
Bicycle Program Update – Feasibility of Protected Bike Lanes

Recommendation

That the Standing Policy Committee on Transportation recommend to City Council:

- 1) That protected bike lanes be installed on 23rd Street (from Spadina Crescent to Idylwyld Drive) and 4th Avenue (from 19th Street to 24th Street) as a demonstration project;
- 2) That implementation be phased over two years with 23rd Street installed in 2015, and 4th Avenue in 2016; and
- 3) That curb parking be installed on the north side of 24th Street between Ontario Avenue and Idylwyld Drive.

Topic and Purpose

This report provides a description of a proposed demonstration project for the installation of protected bike lanes in the Downtown. The demonstration project is intended to assess the feasibility of installing permanent protected bike lanes in the Downtown as proposed in the City Centre Plan (City Centre Plan) and by Saskatoon Cycles through the Better Bike Lanes initiative.

Report Highlights

1. The best location for providing a demonstration project within the Downtown would be two segments on 23rd Street and 4th Avenue.
2. With the addition of parking on 24th Street, between Ontario Avenue and Idylwyld Drive, the net street parking impact of this project is a loss of six parking spaces.
3. Traffic flow can be maintained on both 4th Avenue and 23rd Street with the proposed lane reconfigurations that result from the introduction of protected bike lanes.
4. Extensive engagement with stakeholders and the public was undertaken, which resulted in general support for the project and the identification of key issues.
5. The demonstration period should be a minimum of 18 months in duration with the 23rd Street project implemented in 2015, and the 4th Avenue project added in 2016.

Strategic Goal

Improving the comfort and attractiveness of cycling in the Downtown supports the City of Saskatoon's (City) Strategic Goal of Moving Around by creating a more cycling-friendly Downtown and promoting active transportation. The City Centre Plan identified the need for improved facilities for cycling within the City Centre, which includes the Downtown.

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Background

During its January 20, 2014 City Council meeting, a petition for the installation of separated bike lanes in Downtown Saskatoon (i.e. 4th Avenue and 24th Street) as a demonstration project was presented by Saskatoon Cycles representatives, an organization that advocates for a city in which cycling is a viable, year-round mode of transportation that is safe and convenient for all ages. City Council requested a report outlining the feasibility of installing separated bike lanes as a pilot project for the upcoming cycling season.

At its May 20, 2014 City Council meeting, a feasibility report was presented recommending the use of unidirectional bike lanes on 24th Street (from Spadina Crescent to Idylwyld Drive) and 4th Avenue (from 19th Street to 24th Street) as a demonstration project. The following motions were requested to be addressed:

1. That an open house be held by September 30, 2014, where the detailed design of the pilot project can be taken out to stakeholders;
2. That the Administration report back with options (short-term and long-term) for mitigating on-street parking loss resulting from the pilot project, including:
 - expanding angle parking along 23rd Street between 3rd Avenue and Spadina Crescent;
 - incentives for the construction of parking structures; and
 - the development of an application which identifies available parking capacity Downtown in real time.
3. That the Administration provide further information regarding the traffic flows along 4th Avenue, and the anticipated performance of changing from two lanes, in either direction, to one lane, in either direction, with a turning lane; and
4. That a parking study be conducted at the same time.

Report

The City's Strategic Plan and the City Centre Plan have identified the need to improve cycling as a strategy to increase the attractiveness of, and access to, the Downtown for businesses, residents, visitors, employers, and their employees. A vibrant and healthy Downtown benefits the entire city and region. The Protected Bike Lane Demonstration Project has been planned to achieve this goal. A background summary of protected bike lanes can be found in Attachment 1.

Protected bike lanes should provide an opportunity for people riding bikes to reach destinations in the heart of downtown in a comfortable and safe manner.

Project Location

The feasibility study considered all east-west and north-south streets as potential candidate locations for the project. After extensive review and consultation with stakeholders and the community, the Administration's preferred street pair for the

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project is recommended to be two segments on 23rd Street between Idylwyld Drive and Spadina Crescent and 4th Avenue between 19th Street and 24th Street.

