

**TO:** Mayor Savage and Members of Halifax Regional Council

**SUBMITTED BY:** Original Signed by   
Jacques Dubé, Chief Administrative Officer

**DATE:** July 15, 2020

**SUBJECT:** **Gottingen Street Peak Period Northbound Bus Lane Evaluation**

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## **ORIGIN**

At the August 14, 2018 meeting of Regional Council, the following motion was put and passed:

*“That Halifax Regional Council:*

- 1. Approve detailed design as shown in Attachment B of the staff report dated June 21, 2018;*
- 2. Approve the parking loss mitigation plan as described in Attachment C of the staff report dated June 21, 2018;*
- 3. Direct staff to proceed with implementation of a peak period (7am-9am and 3pm-6pm, Monday to Friday) northbound bus lane on the Gottingen Street corridor;*
- 4. Approve the evaluation methodology as per Attachment E of the staff report dated June 21, 2018 through which the Gottingen Street peak period northbound bus lane will be measured and evaluated one year after implementation; and*
- 5. Direct staff to consider concepts presented in the North End Business Commission correspondence dated August 10, 2018 regarding the parking services business plan.”*

## **LEGISLATIVE AUTHORITY**

Transportation Standing Committee Terms of Reference, section 4 (a) which states: “The Transportation Standing Committee shall oversee and review the Municipality’s Regional Transportation Plans and initiatives, as follows: overseeing HRM’s Regional Transportation Objectives and Transportation outcome Areas”.

Halifax Regional Municipality Charter, subsection 318(2): “In so far as is consistent with their use by the public, the Council has full control over the streets in the Municipality.”

Halifax Regional Municipality Charter, subsection 322(1): “The Council may design, lay out, open, expand, construct, maintain, improve, alter, repair, light, water, clean, and clear streets in the Municipality.”

Motor Vehicle Act, subsection 90 (5) “The traffic authority may (b) mark lanes on street pavement for exclusive traffic by public transit vehicles; (c) exclude from traffic on specified streets or specified portions of streets other than public transit vehicles or vehicles by the traffic authority.”

## **RECOMMENDATION**

It is recommended that Halifax Regional Council:

1. Suspend the rules of procedure under Schedule 7, the Transportation Standing Committee Terms of Reference, of Administrative Order One, the *Procedures of the Council Administrative Order*.
2. Request that the Traffic Authority consider modifying the operational period for the northbound bus lane on Gottingen Street, limiting its enforcement only to the weekday afternoon peak period; and
3. Direct the CAO to continue to monitor the metrics included in the Gottingen Street Monitoring and Evaluation Plan and present the results to the Transportation Standing Committee one year after implementation of the proposed changes as per recommendation number 2.

## **BACKGROUND**

The Halifax Transit *Moving Forward Together Plan* (MFTP), approved by Regional Council in April 2016, identifies Gottingen Street as a critical choke point for transit service that requires transit priority. Based on the results of a January 2018 functional design study (completed by WSP Canada Inc.) that considered multiple design options for the Gottingen Street corridor, staff recommended that the preferred concept – a dedicated, continuous northbound bus lane on Gottingen Street (Cogswell Street to North Street) – be advanced to detailed design and implementation. At its March 6, 2018 meeting, Regional Council directed staff to proceed with detailed design of a time-restricted northbound bus lane on Gottingen Street that is operational during weekday peak periods (7am-9am and 3pm-6pm), and that accommodates time-regulated parking and loading outside of peak periods. ‘Complete streets’ improvements, including the addition of streetscaping elements street trees, benches, and curb extensions were also identified for inclusion in the detailed design.

In April 2018, WSP Canada Inc. was retained to complete detailed design for transit priority and complete streets upgrades on Gottingen Street as described above. The detailed design process – completed collaboratively by staff and the consultant team – included engagement with stakeholders and the public, along with the development of a parking loss mitigation plan and a plan to monitor and evaluate operation of the corridor over a one-year period. On August 14, 2018, Regional Council approved the detailed design, parking loss mitigation plan, and evaluation / monitoring plan for the peak period (7am-9am and 3pm-6pm, Monday to Friday) northbound bus lane on Gottingen Street, and directed staff to implement the project.

In October 2018, construction tender 18-245 was awarded to Dexter Construction Company Limited for the construction of the Gottingen Street northbound transit priority lane and complete streets upgrades. Construction of the transit priority lane commenced in October 2018 and was substantially completed in December 2018.

Following construction, staff continued the monitoring process throughout 2019 by collecting data at regular intervals as per the Monitoring and Evaluation Plan that was approved by Regional Council in August 2018. Due to the COVID-19 pandemic and the major impacts on mobility that have resulted since the provincial state of emergency declaration on March 22, 2020, data collection for the Monitoring and Evaluation Plan was not carried out during the previously scheduled intervals in April and July 2020.

## DISCUSSION

### **Monitoring and Evaluation Plan Results**

The results of the Monitoring and Evaluation Plan are included in Attachment A. The evaluation metrics focused on key areas including transit service, mode share, road safety, on-street parking, the street environment, and the impact on businesses. Data collection was completed according to a prescribed schedule that provided pre-implementation baseline figures as well as observations throughout the year. The Monitoring and Evaluation Plan that was approved by Regional Council in August 2018 is provided in Attachment B.

Key results obtained from the Monitoring and Evaluation Plan include the following:

- Transit Travel Time:
  - On weekdays between 3pm-6pm, average travel time for northbound buses on Gottingen Street (Cogswell Street to Uniacke Street) decreased by an average of 7% relative to the same time period before bus lane implementation in 2018. During the busiest period (4-5pm), average transit travel time decreased by 19%.
  - The data do not indicate a change in transit travel time during the morning peak period following implementation of the bus lane.
- Transit Ridership: The number of people traveling by transit on Gottingen Street increased by 10% during the AM peak period and by 17% during the PM peak period.
- Mode Share: Transit mode share (the percentage of people traveling by bus on Gottingen Street) during peak periods increased from 48% (2018) to 55% (2019).
- Transit User / Public Experience: An online and in person experience survey of approximately 400 people on Gottingen Street indicated the following:
  - Most respondents (over 59%) indicated that the bus lane is a good addition to Gottingen Street, and 66% indicated that the bus lane helps people move transit more efficiently;
  - Approximately 44% of respondents indicated that the bus lane makes it easier and more convenient to visit Gottingen Street, while 29% disagreed or strongly disagreed.
- Motor Vehicle Collisions: The number of motor vehicle collisions on Gottingen Street did not increase relative to previous years, and collision severity did not worsen. The number of transit-related collisions that resulted in vehicle damage decreased from 8 (2018) to 2 (2019).
- Traffic Speed: Speed data collected at two locations on Gottingen Street before and after implementation of the northbound bus lane indicate no change in observed traffic speeds.
- On-Street Parking:
  - The average number of parking tickets issued on Gottingen Street per month in 2019 was 104. Over the course of that period, there was a general trend downward in the number of parking tickets; however, monthly totals have not decreased significantly.
  - The average number of vehicles towed on Gottingen Street per month in 2019 was 34. There was a general trend downward throughout 2019; however, monthly totals have not decreased significantly.
  - Average weekday on-street parking utilization on Gottingen Street between 9am and 3pm has been relatively consistent before and after implementation of the bus lane:
    - December 2019: 52% (after implementation)
    - May 2019: 60% (after implementation)
    - April 2018: 55% (before implementation)

- Parking turnover increased, as the average parking duration per vehicle decreased from 90 minutes (April 2018) to 64 minutes (December 2019).

