

LONSDALE AVE

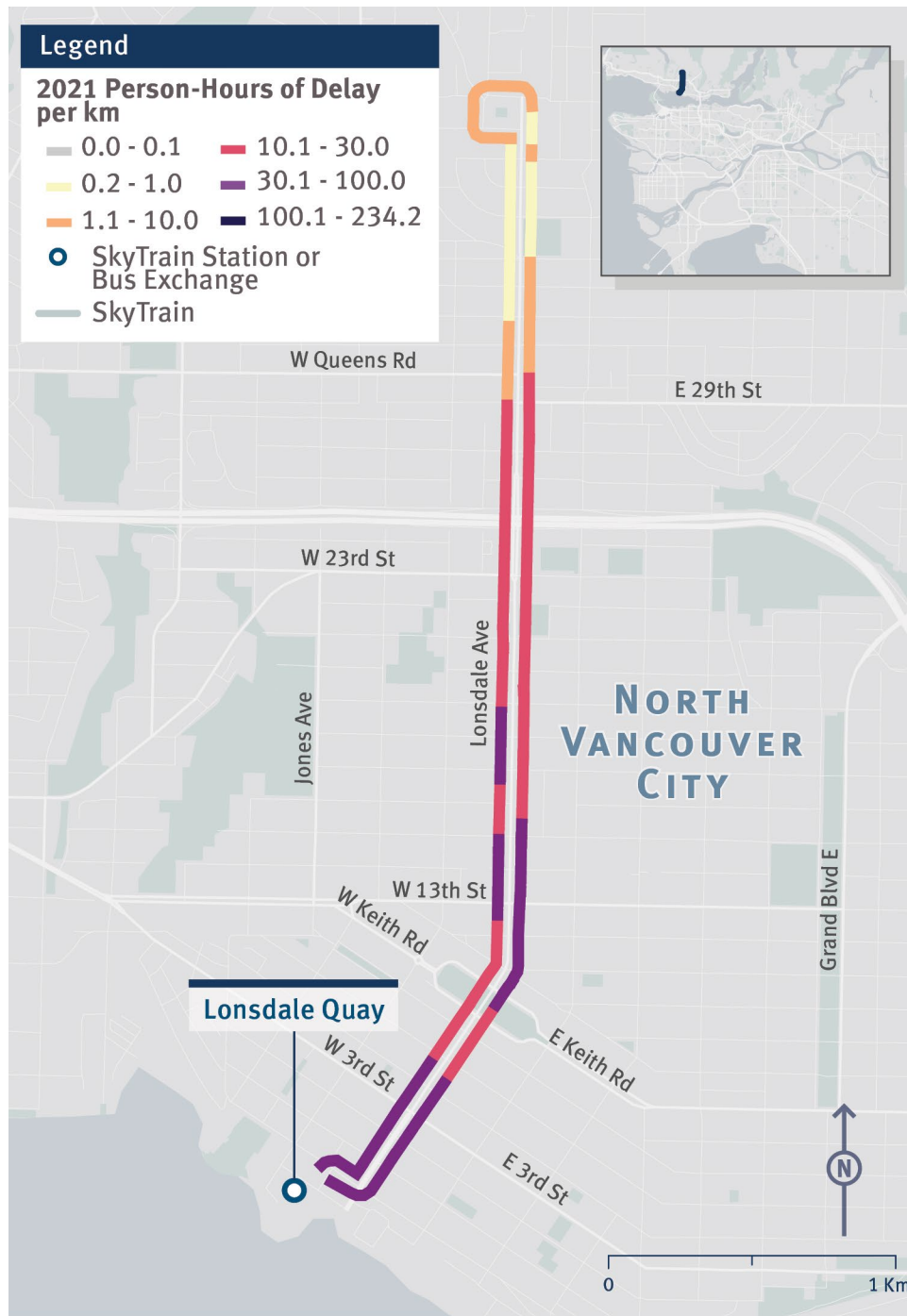
Corridor Description

- Lonsdale Ave is a major and historic north-south transit and commercial corridor for the city of North Vancouver.
- Lonsdale Ave is located in the urban core of the North Shore and has significant commercial and institutional destinations including Lonsdale Quay and The Shipyards.
- Bus service along the corridor provides connections from Lonsdale Quay (SeaBus and bus exchange) at the foot of Lonsdale to the rest of the City and the District of North Vancouver, including commercial centres and important regional cultural and recreation destinations.

Quick Facts

Length	4.2 km
Subregion	North Shore
Primary Routes	230; 228, N24
All Routes	228, 229, 230, 232, 241, 255, R2, N24

Notes: Corridor ranked #24 for person-delay per km in Fall 2021. Profile area varies slightly from the corridor. Ridership is reported for the location with the most cumulative passengers on-board the bus throughout the day; lower end of the range accounts only for routes using the corridor for at least 1 km and upper end of the range reflects all routes.



20

Maximum hourly bus trips per direction



180

Person-hours of delay per day



14,200

Total households (1,500/km² density)



29%

Low income households



21%

Zero vehicle households

Demographics within 400m of corridor

2,300-2,700

Total ridership (daily load in one direction)

18

Bus-hours of delay per day



Lonsdale Ave, continued

Corridor Significance

- **Lonsdale Ave is an important travel corridor connecting to the urban core in the North Shore, with significant commercial and institutional destinations.** More than 7% of all bus journeys in North Shore begin on Lonsdale Ave. It ranks eighth highest in bus delay per kilometre among profile areas. In the southern end of the corridor, buses carry up to 60% of people during morning rush hours. Approximately 10 to 20% of people using the northern part of the corridor are on buses during that time.

Key Challenges for Bus Speed & Reliability

- Lonsdale has parallel parking with high turnover of vehicles (e.g., daytime duration limits of 1 hour). This contributes to delay in the curb lane as general traffic waits for people parking.
- Significantly poor travel times for buses converging to and from Hwy 1 connections.
- Traffic signal phasing must consider bus priority, reducing delay for turn movements, and high pedestrian volumes; Lonsdale Ave is also an important corridor for goods movement and emergency vehicles.