These streets provide the best opportunity for protected bike lanes within the Downtown; bring people on bikes directly to the centre of Downtown; and connect to existing, well-used cycling routes without detrimentally impacting traffic movement, transit service, or street parking.

Both streets have adequate width to accommodate protected bike lanes, accommodate transit operation, maintain street parking and bring people to the centre of Downtown. 4th Avenue provides a direct connection to the Broadway Bridge. On the north end of 4th Avenue, the project will extend past 23rd Street for one additional block to allow the protected bike lanes to transition back to street cycling. 23rd Street connects well to the Blairmore Bikeway on the west end and to Spadina Crescent and promenade, Meewasin Valley Authority trail, and University Bridge on the east end. The selection criteria and summary of the location review appears in Attachment 2.

Transit Terminal

It is recognized that the downtown transit terminal is located on 23rd Street and this provides an interruption to through bicycle traffic. People riding bicycles will not be allowed to ride through the transit terminal either on the traffic lanes or sidewalk and platform areas as is currently prohibited. Walking bikes on the sidewalks is allowed and available for bicycle traffic. It should be noted that the transit terminal is in the centre of downtown and protected bike lanes that extend all the way to the edges of downtown affords people riding bikes to get to the centre of downtown on their bikes before departing from these bike lanes to their final destinations. Through bike traffic can either walk through the transit terminal or use any of the downtown streets as an alternate route.

As a result of the transit terminal, the 23rd Street route is being recommended as two separate segments. Each segment provides dedicated infrastructure, which is long and safe to help cyclists reach their destinations in the downtown. The City Administration will continue to work on options to assist cyclists who wish to ride around the transit terminal, including the east-west lane between 22nd and 23rd Streets as a potential shortcut.

While each street offered favorable characteristics, the overall combination of 4th Avenue and 23rd Street provides the best opportunity to fully meet the desirable project criteria. The proposed location is illustrated in the figure on Attachment 3.

Street Parking

Street parking availability continues to be a key Downtown and community concern. It was not desirable to reduce the amount of street parking spaces. The following table summarizes the parking space inventory along the project streets and illustrates effects of added parking to 24th Street in order to mitigate the parking space impacts.

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Street Location	Existing Parking Spaces	Proposed Parking Spaces	Change in Parking Spaces	Total Change in Parking Spaces
4 th Avenue: 19 th Street to 24 th Street	133	114	-19	-6
23 rd Street: Idylwyld Drive to Spadina Crescent	112	102	-10	
24 th Street: Idylwyld Drive to Ontario Avenue (north side only)	0	23	+23	

Protected bike lanes on 4th Avenue and on 23rd Street result in 29 parking spaces lost. In order to mitigate the amount of parking spaces lost, it was identified that 23 parking spaces could be added on the north side of 24th Street between Idylwyld Drive and Ontario Avenue. With these added parking spaces, the net change is a loss of six parking spaces. Although this design results in an overall loss of parking spaces, data from the parking utilization study indicate that unoccupied parking spaces are available in the study area even during the busiest times (see Attachment 4).

In June 2014, an additional 76 public off-street parking spaces were created on the corner of 4th Avenue and 23rd Street on the former Saskatoon Police Service site. These parking spaces are publicly available for hourly to daily use. This use is temporary until such time that the property is redeveloped.

The Comprehensive Downtown Parking Strategy is currently underway. This project includes the mandate of incorporating information technologies to improve the customer parking experience.

Traffic Flow

Traffic conditions for the proposed design were assessed and compared to the existing traffic conditions. The proposed traffic conditions resulted in an overall intersection level of service (LOS) B* (or better) on 4th Avenue and an overall LOS B* ¹(or better) on 23rd Street in the a.m. and p.m. peak hours. An increase in travel time of 14 seconds in the a.m. peak hour and 10 seconds in the p.m. peak hours were identified on 4th Avenue. These average travel time increases are relatively minor given that the average trip length during peak periods is 10 to 15 minutes. There was no difference in travel time on 23rd Street. A more detailed summary of traffic flow analysis by intersection appears in Attachment 5.

