Tourists (n=120)
Online Total Residents (n=28), Workers (n=135), Visitors (n=1,051), Through trips (n=173)
**Caution small base size*

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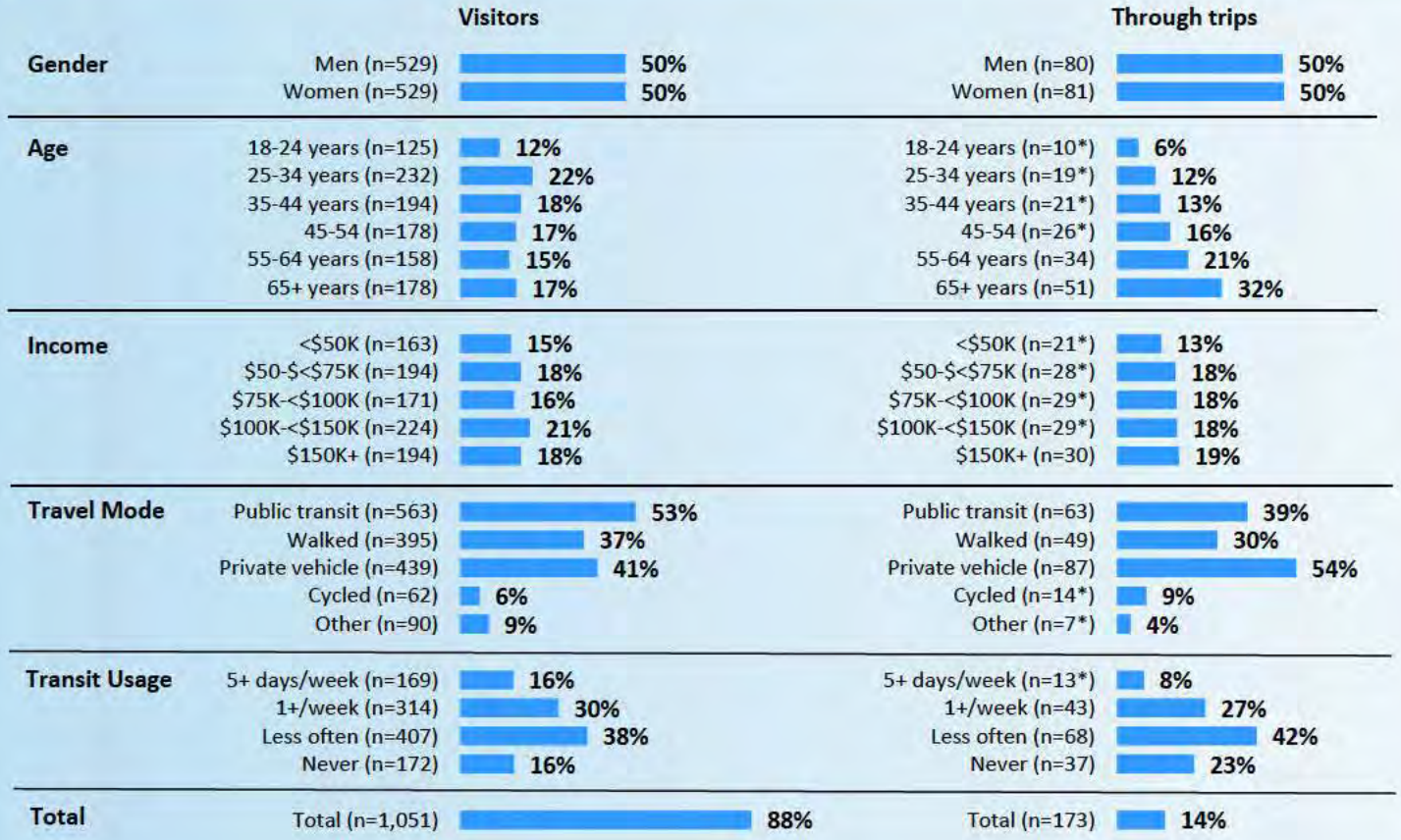
Characteristics of Travel Markets Segments: Online (cont'd)



Base: Intercept Total Residents (n=102), Workers (n=113), Visitors (n=221), Tourists (n=120)
Online Total Residents (n=28), Workers (n=135), Visitors (n=1,051), Through trips (n=173)
**Caution small base size*

Appendix D

Travel Market Analysis

South False Creek Area

For the travel demand modelling component of this study, the Vancouver Sub-Area Model (VanSAM) version 3.0 is used. VanSAM outputs are reported using the Trip Diary sub-areas for the City of Vancouver and at a municipal level outside of the City of Vancouver, however a custom geographical ensemble for South False Creek was developed to capture changes specifically in this area as shown in ***Figure D.1***.

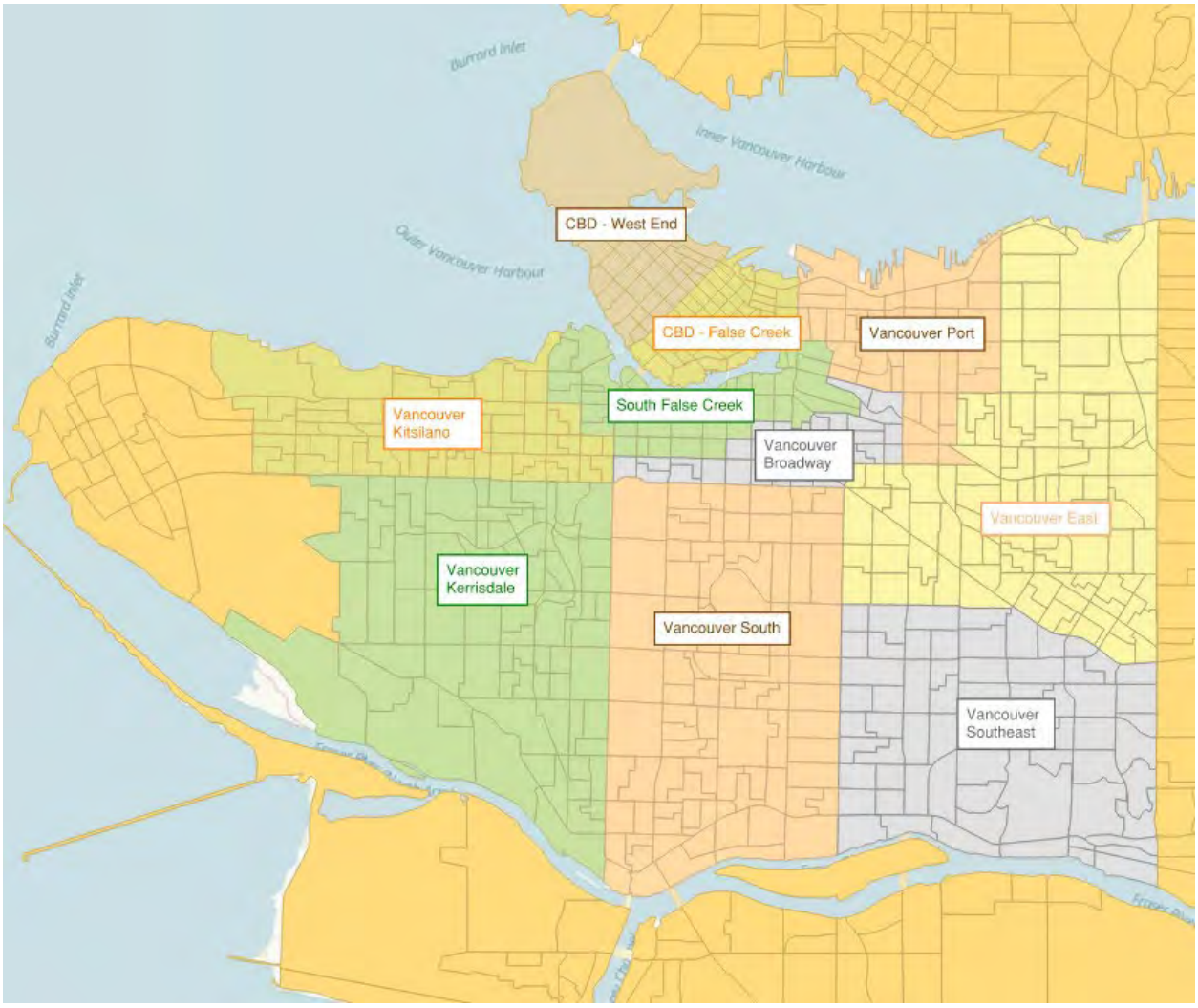


FIGURE D.1: VANSAM GEOGRAPHIC AREAS WITHIN CITY OF VANCOUVER

Note that many of the metrics use trip production and trip attraction values; these are similar but distinct concepts from trip origin and trip destination. The definitions of each are as follows:

- Trip production and attraction are calculated at the daily level. For all home-based trip purposes (e.g. home-based work, home-based school, etc.), the home is the trip production location for both the outbound trip (e.g. from the home to work) *as well as* the return trip. The trip attractor is the place where the activity occurs (e.g. the place of work) – the trip attractor is the same for both the trip *to* work as well as return-to-home trip. For non-home-based trips, the trip production and trip attraction are simply the start and end point – the same as the origin and destination.

- Trip origins and destinations are calculated at the peak-hour level during trip assignment. The origin is simply where that trip starts, and the destination is where that trip ends.

Resident Market

The residents travel market consists of people living within the study area (defined as being within the walkshed of the streetcar service). Currently, this would primarily consist of Olympic Village / Southeast False Creek, False Creek South and Fairview slopes, and east Kitsilano.

Census dissemination area-level information from the 2021 Census of Canada was compiled and overlaid against the approximate study area, as shown in ***Figure 3.3*** below. The shading patterns shown reflect the relative population densities of each dissemination area.

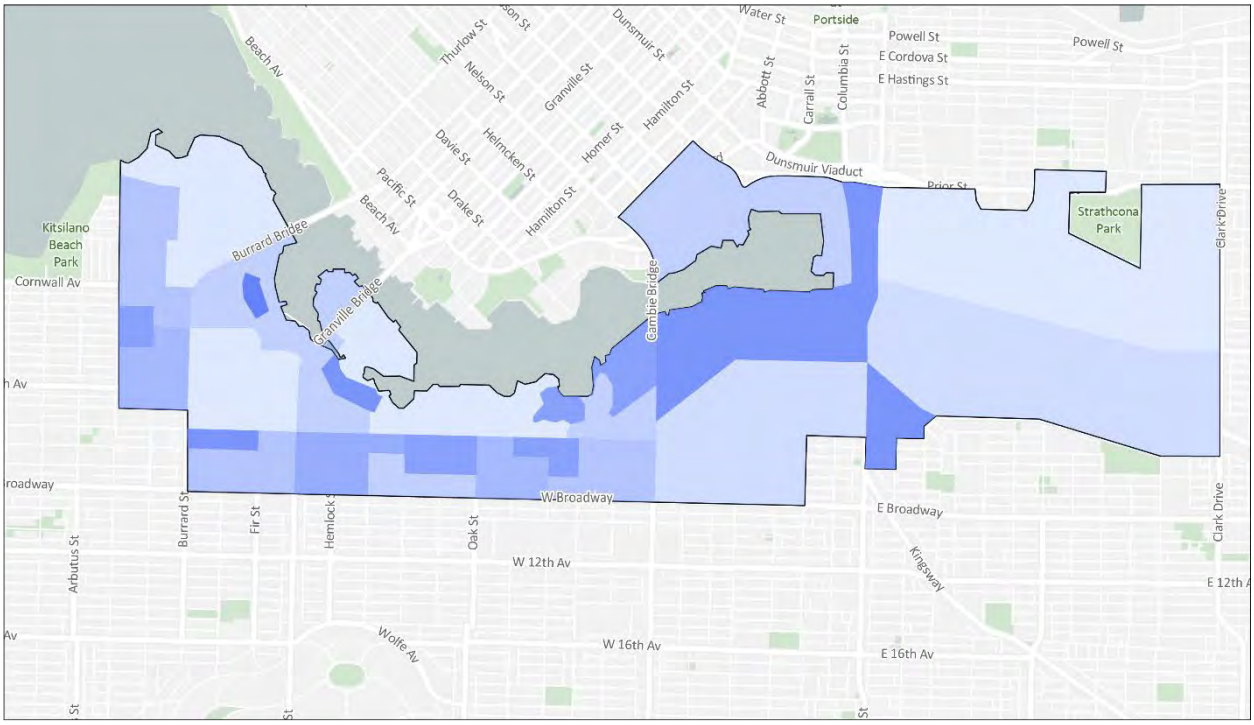
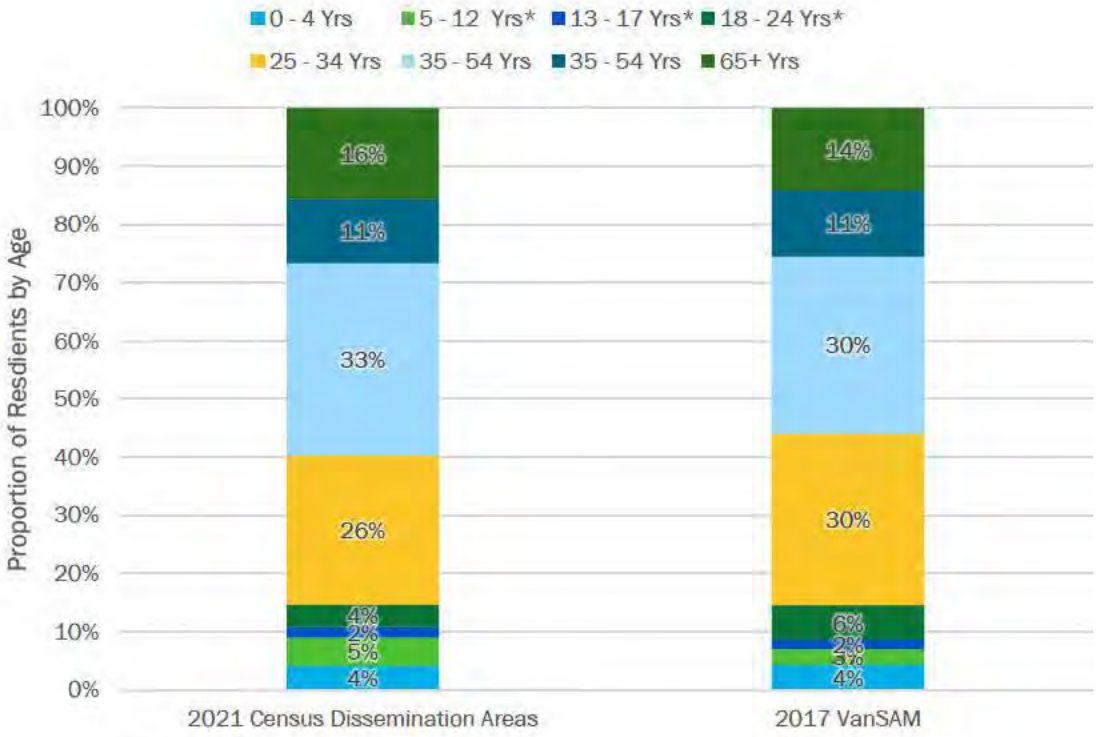


FIGURE D.2: CENSUS DISSEMINATION AREAS WITHIN STUDY AREA

The size and proportional distribution of age range and household sizes within the study area are compared between the 2021 Census and the 2017 VanSAM base-year socio-economic inputs, as shown in ***Figure D.3*** and ***Figure D.4***, respectively.



* Census age ranges differ slightly.

FIGURE D.3: 2021 CENSUS AND 2017 VANSAM BASE YEAR STUDY POPULATION AND AGE DISTRIBUTION

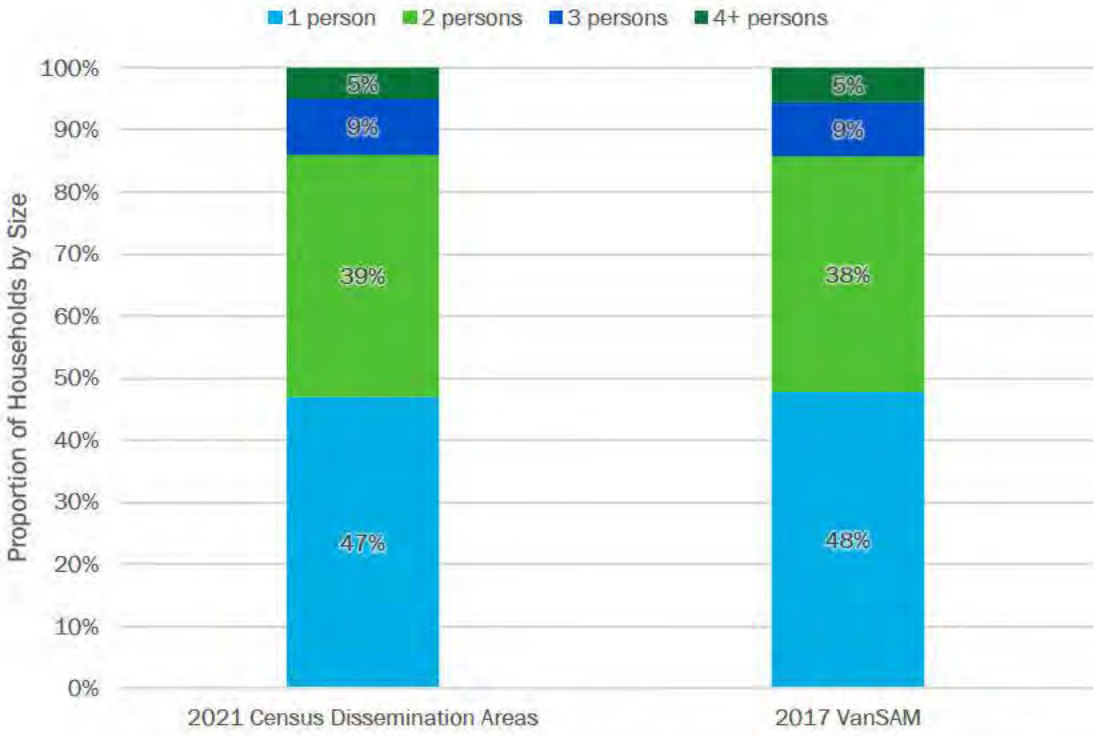


FIGURE D.4: 2021 CENSUS AND 2017 VANSAM BASE YEAR STUDY HOUSEHOLDS AND SIZE DISTRIBUTION

The Census data represents a snapshot in time of the resident travel market as of 2021, however the area is anticipated to grow in population over time; in the future, this area would also include residents of major development projects in the area such as Broadway Plan-related redevelopment, Sen̓áḵw, Molson Site, False Creek South, etc.

