

The logo for the Student Society of UBC Vancouver (ams) is a light blue shield. Inside the shield, the letters "ams" are written in a lowercase, serif font. Below the shield, there is a stylized sunburst or starburst icon with a yellow center and blue rays.

ams

Transit Policy Report

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Student Society
of UBC Vancouver



Introduction

In this report, data from Translink's *Bus Service Performance Reviews*¹ and UBC Vancouver's *Transportation Status Reports* from 2012 to 2015 are used to identify the areas of greatest need for transit advocacy from the AMS. Translink publishes the *Bus Service Performance Review* annually and these reviews are used to record ridership on buses, trains and Seabuses during the fall season to analyze efficiency and identify areas for improvement to the transit system. UBC Campus and Community Planning conducts annual data collections during the fall for the *Transportation Status Reports* to analyze the different modes of transportation students, faculty and staff, and visitors are using to travel to and from campus. These modes of transportation include single occupant vehicles, carpools, bicycles, pedestrians, truck and motorcycles, and public transit.

Ridership data of all bus routes travelling to and from UBC Vancouver, as well as advocacy recommendations to support the AMS Transit Advocacy policy are included in this document. The following are the current bus routes that serve UBC Vancouver:

- 4 Downtown
- 9 Alma
- 14 Hastings
- 25 Brentwood Station
- 33 29th Avenue Station
- 41 Joyce Station
- 43 Joyce Station Express
- 49 Metrotown Station
- 84 VCC-Clark Station Express
- 99 Broadway B-Line
- 480 Bridgeport Station

The population is growing annually both in Metro Vancouver and at UBC Vancouver. Therefore, there is a need for the AMS to adopt a transit advocacy policy that will not only benefit UBC's commuters by advocating for improvements to transit routes servicing the campus directly but that will also benefit Metro Vancouver as a whole in recognition UBC's connection to the region. The AMS should strive to promote efficient, sustainable transportation, as well as consider how the Mayors' Council 10 Year Vision will impact the Society's plans for transit advocacy.

10 Year Vision by the Mayors' Council

Phase One of the 10 Year Vision was approved in 2016 and outlines the improvements to infrastructure and public transportation to decrease congestion on Metro Vancouver's roads and overcrowding on its transit system.² Phase One includes the following plans:

- 10% increase in bus service and 15% in HandyDART service
- New B-Line routes on Fraser Highway, Lougheed Highway, Marine Drive, 41st Avenue and Hastings Street
- Increase in frequency of service on the Canadeline, Expo, Millennium, and Evergreen Lines
- 1 new SeaBus and increase SeaBus service to every 15 minutes
- New funding for operations, maintenance, and expansion of the Major Road Network
- New funding to improve pathways around transit, crosswalks, and pedestrian traffic signals

¹ Note that in 2015, Translink expanded the scope of this report to include SeaBus, SkyTrain and West Coast Express (as well as bus) and renamed it as the *Transit Service Performance Review*.

² [Phase One of the Ten Year Vision: 2017-2026 Investment Plan](#)



- New funding for new bike lanes and multi-use paths

These transit improvements benefit both the UBC Community and Metro Vancouver as a whole and will help to strengthen Metro Vancouver's existing transportation infrastructure to keep up with the region's substantial population growth. As such, AMS transit advocacy should support these plans.

Population and Employment Growth

Translink's Bus Performance Reviews indicate that the population and places of employment within 400 meters of bus routes stayed relatively constant until 2014 to 2015 when it jumped significantly in the thousands, as outlined in *Figure 1* and *Figure 2*. Table 1 also shows the number of residences and employment within 400 meters of the bus routes in detail.

The population and employment growth can likely be attributed to the construction of new multi-level residential buildings and office spaces.