### **General Observations**

While each of the evaluation metrics that were observed provide valuable insight, it is important to consider some key limitations of their monitoring and evaluation over the short-term. Due to the inherent variability in some of the metrics, year over year observations are not generally a reliable performance indicator. Observation of trends over multiple years is required to develop meaningful conclusions. Also, each metric is influenced by other external factors unrelated to the changes introduced by the bus lane – for example, an increase in transit ridership on Gottingen Street is most likely more attributable to improvements to the overall transit network than to improvements specific to Gottingen Street. These limitations should be considered when evaluating the project.

Further general observations related to the evaluation and monitoring data follow:

- The reorganization of Gottingen Street and the restriction of on-street parking during peak periods, when the bus priority lane is operational, improves traffic flow not only for buses in the northbound bus lane, but for all vehicles. As a result, the frequency with which congested traffic conditions occur on Gottingen Street has been reduced, and in many cases, since all traffic flows generally well, buses do not always gain an advantage over general purpose vehicles traveling north on Gottingen Street.
- With construction work on the Cogswell Redevelopment anticipated to occur over multiple years, providing the ability of buses to bypass traffic congestion on Gottingen Street is expected to become increasingly important to maintaining transit reliability and mitigating construction-related mobility impacts.
- A key benefit of the bus lane relates to transit reliability during incident-related traffic congestion. When a traffic incident causes congestion, the northbound bus priority lane enables buses to bypass general traffic to get to the front of the queue. Although buses remain likely to experience incident-related delays in these situations, they should be significantly less impacted than general purpose traffic.
- The addition of periods during which on-street parking is not permitted on Gottingen Street results in a daily 'reset' of parking, which reduces the incidence of vehicles parking on-street for extended periods. The resulting increase in parking turnover and availability is beneficial for the commercial uses that comprise much of Gottingen Street.
- Parking enforcement is particularly challenging with time variable parking restrictions such as those currently in place on Gottingen Street. In many instances, when the parking restrictions begin at 3pm, there can be several vehicles parked in the lane. It takes staff resources to have them removed, and often the first 15-30 minutes of the time period are not used effectively. It only takes one illegally parked vehicle to impact the entire lane and flow of the street.

### **Potential Changes for Consideration**

Based on observations made as part of the Monitoring and Evaluation Plan, potential changes to the configuration and operational characteristics of the street have been considered.

- Modified Operational Hours: Limit the operational period of the bus lane to weekday afternoons between 3pm-6pm, removing weekday mornings (7am-9am). Data indicate that the bus lane is most beneficial during weekday afternoon peak periods, and that it provides less benefit to transit operation during weekday morning peak periods. Removing the weekday morning peak would reduce the impact to on-street parking, simplify parking restrictions, and reduce the enforcement burden for the bus lane.

At this time, pm peak restrictions are from 3-6 pm; however, in the future, this parking restriction time period may fluctuate based on congestion levels and the potential benefit to the flow of traffic, particularly transit vehicles. Modifications to parking time restrictions would be approved by the Traffic Authority, as is standard throughout the municipality.

- Improved Signage / Pavement Markings: The data indicate that compliance with parking restrictions has been an ongoing challenge on Gottingen Street. Although the number of tickets and towed vehicles has trended down since implementation, there is still a significant amount of non-compliance with parking restrictions. Operational time periods of the bus lane and the associated parking controls are communicated using traffic signs and pavement markings – the current bus lane includes intermittent white “reserved” diamond markings (on red pavement stamp) and side-mounted signage.

The practice of bus lane signage and pavement marking in Canada and North America is evolving constantly with increased proliferation of bus lanes in recent years. Bus lane signage and pavement marking design is made more challenging in cases such as Gottingen Street, where bus lanes are only operational during certain time periods. Options to increase awareness of bus lanes can include additional pavement markings (red colored lanes) and overhead signage. Though no specific changes to the signage and pavement markings on Gottingen Street are proposed at this time, staff continue to research options that aim to find a balance between effectiveness and cost (capital and maintenance).

- Public Education / Awareness: Bus priority lanes are a relatively new facility type in HRM, but one that is anticipated to feature prominently in the municipality in the coming years. Increased public awareness of bus lanes in general, which can be achieved both through public education and familiarity (more exposure to the presence of bus priority lanes), is likely to have benefits. Public outreach efforts for the Gottingen Street bus lane have included engagement with residents and businesses on Gottingen Street (pre- and post-implementation), development of informational materials (e.g. project summary video, flyers) and information sharing via social media. Staff plan to continue to refine the approach to public outreach for the Gottingen Street bus lane and other existing and planned transit priority facilities in the municipality to improve public awareness around what they are and how they operate.
- On-Street Parking Enforcement: The effectiveness of bus priority lanes, particularly those that are only operational during certain time periods, is highly dependent on the compliance with on-street parking restrictions. Parking enforcement mechanisms currently used on Gottingen Street – including ticketing and towing of illegally parked vehicles – require considerable resources.

With ongoing expansion of transit and active transportation facilities in the municipality, staff are working to expand parking enforcement capabilities. Recent efforts have included:

- addition of dedicated parking enforcement officers;
- implementation of schedule changes that enable parking enforcement to extend to a wider timeframe that is consistent with the operational periods for peak period bus priority lanes; and
- petitioning the Province of Nova Scotia on two occasions to increase the allowable fines for illegal parking.

## **FINANCIAL IMPLICATIONS**

The costs associated with the recommended changes to the transit priority time period are limited to modifications to existing signage. Such costs are anticipated to be minimal and can be accommodated within the existing capital budget CM000009 – Transit Priority Measures.

## **RISK CONSIDERATION**

Risks associated with the recommendations of this report include:

- Removal of transit priority during weekday AM peak periods could result in increased delay for buses. This risk is deemed to be low and can be addressed relatively easily through reinstatement of current operational regulations.

## **COMMUNITY ENGAGEMENT**

A stakeholder / public consultation process was completed as part of the functional and detailed design stages, which included stakeholder consultation sessions with several groups, a public open house, and online consultation. Results of this consultation process were presented in the March 6, 2018 Regional Council report.

## **ENVIRONMENTAL IMPLICATIONS**

This project is supportive of the Council Priority Outcome of building Healthy, Livable communities, as it aims to make it more convenient for residents to choose sustainable transportation options for everyday transportation purposes. This is reflected in the enhancements for transit, but also the improvements for pedestrians and cyclists.

## **ALTERNATIVES**

Regional Council may decide to refuse or modify the recommendations. Alternatives are presented below:

1. Regional Council may request that the Traffic Authority retain the current configuration and operational timeframes of the Gottingen Street northbound transit priority lane. This alternative is not recommended, as it unnecessarily imposes curb access restrictions on street users during periods when transit priority has been demonstrated not to be critical.
2. Regional Council may request that the Traffic Authority retain the current configuration of the Gottingen Street northbound transit priority lane but expand its operational timeframes beyond weekday morning and afternoon peak periods. This alternative is not recommended, as it unnecessarily imposes curb access restrictions on street users during periods when transit priority has been demonstrated not to be critical.
3. Regional Council may request that the Traffic Authority remove the Gottingen Street northbound transit priority lane and reinstate the street configuration that existed prior to its implementation. This is not recommended, as it would impact bus service delays and reliability during the afternoon peak period and is not consistent with the objectives contemplated by the *Moving Forward Together Plan* and *Integrated Mobility Plan*.