To provide an estimate of the cumulative change in the resident travel market within the study area, the Vancouver Sub-Area Model (VanSAM) TAZ land use/socio-economic inputs were compiled. The trend in population and households within the study area are summarized in ***Figure D.5*** and ***Figure D.6*** respectively – noting that these results reflect a 2017 base year and therefore differ slightly from the Census which was collected in 2021. As shown, between 2017 and 2050, it is anticipated that the study area population will increase by approximately 25,000 residents (or by 53%) and 14,000 households (or by 50%). A visual representation of population change by TAZ is also provided in ***Figure D.7***.

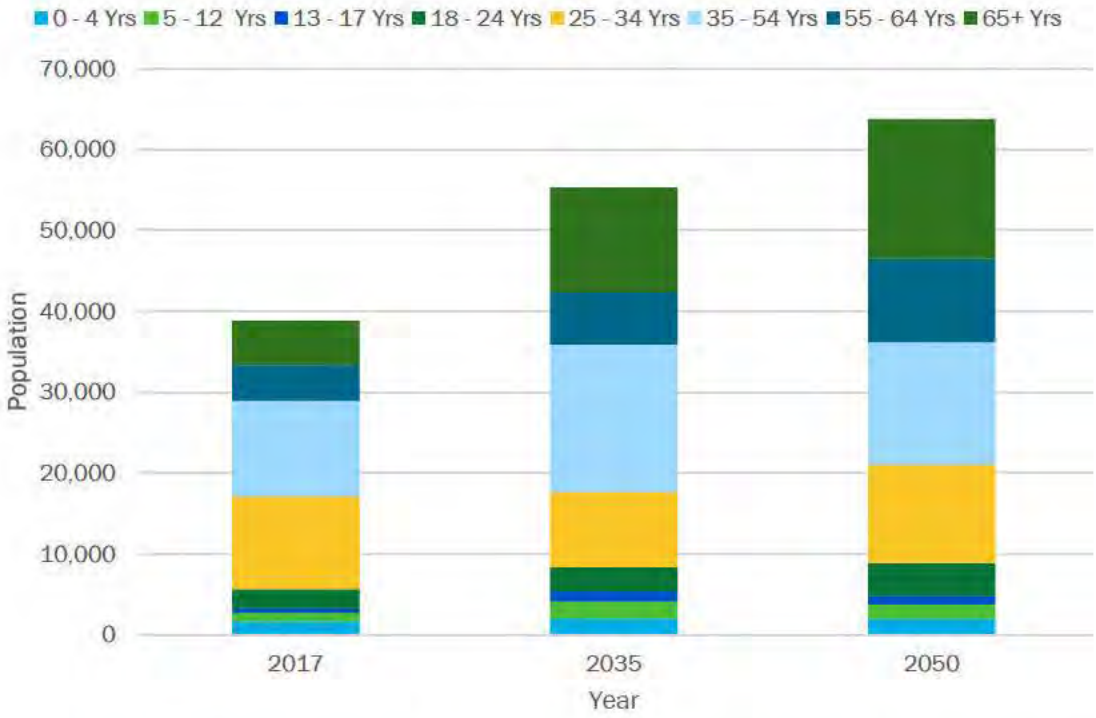


FIGURE D.5: VANSAM POPULATION AND AGE DISTRIBUTION TRENDS WITHIN SOUTH FALSE CREEK STUDY AREA

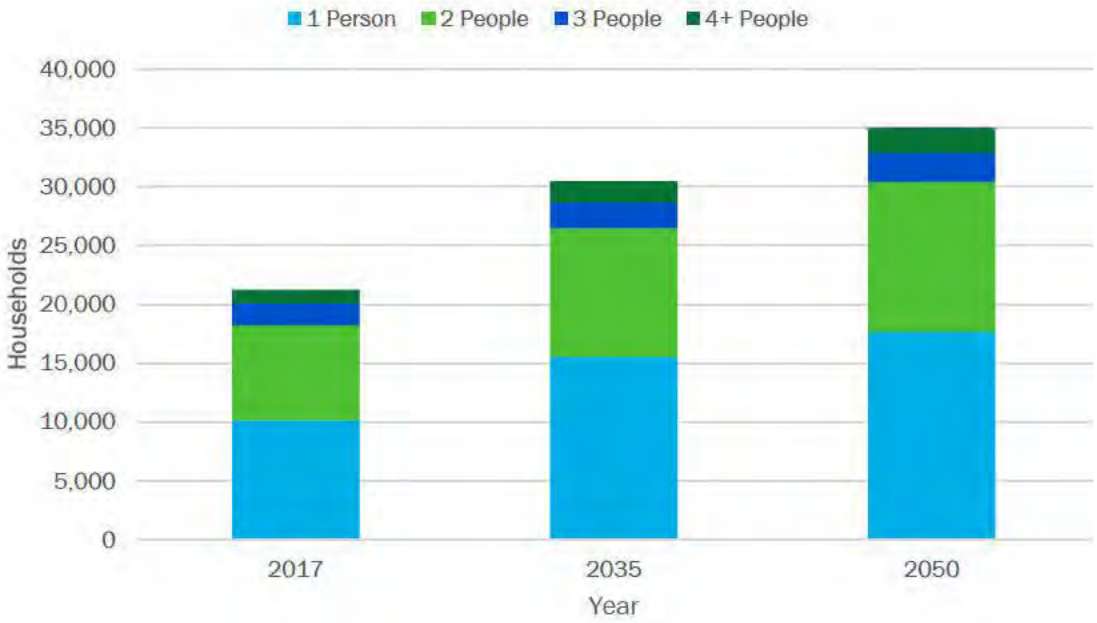


FIGURE D.6: VANSAM HOUSEHOLDS AND SIZE TRENDS WITHIN SOUTH FALSE CREEK STUDY AREA

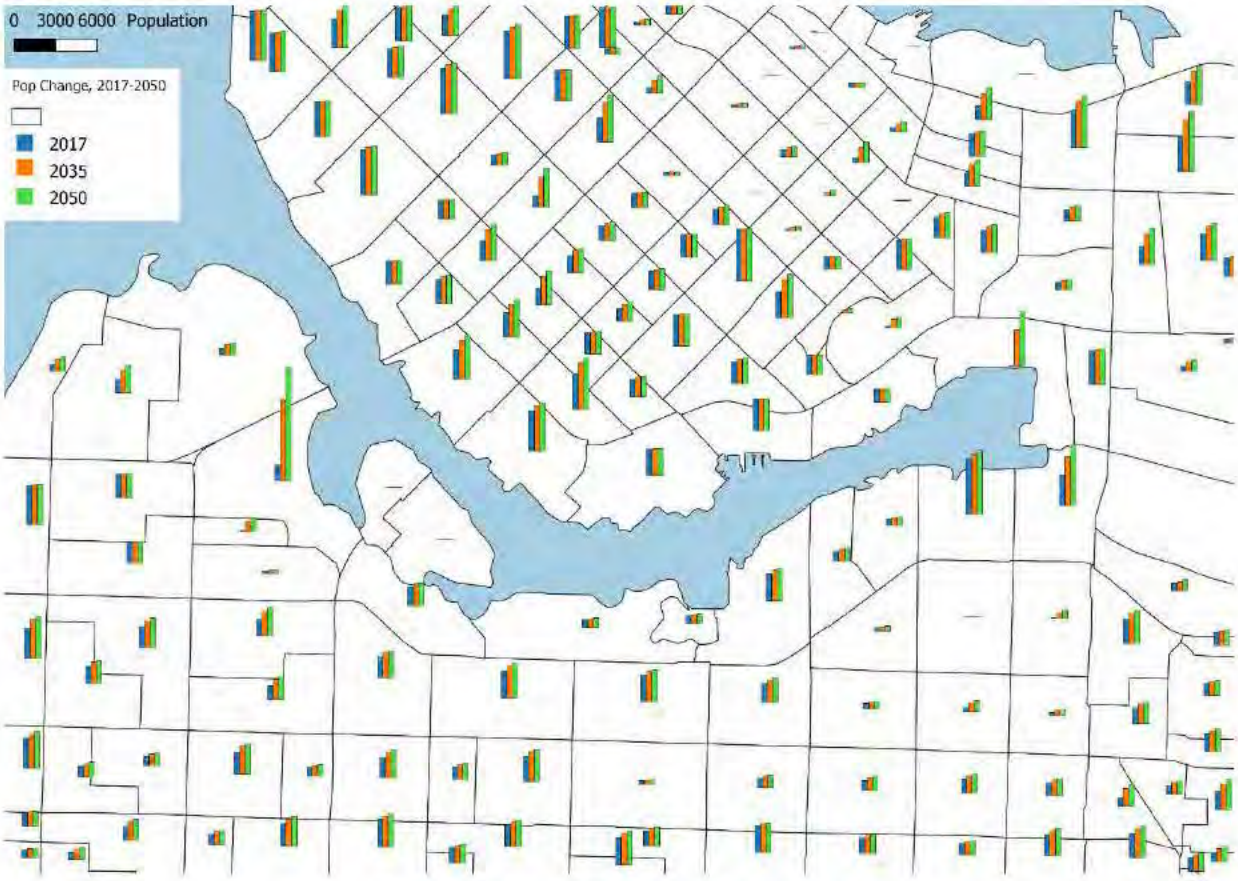


FIGURE D.7: FORECASTED POPULATION CHANGE BY TAZ

The daily proportion of trips by trip purpose for the resident travel market is compared between the 2017 TransLink Trip Diary for the Vancouver Broadway Sub-Area (which overlaps with the study area), and the 2017 VanSAM base model study area ensemble, as shown in ***Figure D.8***.

FIGURE D.8: 2017 TRIP DIARY AND 2017 VANSAM BASE YEAR DAILY TRIP-MAKING BY TRIP PURPOSE FOR RESIDENTS

Total daily trip generation for the resident travel market was generated for VanSAM for the base year as well as the forecasting horizon years. The total number of daily trips made by residents within the study area is also expected to grow correspondingly; by 2050 an additional 48,000 trips (or a 53% increase) is anticipated, as shown in ***Figure D.9***.

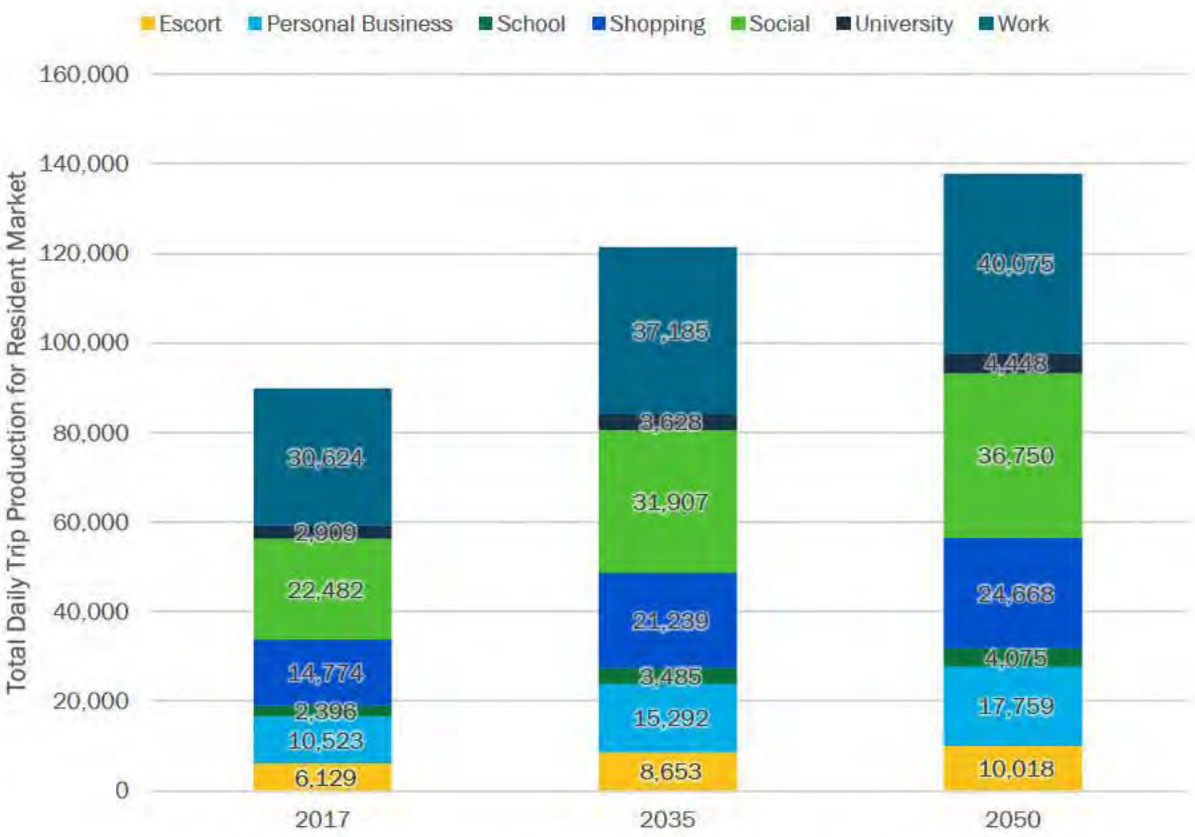


FIGURE D.9: VANSAM DAILY TRIP-MAKING BY SOUTH FALSE CREEK STUDY AREA RESIDENTS

Resident trip attraction locations both within the City of Vancouver and other regions of Metro Vancouver are compared between the 2017 TransLink Trip Diary for the Vancouver Broadway Sub-Area (which overlaps with the study area), and the 2017 VanSAM base model study area ensemble, as shown in ***Figure D.10*** and ***Figure D.11***.