Figure 1: Population within 400 Meters of Bus Route
(Data Source: 2014, 2015 Translink Bus Performance Reviews)

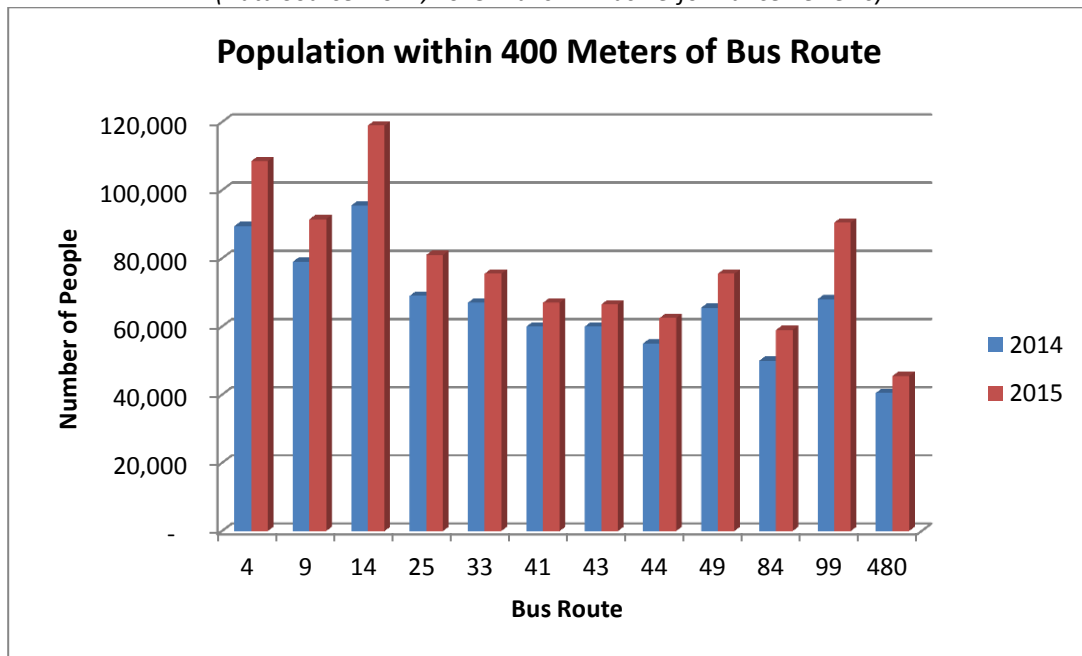


Figure 2: Places of Employment within 400 Meters of Bus Route
(Data Source: 2014, 2015 Translink Bus Performance Reviews)