Location of Common Causes of Bus Delay

Issue	Location(s)
Motorists turning left (or other delay from left-turns)	<ul style="list-style-type: none"> • NB Lonsdale Ave at Esplanade • NB Lonsdale Ave at 2 St • NB Lonsdale Ave at 4 St • NB Lonsdale Ave from 11 St to 13 St • SB Lonsdale Ave from 14 St to 13 St • SB Lonsdale Ave from 18 St to 17 St • NB Lonsdale Ave from 20 St to 21 St • SB Lonsdale at 27 St • NB/SB Lonsdale Ave between Queens Rd and Kings Rd
Motorists turning right (or other delay from right-turns)	<ul style="list-style-type: none"> • NB/SB Lonsdale Ave between 2 St to 4 St • SB Lonsdale Ave from Hwy 1 to 11 St • NB Lonsdale Ave from 11 St to 13 St • NB Lonsdale Ave at 15 St • NB Lonsdale Ave from 18 St to 21 St • NB Lonsdale at 29 St • SB Lonsdale at Queens Rd
Roadway congestion	<ul style="list-style-type: none"> • NB Lonsdale Ave from Esplanade to Kings Rd • SB Lonsdale Ave from Kings Rd to 13 St • SB Lonsdale Ave from 4 St to Esplanade
Closely spaced driveways or other roadways	<ul style="list-style-type: none"> • SB Lonsdale Ave from 14 St to 13 St
Re-entering traffic from bus stops	<ul style="list-style-type: none"> • NB/SB Lonsdale Ave at 13 St • NB Lonsdale Ave at 17 St • NB Lonsdale Ave at 29 St
Location of bus stops	<ul style="list-style-type: none"> • NB Lonsdale at Hwy 1
Short spacing between bus stops	<ul style="list-style-type: none"> • NB Lonsdale Ave at 2 St
Pedestrian movements (including pedestrian signals)	<ul style="list-style-type: none"> • NB/SB Lonsdale Ave between Esplanade and 4 St • NB Lonsdale Ave from 11 St to 13 St • NB Lonsdale Ave at 15 St • SB Lonsdale Ave from 18 St to 13 St • NB Lonsdale Ave from 20 St to 21 St • SB Lonsdale Ave at 22 St • SB Lonsdale Ave from Kings Rd to Queens Rd
Uncoordinated traffic signals	<ul style="list-style-type: none"> • NB Lonsdale Ave at Esplanade

Lonsdale Ave, continued

Potential Solutions to Address Bus Speed and Reliability Issues

Corridor will be developed into BRT/ RapidBus, with final design, including exact alignment, to be confirmed. Bus priority measures shown represent near-term solutions.

Map Callouts

- 1 Signalize Kings Rd to improve vehicle, bus, and pedestrian movements.
- 2 Remove on-street parking approaching the intersection to create a southbound right-turn pocket at 21st St.
- 3 Create a southbound right-turn except bus at 19th St.
- 4 Create an offset bus lane to maintain on-street parking and curb extensions along Lonsdale Ave.
- 5 Turn restrictions and/or removal of on-street parking maintains continuous movement for buses between E Esplanade and 4th St.
- 6 Improve left turns for buses by allowing bus left turns from the through lane on W Esplanade. Provide transit-only signal for bus to turn left onto Lonsdale Ave.

Corridor-Wide Opportunities

- At the 10 signalized intersections, solutions such as signal priority, signal coordination, or timing/phasing adjustments can help reduce delay.
- At the approximately 25 bus stops that are below spacing guidelines (300m) thoughtful removal or relocation could achieve more consistent spacing while maintaining access.
- Up to 6 km of new bus lanes could be added. Different types of lanes are appropriate in different contexts.

Further analysis is needed for all opportunities.



Key Opportunities



10

Signalized intersections along corridor



25+

Bus stops below spacing guidelines (75% of total)



6 km

New bus lanes (directional)

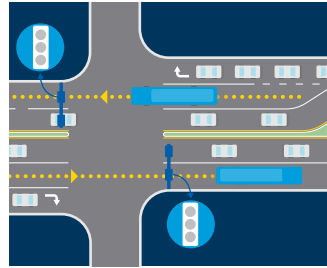
Lonsdale Ave, continued

Considerations for Key Solutions

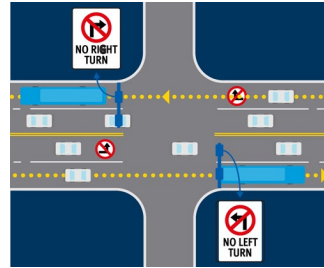


LEFT- AND RIGHT-TURN SOLUTIONS

Where right-of-way permits, turn solutions include dedicated turn pockets. Where right-of-way is limited, solutions include turn restrictions for general traffic but permitted for buses.



Turn pockets separate buses and motor vehicle traffic to reduce time spent by buses queuing behind general traffic. Consider turn pockets when turn volumes are high.

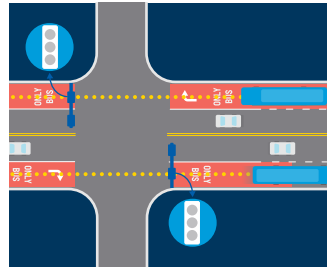


Turn restrictions limit left or right turns for general traffic to reduce delay for buses and other vehicles traveling along a corridor. Buses may be exempted from the restrictions.



QUEUE JUMPS AND APPROACH LANES

Queue jumps and approach lanes should be implemented strategically and in combination with intersection operations and turn solutions. They are typically implemented when the right-of-way is too limited to create a whole bus lane.

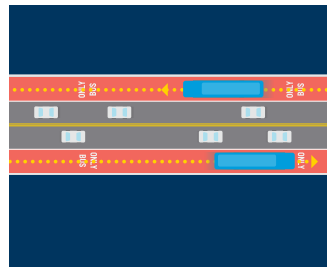


Queue jumps can be implemented **in the right-turn lane or BAT Lane**. Signal priority is not required but may be complementary.

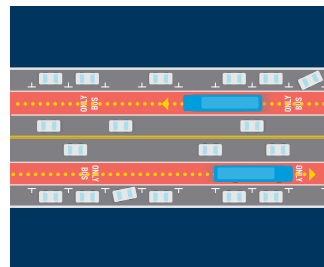


BUS LANES

Bus lanes can be implemented in context-specific solutions that consider traffic conditions, on-street parking and access to business and destinations; and integration with facilities for bicyclists or goods movements.



Curbside bus lanes can be full-time or part-time (peak hours). They are quick to implement but may have conflicts with right turning motor vehicle traffic and curb require enforcement and curb management to deter parking during operating hours.



Offset bus lanes (in commercial areas) run between an on-street parking lane and a through-traffic lane and preserve parking and loading along the curb. Bus bulbs used with offset bus lanes can provide additional space for passengers at bus stops and shorten pedestrian crossing distances.

SE MARINE DR



Corridor Description

- SE Marine Dr is a key east-west corridor through neighbourhoods in south Vancouver and south Burnaby.
- This corridor connects the Marine Drive Station on the Canada Line and the 22nd Street Station on the Expo Line.
- The corridor includes residential areas and smaller-scale commercial and light industrial land uses.

Quick Facts

Length	14.3 km
Subregions	Vancouver/UBC, Burnaby/ New Westminister
Primary Route	100
All Routes	3, 10, 17, 31, 100, 116, 146, 148, N8, N20

Notes: Corridor ranked #26 for person-delay per km in Fall 2021. Profile area extends further west and east than the corridor. Ridership is reported for the location with the most cumulative passengers on-board the bus throughout the day; lower end of the range accounts only for routes using the corridor for at least 1 km and upper end of the range reflects all routes.