**ATTACHMENTS**

Attachment A: *Gottingen Street: Monitoring & Evaluation Results (March 2020)*  
Attachment B: *Monitoring & Evaluation Plan: Gottingen Street Transit Priority Corridor (June 2018)*

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A copy of this report can be obtained online at [halifax.ca](http://halifax.ca) or by contacting the Office of the Municipal Clerk at 902.490.4210.

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# HALIFAX

## GOTTINGEN STREET: MONITORING & EVALUATION RESULTS

### PREPARED BY:

Strategic Transportation Planning

March 2020



### Transit Priority Corridor

In March 2018, Regional Council directed staff to proceed with detailed design of a time-restricted northbound bus lane on Gottingen Street that is operational during weekday peak periods (7am-9am and 3pm-6pm), and accommodates time-regulated parking and loading outside of peak periods. Staff were also directed to develop a plan to measure and evaluate the impact of the project and recommend changes, if any, within one year of implementation.

In December 2018, the Halifax Regional Municipality implemented the Gottingen Street Transit Priority Project, aiming to provide priority to the movement of buses over general traffic. The project also identified 'complete streets' improvements, including the addition of streetscaping elements street trees, benches, and curb extensions.



### Monitoring Plan

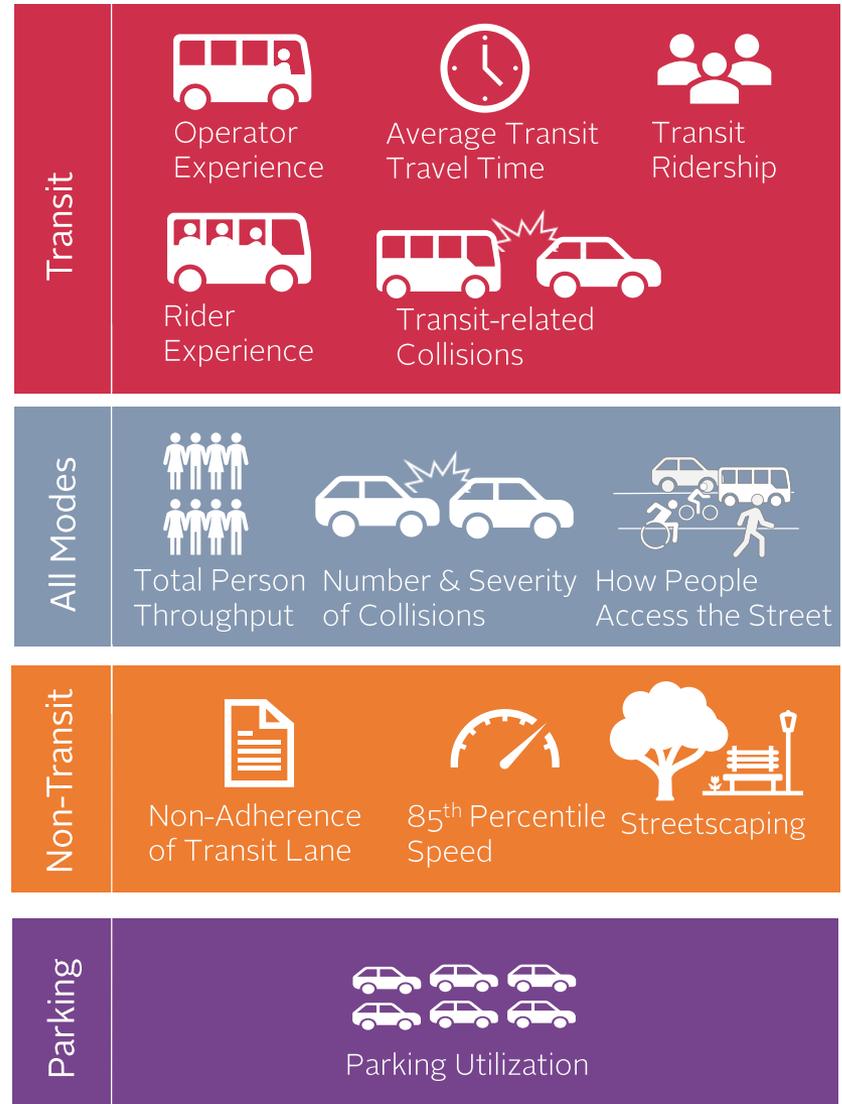
The primary objective of the Monitoring and Evaluation Plan is to determine the extent to which the Gottingen Street peak period northbound bus lane project achieves the desired outcomes, particularly regarding transit service improvements, while understanding the implications for other potential related impacts.

Staff have identified fifteen metrics to monitor the post-implementation of the time-restricted northbound bus lane based on project objectives, public feedback, as well as staff and data resources.

The figure to the right shows each metric and categorizes it by impact area (i.e. transit, all transportation modes, non-transit, and parking).

While each of the identified metrics provide valuable insight, it is important to consider some key limitations of their monitoring and evaluation over the short-term. Due to the inherent variability in some of the metrics, year over year observations are not generally a reliable performance indicator. Observation of trends over multiple years is required to develop meaningful conclusions. Also, each metric is influenced by other external factors unrelated to the changes introduced by the proposed bus lane. These limitations should be considered when evaluating the project after implementation.

### Evaluation Metrics



# 2.1 RESULTS - TRANSIT

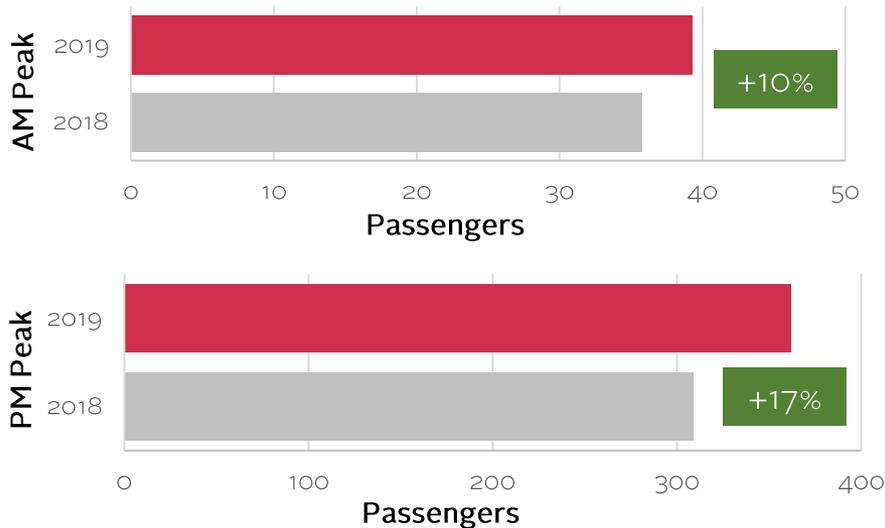
## Summary

- During weekday afternoon peak period, average transit travel time for northbound buses improved by 7%.
- The number of people travelling by transit along the corridor increased by 10% during the AM Peak and 17% during the PM Peak.
- Survey results suggest that most people are supportive of the bus lane.