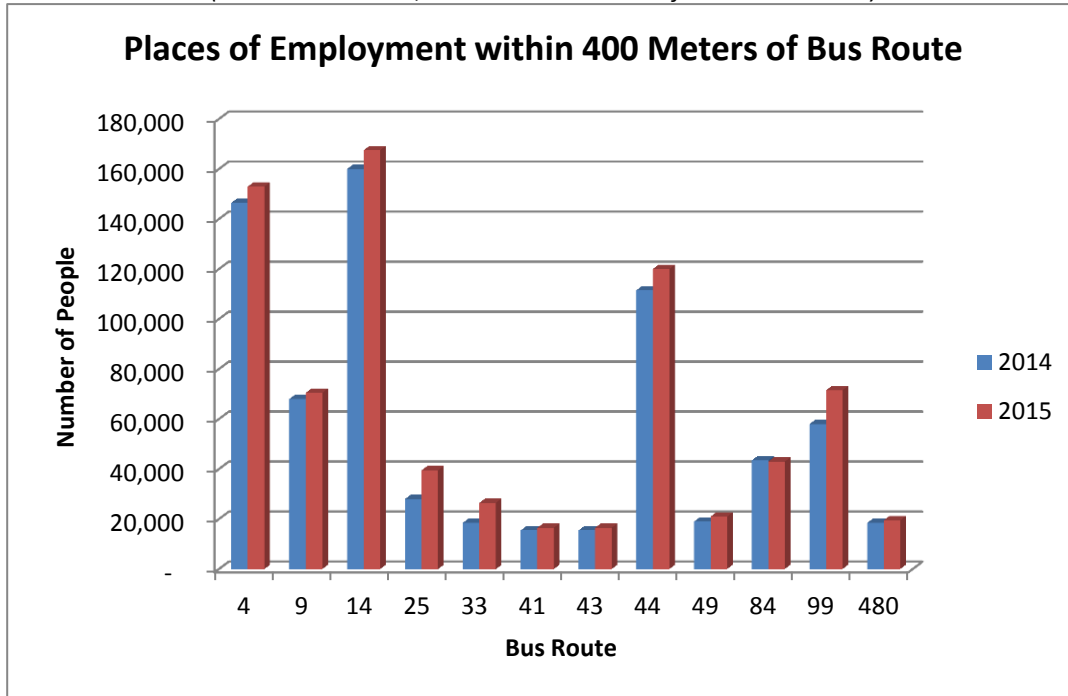


Table 1: Summary of population and employment within 400 meters of bus routes
(Data Source: 2014, 2015 Translink Bus Performance Reviews)

Route	Destination	Population within 400 m		Employment within 400 m	
		2014	2015	2014	2015
4	Downtown	89,500	108,500	146,500	153,000
9	Alma	79,000	91,500	68,000	70,500
14	Hastings/Downtown	95,500	119,000	160,000	167,500
25	Brentwood Stn	69,000	81,000	28,000	39,500
33	29th Avenue Stn	67,000	75,500	18,500	26,500
41	Joyce Stn	60,000	67,000	15,500	16,500
43	Joyce Stn	60,000	66,500	15,500	16,500
44	Downtown	55,000	62,500	111,500	120,000
49	Metrotown	65,500	75,500	19,000	21,000
84	VCC-Clark Stn	50,000	59,000	43,500	43,000
99	Broadway B-Line	68,000	90,500	58,000	71,500
480	Bridgeport	40,500	45,500	18,500	19,500



While Translink has not yet released its 2016 data, the Real Estate Board of Canada forecasts an increase of 30,000 Metro Vancouver residents annually resulting in a projection of 1.2 million new residents by 2041.³ Assuming this population projection holds true, Metro Vancouver will require approximately 574,000 housing units before 2041. This will lead to an increase of population density in metropolitan areas and heavy reliance on public transit and existing roads for transportation.

Increased Ridership

With the increase of residences and employment along the bus routes comes a subtle increase in ridership on some routes, but also a decrease in others. *Table 2* summarizes Translink’s annual and average weekday boardings. Fluctuations in boardings can be due to re-routing of buses due to construction, ridership utilizing another bus route, decrease or increase in frequency of bus services, or ridership switching to a different mode of transportation.

Table 2: Summary of Annual and Average Daily Boardings
(Data Source: 2012, 2013, 2014, 2015 Translink Bus Performance Reviews)

Route	Destination	Annual Boardings				Average Daily Boardings (M-F)			
		2012	2013	2014	2015	2012	2013	2014	2015
4	Downtown	3,147,000	2,648,000	2,691,000	2,937,000	9,200	6,950	7,350	7,500
9	Alma	8,806,000	8,464,000	8,048,000	7,381,000	27,200	26,650	25,150	22,950
14	Hastings/Downtown	5,099,000	5,131,000	5,257,000	5,315,000	15,050	15,150	15,700	15,700
25	Brentwood Stn	6,453,000	6,545,000	6,651,000	6,970,000	20,550	20,950	21,400	22,300
33	29th Avenue Stn	2,088,000	2,147,000	2,124,000	2,268,000	7,000	7,250	7,100	7,550
41	Joyce Stn	8,590,000	8,543,000	8,447,000	8,803,000	25,550	25,400	25,150	26,200
43	Joyce Stn	1,457,000	1,391,000	1,406,000	1,367,000	5,750	5,550	5,600	5,450
44	Downtown	1,599,000	1,488,000	1,441,000	1,377,000	6,300	5,950	5,750	5,500
49	Metrotown	6,444,000	6,662,000	6,967,000	7,268,000	20,350	21,300	22,350	23,350
84	VCC-Clark Stn	2,316,000	2,276,000	2,415,000	2,596,000	8,200	8,100	8,550	9,250
99	Broadway B-Line	16,897,000	17,054,000	17,325,000	17,187,000	54,100	55,000	55,350	55,500
480	Bridgeport	1,076,000	1,031,000	1,035,000	975,000	4,250	4,100	4,150	3,900
Total Amount of Boardings		63,972,000	63,380,000	63,807,000	64,444,000	203,500	202,350	203,600	205,150