 46 Maximum hourly bus trips per direction	 480 Person-hours of delay per day	 15,700 Total households (600/km ² density)	 33% Low income households	 13% Zero vehicle households
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5,000-5,400
Total ridership (daily load in one direction)

39
Bus-hours of delay per day

Demographics within 400m of corridor



SE Marine Dr, continued

Corridor Significance

- **SE Marine Dr is an important east-west transit corridor for the Vancouver/UBC and Burnaby/New Westminister subregions.** Up to a quarter of people traveling through the corridor are on buses during morning rush hours, and close to three-quarters on the far eastern end near 22nd St Station. Route 100, which serves the length of SE Marine Dr, arrives every 5 to 6 minutes all day.
- **Performance on SE Marine Dr makes bus travel through south Vancouver and Burnaby less reliable.** During heavier traffic, an end-to-end trip between the Marine Drive and 22nd Street stations can take over 10 minutes longer compared to a best-case trip, when the bus is able to move smoothly.
- **Transit priority improvements are planned on SE Marine Dr.** A RapidBus route is planned for the SE Marine Dr corridor in TransLink's *10-Year Priorities*. This route would provide an east-west connection between the Canada Line and the Expo Line. Consideration of and planning work for BRT are also proposed.

Key Challenges for Bus Speed & Reliability

- Severe delays on the western part of the profile area due to roadway congestion and motorists accessing shopping centers and businesses on Marine Drive between Manitoba Street and Ross Street.
- The corridor has existing transit priority lanes but only during PM Peak travel times; the lanes are shared with bikes.

Location of Common Causes of Bus Delay

Issue	Location(s)
Motorists turning left (or other delay from left-turns)	<ul style="list-style-type: none"> • EB SE Marine Dr at Victoria Dr • EB Marine Dr at Strathearn Ave • WB SW Marine Dr at Columbia St • WB SW Marine Dr at Ash St
Motorists turning right (or other delay from right-turns)	<ul style="list-style-type: none"> • EB SW Marine Dr at Oak St • EB/WB SW Marine Dr between Manitoba St and Ontario St • EB SE Marine Dr at Victoria Dr • EB Marine Dr at Strathearn Avenue • WB SE Marine Dr at Kerr St • WB SE Marine Dr at Main St
Roadway congestion	<ul style="list-style-type: none"> • EB/WB SW Marine Dr at W 70 Ave • EB/WB SW Marine Dr between Manitoba St and Ross St • EB SE Marine Dr at Victoria Dr • EB SE Marine Dr at City Edge Pl • EB Marine Dr at Strathearn Avenue • WB Southbridge Dr at Byrnespark Dr • WB Marine Dr at Greenall Ave • WB Marine Dr between Fieldstone Ave and Kerr St • WB SW Marine Dr between Ash St and Oak St
Closely spaced driveways or other roadways	<ul style="list-style-type: none"> • EB SW Marine Dr between Heather St and W 70 Ave • EB SE Marine Dr between Manitoba St and Argyle St • EB Marine Dr between Greenall Ave and Sussex Ave • EB/WB Marine Dr between Strathearn Ave and Nelson Ave • WB SE Marine Dr at Victoria St • WB SE Marine Dr at Ross St • WB SE Marine Dr at Prince Edward St • WB SE Marine Dr between Main St and Ontario St • WB SW Marine Dr between Logan St and Oak St

SE Marine Dr, continued

Issue	Location(s)
Re-entering traffic from bus stops	<ul style="list-style-type: none"> • EB SE Marine Dr at Main St • EB SE Marine Dr at Saint George St • EB SE Marine Dr at Fraser St • EB SE Marine Dr at City Edge Pl • WB Marine Dr at Patterson Ave • WB SE Marine Dr at Fieldstone Ave • WB SE marine Dr at Prince Edward St • WB SE Marine Dr between Main St and Ontario St
Location of bus stops	<ul style="list-style-type: none"> • EB SW Marine Dr at Oak St
Short spacing between bus stops	<ul style="list-style-type: none"> • EB SE Marine Dr at Beatrice St
Pedestrian movements (including pedestrian signals)	<ul style="list-style-type: none"> • EB SW Marine Dr at W 70 Ave • EB SE Marine Dr at Kerr St • EB/WB SE Marine Dr at City Edge Pl • WB Marine Dr at Greenall Ave • WB SE Marine Dr at Fieldstone Ave
Uncoordinated traffic signals	<ul style="list-style-type: none"> • EB SW Marine Dr at W 70 Ave • WB Marine Dr between Trapp Rd and 7 Ave • WB Southridge Dr at Byrnepark Dr • WB SE Marine Dr at Fieldstone Ave • WB SW Marine Dr at W 70 Ave • WB SW Marine Dr at Columbia St • WB SW Marine Dr at Ash St
Overhead trolley wire-related delays/conflicts	<ul style="list-style-type: none"> • EB SW Marine Dr at W 70 Ave
Pedestrian access and/or safety	<ul style="list-style-type: none"> • EB SW Marine Dr at W 70 Ave • WB Marine Dr at 10 Ave • WB SE Marine Dr at City Edge Pl • WB SW Marine St at Laurel St
Bus/bicycle interactions	<ul style="list-style-type: none"> • EB SE Marine Dr between Manitoba St and Ontario St • WB SE Marine St at Ross St

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SE Marine Dr, continued



Key Opportunities



20

Signalized intersections along corridor



25

Bus stops below spacing guidelines (>1/3 of total)



18 km

New bus lanes (directional)

Corridor will be developed into BRT/RapidBus, with final design, including exact alignment, to be confirmed. Bus priority measures shown represent near-term solutions.

Map Callouts

- 1 Manage left-turns and other movements to reduce delay to buses exiting and entering Marine Drive Station.
- 2 Reduce delay for EB buses turning left onto Main St. Opportunity to straighten circuitous alignment for SB buses on Main St. turning right onto SE Marine Dr.
- 3 In-lane bus stops can be developed in tandem with the multi-use path planned for the north side of Marine Way. Bus timing points may need to be moved or accommodated.
- 4 NB left turn from Byrnespark Dr to Southridge Dr.

Corridor-Wide Opportunities

- At the 20 signalized intersections, solutions such as signal priority, signal coordination, or timing/phasing adjustments can help reduce delay.
- At the approximately 25 bus stops that are below spacing guidelines (300m) thoughtful removal or relocation could achieve more consistent spacing while maintaining access.
- Up to 18 km of new bus lanes could be added. Different types of lanes are appropriate in different contexts.

Further analysis is needed for all opportunities.

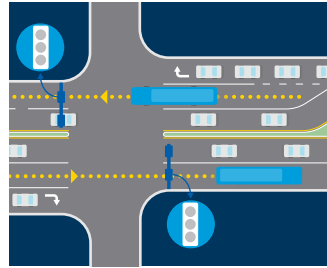
SE Marine Dr, continued

Considerations for Key Solutions

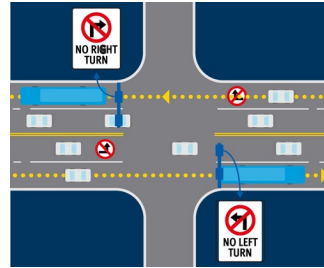


LEFT- AND RIGHT-TURN SOLUTIONS

Where right-of-way permits, turn solutions include dedicated turn pockets. Where right-of-way is limited, solutions include turn restrictions for general traffic but permitted for buses.



Turn pockets separate buses and motor vehicle traffic to reduce time spent by buses queuing behind general traffic. Consider turn pockets when turn volumes are high.