## Transit Ridership



The average number of passengers on board the bus for any trip during the AM and PM peaks has increased by 10% and 17% respectively.



## Operator Experience

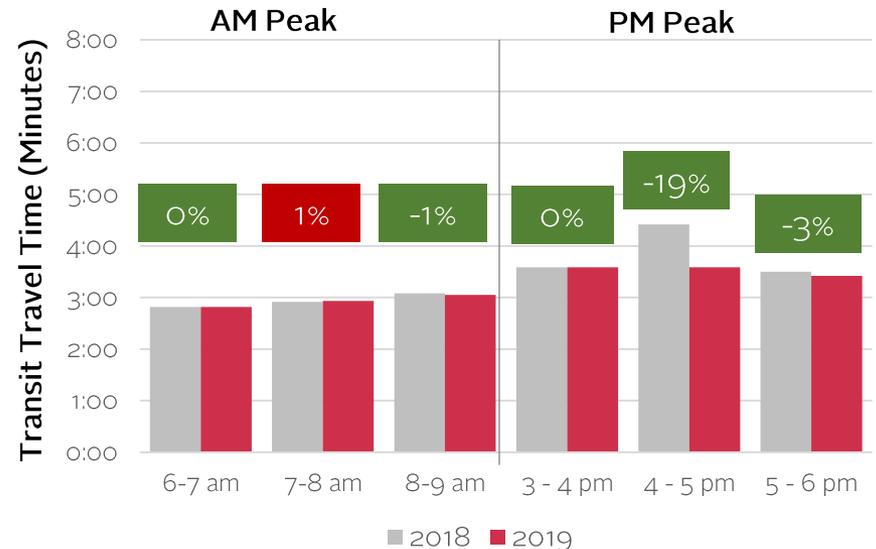


Through a Talk Transit survey, transit operators were asked to describe any benefits, issues, or challenges they've experienced while using the bus lane. Most of the operators commented that the bus lane works well when they're able to use it. They indicated that illegally parked vehicles pose a challenge for buses attempting to use the bus lane during the peak period.

## Average Transit Travel Time



On average, when the bus lane is operational, 83% of trips have seen a reduction in travel time. Between Cogswell Street and Uniacke Street, there was an average transit travel time savings of 7% during the PM peak and no improvement during the AM Peak. The figure below, illustrates the average travel time between 6-9am and 3-6pm in 2018 and 2019.

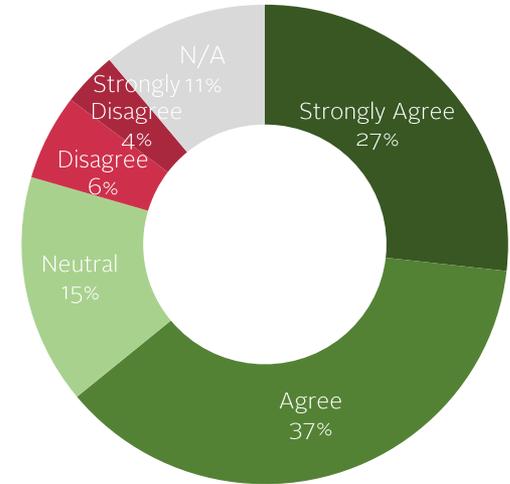


### Rider / Public Experience

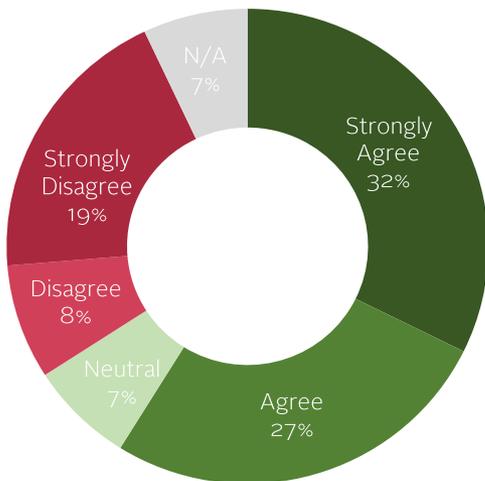


- Approximately 400 online and in person surveys were collected. Most of the survey responses were positive and in support of the project.
- Over **59%** of respondents thought the bus lane is a good addition to Gottingen Street and about **66%** thought the bus lane helped move people on transit more efficiently.
- About **44%** of respondents thought the bus lane made it easier and more convenient to visit Gottingen Street, while **29%** disagreed or strongly disagreed.
- Many respondents commented that they'd like to see more public amenities (e.g. trees, benches, etc.). About **64%** of respondents indicated that the added public amenities has improved public space along the corridor.

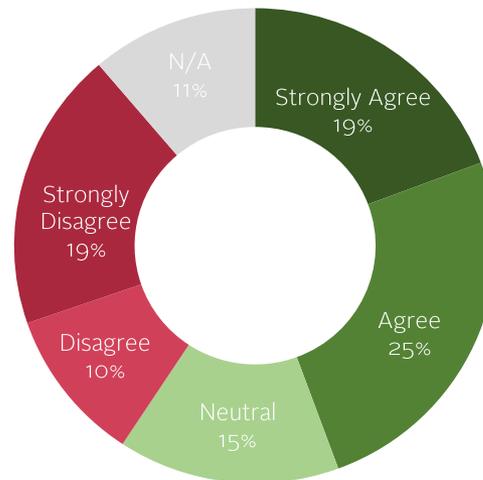
### Added public amenities have improved public space along Gottingen Street



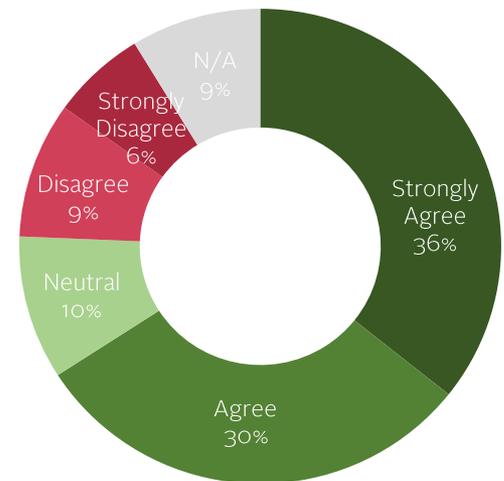
#### The bus lane is a good addition to Gottingen Street