While Translink’s data indicates that the total number of boardings from 2014 to 2015 increased, UBC Vancouver’s data states otherwise. The total amount of boardings increased from 70,361 to 72,647 boardings from 2012 to 2013, but the boardings decrease to 67,542 in 2015, depicted in red in *Table 3*. It is important to note that UBC’s Transportation Status Report collects data on transit ridership through manual observation over one day from 6:00 am to 4:30 pm whereas Translink uses an automated passenger counter placed above the door of a bus to record bus boardings and alightings. For this reason, these two data sets should be considered separately rather than compared to each other.

³Real Estate Board of Canada, [“Population Growth Takes Off”](#)



Table 3: Summary of Average Daily Boardings Travelling to and From UBC Vancouver
(Data Source: 2012, 2013, 2014, 2015 UBC Vancouver Transportation Status Report)

Route	Destination	Average Daily Boardings (M-F)			
		2012	2013	2014	2015
4	Downtown	3010	3305	2885	2920
9	Alma	1491	1623	1543	1234
14/N17	Hastings/Downtown	4280	5105	3837	3931
25	Brentwood Stn	7890	6040	7757	6662
33	29th Avenue Stn	4860	3957	4140	4195
41	Joyce Stn	6310	7058	8249	7185
43	Joyce Stn	3520	3355	2921	3599
44	Downtown	4700	3744	5204	5146
49	Metrotown	3220	4329	5492	6129
84	VCC-Clark Stn	5200	8217	5680	5710
99	Broadway B-Line	25800	25647	20030	19780
480	Bridgeport	4360	5372	5837	4982
Total Amount of Boardings		70361	72647	69738	67542

Table 4: Weekday Person Trips to and from UBC Vancouver on different travel modes
(Data Source: 2012, 2013, 2014, 2015 UBC Vancouver Transportation Status Report)

Travel Mode	Person Trips			
	2012	2013	2014	2015
Single occupant Vehicle (SOV)	39,000	40,200	44,300	40,100
Carpool / Vanpool (HOV)	19,400	18,800	11,300	20,600
Transit	75,600	78,300	74,000	72,000
Bicycle	1,800	2,400	1,700	3,500
Pedestrian	1,000	1,000	800	1,800
Truck & Motorcycle	1,400	1,600	1,500	1,400
Total Person Trips:	138,200	142,300	133,600	139,400

Commuters travelling to and from UBC utilize the 99 B-Line the most, followed by the 41, 25, 49, 84 bus routes. Although the Phase One plan does not address all routes travelling to and from UBC, the Mayors' Council has addressed these 5 bus routes that undergo the most overcrowding in the region with the following improvements:

- 25 Route: additional trips during weekday and Saturday morning and evening peak hours by increasing frequency to up to every 4 minutes
- 43 Express: extend its service throughout weekdays and weekends where it currently operates during weekday peak hours. To reduce overcrowding on the 41 route, the 43 Express will have additional trips during peak hours and will eventually be consolidated with the new B-Line route on the 41st Avenue Corridor.

- 49 Route: additional trips during weekday peak hours, increasing frequency to up to every 5 minutes
- 84 Express: additional trips during weekday peak hours, increasing frequency to up to every 6 minutes
- 99 B-Line: additional trips during weekday midday and evening

The AMS has already expressed support for these improvements, through public consultation on the Phase One plan, as they will directly benefit students (as well as staff and faculty) commuting to the UBC Vancouver campus. Ongoing advocacy surrounding Phase One should monitor the implementation of these improvements and evaluate effectiveness.