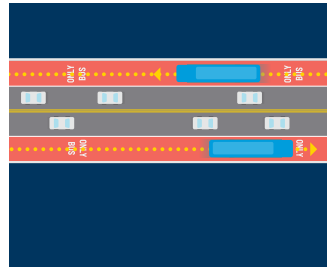


Turn restrictions limit left or right turns for general traffic to reduce delay for buses and other vehicles traveling along a corridor. Buses may be exempted from the restrictions.

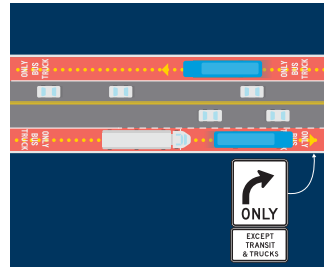


BUS LANES

Bus lanes can be implemented in context-specific solutions that consider traffic conditions, on-street parking and access to business and destinations; and integration with facilities for bicyclists or goods movements.



Curbside bus lanes can be full-time or part-time (peak hours). They are quick to implement but may have conflicts with right turning motor vehicle traffic and require enforcement and curb management to deter parking during operating hours.

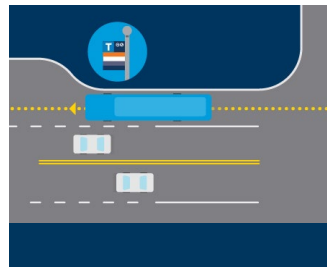


Bus lanes along freight routes can consider implementing such as freight and bus lanes or restrictions on turning movements that accommodate buses and trucks to improve freight mobility and reduce conflict with other modes of travel.



IN-LANE STOPS

In-lane stops (also called “bus bulb” or “floating bus stop”) may be temporary platforms or paved extensions of the sidewalk. Both applications improve passenger visibility for the bus and reduce passenger conflicts with pedestrians on the sidewalks.



KING EDWARD



Corridor Description

- King Edward is a key east-west corridor connecting Burnaby and UBC.
- The corridor connects the Canada and Expo lines, serving the King Edward and Nanaimo stations. A key route along the corridor (25) also serves Brentwood Town Centre Station.
- Key destinations in the surrounding areas include Amazing Brentwood, BCIT, Burnaby Hospital, and UBC.

Quick Facts

Length	19.6 km
Subregions	Vancouver/UBC, Burnaby/ New Westminister
Primary Route	25
All Routes	7, 25, 33

Notes: Corridor ranked #27 for person-delay per km in Fall 2021. Profile area includes an extension to UBC and also extends further east to Willingdon Ave. Ridership is reported for the location with the most cumulative passengers on-board the bus throughout the day; lower end of the range accounts only for routes using the corridor for at least 1 km and upper end of the range reflects all routes.

20
Maximum hourly bus trips per direction

860
Person-hours of delay per day

26,800
Total households (800/km² density)

34%
Low income households

14%
Zero vehicle households

3,800-4,200
Total ridership (daily load in one direction)

50
Bus-hours of delay per day

Demographics within 400m of corridor



King Edward, continued

Corridor Significance

- **King Edward is served by TransLink’s 4th busiest bus route.** Route 25 has 17,500 daily weekday boardings and is the primary route on King Edward. It runs every 4 to 5 minutes all-day.
- **Performance impacts a key east-west bus corridor through Burnaby and Vancouver.** There are no other near-by alternative transit routes for east-west travel through this part of the region. Over a quarter of people using this corridor are traveling by bus. A typical end-to-end trip on King Edward between Willingdon and UBC can vary by over 17 minutes, 2nd highest among profile areas.

Key Challenges for Bus Speed & Reliability

- King Edward is a lengthy corridor with multiple turns on and off heavily used streets prone to congestion.
- There is heavy demand for left and right turns at major and minor intersections. Most major intersections have turn lanes, but minor sections do not. Uncoordinated signals and congestion along parts of the corridor result in lengthy delays at intersections.
- The corridor includes a mix of residential and commercial on-street parking. Buses experience delay from exiting and re-entering the travel lane while navigating on-street parking.
- Parking restrictions along the corridor are not consistent and conflict with peak periods of travel, adding to delays along the corridor in addition to safety concerns.

Location of Common Causes of Bus Delay

Issue	Location(s)
Motorists turning left (or other delay from left-turns)	<ul style="list-style-type: none"> • EB 16 Ave at Alma (contributing to EB delays approaching Dunbar St) • EB/WB 16 Ave at Dunbar St • EB King Edward Ave at Dunbar St • WB Kingsway at King Edward Ave • NB Nanaimo St at Kingsway • EB 22 Ave at Rupert St • EB 22 Ave at Boundary Rd • WB Kincaid St at Boundary Rd • WB Kincaid St at Gilmore Way
Motorists turning right (or other delay from right-turns)	<ul style="list-style-type: none"> • SB/NB Dunbar St at 16 Ave • EB/WB King Edward Ave at Arbutus St • EB King Edward Ave at Granville St • EB/WB King Edward Ave at Oak St • WB King Edward Ave at Cambie St • EB/WB King Edward Ave at Main St • EB King Edward Ave at Fraser St • EB/WB King Edward Ave at Knight St • EB/WB Kingsway at Victoria Dr • EB/WB 22 Ave at Rupert St • EB 22 Ave at Boundary Rd • WB Kincaid St at Boundary Rd • WB Kincaid St at Gilmore Way

King Edward, continued

Issue	Location(s)
Roadway congestion	<ul style="list-style-type: none"> • EB/WB 16 Ave at Dunbar St • WB King Edward Ave at Macdonald St • EB/WB King Edward Ave at Arbutus St • EB King Edward Ave from Cypress St to Granville St • EB King Edward Ave from Hudson St to Oak St • WB King Edward Ave at Oak St • WB King Edward Ave at Cambie St • EB King Edward Ave from Ontario St to Fraser St • WB King Edward Ave at Main St • EB/WB between King Edward Ave at Inverness St and Kingsway at Nanaimo St • SB Nanaimo St at Nanaimo Station • EB/WB 22 Ave at Rupert St • EB 22 Ave at Boundary Rd • WB Kincaid St at Boundary Rd • WB Kincaid St at Gilmore Way
Re-entering traffic from bus stops	<ul style="list-style-type: none"> • EB/WB 16 Ave at Dunbar St • WB King Edward Ave at Macdonald St • WB King Edward Ave at Arbutus St • EB King Edward Ave at Oak St • WB King Edward Ave at Cambie St • EB/WB King Edward Ave at Main St • EB/WB between King Edward Ave at Inverness St and Kingsway at Nanaimo St • SB Nanaimo St at Nanaimo Station • WB 22 Ave at Rupert St
Location of bus stops	<ul style="list-style-type: none"> • EB King Edward Ave at Arbutus St
Short spacing between bus stops	<ul style="list-style-type: none"> • EB/WB King Edward Ave at Arbutus St • Note: A bus stop consolidation project was already completed on Route 25
Pedestrian movements (including pedestrian signals)	<ul style="list-style-type: none"> • EB/WB 16 Ave at Dunbar St • WB King Edward Ave at Macdonald St • EB/WB King Edward Ave at Arbutus St • WB King Edward Ave at Granville St • EB/WB King Edward Ave at Oak St • WB King Edward Ave at Cambie St/King Edward Station • EB/WB King Edward Ave at Main St • EB/WB King Edward Ave at Knight St • EB/WB Kingsway at Victoria Dr • EB/WB Kingsway at Nanaimo St • EB/WB 22 Ave at Rupert St • EB 22 Ave at Boundary Rd • WB Kincaid St at Boundary Rd
Uncoordinated traffic signals	<ul style="list-style-type: none"> • EB 16 Ave at Alma St • EB 16 Ave at Dunbar St • EB King Edward Ave at Granville St • EB/WB King Edward Ave at Oak St • EB King Edward Ave at Main St • EB/WB King Edward Ave at Knight St • EB Kingsway at Victoria Dr • NB/SB Kingsway at Nanaimo St • SB Nanaimo St at Nanaimo Station • WB 22 Ave at Rupert St • EB 22 Ave at Boundary Rd • WB Kincaid St at Boundary Rd
Bus/bicycle interactions	<ul style="list-style-type: none"> • WB King Edward Ave at Trafalgar St • EB/WB King Edward Ave at Arbutus St • EB King Edward Ave at Cypress St