#### The bus lane made it easier and more convenient to visit Gottingen Street



#### The bus lane helps move people on transit more efficiently

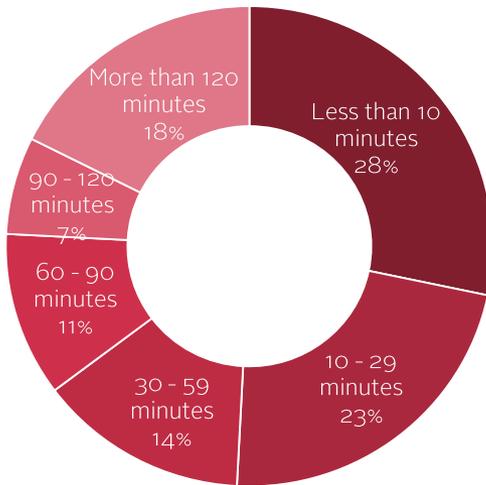


### Rider / Public Experience (continued)

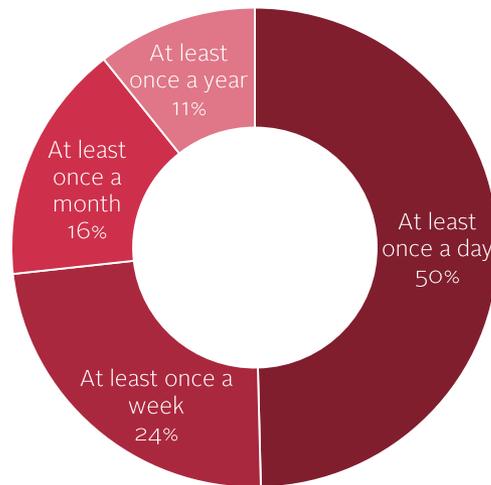


- ➔ The majority of respondents (65%) said they spend less than an hour on Gottingen Street and about half of the respondents indicated they visit the corridor at least once a day.
- ➔ When asked about the type of activities they engage in along the corridor, the majority of respondents (65%) said they travel through Gottingen Street, about half said they visit cafes/ dine at restaurants, and about 42% indicated that they shop at the stores along the corridor.

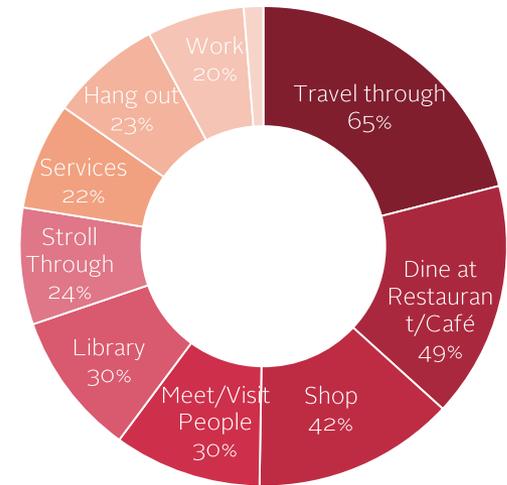
How much time do you normally spend on Gottingen Street?



How often do you visit Gottingen Street?



What do you typically do on Gottingen Street?



### Transit Collisions



- ➔ The proportion of transit-related collisions occurring during the operation of the bus lane, has remained relatively unchanged since its implementation (48% in 2018 and 42% in 2019).
- ➔ The number of transit-related collisions that resulted in vehicle damage has decreased from eight pre-implementation to two post-implementation.

### Summary

- The transit mode share along the corridor has increased from 48% to about 55%; a 7% increase.
- As supported by the increase in ridership, the number of people travelling along the corridor by transit has increased.
- The right-of-way assigned to each travel mode corresponds more closely to the mode split.
- The number of collisions along the corridor has not increased since the implementation of the project.

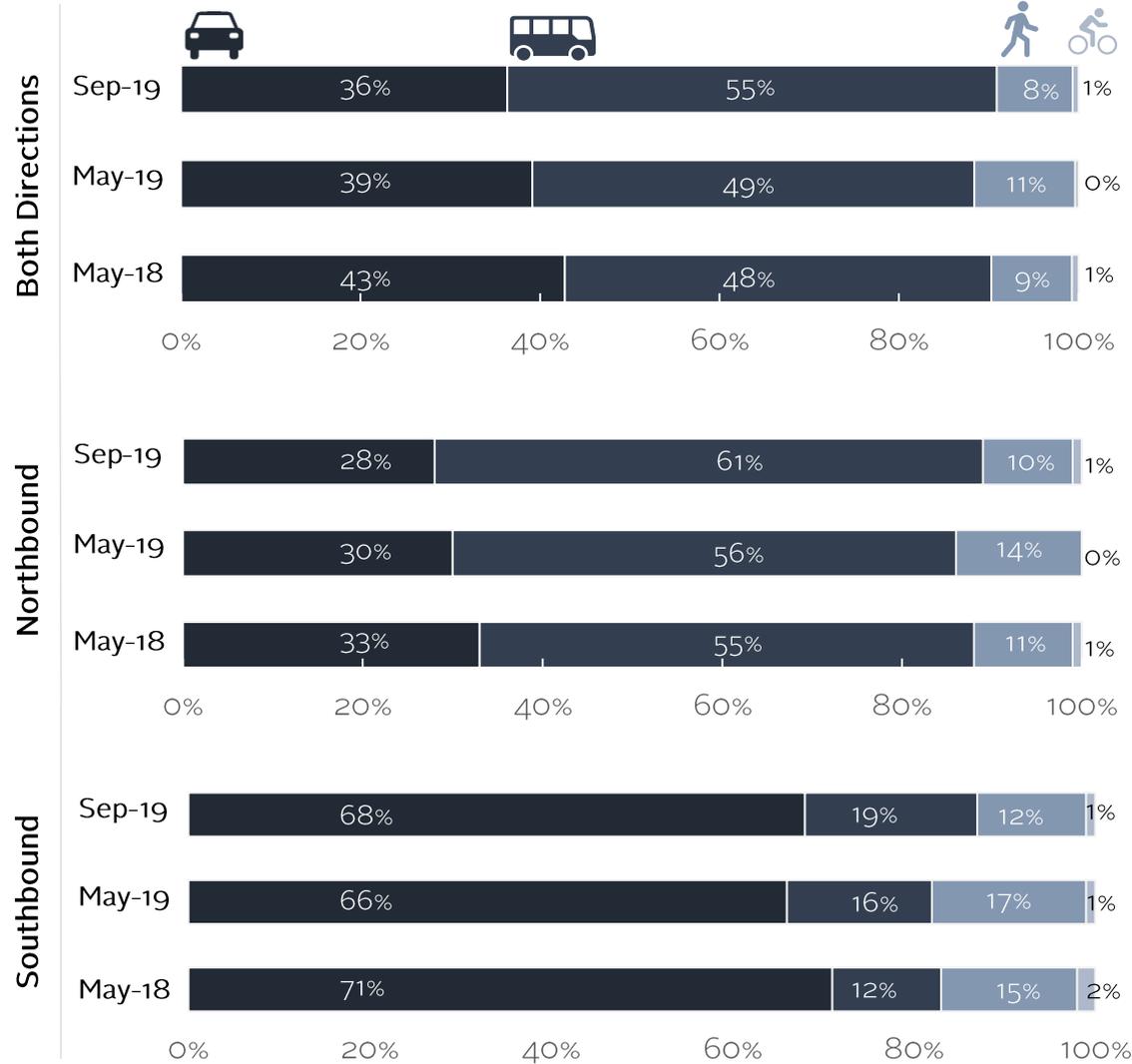
### Total Person Throughput



This indicator was obtained by conducting manual screenline counts of people and their respective travel modes pre- and post- bus lane implementation.

The number of people travelling northbound and southbound by transit, during the PM peak, has increased by approximately 6% and 7%, respectively. By contrast, the number of people travelling using a car in both directions has decreased by about approximately 7%.

The number of cyclists and pedestrians travelling through the corridor has remained relatively similar.



### Number and Severity of Collisions



This measure was obtained from the collision reports prepared by the Halifax Regional Police.

The data suggests that the number of collisions along the corridor has not increased when compared to previous years. The data also indicates that overall collision severity has not worsened.