One potential area for AMS advocacy is in regards to the 33 bus route. This route, which serves UBC, does not have any proposed improvements in the 10 Year Vision and has shown growth in both annual and average daily boardings. It is also a potential route of concern due to City of Vancouver’s *Cambie Corridor Plan*, where an immense amount of new development is proposed for the region.

The Cambie Corridor and 33 Bus Route

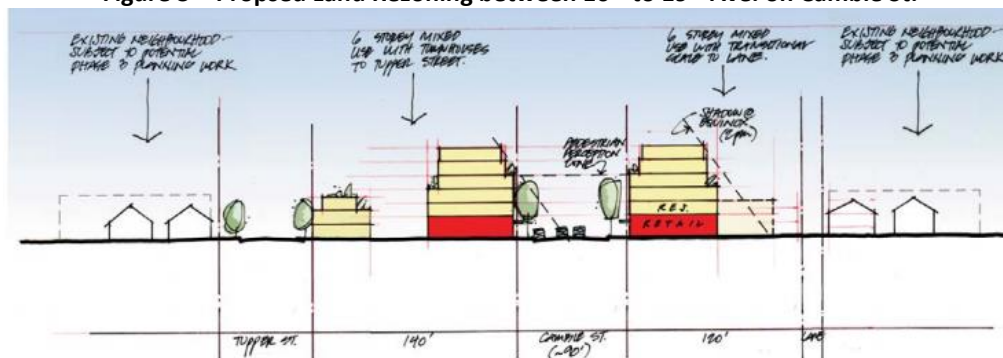
Phase One of the Ten Year Vision does not address improvements for the 33 bus route. This is a concern as the City of Vancouver approved land rezoning along the Cambie Corridor in May 2011, allowing for multi-story buildings that will include businesses and new residences⁴ to be built in the surrounding neighbourhoods. Based on the *Cambie Corridor Plan*, estimates of population growth indicate that the population in this area could increase from 21,500 in 2011 to approximately 35,000 by 2041. For the purposes of this report, only new developments proposed for the Cambie Corridor along the 33 bus route will be presented.

The following areas are new developments on the Cambie Corridor along the 33 bus route:

Cambie Street: 16th to 19th Avenue (Figure 3)

- Currently the heart of the Cambie Village where it serves as the local shopping centre for groceries, movie theatre, restaurants and other services
- City of Vancouver plans to build 4- to 6-storey mixed-use buildings for new residences and businesses

Figure 3 – Proposed Land Rezoning between 16th to 19th Ave. on Cambie St.



Representative Section: Cambie Street between 17th and 18th Avenue

(Source: *Cambie Corridor Plan* by the City of Vancouver)

⁴ City of Vancouver, [Cambie Corridor Plan](#), (May 2011).

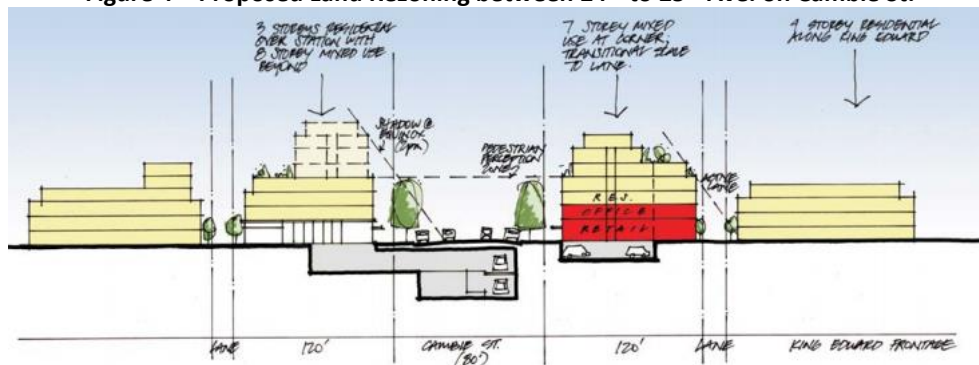
Cambie Street: 19th to 24th Avenue

- The current 4-storey residential buildings will remain untouched to preserve its stable rental housing

Cambie Street: 24th to 25th Avenue (Figure 4)

- City of Vancouver plans to build mixed-use buildings for new residences and businesses of up to 6-storeys, with 8-storey buildings in consideration the proximity to King Edward Avenue

Figure 4 – Proposed Land Rezoning between 24th to 25th Ave. on Cambie St.