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King Edward, continued



Key Opportunities



20

Signalized intersections along corridor



40+

Bus stops below spacing guidelines (> 1/3 of total)



20 km

New bus lanes (directional)

Map Callouts

- 1 Extend on-street parking restrictions.
- 2 Extend left-turn lane and left turn signal.
- 3 Create floating bus stops between Quesnel Dr & Angus Dr.
- 4 Add EB queue jump between approximately Gladstone St and Nanaimo St to allow buses to merge across traffic into left-turn lane. Extending the left-turn phase also helps buses turn onto Nanaimo St.
- 5 New left-turn signal for buses turning left from Boundary Rd to Kincaid St.

Corridor-Wide Opportunities

- At the 20 signalized intersections, solutions such as signal priority, signal coordination, or timing/phasing adjustments can help reduce delay.
- At the approximately 40 bus stops that are below spacing guidelines (300m) thoughtful removal or relocation could achieve more consistent spacing while maintaining access.
- Up to 20 km of new bus lanes could be added. Different types of lanes are appropriate in different contexts.

Further analysis is needed for all opportunities.

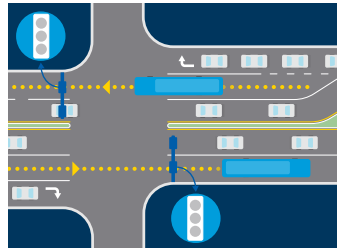
King Edward, continued

Considerations for Key Solutions



LEFT- AND RIGHT-TURN SOLUTIONS

Where right-of-way permits, turn solutions include dedicated turn pockets. Where right-of-way is limited, solutions include turn restrictions for general traffic but permitted for buses.

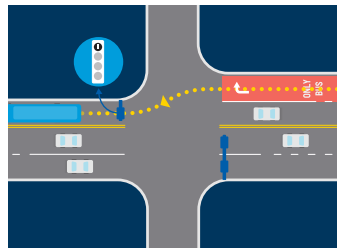


Turn pockets separate buses and motor vehicle traffic to reduce time spent by buses queuing behind general traffic. Consider turn pockets when turn volumes are high.



QUEUE JUMPS AND APPROACH LANES

Queue jumps and approach lanes should be implemented strategically and in combination with intersection operations and turn solutions. They are typically implemented when the right-of-way is too limited to create a whole bus lane.

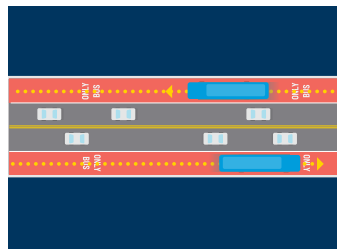


Queue jump in right-turn lane or BAT lane without a receiving lane. A specialized **transit signal** and / or phase is required to help the bus transition back into traffic.



BUS LANES

Bus lanes can be implemented in context-specific solutions that consider traffic conditions, on-street parking and access to business and destinations; and integration with facilities for bicyclists or goods movements.

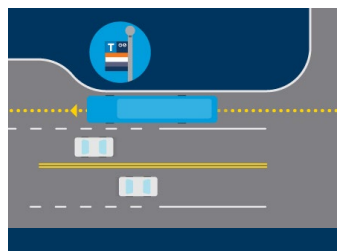


Curbside bus lanes can be full-time or part-time (peak hours). They are quick to implement but may have conflicts with right turning motor vehicle traffic and require enforcement and curb management to deter parking during operating hours.



IN-LANE STOPS

In-lane stops (also called “bus bulb” or “floating bus stop”) may be temporary platforms or paved extensions of the sidewalk. Both applications improve passenger visibility for the bus and reduce passenger conflicts with pedestrians on the sidewalks.



QUEENSBOROUGH BRIDGE / HWY 91A

Corridor Description

- Queensborough Bridge connects the New Westminster neighbourhood of Queensborough (located on Lulu Island) with the main portion of New Westminster across the Fraser River.
- The bridge provides important connections between Burnaby / New Westminster and Richmond via the the East-West Connector and Delta/Surrey via the Alex Fraser Bridge.
- Services access the Queensborough Bridge from Eighth and Sixth Avenues in New Westminster and from Ewen Avenue in Queensborough.
- The bridge provides access to the 22nd Street station on the Expo Line for Annacis Island, Queensborough, and Hamilton.

Quick Facts

Length	4.5 km
Subregion	Burnaby/New Westminster
Primary Routes	104, 340, 388, 410, 418
All Routes	100, 101, 104, 128, 155, 340, 388, 410, 418

Notes: Corridor ranked #32 for person-delay per km in Fall 2021. Profile area is slightly different from the corridor. Ridership is reported for the location with the most cumulative passengers on-board the bus throughout the day; lower end of the range accounts only for routes using the corridor for at least 1 km and upper end of the range reflects all routes.



69

Maximum hourly bus trips per direction



190

Person-hours of delay per day



2,400

Total households (300/km² density)



29%

Low income households



8%

Zero vehicle households

Demographics within 400m of corridor

9,700-13,500

Total ridership (daily load in one direction)

12

Bus-hours of delay per day



Queensborough Bridge / Hwy 91A, continued

Corridor Significance

- **The Queensborough Bridge provides an important connection between New Westminster, Richmond, Surrey, and Langley.** During weekday peak hours, Queensborough Bridge carries a bus every 2 minutes.

Key Challenges for Bus Speed & Reliability

- Major delays due to high volume of vehicles accessing different major roadways during peak periods such as the Queensborough Bridge and Stewardson Way. Most of the delays are caused by congestion at the Highway 91A on and off ramps. In addition to accessing the highway, stop locations near the highway entrance cause significant delays when re-entering traffic after serving the bus stop.
- Additional delays are caused by right turn movements along 8 Avenue where intersections are not signalized.