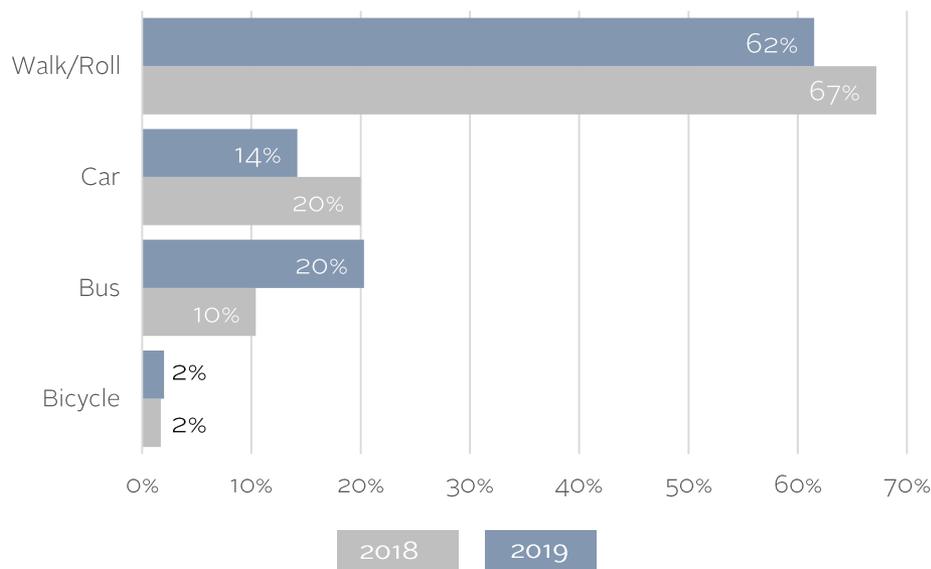
### How People Access the Street



This measure was collected through an in-person survey before and after implementation of the project.

The survey indicated that the majority of people access the street through walking. The number of people accessing the street by transit has increased, while the number of people accessing the corridor by car has decreased.

Since the survey was done in-person, the number of people who reported cycling to Gottingen Street may be underrepresented and the number of people walking to Gottingen Street might be overrepresented.



# 2.3 RESULTS – NON-TRANSIT

## Summary

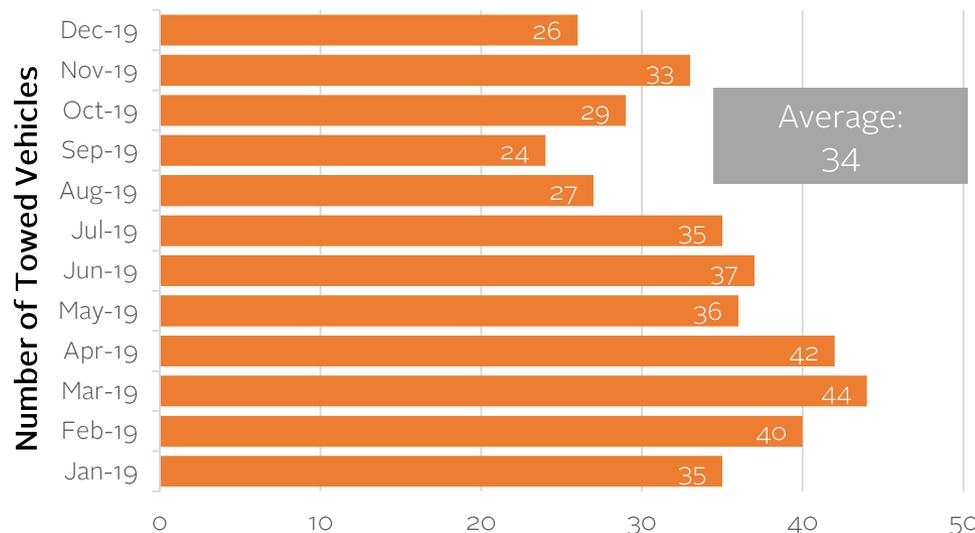
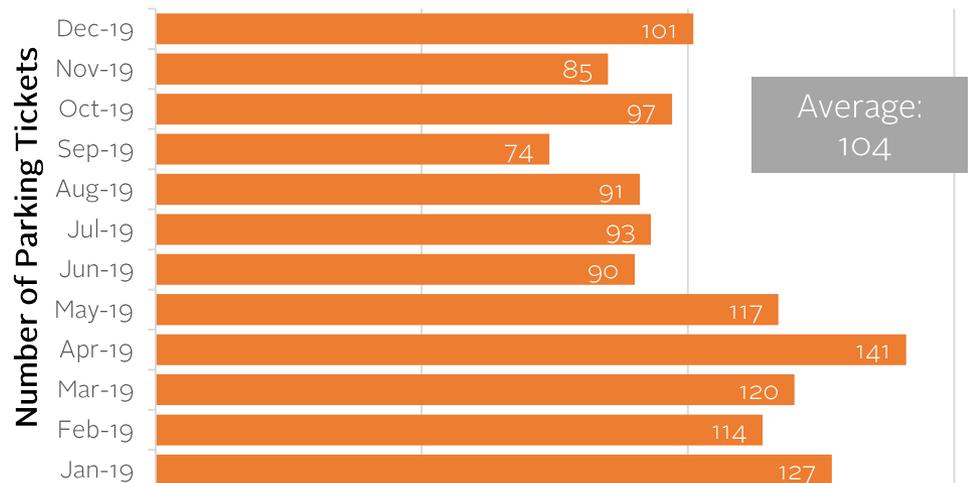
- The average monthly number of parking tickets issued since January 2019 is **104**.
- The average number of towed vehicles since January 2019 is **34**.
- The number of illegal parking / stopping has started to decrease but remains relatively high.
- The 85<sup>th</sup> percentile speed has remained relatively unchanged in both directions

## Non-Adherence of Transit Lane



This indicator was assessed by obtaining information on the number of parking tickets and tows during peak periods.

There was a general downward trend in the number of parking tickets and towed vehicles; however, monthly totals have not decreased significantly. The average number of vehicles that have been towed since January 2019 is 34, and the average number of parking tickets issued since January 2019 is 104. Illegal parking and stopping during the operational hours of the bus lane negatively impacts transit's operation and reduces its reliability.



### 85<sup>th</sup> Percentile Speed



The 85<sup>th</sup> percentile speed was obtained by conducting speed volume surveys before and after implementation of the bus lane at two locations: Cornwallis Street & Falkland Street and Charles Street & Uniacke Street.

Speed data collected at the two locations before and after implementation of the northbound bus lane indicate no change in 85<sup>th</sup> percentile traffic speeds.

### Streetscaping Elements

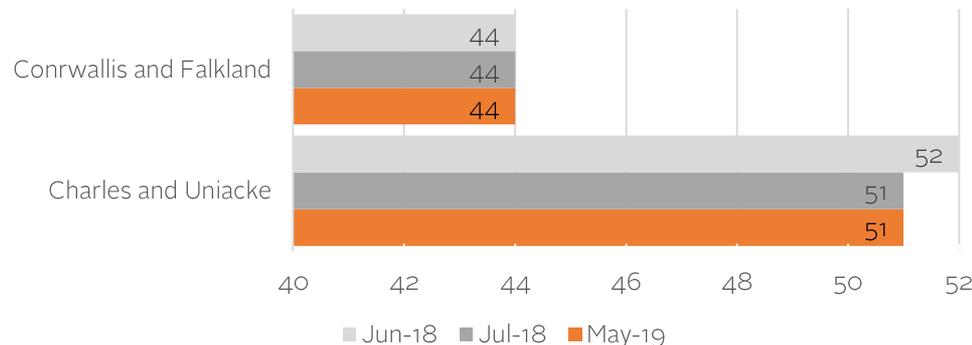


The pedestrian realm enhancements included four curb extensions to reduce pedestrian crossing distances on side streets (two at Portland Place, one at Cunard Street, one at Uniacke Street).