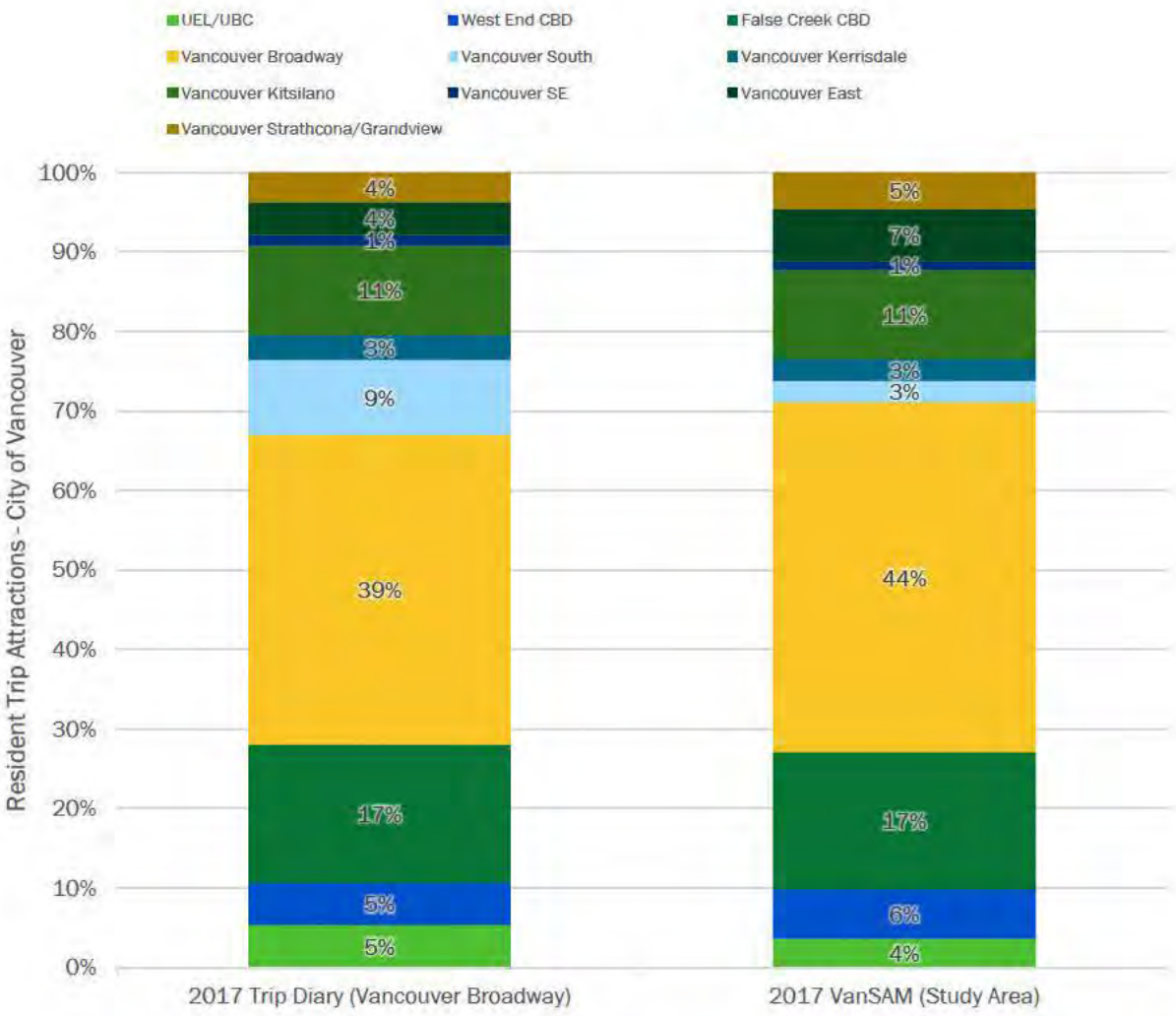


FIGURE D.10: DAILY TRIP PRODUCTION LOCATIONS WITHIN THE CITY OF VANCOUVER FOR SOUTH FALSE CREEK STUDY AREA RESIDENTS

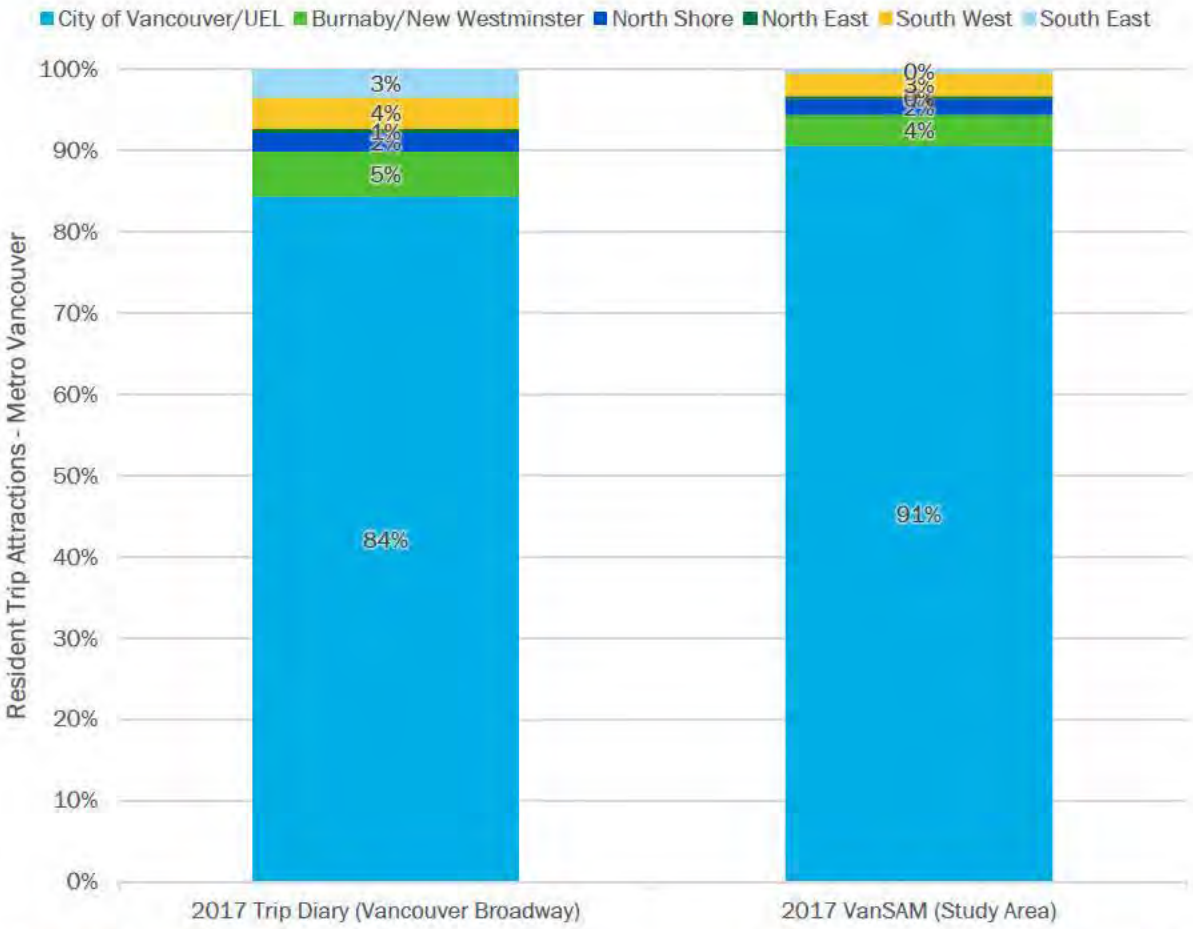


FIGURE D.11: DAILY TRIP PRODUCTION LOCATIONS WITHIN METRO VANCOUVER FOR SOUTH FALSE CREEK STUDY AREA RESIDENTS

Trip attraction locations for residents of the South False Creek study area were modelled, as provided in ***Figure D.12***. As shown, in 2017 roughly 31% of trips are anticipated to remain within the study area (meaning these trips would also be in the worker or visitor travel markets), 56% of trips are to the remainder of the City of Vancouver, and 13% of trips are to other municipalities throughout the region. These proportions are anticipated to remain relatively stable over time, although the absolute magnitude of trips to each destination will increase as the overall resident population within the study area increases.

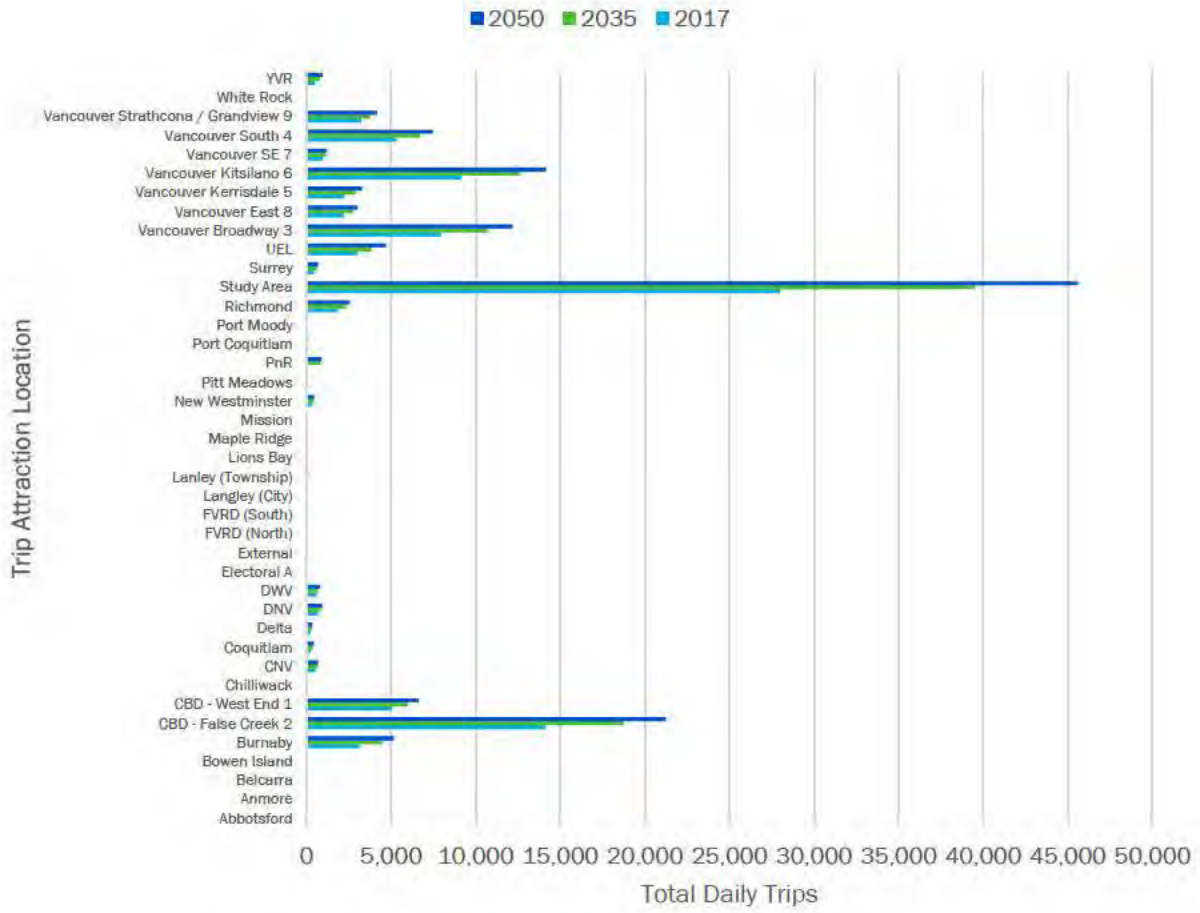


FIGURE D.12: DAILY TRIP ATTRACTION LOCATIONS FOR SOUTH FALSE CREEK STUDY AREA RESIDENTS

Daily travel mode choices for the resident travel market were compared between the 2017 TransLink Trip Diary (for the partially overlapping Vancouver-Broadway subarea) and the VanSAM 2017 base year (for the study area), as summarized in ***Figure D.13***.

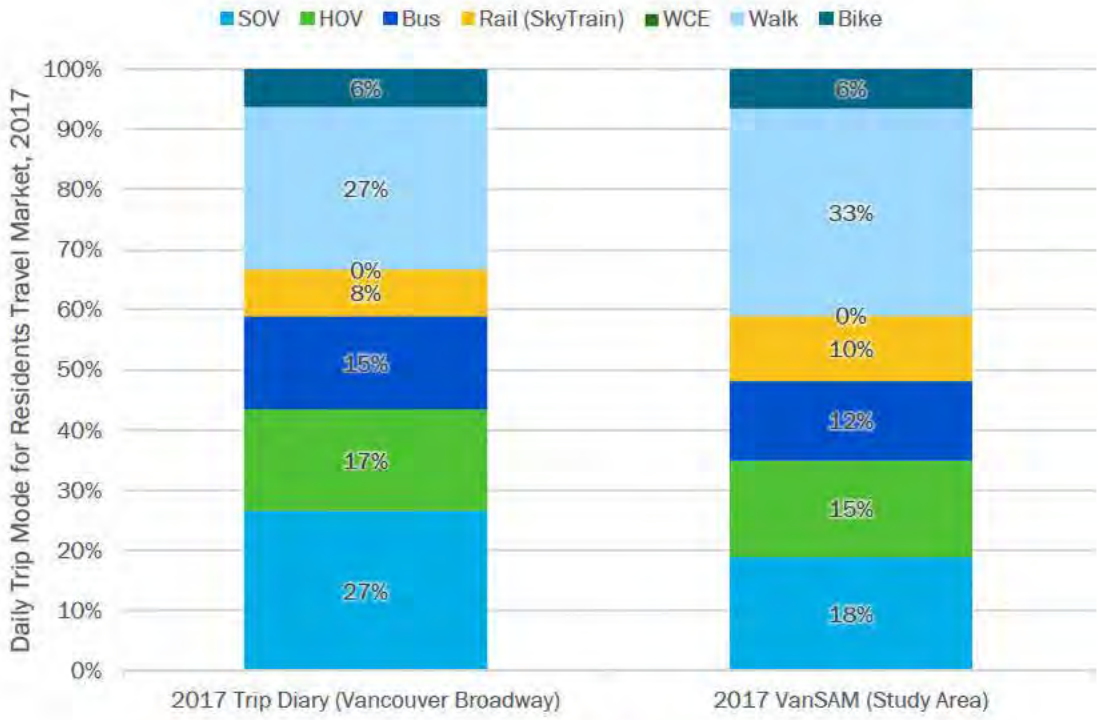


FIGURE D.13: 2017 TRIP DIARY AND 2017 VANSAM BASE YEAR DAILY TRIP-MAKING BY PRIMARY MODE

Note that with respect to individual transit modes, the Trip Diary, VanSAM (and the parent Regional Transportation Model) apply a transit mode hierarchy wherein:

- **West Coast Express**: The West Coast Express being the highest "ranked" mode, followed by rail (i.e. SkyTrain in the existing condition) and then bus. Although the West Coast Express does not pass through the study area, any transit trip that uses the West Coast Express for *any* part of the journey is considered a West Coast Express trip, even if it also involves SkyTrain and/or buses.
- **Rail**: A rail trip is a trip that makes use of SkyTrain (except for those trips that *also* use West Coast Express) – regardless of whether or not the trip also uses a bus. In the context of study results, it does not necessarily imply that people are using the rail mode *within* the study area (e.g. at Olympic Village Station). A resident of South False Creek who boards the Route 84 bus to transfer to SkyTrain at VCC-Clark Station and then uses SkyTrain to reach Brentwood Town Centre would be classified as a rail trip – even though this trip made use of buses within the study area.
- **Bus**: Bus trips are therefore transit trips that *exclusively* uses buses. This could include for example a False Creek South resident boarding Route 10 on Granville Street to travel to a destination on the downtown peninsula.

As shown, walking is the most used mode for area residents, followed by auto modes (SOV and HOV) and then transit (bus, rail and WCE). In absolute terms, walking trips are anticipated to grow significantly between 2017 and 2050, resulting in a modest increase in mode share. The rail sub-mode is anticipated to increase – due in part to a decrease in the bus sub-mode (to be expected once the Broadway Subway begins operations), as well as a modest increase in overall transit mode share. SOV and HOV trips are anticipated to decline slightly as a proportion, but still see an absolute increase in daily volumes.

Trends in mode choice for residents of the South False Creek study area were modelled, as provided in ***Figure D.14*** (for absolute volumes) and ***Figure D.15*** for proportional/share volumes. A tabular summary is also provided in ***Table D.1***.

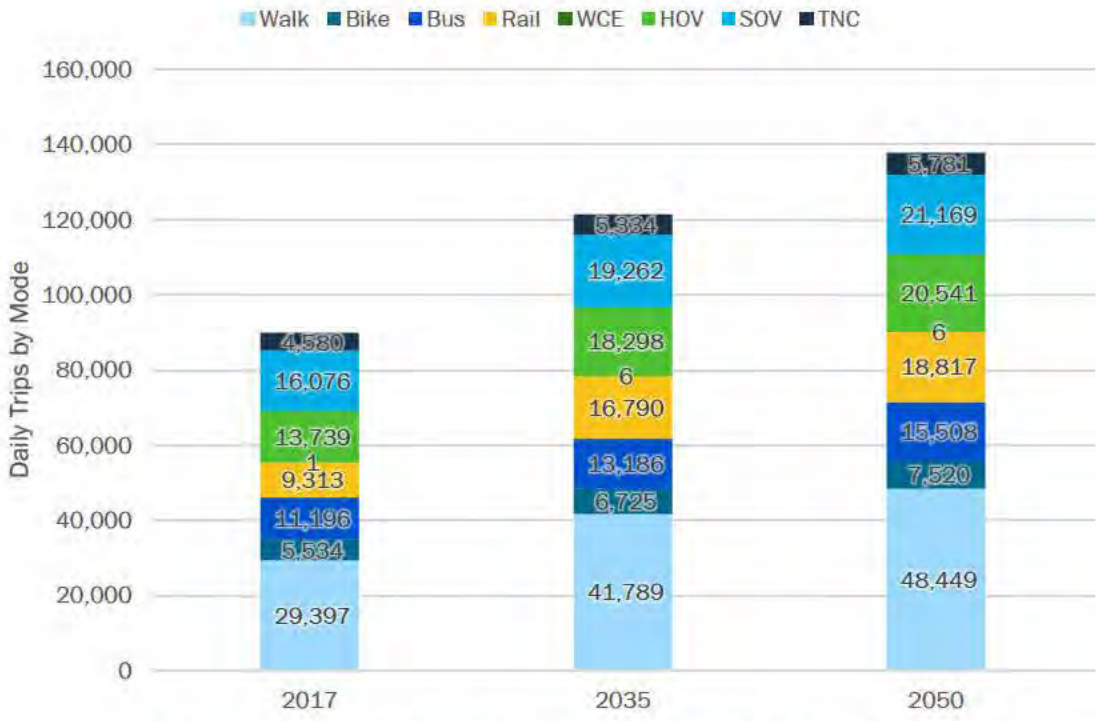


FIGURE D.14: DAILY MODE CHOICE (ABSOLUTE VOLUMES) FOR SOUTH FALSE CREEK STUDY AREA RESIDENTS

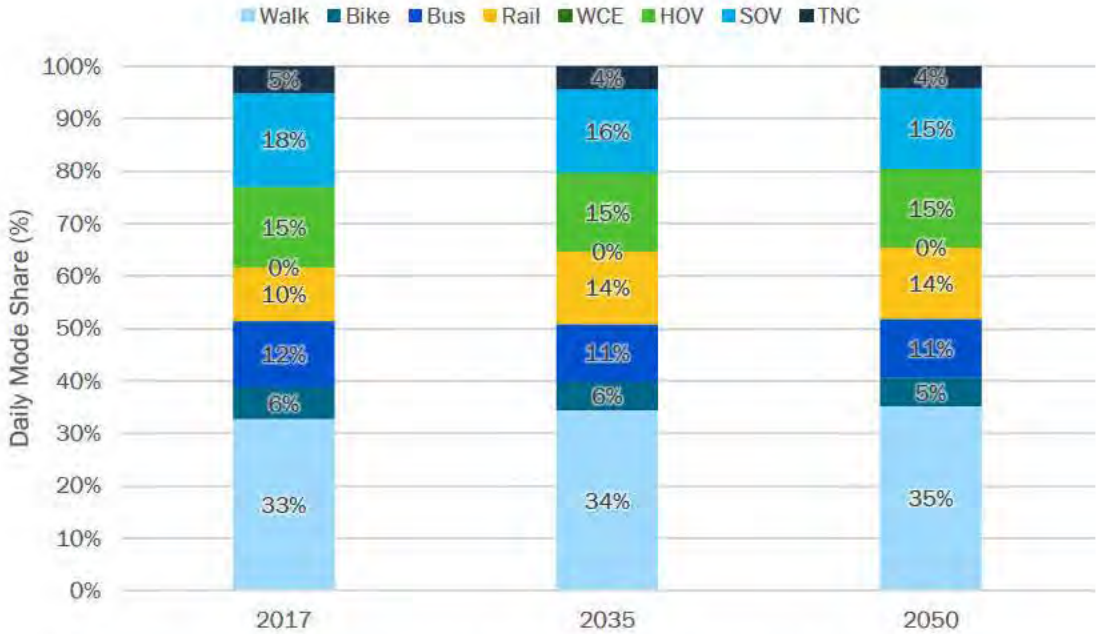


FIGURE D.15: DAILY MODE CHOICE (PROPORTIONS/SHARE) FOR SOUTH FALSE CREEK STUDY AREA RESIDENTS

TABLE D.1: SUMMARY OF DAILY MODE CHOICE FOR SOUTH FALSE CREEK STUDY AREA RESIDENTS

MODE	ABSOLUTE VOLUME			PROPORTION		
	2017	2035	2050	2017	2035	2050
Bike	5,534	6,725	7,520	6%	6%	5%
Bus	11,196	13,186	15,508	12%	11%	11%
HOV	13,739	18,298	20,541	15%	15%	15%
Rail	9,313	16,790	18,817	10%	14%	14%
SOV	16,076	19,262	21,169	18%	16%	15%
TNC	4,580	5,334	5,781	5%	4%	4%
Walk	29,397	41,789	48,449	33%	34%	35%
WCE	-	-	-	0%	0%	0%
Total	**89,837**	**121,390**	**137,792**	**100%**	**100%**	**100%**

Worker Market

The workers travel market consists of people working within the study area (defined as being within the walkshed of the streetcar service). Currently, this would primarily consist of central Broadway, Granville Island, the Mount Pleasant Industrial Area, and east Kitsilano.