Location of Common Causes of Bus Delay

Issue	Location(s)
Motorists turning left (or other delay from left-turns)	<ul style="list-style-type: none"> • NB 6 Ave at 18 St • NB 8 Ave at 21 St • NB/SB Howes St at Ewen Ave • SB 8 Ave at 20 St
Motorists turning right (or other delay from right-turns)	<ul style="list-style-type: none"> • NB Hwy 91A at Howes St • NB 8 Ave between 21 and 22 St • NB 8 Ave at 18 St • SB 8 Ave between 19 St and 20 St • SB Howes St at Ewen Ave
Roadway congestion	<ul style="list-style-type: none"> • NB/SB Hwy 91A at Howes St • NB/SB Howes St at Ewen Ave • NB/SB 8 Ave at 20 St
Re-entering traffic from bus stops	<ul style="list-style-type: none"> • NB Howes St at Ewen Ave • NB/SB Hwy 91A at Howes St • NB 8 Ave at 20 St • SB 8 Ave between 18 St and 20 St
Short spacing between bus stops	<ul style="list-style-type: none"> • NB Howes St at Ewen Ave
Pedestrian movements (including pedestrian signals)	<ul style="list-style-type: none"> • NB 6 Ave at 18 St • NB/SB 8 Ave at 20 St • NB 8 Ave at 18 St • SB 8 Ave at 22 St • SB Ewen Ave at Howes St
Uncoordinated traffic signals	<ul style="list-style-type: none"> • NB Hwy 91A at Howes St
HOV or bus-only lane violations	<ul style="list-style-type: none"> • NB 8 Ave at 19 St • SB 8 Ave at 20 St
Pedestrian access and/or safety	<ul style="list-style-type: none"> • NB 22nd Street Station
Bus/bicycle interactions	<ul style="list-style-type: none"> • NB 22nd Street Station • NB 6 Ave at 18 St

Queensborough Bridge / Hwy 91A, continued

Potential Solutions to Address Bus Speed and Reliability Issues

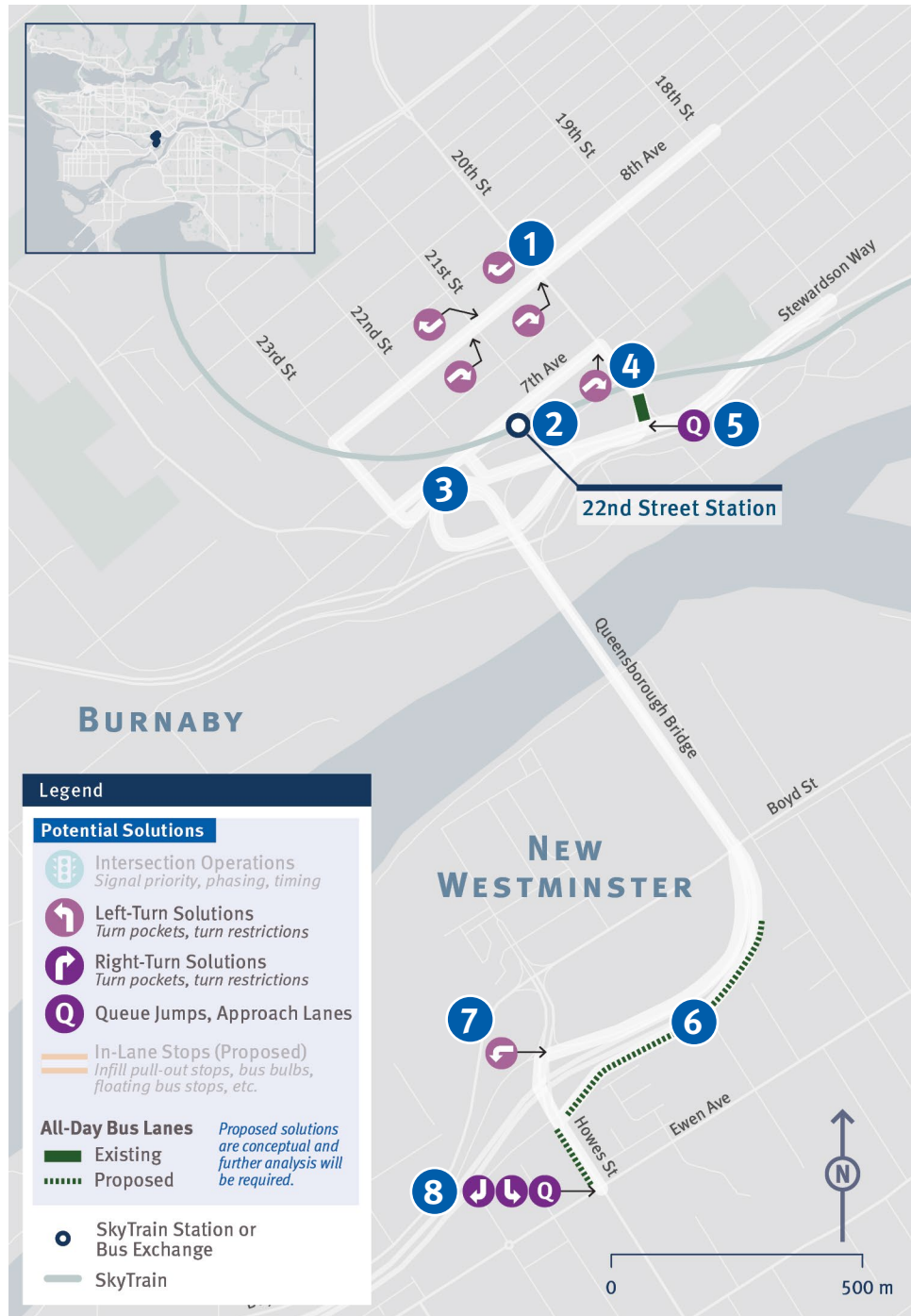
Map Callouts

- 1 Convert parking into right turn lanes.
- 2 Improve right-turn for buses turning from 7th Ave to 20th St
- 3 Opportunity to shorten circuitous route by providing more direct bus-only access between Queensborough Bridge and 22nd Street Station.
- 4 Existing SB approach lane/ dedicated right-turn for buses; extend length of lane if insufficient to clear queued vehicles.
- 5 Queue jump westbound 6th Ave at 20th St.
- 6 Create NB bus-only shoulder lane as right-of-way permits, starting from existing pull-out stop.
- 7 Create transit approach lane for buses turning left or going straight.
- 8 Turn management and/or queue jump for buses turning left and right.

Corridor-Wide Opportunities

- At the 4 signalized intersections, solutions such as signal priority, signal coordination, or timing/phasing adjustments can help reduce delay.
- At the approximately 8 bus stops that are below spacing guidelines (300m) thoughtful removal or relocation could achieve more consistent spacing while maintaining access.
- Less than 1 km of new bus lanes could be added. Different types of lanes are appropriate in different contexts.

Further analysis is needed for all opportunities.



Key Opportunities



4

Signalized intersections along corridor



8

Bus stops below spacing guidelines (50% of total)



< 1 km

New bus lanes (directional)



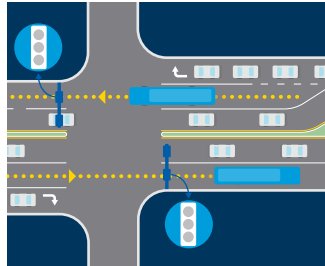
Queensborough Bridge / Hwy 91A, continued

Considerations for Key Solutions



LEFT- AND RIGHT-TURN SOLUTIONS

Where right-of-way permits, turn solutions include dedicated turn pockets. Where right-of-way is limited, solutions include turn restrictions for general traffic but permitted for buses.