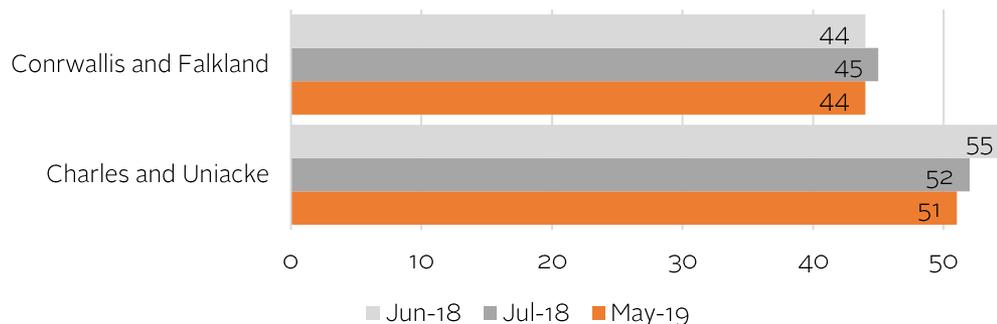
Each curb extension was surfaced with decorative brick pavers, reflecting the area's character, and included a bench and one or two bicycle racks.

An urban soil trench for three trees was installed. It is designed to preserve structural integrity of the adjacent roadway and sidewalk while containing sufficient volumes of uncompacted soil to support tree health.

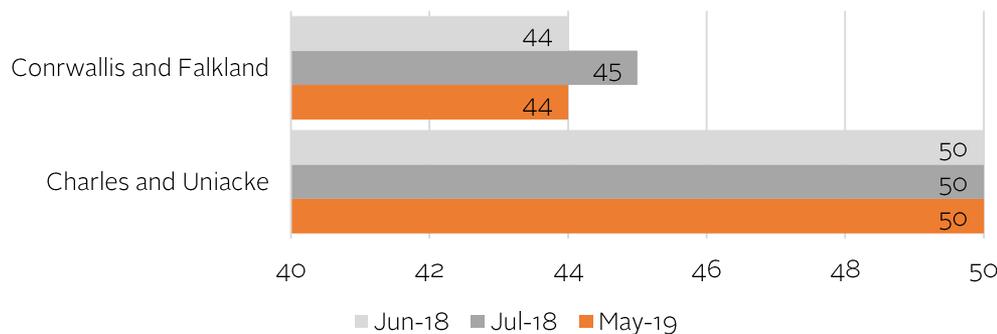
### Both Directions



### Northbound



### Southbound



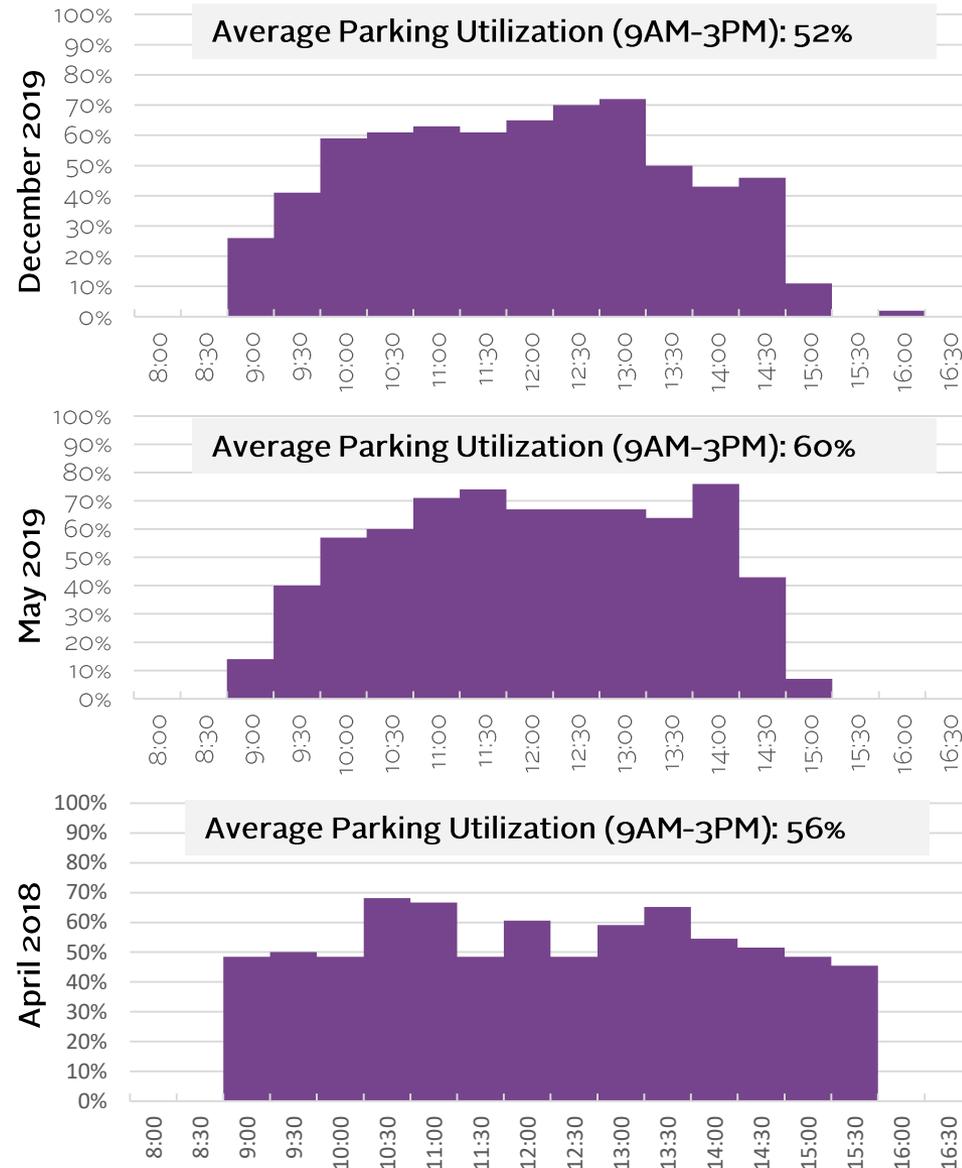
# 2.4 RESULTS – PARKING

## Parking



Prior to the implementation of the transit lane, parking data was collected in February 2018 and April 2018 to develop an understanding of the parking utilization and turnover on Gottingen Street. This exercise was repeated in June 2019 and December 2019.

- ➔ During permitted parking hours (9:00 AM to 3:00 PM), the average parking utilization along Gottingen Street was approximately 52%, compared to 60% in May 2019 and 56% in April 2018.
- ➔ Parking turnover increased, as the average parking duration per vehicle decreased from 90 minutes (April 2018) to 64 minutes (December 2019).