Overall, traffic flow can be maintained on both 4th Avenue and 23rd Street with the proposed lane reconfigurations that result from the introduction of protected bike lanes.

A similar traffic flow analysis was undertaken for 24th Street between Idylwyld Drive and Ontario Avenue to understand the impact of converting a travel lane to a parking lane.

¹ *LOS is a term used to qualitatively describe the operating conditions of a roadway based on factors, such as speed, travel time, manoeuvrability, delay, and safety. The level of service of a facility is designated with a letter A to F, with A representing the best operating conditions and F the worst.

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An overall intersection LOS B was able to be maintained at Idylwyld Drive with the proposed addition of on-street parking.

Given the relatively modest impacts on traffic movement, it is not anticipated that existing traffic will seek alternate routes in the Downtown; and therefore, it is not anticipated that the project will affect traffic conditions on other Downtown streets.

Identification of Key Issues

1. Winter Use and Maintenance

Concern has been expressed that the protected bike lanes would not be cleared well in the winter and that cycling usage would be low because of winter conditions.

It is expected that following a snow fall, sidewalk snow would be cleared into the bike lanes. This snow would be plowed (using the pathway plows) towards the centre of the road into the parking lane. Graders would pull all the snow towards the roadway centre to form a windrow to be removed. Some of the plastic delineation posts along the edge of the bike lane would be removed prior to the first snow fall to allow for improved snow clearing efficiency; however, some would remain in order to provide guidance to motorists parking their vehicles.

This project would represent a new challenge for snow and ice operations, and the precise effort and procedure is not known. The Public Works Division, along with the Transportation Division, has committed to clearing the bike lanes and taking a collaborative approach to problem solving.

2. Conflict with Buses and Transit Customers

For the duration of this demonstration project, the transit terminal will be in place; and therefore, people riding bikes will need to abide by the current restrictions that are in place:

- a) only transit and emergency vehicles are allowed through the transit terminal; and
- b) cycling is not allowed on the sidewalks or platforms through the terminal.

These rules exist today for the safety of pedestrians, transit customers, and people riding bikes. While it is not an ideal situation for either people riding bicycles or transit service to lead the protected bicycle lanes to the transit terminal, using 23rd Street as demonstration location is preferred over all other east-west options. The Growing Forward project calls for the removal of the transit terminal. Discussions are underway with regards to timing and logistics around its removal.

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Transit stops will be designed to allow buses to stop at the curb (as they do today), effectively blocking the bike lane. Buses do not dwell at any of the stops within the project. This design is required to ensure that transit passengers can easily and safely board and exit the transit vehicle without conflict with people riding bikes.

The Administration will work with Transit and Cyclists throughout the demonstration on ways to minimize buses stopping within the bikelane, including the construction of temporary ramps to allow transit customers to board busses conveniently and safely

This project has been discussed with Saskatoon Transit, who stress that the safety and convenience of their customers and the general public is of paramount importance during this demonstration project.

3. Economic Impact

Previous discussion of this matter included some concern about the economic impact that the bike lanes might have on the Downtown, and the economic impact that a loss of street parking might have.

The studies and research that has been undertaken has indicated a range of values depending on the type of street and adjacent property uses, and the changes made to accommodate bike lanes. A brief summary of four studies appears in Attachment 6. Generally, the studies found a positive relationship between bike lanes and economic activity if the introduction of bike lanes increased the number of people accessing the street. Where the introduction of bike lanes eliminated a large number of parking spaces or dramatically reduced mobility for motor vehicle traffic or pedestrians, economic activity decreased.

Overall, protected bike lanes on 4th Avenue and 23rd Street consist of a design that will fully protect bicyclists, result in only six parking spaces lost, result in a minimal increase in travel times on 4th Avenue and 23rd Street, and provide a facility for people riding bikes to get to and destinations within the Downtown.

Demonstration Duration and Implementation Timing

It is recommended that a minimum trial period of 18 months be considered in order to evaluate the operation of the street during all seasons, especially winter. Community Services and Transportation & Utilities staff have been assigned to work with property owners, businesses, Saskatoon Transit, Public Works, and emergency service providers to identify and resolve conflicts, hazards, and operational issues in an expedient manner during implementation and throughout the duration of the demonstration project.