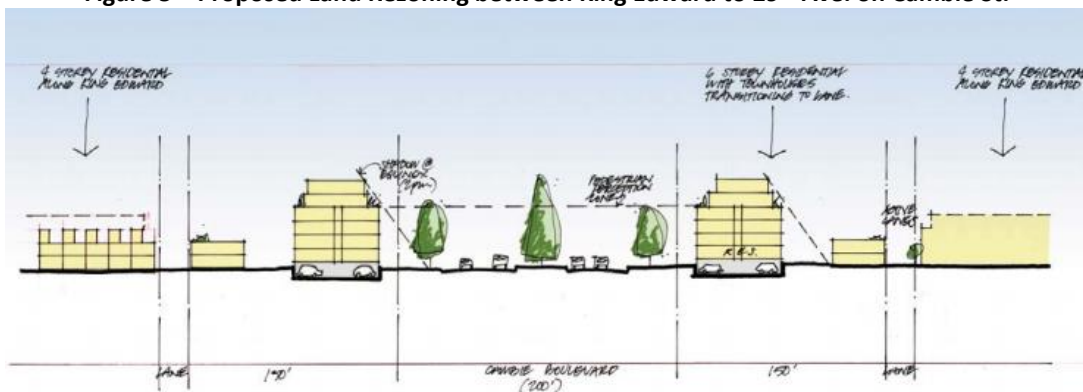
Representative Section: Cambie Street at King Edward Station

(Source: Cambie Corridor Plan by the City of Vancouver)

Cambie Street: King Edward to 29th Avenue (Figure 5)

- Residential buildings are currently in construction, with up to 6-storeys

Figure 5 – Proposed Land Rezoning between King Edward to 29th Ave. on Cambie St.



Representative Section: Cambie Street between King Edward and 26th Avenue

(Source: Cambie Corridor Plan by the City of Vancouver)

The 33 bus route had an additional 100,000 annual boardings from 2014 to 2015, which was serviced with a standard, one car bus. The above examples from the *Cambie Corridor Plan* demonstrate that new developments along the 33 route will result in an increased population density. It can be expected that the demand will continue to increase on the 33 with the construction of additional residences and job creation. Therefore, there will be a need to have additional trips or service of articulated buses along the 33 bus route to keep up with the increasing ridership.



The Broadway Corridor



(Source: *The UBC-Broadway Corridor – Unlocking the Economic Potential* by KPMG⁵)

The Broadway Corridor spans north of 4th Avenue, south of 16th Avenue and east of Commercial-Broadway Station towards UBC. The region holds Metro Vancouver's 2nd largest job sector and the country's second largest hospital facilities, making it one of the busiest areas in the provinces for healthcare, employment and transportation.

The number 4, 9, 14, 84, and 99 bus routes operate along the Corridor and transport an average total of 110,900 passengers daily or 35,416,000 passengers annually as of 2015. Only the 84 Express and 99 B-Line serve as the region's bus rapid transit and are already operating at their capacity, where buses are unable to pick up passengers during peak hours due to overcrowding. Although the Mayors' Council have approved increasing the 84 Express frequency to every 6 minutes and additional trips on the 99 B-Line, adding buses can only solve the capacity issue temporarily. Traffic levels will increase, resulting in increased travel times for commercial vehicles, passenger vehicles and buses. Although the traffic levels along the Corridor will increase over time, implementing Traffic Priority Measures (TPM) can potentially minimize bus travel delays.