To provide an estimate of the cumulative change in the worker travel market in the study area, the Vancouver Sub-Area Model (VanSAM) TAZ land use/socio-economic inputs were compiled. The trend in employment and school enrolments within the study area are summarized in ***Figure D.16*** and ***Figure D.17***, respectively. As shown, between 2017 and 2050, it is anticipated that the study area employment will increase by approximately 30,000 jobs (or by 47%) and 2,700 student enrolments (or by 26%). A visual representation of employment change by TAZ is also provided in ***Figure D.18***.

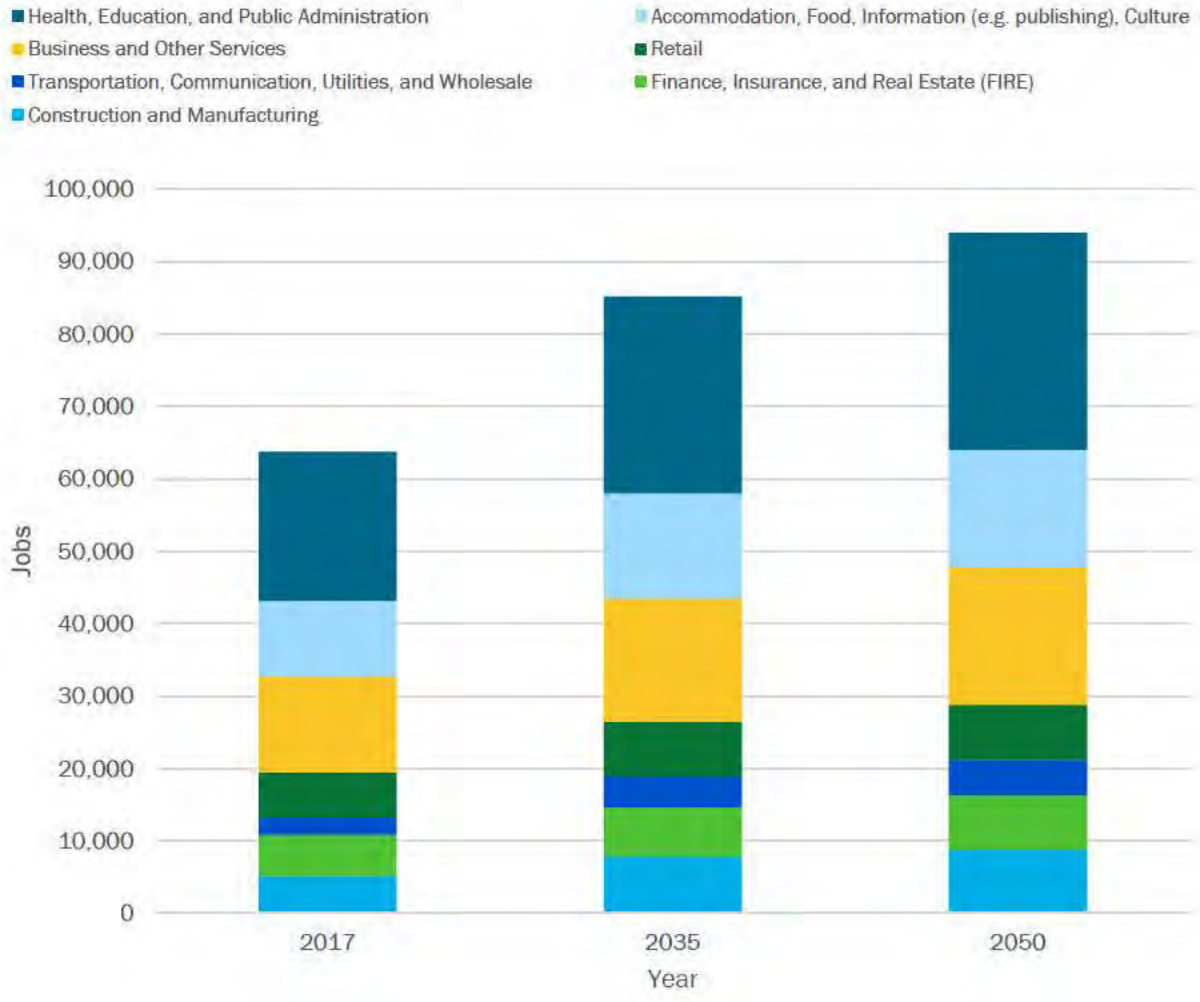


FIGURE D.16: EMPLOYMENT FORECASTS WITHIN SOUTH FALSE CREEK STUDY AREA

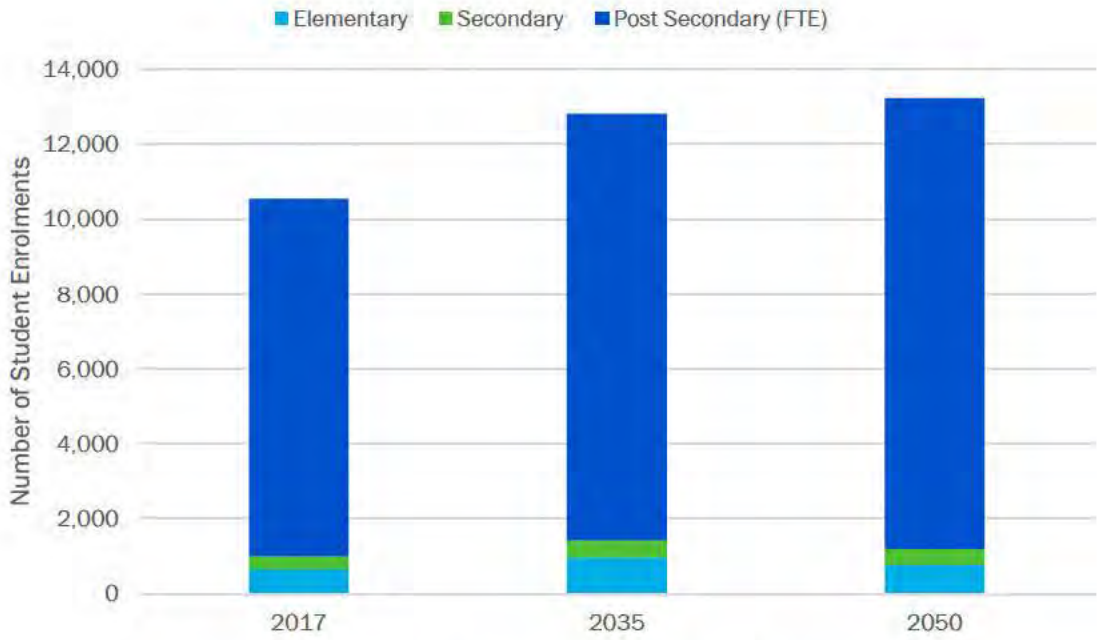


FIGURE D.17: SCHOOL ENROLMENT FORECASTS WITHIN SOUTH FALSE CREEK STUDY AREA

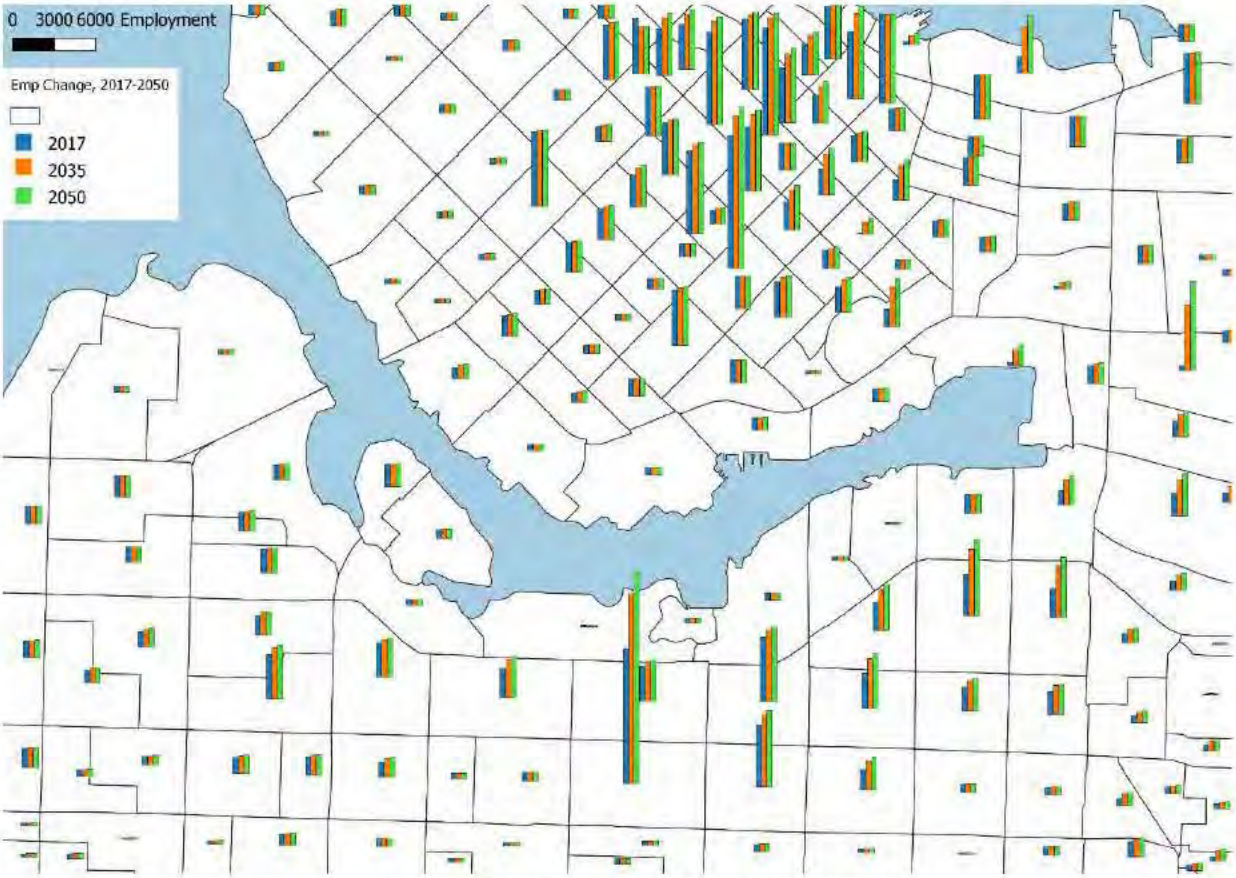


FIGURE D.18: FORECASTED EMPLOYMENT CHANGE BY TAZ

A comparison of the daily proportion of trips by trip purpose for the 2017 TransLink Trip Diary for the Vancouver Broadway Sub-Area, and the 2017 VanSAM base model study area ensemble is not provided as all trips in the Workers travel market are, definitionally, the attraction-end of a home-based work trip purpose.

Total daily trip generation for the workers travel market was generated for VanSAM for the base year as well as the forecasting horizon years. The total number of daily trips made by workers within the study area is also expected to grow correspondingly; by 2050 an additional 43,000 trips (or a 44% increase) is anticipated, as shown in ***Figure D.19***.

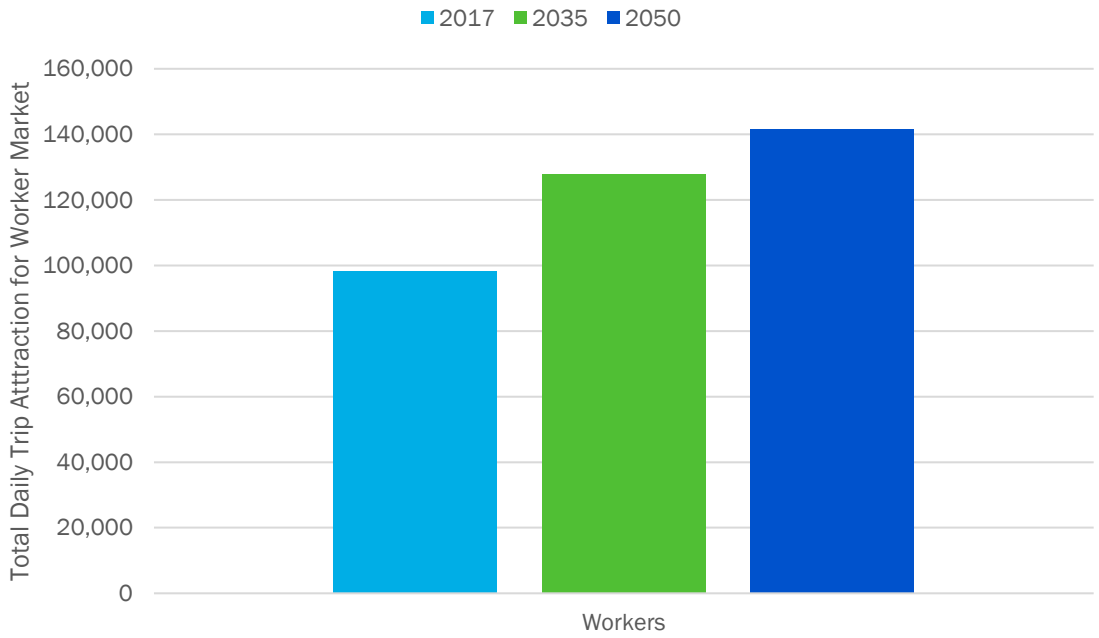


FIGURE D.19: DAILY TRIP-MAKING BY SOUTH FALSE CREEK STUDY AREA WORKERS

Worker trip production locations both within the City of Vancouver and other regions of Metro Vancouver are compared between the 2017 TransLink Trip Diary for the Vancouver Broadway Sub-Area (which overlaps with the study area), and the 2017 VanSAM base model study area ensemble, as shown in ***Figure D.20*** and ***Figure D.21***.