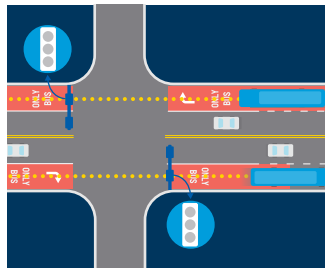


Turn pockets separate buses and motor vehicle traffic to reduce time spent by buses queuing behind general traffic. Consider turn pockets when turn volumes are high.



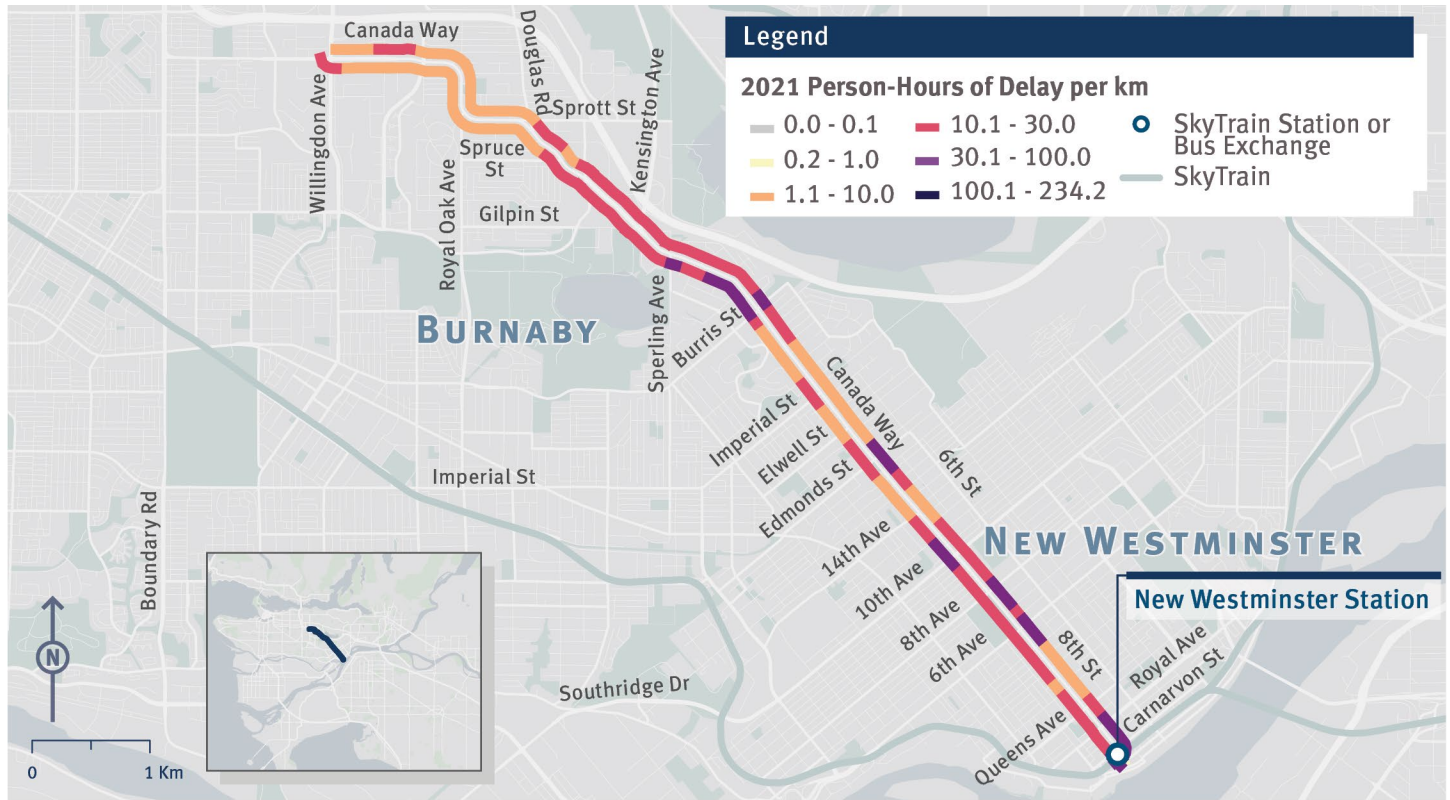
QUEUE JUMPS AND APPROACH LANES

Queue jumps and approach lanes should be implemented strategically and in combination with intersection operations and turn solutions. They are typically implemented when the right-of-way is too limited to create a whole bus lane.



Queue jumps can be implemented **in the right-turn lane or BAT Lane**. Signal priority is not required but may be complementary.

CANADA WAY



Corridor Description

- The Canada Way / Eighth Street corridor connects New Westminister with Burnaby and the BC Institute of Technology.
- Route 123 serves the entire corridor with frequent service, connecting Brentwood Town Centre and the Millennium Line in Burnaby (just beyond the map area) with the Expo Line’s New Westminister station.

Quick Facts

Length	9.6 km
Subregion	Burnaby/New Westminister
Primary Route	123
All Routes	105, 123, 133, 144

Notes: Corridor ranked #37 for person-delay per km in Fall 2021. Ridership is reported for the location with the most cumulative passengers on-board the bus throughout the day; lower end of the range accounts only for routes using the corridor for at least 1 km and upper end of the range reflects all routes.



28

Maximum hourly bus trips per direction



270

Person-hours of delay per day



17,200

Total households (700/km² density)



38%

Low income households



18%

Zero vehicle households

2,200-4,200

Total ridership (daily load in one direction)

23

Bus-hours of delay per day

Demographics within 400m of corridor



Canada Way, continued

Corridor Significance

- **Canada Way is an important transit street.** During weekday peak hours, Canada Way is served by a bus every 5 minutes. The primary route along the corridor, Route 123, runs every 9 to 10 minutes and has 5,000 boardings every weekday—the 4th highest in Burnaby/New Westminister. Among profile areas, Canada Way ranks fifth in terms of the share of low-income households.
- **Bus performance impacts reliability for people riding the bus.** A typical end-to-end trip on Canada Way between New Westminister Station and Willingdon Ave can vary by over 10 minutes, 6th highest among profile areas relative to the total average travel time.
- **Transit priority improvements are planned on Canada Way.** A RapidBus route is planned for Canada Way in TransLink's *10-Year Priorities*, connecting New Westminister Station to Brentwood Town Centre Station.

Key Challenges for Bus Speed & Reliability

- Major delays in this corridor are mostly caused by severe roadway congestion during peak periods on weekdays. In addition to congestion, delays are mainly at stop locations that require the bus to re-enter traffic or to pick up/drop off passengers at closely spaced stops along Canada Way and 8 Street.
- The 8 Street portion of the corridor is very constrained between Royal Avenue and 12 Avenue, with one general purpose lane and parking on both sides of the street. Parking along the street requires the bus to exit and re-enter traffic when leaving New Westminister Station.