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It is further recommended that two protected bike lane segments be installed on 23rd Street in 2015, with 4th Avenue added in 2016 as a result of the University Bridge closure/restriction in 2015.

Options to the Recommendation

An extensive consideration of a variety of streets and bike lane styles was undertaken as a part of this project. The resultant recommendation is the product of this review and engagement process.

City Council may wish to consider 24th Street as the east-west connection. Two options have been explored utilizing 24th Street for the protected bike lanes.

A continuous protected bike lane for the entire length of 24th Street would require the loss of 47 on-street parking spaces including all street parking from 4th Avenue to Spadina Crescent. This option was presented in the original feasibility report to City Council in May 2014.

A revised design for 24th Street was presented at the October 21st, 2014, open house event. This design provided for a protected bike lane through the centre of downtown (1st Avenue to 4th Avenue) with “Green Lane” connections beyond that to connect the project to the larger cycling network. These “Green Lanes” required people riding bikes to ride in the centre of the traffic lane with motor vehicle traffic in the same way that traffic lanes marked with sharrows reinforce that bicycle riding is allowed on streets. This option was not received well by the community as it was seen to severely limit the ability of people riding bikes to comfortably get to the demonstration project on their bikes.

Both of these options were considered by the Administration as being inferior solutions to the recommendation.

Public and/or Stakeholder Involvement

A combination of meetings with key stakeholders, interest groups, and an open house event formed the basis of engagement for this project. From this engagement, the following themes emerged:

- i. **General Support from Stakeholders and the Public**
There was general support that protected bike lanes would make the Downtown more attractive and accessible to people riding bikes, which would positively contribute to the continued success of the Downtown.
- ii. **Separation Preferred**
Most participants favour protected bike lanes over green lanes or sharrows. Safety was the key reason given for this preference. It was generally expressed that requiring cyclists to share the road with motor vehicles would not attract the target group who say that they would like to bike to the Downtown if they could feel safe doing so.

iii. **Connectivity and Access**

A key concern among public and stakeholder participants is how bikes will connect to and access the Broadway Bridge from 4th Avenue. Providing improved access to the Broadway Bridge was examined as a part of this project. Improvements are being included in the design.

iv. **Parking/Business Access**

There was no appetite at all for any proposals that resulted in any loss of street parking spaces. This was a key consideration in choosing 23rd Street for the project as it resulted in only a few spaces to be removed and allowed for parking to be reintroduced on portions of 24th Street.

A summary of all of the engagement activities is shown in Attachment 7.

To conclude the consultation and community engagement for this project, a comprehensive meeting of community stakeholder groups and civic divisions was held on February 24, 2015. This meeting facilitated the discussion of the overall project goals, project process, technical considerations, and recommendation for implementation. It provided an opportunity for stakeholders and civic divisions to openly discuss the benefits and challenges that the project had for the community and their respective organizations. It was broadly recognized that this project had strong potential to benefit the vitality of downtown and to improve access to the downtown for people riding bikes without compromising current accessibility.

It was also recognized that the existence of the transit terminal on 23rd Street prevents a less-than-perfect continuous bike lane demonstration; however, it was still better than the options that were considered for 24th Street. It was also recognized that much inter-division/agency collaboration will be required prior to and during implementation for the safety benefit of all street users during the demonstration period

Communication Plan

As protected bike lanes move toward implementation, stakeholders will continue to be involved in the demonstration project. Communication activities to inform the public will include print media, information on the City's website, and social media. Direct mailing and notice delivery to property owners and business along 23rd Street and 4th Avenue would be undertaken prior to physical work being undertaken along the streets. A static display of information panels will be on display in the lobby of City Hall for four weeks. Strong, effective signage will be installed at key locations at the onset of the project to aid cyclists, pedestrians, transit and motorists in understanding the bikeway.