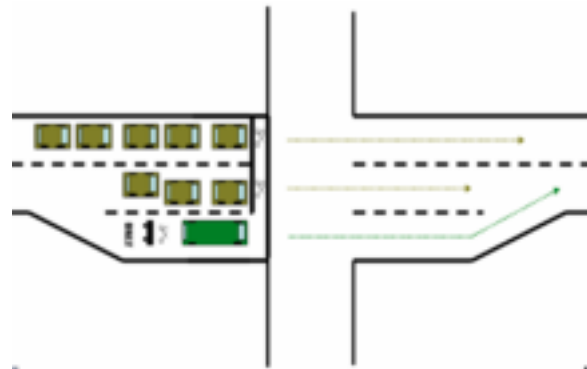
Transit Priority Measures

Transit Priority Measures use designated bus lanes, traffic signals and sensors to allow buses to freely travel through intersections and roadways to minimize travel delays on congested roads. The direct benefit of TPM is an improvement in transit operations by minimizing delays. TPM also have indirect benefits through the decrease of greenhouse gas emissions and reducing traffic congestion by promoting ridership on a more efficient transit system.

There are currently bus lanes at major congested areas along the Broadway Corridor. During morning and afternoon peak hours, parking is prohibited in these areas to give priority to buses travelling through the Corridor. However, traffic congestion has increased over the years, creating bottlenecks in areas where there are no bus lanes and causing travel delays on buses. A possible solution would be to implement a queue jump, where an additional restricted bus travel lane will be built at major signalized intersections (*Figure 5*).

⁵ "The UBC-Broadway Corridor – Unlocking the Economic Potential" by KPMG: <http://vancouver.ca/files/cov/KPMG-UBC-Broadway-Corridor-2013-02-26.pdf>

Figure 5 – Restricted Bus Travel Lane of Queue Jump



(Source: Queue Jump by Wikipedia)

As a bus approaches the intersection, the signal light will stop all traffic and allow the bus to travel through the intersection and freely merge into traffic. This will require not only all signal lights along the Corridor to be actuated, but also corridors travelling north to south, such as Granville St. and Cambie St., to ensure proper movement of traffic. Also, an issue with building the additional travel lane is that most intersections are at its lane capacity where there is only room for the pedestrian sidewalk. To avoid this, this can be simplified by adding a signal at signalized intersections that will notify all traffic to stop then allow buses to travel and merge onto traffic. However, this alternative is still costly, where each queue jump will cost about \$70,000.⁶ Therefore, the City of Vancouver and Translink need to allocate funds and conduct further research into implementing queue jumps along the Broadway Corridor

Tranlink and municipalities have implemented numerous TPM throughout Metro Vancouver such as designated bus lanes along Burrard Street, bus activated traffic signals at bus interchanges, and bus queue jump at intersections. In 2006, the Translink Board of Governors identified the following Vancouver corridors in need of TPM:

- Broadway
- Hastings
- 41st Avenue
- Main Street
- Burrard Street

According to the Mayors' Council's meeting minutes from September 16, 2016, funding transit priority projects is a potential option for system management.⁷ This option could include additional bus lanes and queue jumpers throughout the Lower Mainland as well as conducting feasibility studies in partnership with municipalities. Areas where the implementation will occur was not disclosed, however this presents an area for continued monitoring and a potential opportunity for advocacy for the AMS.

Closing Remarks

It is important to emphasize once more that Metro Vancouver and UBC continue to grow in population and jobs each year, which also continues to increase the demand for public transit. Therefore, the AMS must continue to advocate

⁶ Transit Priority in Metro Vancouver by Translink

⁷ Mayors' Council, [Agenda Package \(Public Meeting\)](#), September 16, 2016.



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for transit improvements throughout the years to ensure that Translink and the Mayors' Council are held accountable for their proposed plans.

With enough data, a potential study on train service and Seabus ridership will benefit the AMS in understanding the number of students, faculty and staff who utilize existing rapid transit systems and where improvements can be made outside of the bus system. Understanding how buses and rapid transit directly affect each other will help identify weaknesses in the transit system as a whole, but that is to be touched on outside the scope of this report.