Location of Common Causes of Bus Delay

Issue	Location(s)
Motorists turning left (or other delay from left-turns)	<ul style="list-style-type: none"> • NB 8 St at Royal Ave • NB/SB 8 St at 8 Ave • NB 8 St at 10 Ave • SB Canada Way at Kincaid St • SB Canada Way at Ulster St • SB Canada Way at 12 Ave • SB 8 St at Queens Ave
Motorists turning right (or other delay from right-turns)	<ul style="list-style-type: none"> • NB/SB 8 St at Royal Ave • NB 8 St at 6 Ave • NB 8 St at 7 Ave • NB Canada Way at Wedgewood St • NB Canada Way between Sperling Ave and Norland Ave • SB Canada Way between Kincaid St and Deer Lake Parkway • SB Canada Way between Ledger Ave and Stanley Cres • SB Canada Way at Imperial St • SB Canada Way at Rosewood St • SB Canada Way at 12 Ave • SB 8 St at Queens Ave
Roadway congestion	<ul style="list-style-type: none"> • NB/SB New Westminister Station • NB/SB 8 St at 5 Ave • NB 8 St at between 7 Ave and 10 Ave • NB Canada Way at 18 Ave • NB Canada Way between Burris St and Ledger Ave • SB Canada Way between Kincaid St and Deer Lake Pkwy • SB Canada way between Century Pkwy and Haszard St • SB Canada Way at Morley Dr • SB Canada Way at Rosewood St • SB Canada Way at 12 Ave • SB 8 St at 10 Ave

Canada Way, continued

Issue	Location(s)
Closely spaced driveways or other roadways	<ul style="list-style-type: none"> • NB/SB Canada Way between 12 Ave and 14 Ave • NB Canada Way at Stanley St • NB Canada Way at Burris St • SB Canada Way at Willingdon Ave • SB Canada Way at Beta Ave • SB Canada Way between Hardwick St and Kincaid St • SB Canada Way at Ledger Ave • SB Canada Way between Century Pkwy and Sperling Ave • SB Canada Way at Rugby St • SB Canada Way at Imperial St
Re-entering traffic from bus stops	<ul style="list-style-type: none"> • NB 8 St at Queens Ave • NB 8 St at 3 Ave • NB 8 St at 5 Ave • NB/SB 8 St at 7 Ave • NB Canada Way at 12 Ave • NB Canada Way at Burris St • NB Canada Way at Ledger Ave • SB Canada Way at Willingdon Ave • SB Canada Way between Century Pkwy and Kincaid St • SB Canada Way at Rosewood St • SB 8 St at 4 Ave
Location of bus stops	<ul style="list-style-type: none"> • NB Canada Way at 12 Ave • NB Canada Way at 18 Ave • SB Canada Way at Willingdon Ave
Short spacing between bus stops	<ul style="list-style-type: none"> • NB Canada Way between 16 Ave and Wedgewood St • NB Canada Way at Elwell St • NB Canada Way at Imperial St • SB Canada Way at Deer Lake Pkwy • SB Canada Way at Ulster St • SB Canada Way between Edmonds St and 18 Ave • SB Canada Way at 12 Ave
Pedestrian movements (including pedestrian signals)	<ul style="list-style-type: none"> • NB New Westminster Station • NB 8 St at Royal Ave • NB 8 St at 3 Ave • NB 8 St at 4 Ave • NB/SB 8 St at 7 Ave • NB/SB Canada Way between 10 Ave and 12 Ave • NB Canada Way at 18 Ave • NB Canada Way between Ledger Ave and Norland Ave • SB Canada Way at Hardwick St • SB Canada Way at Rosewood St
Uncoordinated traffic signals	<ul style="list-style-type: none"> • NB 6 St at Carnarvon St • SB Canada Way at Kincaid St • SB Canada Way at Haszard St • SB Canada Way at Morley Dr
Schedules and/or timepoints	<ul style="list-style-type: none"> • NB 8 St at 8 Ave
Pedestrian access and/or safety	<ul style="list-style-type: none"> • NB 8 St at 7 Ave

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Canada Way, continued



Key Opportunities



15

Signalized intersections along corridor



30+

Bus stops below spacing guidelines (50+% of total)



11 km

New bus lanes (directional)

Map Callouts

- 1 Advance buses through high volume WB right-turn lane at Willingdon Ave.
- 2 Ensure the NB left-turn lane at Norland Ave and the NB dual-right turn lanes at Kensington Ave do not exceed capacity, thereby delaying buses at these intersections.
- 3 Investigate limiting left-turn movements to/from minor intersections to prevent impacts to traffic flow.
- 4 Create left-turn pocket(s) and/or Right-Turn Except Bus lane (NB)
- 5 Create in-lane bus stops to allow buses to stop directly in the travel lane in front of the bus stop. Bus bulbs or island bus stops may be used to create in-lane stops, and may also require changes to intersection operations and turn management.

Corridor-Wide Opportunities

- At the 15 signalized intersections, solutions such as signal priority, signal coordination, or timing/phasing adjustments can help reduce delay.
- At the approximately 30 bus stops that are below spacing guidelines (300m) thoughtful removal or relocation could achieve more consistent spacing while maintaining access.
- Up to 11 km of new bus lanes could be added. Different types of lanes are appropriate in different contexts.

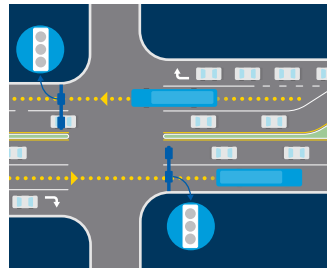
Further analysis is needed for all opportunities.

Canada Way, continued

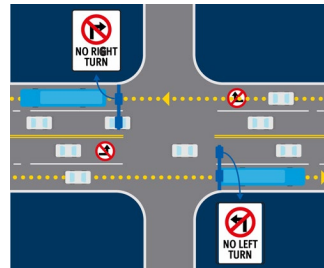
Considerations for Key Solutions

LEFT- AND RIGHT-TURN SOLUTIONS

Where right-of-way permits, turn solutions include dedicated turn pockets. Where right-of-way is limited, solutions include turn restrictions for general traffic but permitted for buses.



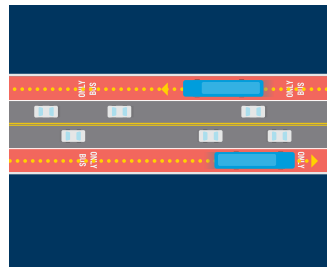
Turn pockets separate buses and motor vehicle traffic to reduce time spent by buses queuing behind general traffic. Consider turn pockets when turn volumes are high.



Turn restrictions limit left or right turns for general traffic to reduce delay for buses and other vehicles traveling along a corridor. Buses may be exempted from the restrictions.

BUS LANES

Bus lanes can be implemented in context-specific solutions that consider traffic conditions, on-street parking and access to business and destinations; and integration with facilities for bicyclists or goods movements.



Curbside bus lanes can be full-time or part-time (peak hours). They are quick to implement but may have conflicts with right turning motor vehicle traffic and require enforcement and curb management to deter parking during operating hours.

IN-LANE STOPS

In-lane stops (also called “bus bulb” or “floating bus stop”) may be temporary platforms or paved extensions of the sidewalk. Both applications improve passenger visibility for the bus and reduce passenger conflicts with pedestrians on the sidewalks.