Financial Implications

It is estimated that the cost of undertaking this trial project will be \$225,000. This would include the costs for materials and installation of road painting, flexible posts, and signage. The cost estimate also includes a public awareness/educational campaign to help motorists, cyclists, and pedestrians to use the facilities appropriately and safely.

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This project will be accommodated within the \$375,000 budget available for cycling infrastructure construction in the 2014 Capital Budget.

Snow removal and street sweeping operations will be evaluated during the demonstration project. These streets are currently swept and cleared but the operation with protected bike lanes will be different, and therefore, there will be an incremental cost. That incremental cost has not been calculated as a part of this feasibility study.

Durable markings were installed on three blocks of 4th Avenue in 2013 during street resurfacing. Those markings would need to be removed in order to reallocate street space for protected bike lanes. The removal of those markings has been included in the implementation cost; however, the “lost investment” of the durable markings has not.

Environmental Implications

Cycling has been recognized to have a positive impact towards reducing energy consumption and greenhouse gas production. The initiatives proposed contribute to increasing the ability of people to use their bicycles for practical purposes, thereby substituting automobile trips for bicycle trips. Although not quantified for this report, the net benefit to the environment would be positive.

Other Considerations/Implications

There are no policy, privacy, or CPTED implications or considerations.

Due Date for Follow-up and/or Project Completion

The evaluation period will conclude at the end of 2016. At that time, a report will be prepared to recommend next steps.

Public Notice

Public Notice, pursuant to Section 3 of Public Notice Policy No. C01-021, is not required.

Attachments

1. Protected Bike Lane Basics
2. Project Location Summary
3. Protected Bike Lane Demonstration Project
4. Parking Utilization Study
5. Traffic Flow Analysis
6. Economic Impact Studies
7. Engagement Study

Report Approval

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Protected Bike Lane Basics

Protected bike lanes provide a dedicated marked lane, 1.5 meters wide (minimum) for bicyclists, that is to the right of the traffic lane or street parking (if provided) and is “protected” from moving traffic by street parking and a 1.0 meter wide (minimum) painted buffer or physical barrier. This places the bicyclists directly adjacent to the boulevard and sidewalk. Protected bike lanes require more street space than conventional bike lanes and may impact the amount of parking and/or number of traffic lanes.

What are Protected Bike Lanes?

Protected bike lanes physically separate people riding bikes from drivers. Protected bike lanes make this transportation option more attractive by increasing the comfort level and feeling of safety by “protecting” cyclists from traffic and opening of car doors. The lanes also benefit drivers, as separate space for cyclists increases the predictability and comfort of driving. It also reduces “sidewalk riding”, which is beneficial for pedestrians.

Photo Examples from Other Cities



Photo Credit: Cycle Toronto & ActiveTrans

Who Would Use Protected Bike Lanes?

Protected bike lanes are intended to be used by all people riding bikes; however, they are most attractive to cyclists who self-identify as “Interested but Concerned”. Based on studies in other North American cities, this group makes up the largest proportion of residents and holds the greatest opportunity for increasing cycling in the Downtown.

Cyclist Type	Description	Typical Proportion of Residents
Strong and Fearless	Very comfortable without bike lanes	3%
Enthusied and Confident	Very comfortable with bike lanes	7%
Interested But Concerned	Not very comfortable but interested in biking more	60%
No Way - No How	Physically unable, very uncomfortable, or not interested	30%

Why Are Protected Bike Lanes Important for the Downtown?

The City of Saskatoon Strategic Plan and the City Centre Plan have identified the need to improve cycling as a strategy to increase the attractiveness of, and access to, the Downtown for businesses, residents, visitors, employers, and their employees. A vibrant and healthy Downtown benefits the entire city and region. The Protected Bike Lane Demonstration Project has been planned to achieve this goal.

Have Similar Bike Lanes Been Successful in Other Cities?

The use of protected bike lanes began 25 years ago in cities in North America and within the last ten years has become a successful method of creating cycling facilities for all ages in strategically important locations. Permanent protected bike lanes have been built in Canada's largest cities, including Toronto, Montreal, Vancouver, Ottawa, and Calgary. Demonstration projects are currently underway in Edmonton and Winnipeg.