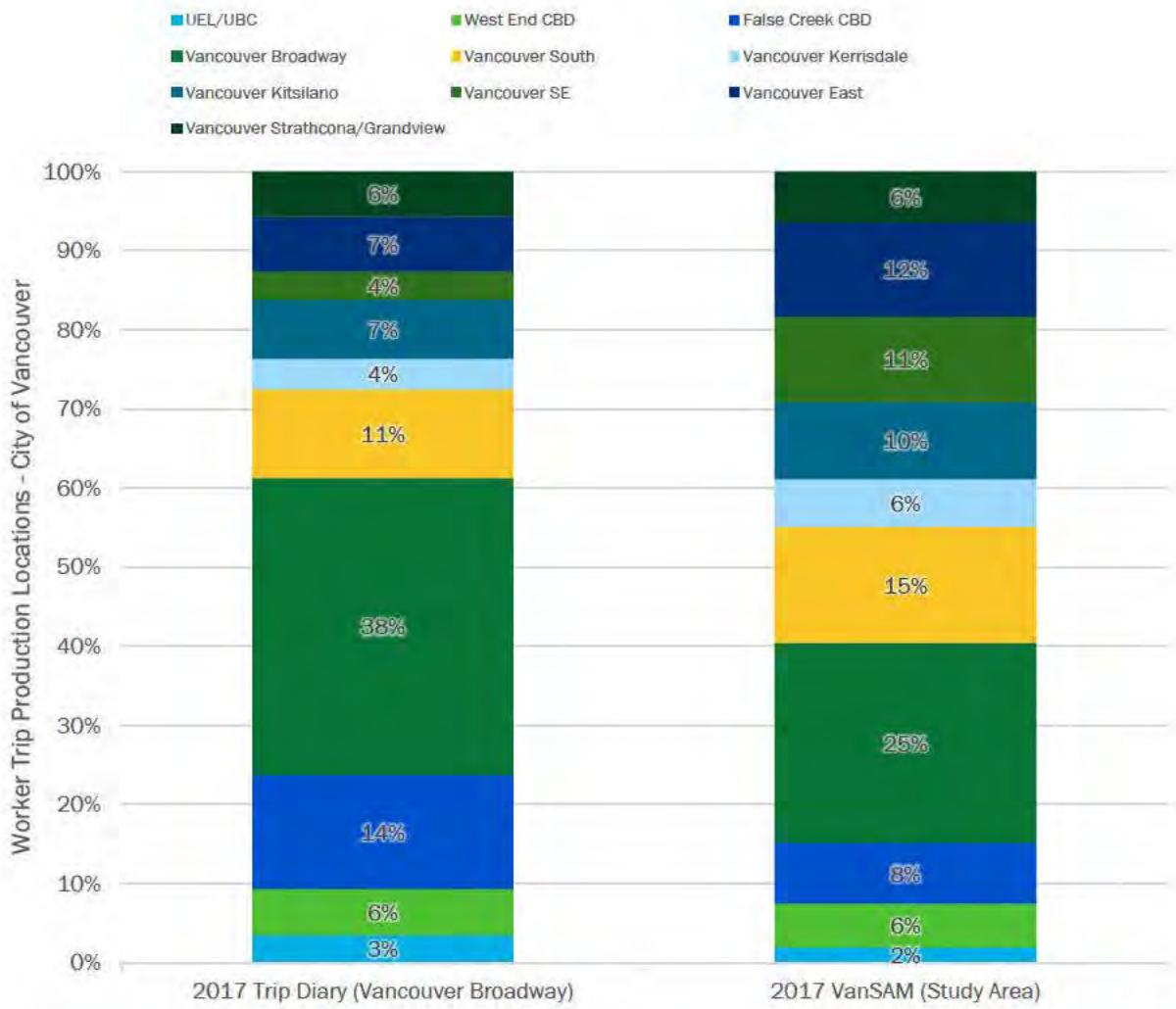


FIGURE D.20: DAILY TRIP PRODUCTION LOCATIONS WITHIN THE CITY OF VANCOUVER FOR SOUTH FALSE CREEK STUDY AREA WORKERS

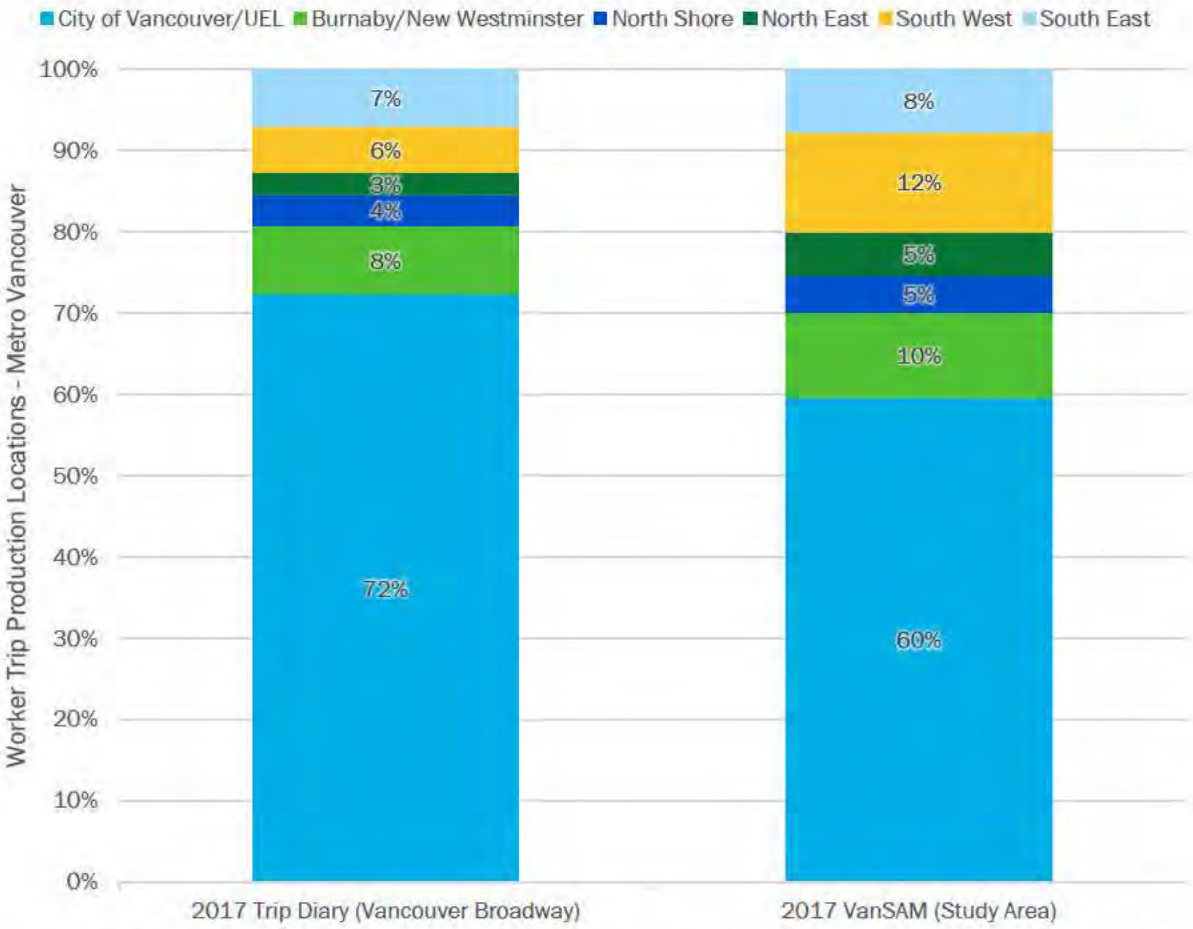


FIGURE D.21: DAILY TRIP PRODUCTION LOCATIONS WITHIN METRO VANCOUVER FOR SOUTH FALSE CREEK STUDY AREA WORKERS

Trip production locations for workers of the South False Creek study area were modelled, as provided in ***Figure D.22***. As shown, in 2017 roughly 8% of workers within the study area live within the study area (meaning these trips would also be in the residents travel market), 50% of trips are to the remainder of the City of Vancouver, and 42% of trips are to other municipalities throughout the region. These proportion of workers coming from the rest of the region is anticipated to increase slightly over time as much of the region grows proportionately faster than the City of Vancouver, and the Broadway Subway Project increases accessibility to the study area. The effect of the Broadway Subway Project is most notable for workers living in Burnaby – which is expected to see a proportional increase in its share of the South False Creek workforce.

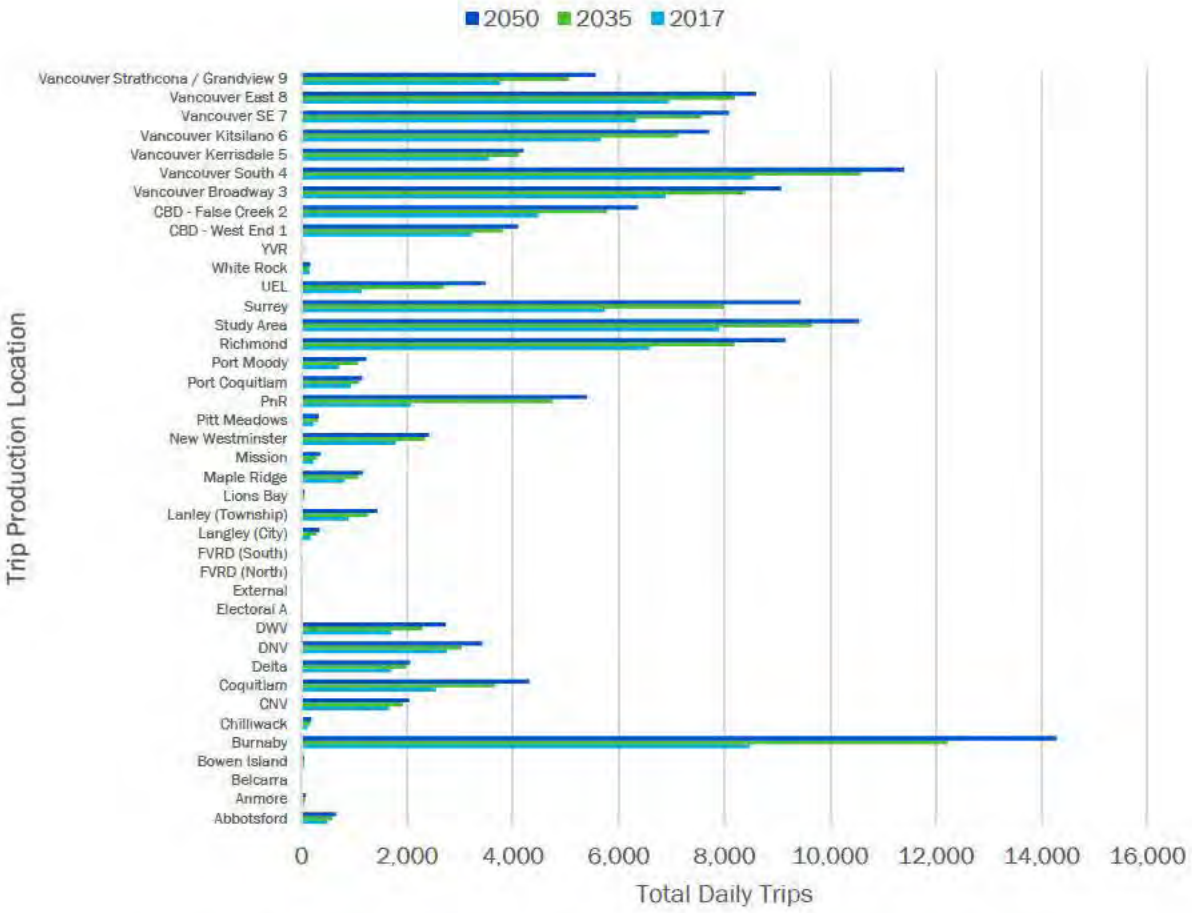


FIGURE D.22: DAILY TRIP PRODUCTION LOCATIONS FOR SOUTH FALSE CREEK STUDY AREA WORKERS

Daily travel mode choices for the worker travel market were compared between the 2017 TransLink Trip Diary (for the partially-overlapping Vancouver-Broadway subarea) and the VanSAM 2017 base year (for the study area), as summarized in ***Figure D.23***.

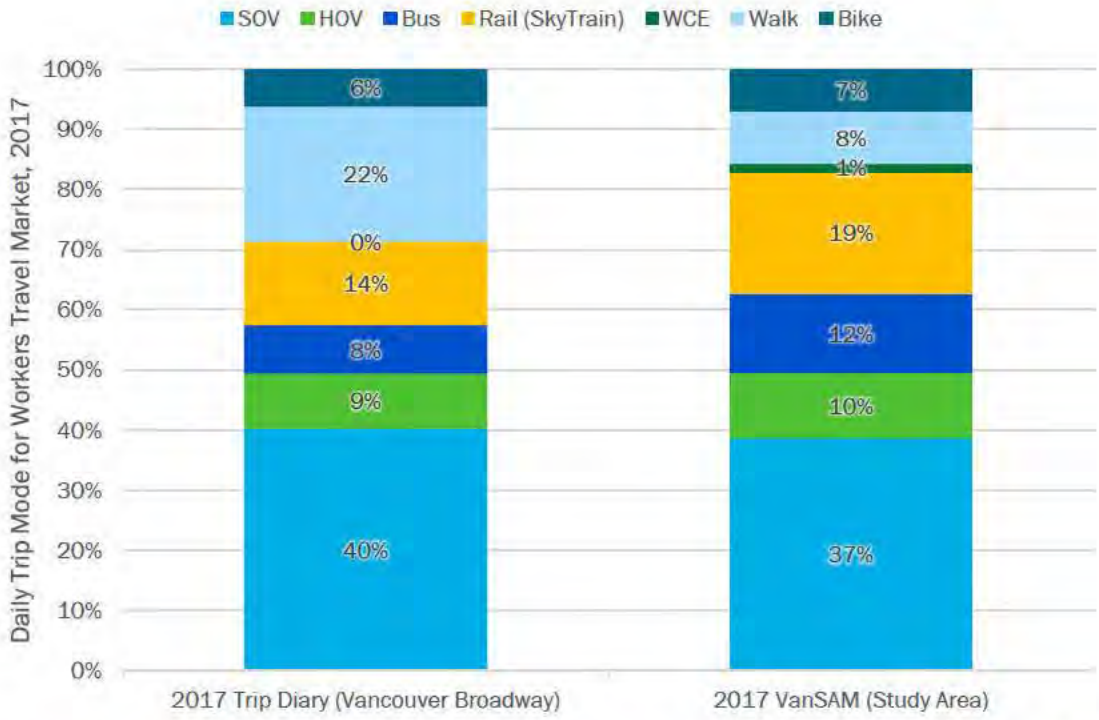


FIGURE D.23: 2017 TRIP DIARY AND 2017 VANSAM BASE YEAR DAILY TRIP-MAKING BY PRIMARY MODE FOR WORKERS TRAVEL MARKET

Trends in trip mode choice for workers in the South False Creek study area were also modelled, as provided in ***Figure D.24*** (for absolute volumes) and ***Figure D.25*** for proportional/share volumes. A tabular summary is also provided in ***Table D.2***.

As shown, auto modes (SOV and HOV) and then transit (bus, rail and WCE) are the most common modes for workers in 2017. But 2035, transit modes will increase significantly in both absolute terms and as a proportion (primarily due to an increase in the rail modes as a result of the Broadway Subway Project), while auto modes will decrease as a proportion but increase slightly in absolute terms. Walking and cycling are anticipated to increase slightly in absolutely terms, but decrease as a proportion.