# Monitoring & Evaluation Plan

## Gottingen Street Transit Priority Corridor

**Prepared by:**

Halifax Transit  
June 2018

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# Introduction

## Background

In March 2018, Regional Council directed staff to proceed with detailed design of a time-restricted northbound bus lane on Gottingen Street that is operational during weekday peak periods (7am-9am and 3pm-6pm), and that accommodates time-regulated parking and loading outside of peak periods. Staff were further directed to develop a plan to measure and evaluate the impact of the project and recommend changes, if any, within one year of implementation.

The Monitoring and Evaluation Plan, presented in the sections below, identifies fourteen metrics which staff recommend to evaluate to better understand the impact of the project on transit service, mode share, road safety, parking, the street environment, and adjacent land uses.

## Objectives

The primary objective of the Monitoring and Evaluation Plan is to determine the extent to which the Gottingen Street peak period northbound bus lane project achieves desired outcomes, particularly regarding transit service improvements, while understanding the implications for other potential related impacts.

## Deliverables

The key deliverable of this plan is a staff report to Regional Council, one year after project implementation, that will present the monitoring and evaluation results, identify any areas for improvement and recommend suitable design refinements.

## Metrics

Staff have identified metrics to monitor post-implementation of the time restricted northbound bus lane based on project objectives, public feedback, available staff and data collection resources. Table 1 introduces and categorizes each metric by impact area (transit, all transportation modes, non-transit motorists, street environment, land uses and parking), states how the data will be collected, and identifies the desired outcome.

While each of the identified metrics provide valuable insight, it is important to consider some key limitations of their monitoring and evaluation over the short-term. Due to the inherent variability in some of the metrics, year over year observations are not generally a reliable performance indicator. Observation of trends over multiple years is required to develop meaningful conclusions. Also, each metric is influenced by other external factors unrelated to the changes introduced by the proposed bus lane. These limitations should be considered when evaluating the project after implementation.

Table 1 Project Evaluation Metrics

#	CATEGORY	METRIC	DESCRIPTION
1	Transit	Change in average transit travel time and variability	<p>Transit travel time will be obtained through Automatic Vehicle Locator (AVL) technology to calculate and compare the average travel time and variability of pre- and post-implementation project conditions.</p> <p>The desired outcome would be a decrease in the average travel time and variability for buses in both directions during the peak periods.</p>
2	Transit	Rider experience	<p>Rider experience will be assessed by obtaining feedback through surveys conducted on buses and/or online.</p> <p>The desired outcome would be that most of the survey responses are positive and support the project.</p>
3	Transit	Transit operator experience	<p>Transit operator experience will be assessed by obtaining feedback through surveys.</p> <p>The desired outcome would be that most of the survey responses are positive and support the project.</p>
4	Transit	Change in ridership	<p>Ridership will be assessed by comparing data on the number of onboard passengers, for each transit route using Gottingen Street, pre- and post-implementation of the project.</p> <p>The desired outcome would be an increase in the number of onboard passengers for each transit route during peak periods.</p>

#	CATEGORY	METRIC	DESCRIPTION
5	Transit	Change in number of transit related collisions (vehicle damage only)	<p>Transit related collisions will be obtained through transit collision reports pre- and post-implementation of the project for comparison.</p> <p>The desired outcome would be a decrease in the number of transit-related collisions.</p>
6	All Modes	Change in total person throughput	<p>Total person throughput will be obtained by conducting manual screenline counts of people and their respective travel mode pre- and post-implementation of the project for comparison.</p> <p>The desired outcome would be an increase in the number of people traveling by transit (for each transit route) and active transportation modes during the PM peak.</p>
7	All Modes	Cross section allocation	<p>Cross section allocation will be assessed by comparing mode splits to the right-of-way width assigned to each travel mode pre- and post-implementation of the project.</p> <p>The desired outcome would be that right-of-way width assigned to each travel mode corresponds more closely to the mode split.</p>
8	All Modes	Public experience	<p>Public experience of all people who use Gottingen Street will be assessed by obtaining feedback through surveys conducted on street and/or online.</p> <p>The desired outcome would be that most of the survey responses are positive and support the project.</p>

#	CATEGORY	METRIC	DESCRIPTION
9	All Modes	Change in number and severity of collisions	<p>The number and severity of collisions will be obtained from Halifax Regional Police collision reports pre- and post-implementation of the project for comparison.</p> <p>The desired outcome would be a decrease in the number and severity of collisions.</p>
10	All Modes	Change in how people are accessing the street	<p>Obtaining data on how people are accessing Gottingen Street will be through conducting on-street intercept surveys pre- and post-implementation of the project.</p> <p>The desired outcome would be an increase in the number of people accessing the street via transit and active transportation modes.</p>
11	Non-Transit Motorists	Non-adherence of transit lane	<p>Non-adherence of the transit lane will be assessed by obtaining information on the number of parking tickets and tows and/or through monitoring using time lapse/video cameras during peak periods.</p> <p>The desired outcome would be that few blockages to transit vehicles occur in the peak periods after a year from implementation.</p>
12	Non-Transit Motorists	Change in 85 <sup>th</sup> percentile speed	<p>85<sup>th</sup> percentile speed will be obtained by conducting speed volume surveys pre- and post-implementation of the project for comparison.</p> <p>The desired outcome would be no significant increase in the 85<sup>th</sup> percentile speeds.</p>

#	CATEGORY	METRIC	DESCRIPTION
13	Street Environment	Number of installed streetscape elements (ex. # of planted trees)	<p>The number of installed streetscape elements will be recorded in a document as they are installed/constructed.</p> <p>The desired outcome would be an increase in the number of streetscaping elements.</p>
14	Parking	Parking utilization	<p>Parking utilization data will be obtained by conducting parking utilization surveys, of Gottingen Street and the surrounding neighbourhood, post-implementation of the project for evaluation.</p> <p>The desired outcome would be that the 85<sup>th</sup> percentile parking occupancy is at or less than 85%.</p>

## Data Collection Timeline

The proposed data collection timeline is presented in Table 2 using five time period columns. The baseline column represents data that are required to be collected before project implementation. These data already exist or are planned for collection in the coming months. The next four columns represent data collection throughout the year after project implementation divided into three-month increments, and the last column represents data that must be monitored on an ongoing basis after the initial data collection year. The proposed timeline may vary to accommodate staff resources and the reporting timeline requested by Regional Council (i.e. report back within one year of implementation).

Table 2 Data Collection Timeline

#	METRIC	DATA COLLECTION TIMELINE					
		Baseline	0-3 MO	3-6 MO	6-9 MO	9-12 MO	Ongoing
1	Change in average transit travel time	✓	✓	✓		✓	
2	Rider experience			✓			
3	Transit operator experience			✓			
4	Change in ridership	✓			✓		✓
5	Change in number of transit related collisions	✓				✓	
6	Change in total person throughput	✓	✓		✓	✓	✓
7	Cross section allocation	✓				✓	
8	Public experience			✓			
9	Change in number and severity of collisions	✓				✓	✓
10	Change in how people are accessing the street	✓			✓		
11	Non-adherence of transit lane			✓		✓	
12	Change in 85 <sup>th</sup> percentile speed	✓			✓		
13	Number of installed streetscape elements					✓	
14	Parking utilization	✓		✓			