The most recent research throughout the United States from the National Institute for Transportation and Communities indicate that protected bike lanes have increased ridership and do not have a negative impact on retail sales.

Project Location Summary

Each street within the Downtown was reviewed on selection criteria developed based on the overall project objectives:

- 1) a continuous protected bike lane route through the Downtown;
- 2) good connections at either end to existing well-used cycling facilities,
- 3) leads cyclists to the centre of the Downtown; and
- 4) adequate street width to allow traffic movement, transit, parking, and bike lanes.

East-West Streets

Street	Favorable Characteristics	Unsuitable Characteristics
19 th Street	Could provide a continuous route; connects directly to Broadway Bridge; adequate street width.	Does not connect to a cycling facility to the west of Downtown, along the edge of Downtown.
20 th Street	Could provide a continuous route; connect indirectly to Broadway Bridge; connect to Spadina bike lanes and Meewasin Valley Authority (MVA) Trail; close to the centre of Downtown; adequate street width.	Does not connect to a cycling facility to the west of Downtown.
21 st Street	Connects to Spadina bike lanes; located in the centre of Downtown; adequate street width.	Does not span the Downtown, does not connect to other cycling facilities.
22 nd Street	Could provide a continuous route; connects to Spadina bike lanes and MVA Trail; located in the centre of Downtown.	Does not connect to a cycling facility to the west of Downtown; inadequate street width.
23 rd Street	Could provide a continuous route (with the exception of the transit terminal); connects to the Blairmore Bikeway; Spadina bike lanes and MVA Trail; located in the centre of Downtown; adequate street width.	Cyclist must walk bikes through transit terminal.
24 th Street	Could provide a continuous route; connects to Spadina bike lanes and MVA Trail; located close to the centre of Downtown.	Does not connect to a cycling facility to the west of Downtown; inadequate street width.

North-South Streets

Street	Favorable Characteristics	Unsuitable Characteristics
1 st Avenue	Could provide a continuous route; located close to the centre of Downtown; adequate street width.	Does not connect to a cycling facility at either end.
2 nd Avenue	Could provide a continuous route; connects to Riverlanding; located in the centre of Downtown.	Does not connect to a cycling facility to the north of Downtown; inadequate street width with angle parking.
3 rd Avenue	Could provide a continuous route; connects to Riverlanding and MVA Trail; located in the centre of Downtown.	Does not connect to a cycling facility to the north of Downtown; inadequate street width to support traffic, bike lanes, parking, and transit.
4 th Avenue	Could provide a continuous route; connects directly to Broadway Bridge; adequate street width; located in the centre of Downtown.	Does not connect to a cycling facility to the north of Downtown.
Spadina Crescent	Could provide a continuous route; connects directly to University Bridge.	Does not connect to a cycling facility to the south of Downtown; located on the edge of Downtown; inadequate street width to retain parking lane.

Protected Bike Lane Demonstration Project

Protected Bike Lane Demonstration Project

Where Will the Demonstration Project Be?



Building on the current major access points for people riding bikes to the downtown, a north-south and east-west street pair was determined based on an in-depth examination of downtown streets and how they connect to the larger city.

- Protected Bike Lane
- Transit Terminal
- Main Cycling Connection

Parking Utilization Study

A parking utilization study was conducted by ME2 Transportation Data Corp. in July 2014 to determine the street parking supply and utilization on, and around, 4th Avenue and 24th Street. Figure 1 presents the weekday percentage of occupied and unoccupied parking spaces in the study area from 7 a.m. to 5 p.m. The data indicated that at peak daytime parking demand, 50% of the existing parking spaces provided are unoccupied. Noon to 1 p.m. was identified as the peak hour with the highest percentage of occupied parking spaces.