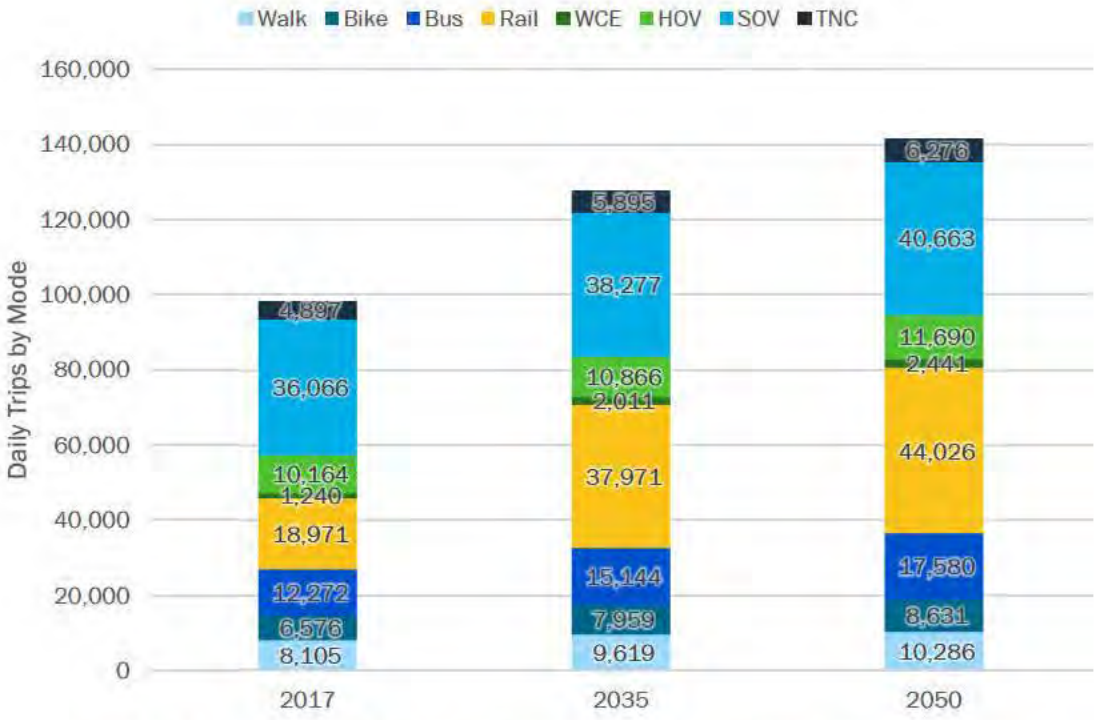


FIGURE D.24: DAILY MODE CHOICE (ABSOLUTE VOLUMES) FOR SOUTH FALSE CREEK STUDY AREA WORKERS

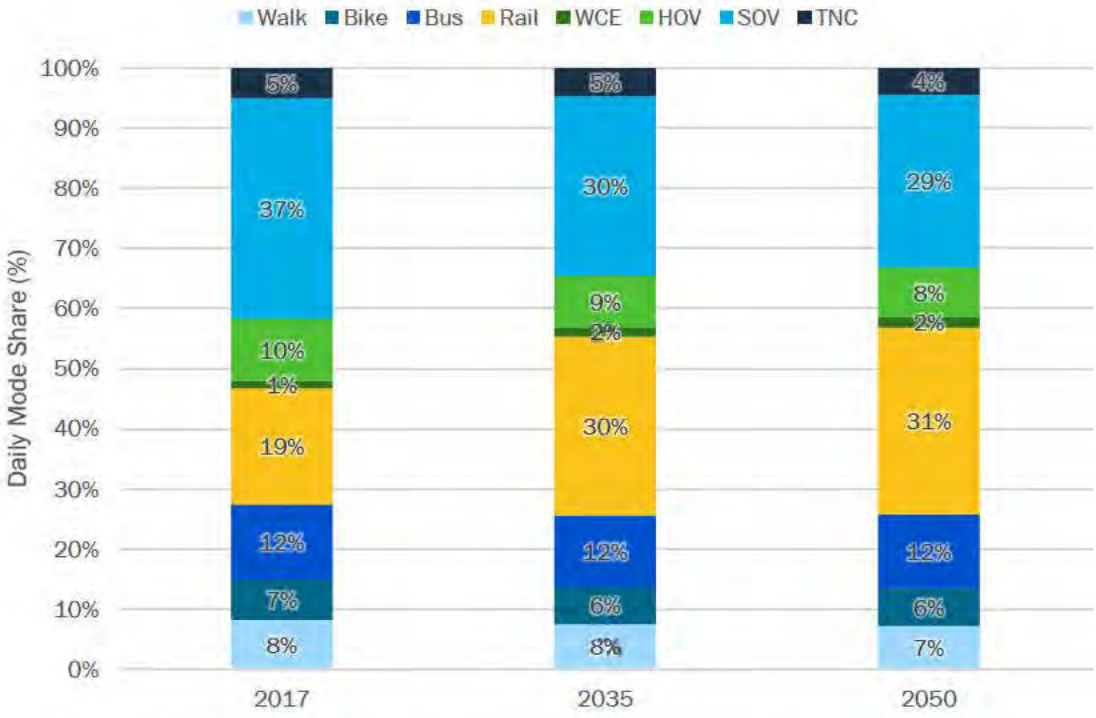


FIGURE D.25: DAILY MODE CHOICE (PROPORTIONS/SHARE) FOR SOUTH FALSE CREEK STUDY AREA WORKERS

TABLE D.2: SUMMARY OF DAILY MODE CHOICE FOR SOUTH FALSE CREEK STUDY AREA WORKERS

MODE	ABSOLUTE VOLUME			PROPORTION		
	2017	2035	2050	2017	2035	2050
Walk	8,105	9,619	10,286	8%	8%	7%
Bike	6,576	7,959	8,631	7%	6%	6%
Bus	12,272	15,144	17,580	12%	12%	12%
Rail	18,971	37,971	44,026	19%	30%	31%
WCE	1,240	2,011	2,441	1%	2%	2%
HOV	10,164	10,866	11,690	10%	9%	8%
SOV	36,066	38,277	40,663	37%	30%	29%
TNC	4,897	5,895	6,276	5%	5%	4%
Total	**98,290**	**127,742**	**141,592**	**100%**	**100%**	**100%**

Visitor Market

The visitors travel market consists of people traveling to the study area for non-work or educational purposes. This could include activities such as shopping on Granville Island, walking along the seawall, or conducting personal business along central Broadway.

The daily proportion of trips by trip purpose for the visitors travel market is compared between the 2017 TransLink Trip Diary for the Vancouver Broadway Sub-Area (which overlaps with the study area), and the 2017 VanSAM base model study area ensemble, as shown in ***Figure D.26***.

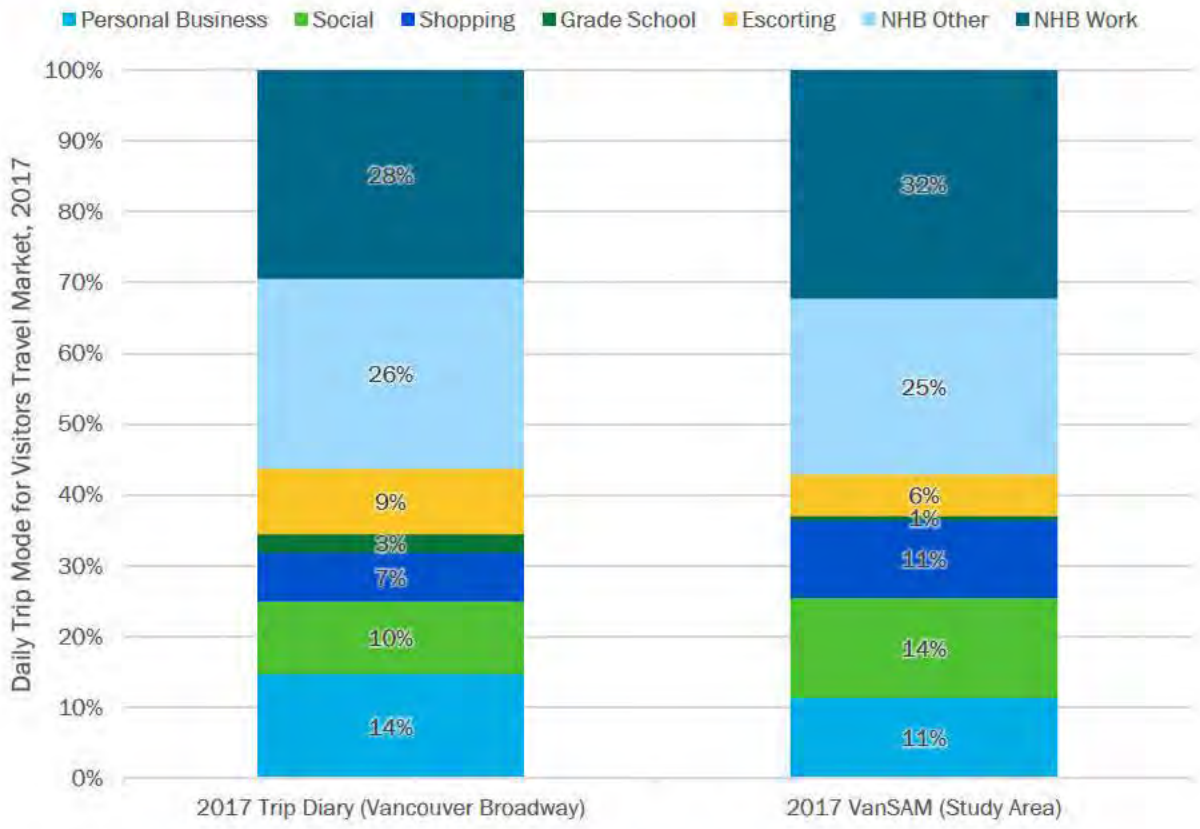


FIGURE D.26: 2017 TRIP DIARY AND 2017 VANSAM BASE YEAR DAILY TRIP-MAKING BY TRIP PURPOSE FOR VISITORS

Total daily trip generation for the visitors travel market was generated for VanSAM for the base year as well as the forecasting horizon years. The total number of daily trips made by visitors within the study area is expected to increase; relative to 2017 by 2050 an additional 127,000 trips (or a 50% increase) is anticipated, as shown in ***Figure D.27***. Note that the overall magnitude of visitor trips to and from the area is significantly larger than the resident or worker travel markets.

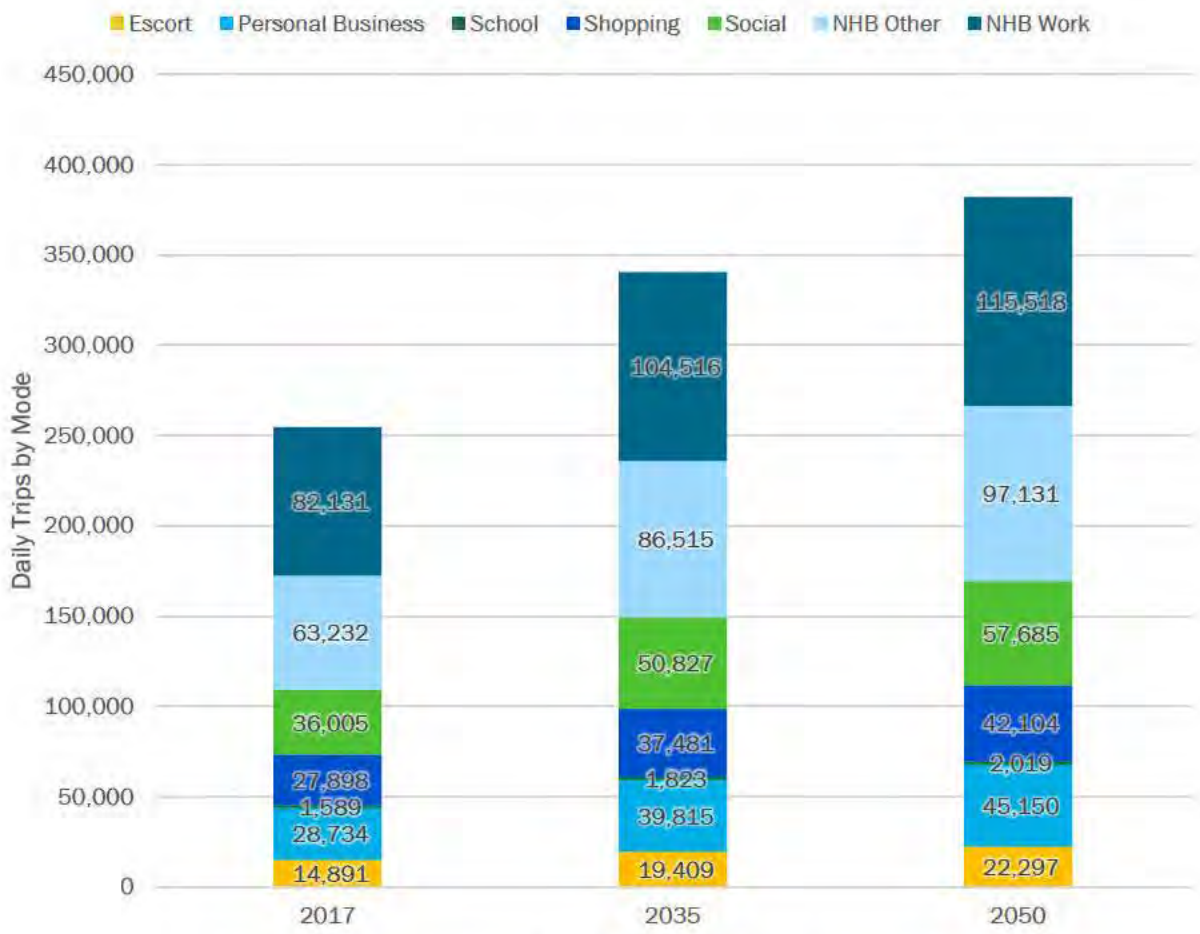


FIGURE D.27: DAILY TRIP-MAKING BY SOUTH FALSE CREEK STUDY AREA VISITORS

Visitor trip production locations both within the City of Vancouver and other regions of Metro Vancouver are compared between the 2017 TransLink Trip Diary for the Vancouver Broadway Sub-Area (which overlaps with the study area), and the 2017 VanSAM base model study area ensemble, as shown in ***Figure D.28*** and ***Figure D.29***.

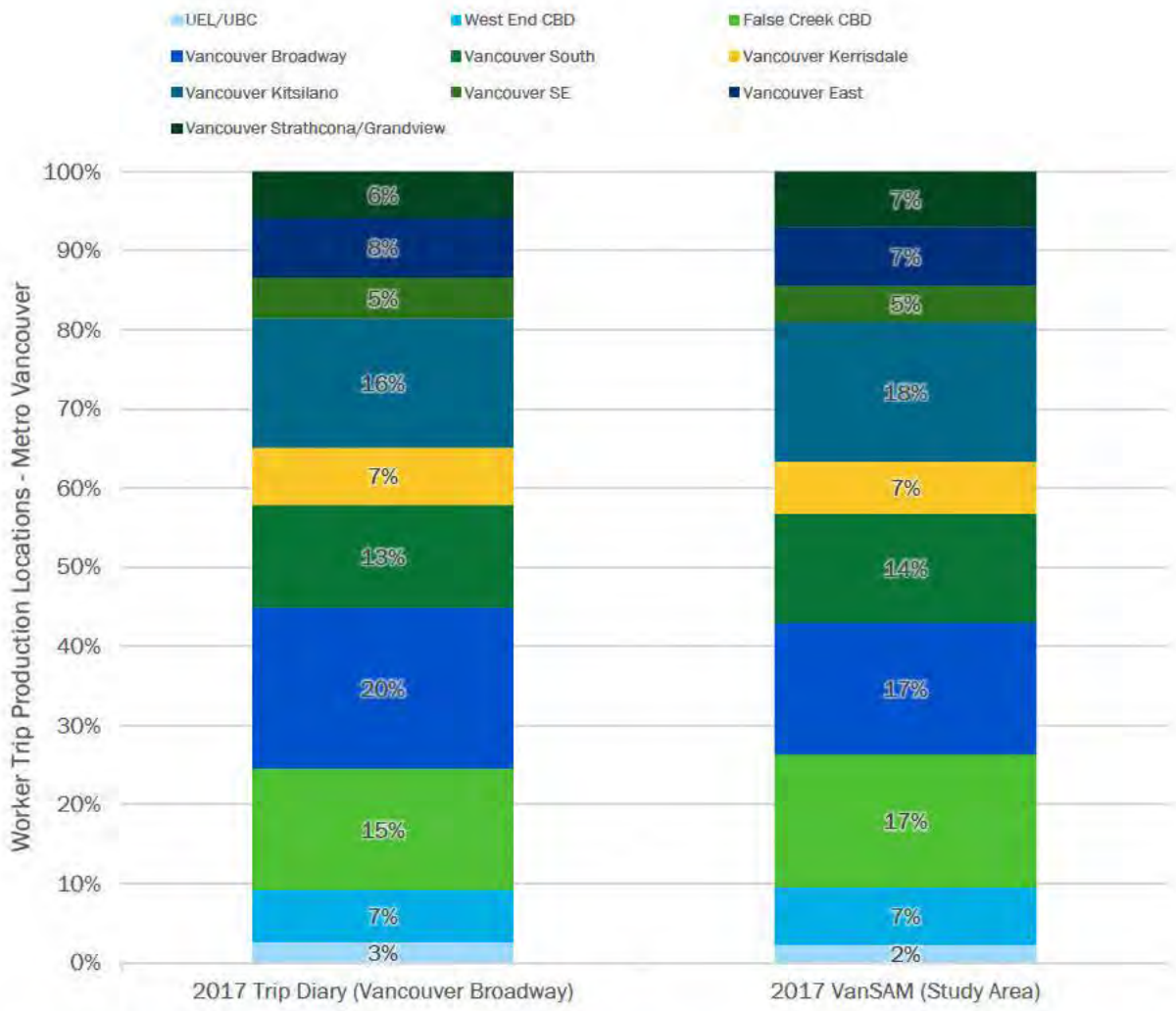


FIGURE D.28: DAILY TRIP PRODUCTION LOCATIONS WITHIN THE CITY OF VANCOUVER FOR SOUTH FALSE CREEK STUDY AREA VISITORS

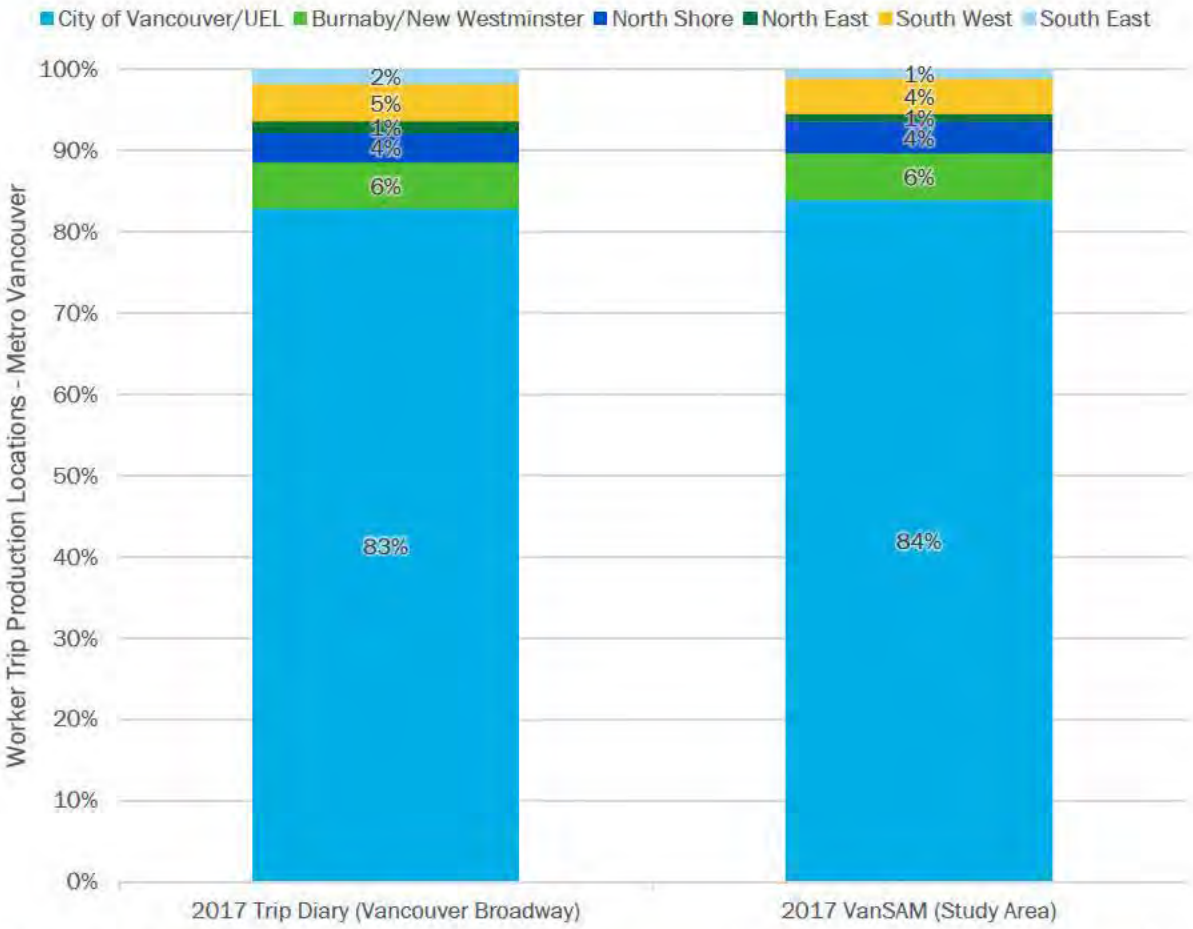


FIGURE D.29: DAILY TRIP PRODUCTION LOCATIONS WITHIN METRO VANCOUVER FOR SOUTH FALSE CREEK STUDY AREA VISITORS

Trip production and attraction locations for visitors to the South False Creek study area were modelled, as provided in ***Figure D.30***. As shown, in 2017 roughly 19% of visitors to the study area live within the study area (meaning these trips would also be in the resident travel market), 67% of trips are to the remainder of the City of Vancouver, and 14% of trips are to other municipalities throughout the region. These proportion of visitors with living within the study area is anticipated to increase slightly over time.

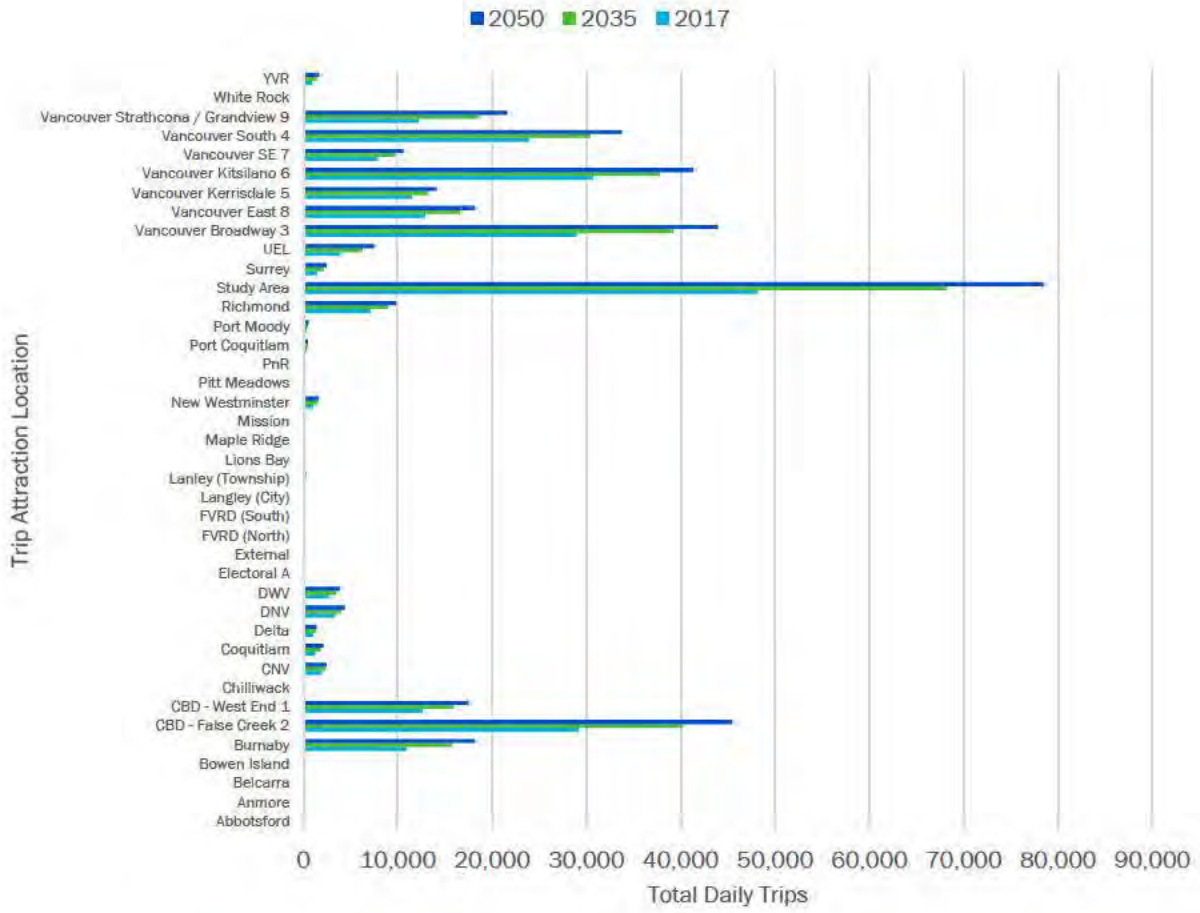


FIGURE D.30: DAILY TRIP PRODUCTION AND ATTRACTION LOCATIONS FOR SOUTH FALSE CREEK STUDY AREA VISITORS

Daily travel mode choices for the visitor travel market were compared between the 2017 TransLink Trip Diary (for the partially-overlapping Vancouver-Broadway subarea) and the VanSAM 2017 base year (for the study area), as summarized in ***Figure D.31***.

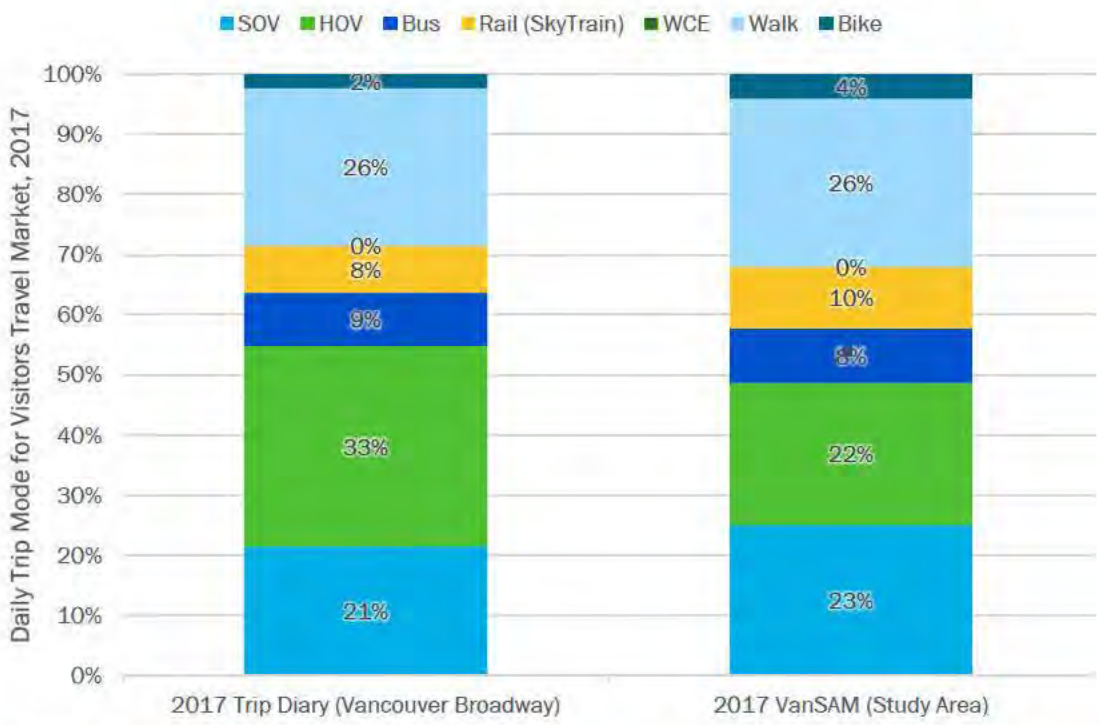


FIGURE D.31: 2017 TRIP DIARY AND 2017 VANSAM BASE YEAR DAILY TRIP-MAKING BY PRIMARY MODE FOR VISITORS TRAVEL MARKET

Trends in trip mode choice for visitors to the South False Creek study area were modelled, as provided in ***Figure D.32*** (for absolute volumes) and ***Figure D.33*** for proportional/share volumes. A tabular summary is also provided in ***Table D.3***.

As shown, walking is the most used mode for area visitors, followed by auto modes (SOV and HOV) and then transit (bus, rail and WCE). In absolute terms, walking trips for visitors are anticipated to grow significantly between 2017 and 2050, resulting in a modest increase in mode share. The rail sub-mode is anticipated to increase – due in part to a decrease in the bus sub-mode (to be expected once the Broadway Subway begins operations), as well as a modest increase in overall transit mode share. SOV and HOV trips are anticipated to decline slightly as a proportion, but still see an absolute increase in daily volumes.

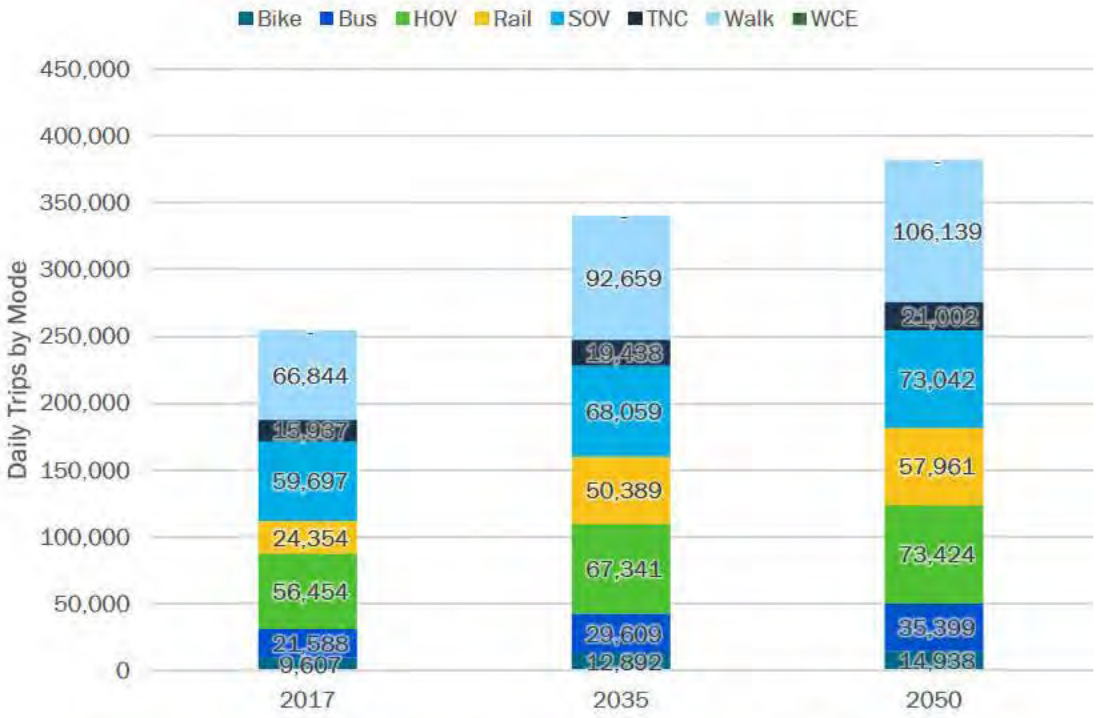


FIGURE D.32: DAILY MODE CHOICE (ABSOLUTE VOLUMES) FOR SOUTH FALSE CREEK STUDY AREA VISITORS

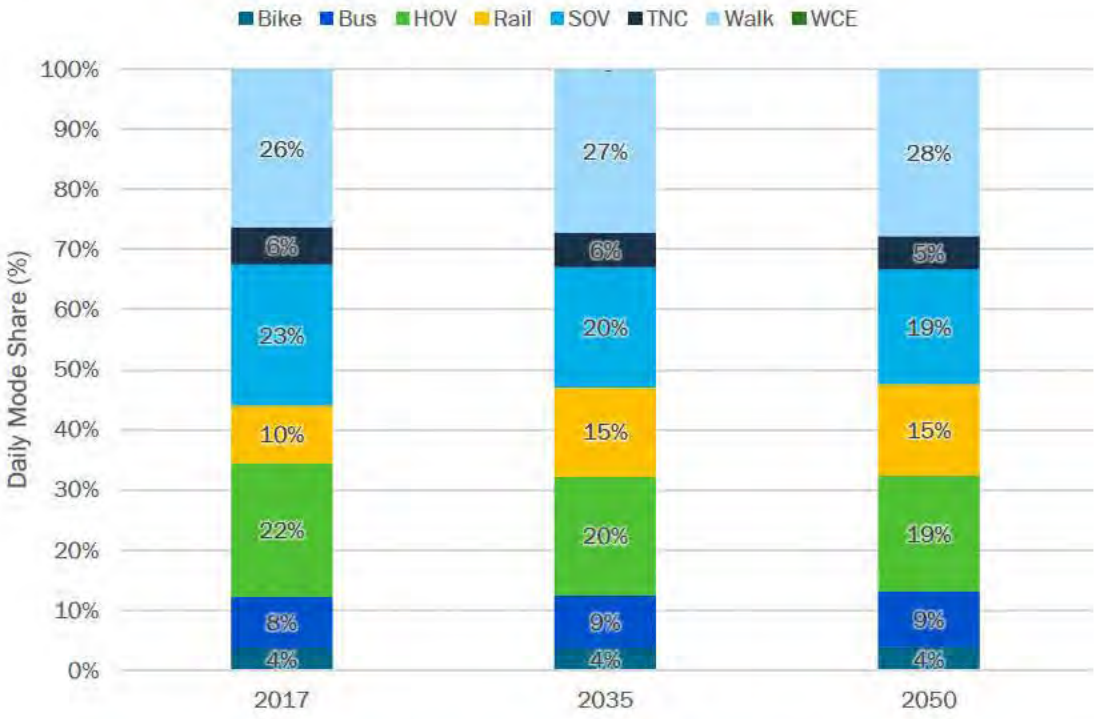


FIGURE D.33: DAILY MODE CHOICE (PROPORTIONS/SHARE) FOR SOUTH FALSE CREEK STUDY AREA VISITORS

TABLE D.3: SUMMARY OF DAILY MODE CHOICE FOR SOUTH FALSE CREEK STUDY AREA VISITORS

MODE	ABSOLUTE VOLUME			PROPORTION		
	2017	2035	2050	2017	2035	2050
Bike	9,607	12,892	14,938	4%	4%	4%
Bus	21,588	29,609	35,399	8%	9%	9%
HOV	56,454	67,341	73,424	22%	20%	19%
Rail	24,354	50,389	57,961	10%	15%	15%
SOV	59,697	68,059	73,042	23%	20%	19%
TNC	15,937	19,438	21,002	6%	6%	5%
Walk	66,844	92,659	106,139	26%	27%	28%
WCE	-	-	-	0%	0%	0%
Total	**254,480**	**340,387**	**381,904**	**100%**	**100%**	**100%**

Tourist Market

Information on the tourist travel market is not collected in either the TransLink Trip Diary or the Vancouver Transportation Survey, and therefore not directly reflected in the VanSAM travel demand model. Instead, trends and potential market size for the tourist travel market must be inferred indirectly from other sources.

Overnight visitor statistics to Metro Vancouver were collected from Destination Vancouver's Visitor Volume model. Annual overnight visitors between 1994 and 2023 are summarized in ***Figure D.34*** and show an overall growth trend until a sizeable drop due to COVID-19, and then an almost complete recovery by 2023.

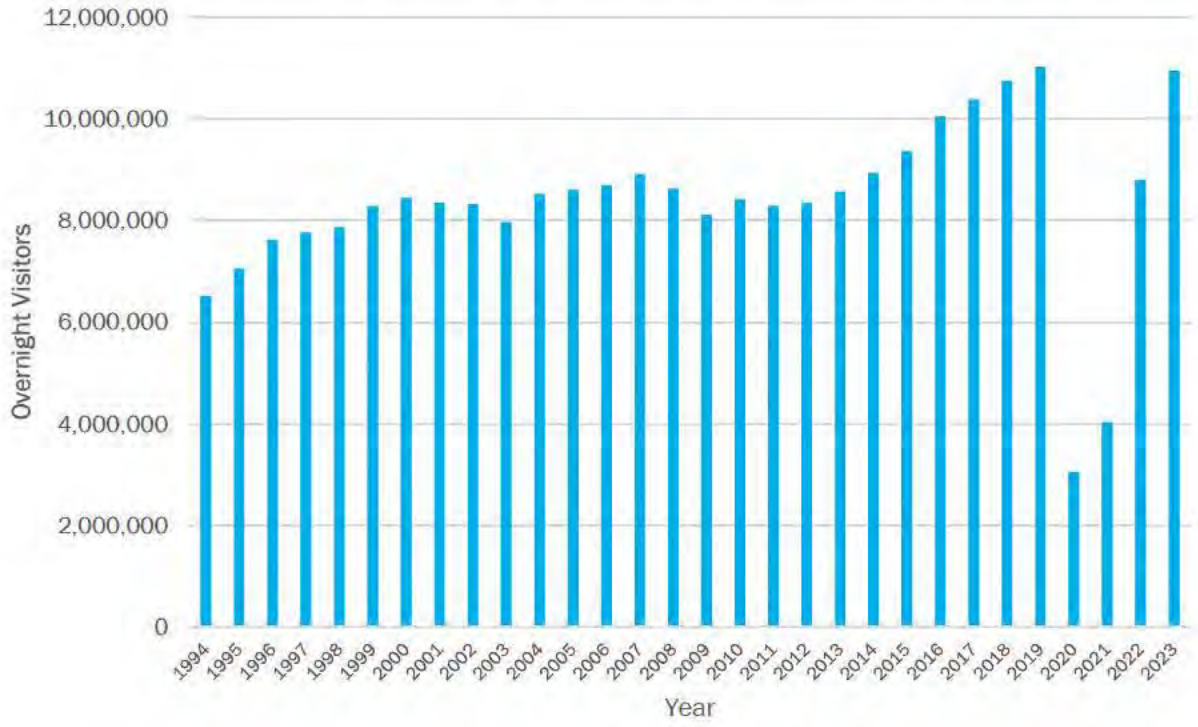


FIGURE D.34: ANNUAL OVERNIGHT VISITORS TO METRO VANCOUVER, 1994 – 2023 (SOURCE: DESTINATION VANCOUVER)

Monthly statistics were also collected and are summarized in ***Figure D.35*** for 2023. As shown, August (which is the month wherein surveys were collected, as discussed in Section 4 below) is the busiest month for tourism.

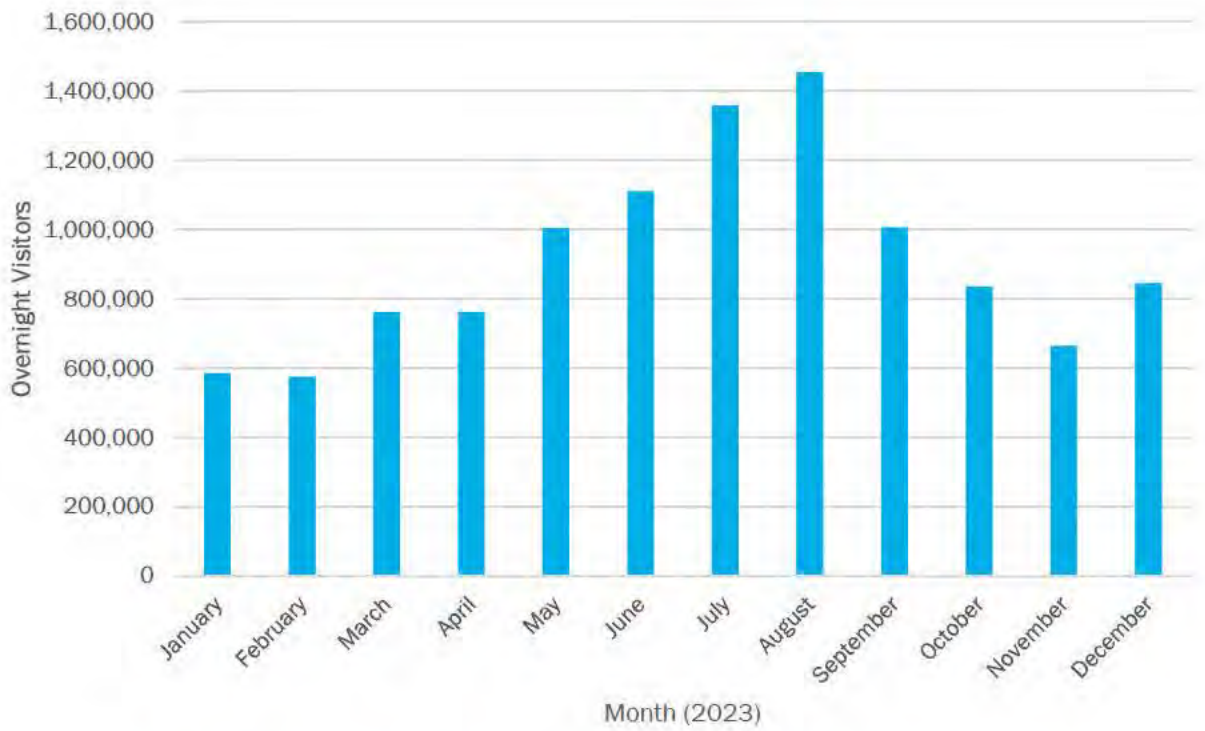


FIGURE D.35: MONTHLY OVERNIGHT VISITORS TO METRO VANCOUVER, 2023 (SOURCE: DESTINATION VANCOUVER)

As a proxy, annual trip volumes to and from Granville Island were collected from Canada Mortgage and Housing Corporation – noting that these values reflect *all* trips to Granville Island (e.g. worker and visitor travel markets in addition to tourists) and would also not reflect other tourist trips within the study area that did not visit Granville Island. Annual volumes to Granville Island are shown in ***Table D.4*** and demonstrate that by 2022 visits had largely recovered to pre-COVID conditions.

TABLE D.4: ANNUAL PERSON-VOLUMES TO GRANVILLE ISLAND

YEAR	ANNUAL VOLUME
2019	6,149,008
2020	4,913,412
2022	6,281,305

Volumes by mode were also collected for a one-month period spanning June 12 to July 12, 2024, and are provided in ***Table D.5***.

TABLE D.5: JUNE 12TH TO JULY 12TH, 2024 PERSON-VOLUMES TO GRANVILLE ISLAND

MODE	VOLUME
Pedestrians – via Anderson Street	462,131 people
Bikes – via Anderson Street	49,454 people
Pedestrians and Bikes at all other entry points to Granville Island (seawall entrances, ferry docks etc.)	246,064
Passenger Vehicles	382,848 vehicles, totaling approximately 849,922 people
Total	**1,607,571**

Long-term trends in the tourism market ridership were extracted from the *Economic Analysis of Hotel Supply and Projected Demand in Metro Vancouver, 2023 to 2050*, prepared by MNP LLP on behalf of Destination Vancouver – using growth in demand for room nights as a proxy for growth in tourism volumes, as shown in ***Figure D.36***. At a high level, the report shows that the potential room night demand could roughly double by 2050 – although in practice such a demand would only be realized and converted to actual tourism volumes if room supply is sufficient.

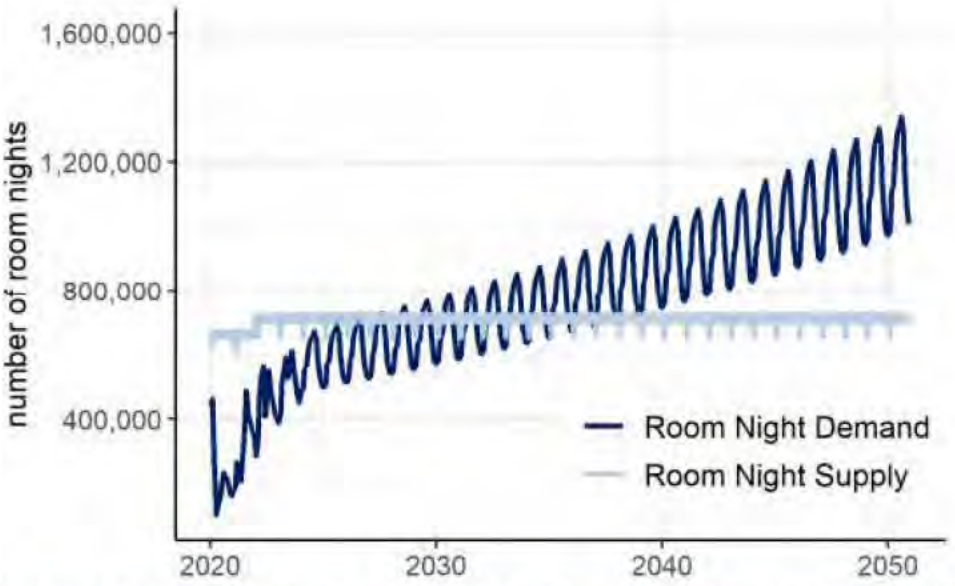


FIGURE D.36: MONTHLY HOTEL ROOM NIGHT SUPPLY AND DEMAND IN METRO VANCOUVER FROM 2020 TO 2050 (SOURCE: ECONOMIC ANALYSIS OF HOTEL SUPPLY AND PROJECTED DEMAND IN METRO VANCOUVER, 2023 TO 2050, 2023)

Through-Trips

As noted previously in ***Table 3.1***, through-trips cannot be assessed at the daily level, since the individual route selection is only undertaken during the trip assignment stage, which is only conducted for the three VanSAM model peak hours (AM, MD and PM).

The proportion of vehicle trips and transit trips in the study area made by people going to and from the South False Creek was investigated to understand how the existing transportation is used to service through-trips versus trips to, from and within the study area. Using VanSAM, all trips that originated in or were destined to traffic analysis zones within the boundaries of the South False Creek area, as defined in ***Figure 3.2***, were categorized separately from all other trips. In ***Figure D.37*** and ***Figure D.38***, the traffic volumes and transit ridership is depicted graphically for the 2017 AM peak hour and PM peak hours. Blue bars represent the traffic or transit ridership volume that originated from and/or is destined to the study area, and red bars represent all other (non-South False Creek) trips passing through the area.

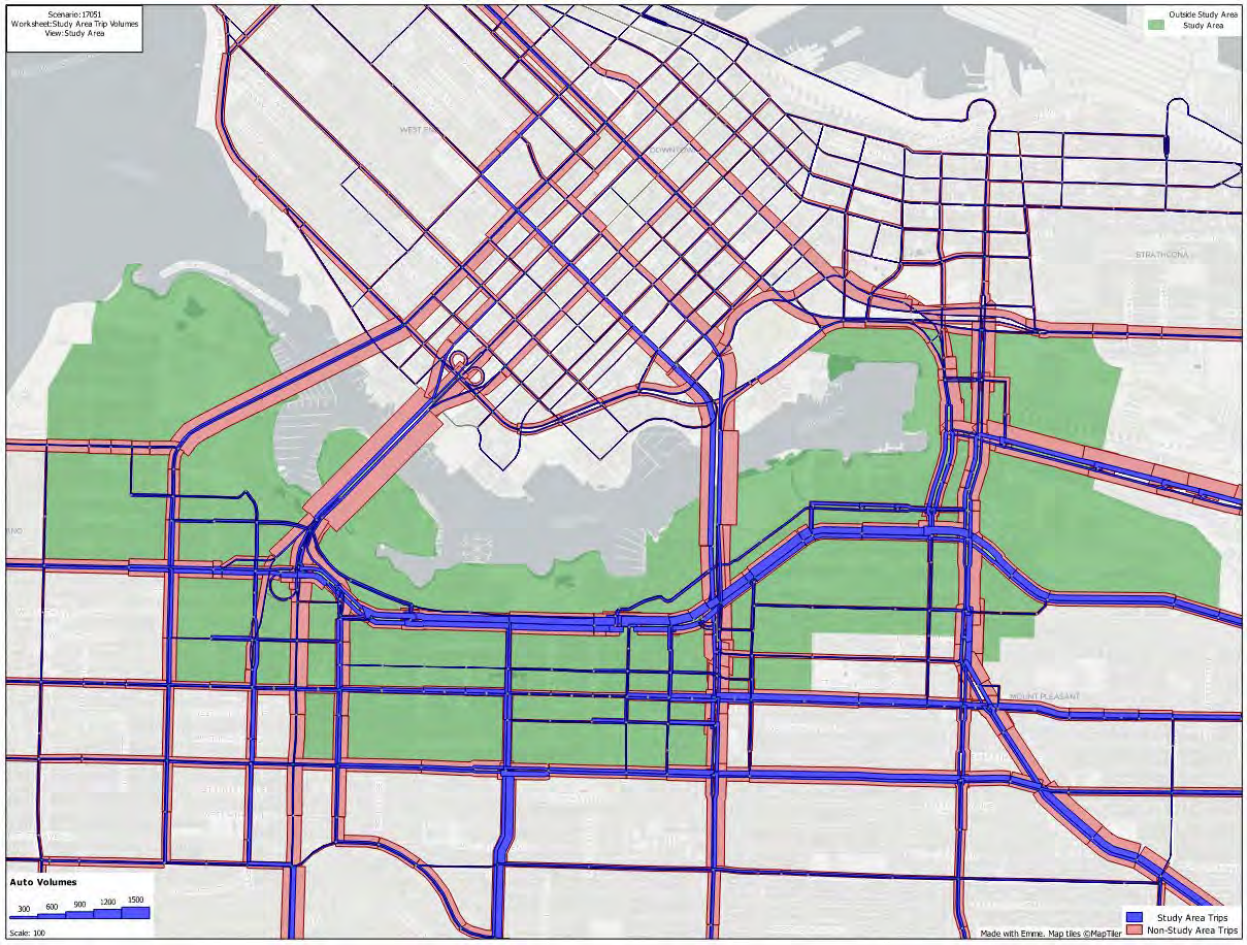


FIGURE D.37: PROPORTION OF AUTO MODE(S) PASS-THROUGH TRIPS IN STUDY AREA (2017 AM PEAK HOUR)

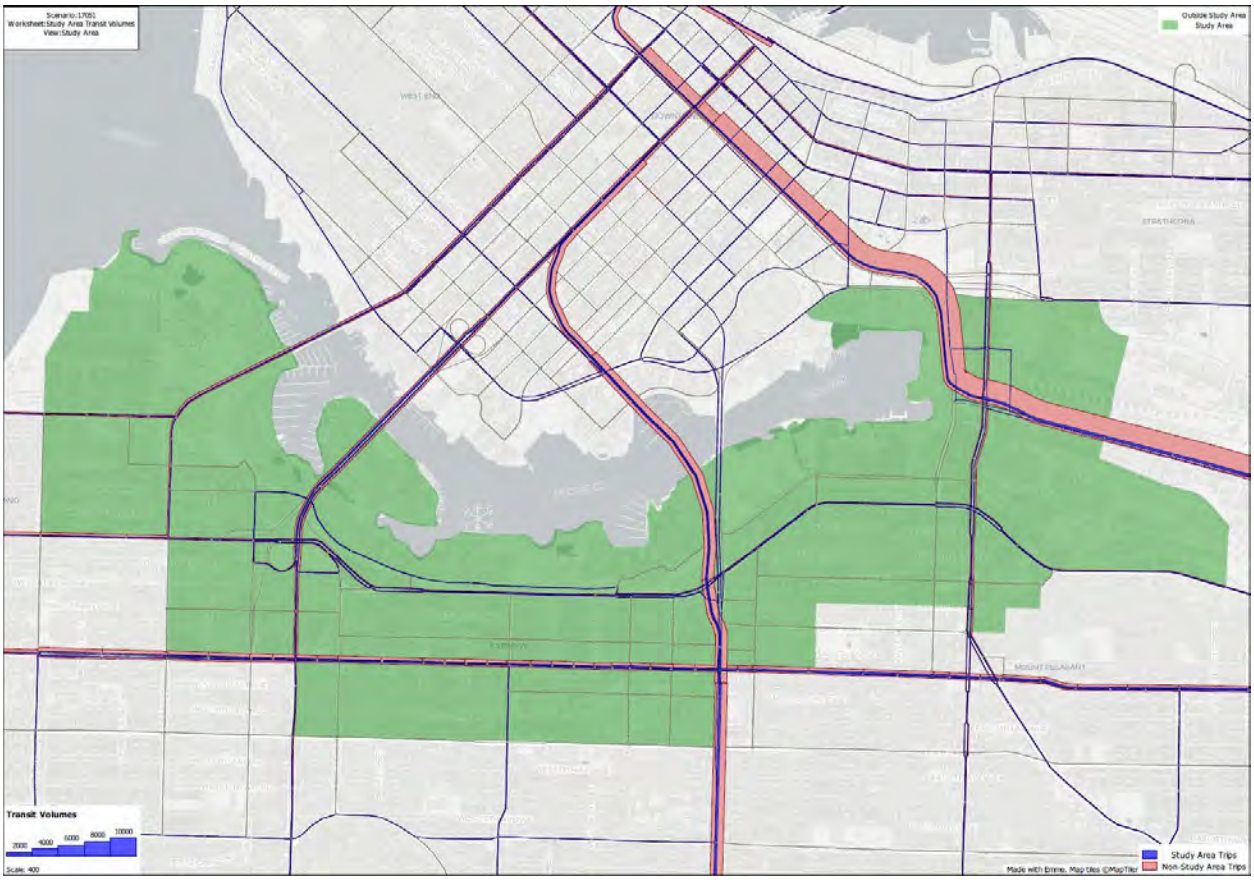


FIGURE D.38: PROPORTION OF TRANSIT MODE(S) PASS-THROUGH TRIPS IN STUDY AREA (2017 AM PEAK HOUR)

As shown above, for both auto and transit modes the east-west routes through the South False Creek (which a streetcar would largely parallel) are primarily used for trips to, from or within the study area, with relatively few through-trips making use of these corridors (especially 2nd Avenue / 6th Avenue). In contrast, major north-south corridors that pass through the study area (e.g. Burrard Street, Granville Street, Cambie Street and Main Street) see a much higher proportion of trips on these corridors consisting of through-trips. Although volume plots are shown for the 2017 AM peak hour in the figures above, the general finding / pattern holds true across all peak hours and horizon years.

These findings suggest that the streetcar is operating along a corridor with primarily resident, worker and/or visitor travel market trips, and may have lower potential to service pass-through trips as part of a larger journey.