Figure 1: Weekday Parking Occupancy

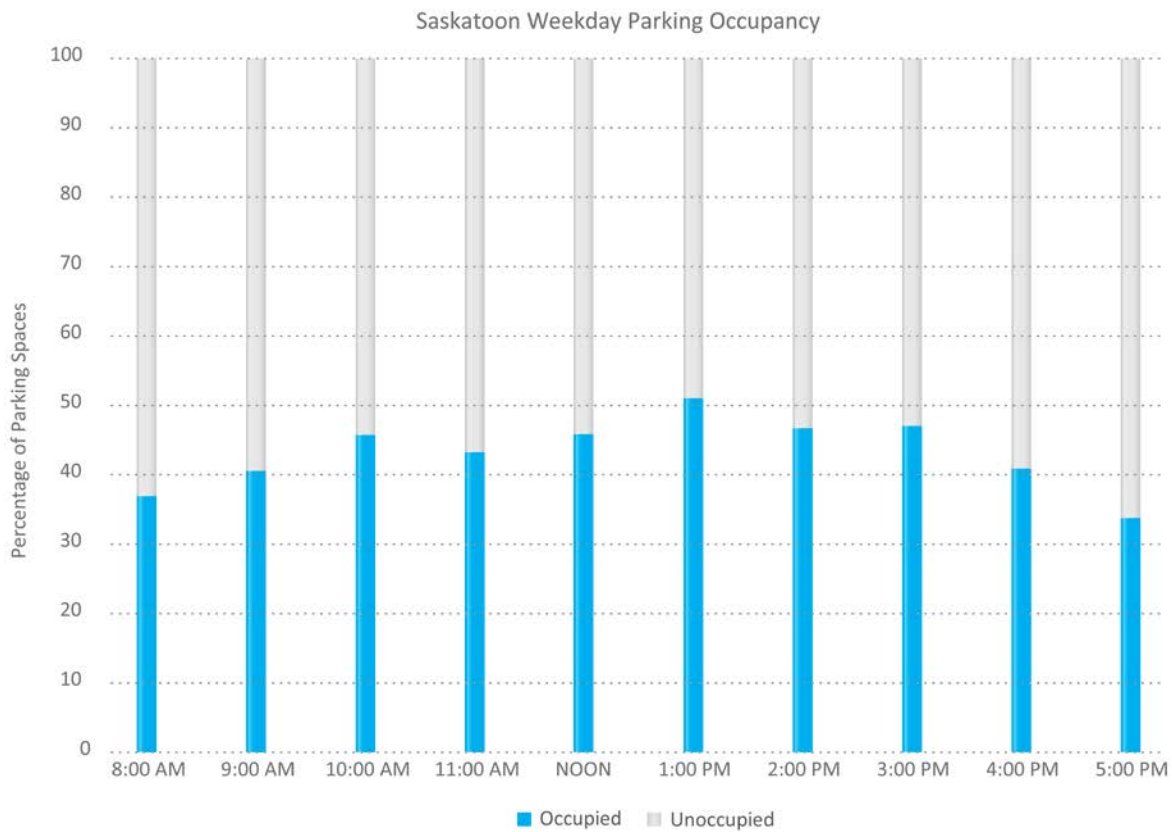
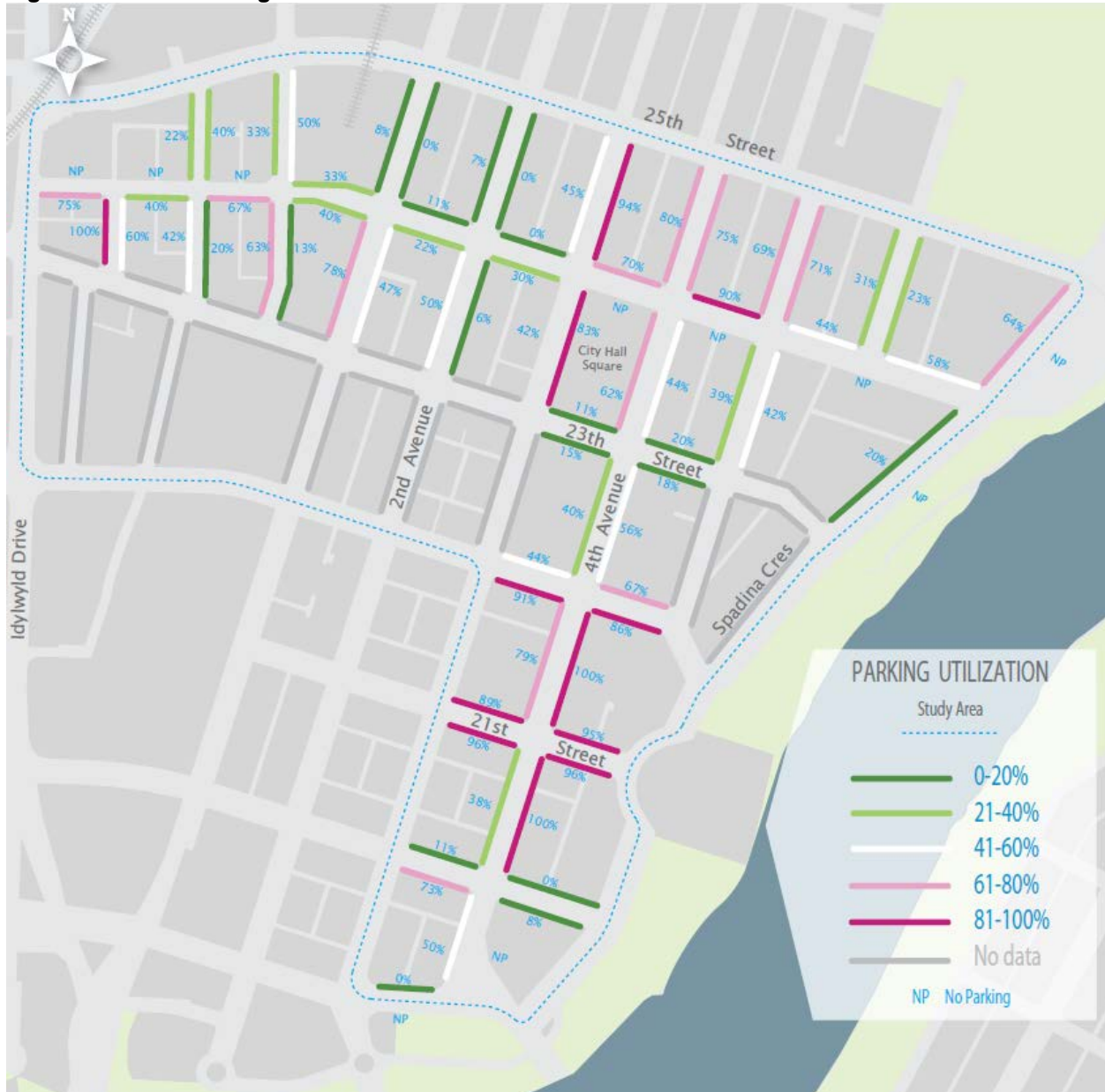


Figure 2 presents the parking utilization during the 12 p.m. to 1 p.m. peak hour in the study area. Overall, there are several block faces with low utilization percentages. However, there are areas with highly utilized parking spaces. The area around the intersection of 4th Avenue and 21st Street, and the intersection of 4th Avenue and 24th Street show a parking utilization percentage that range from 61% to 100%.

Figure 2: Street Parking Utilization



Although there are highly utilized blocks that are almost at or have reached capacity, the data shows vehicles will be able to find an unoccupied parking space in the study area during the busiest time of the weekday.

Traffic Flow Analysis

The existing and proposed level of services for the designs on 4th Avenue, 24th Street, and 23rd Street are outlined in Table 1. Protected bike lanes on 4th Avenue result in an overall LOS C (or better) in the a.m. and p.m. peak hours. The design on 23rd Street results in an overall LOS D (or better) in the a.m. and p.m. peak hours.

Table 1: Intersection Level of Service Summary

Street	Existing LOS		LOS with Protected Bike Lanes	
	a.m.	p.m.	a.m.	p.m.
	Peak Hour	Peak Hour	Peak Hour	Peak Hour
4 th Avenue	B or better	B or better	B or better	B or better
23 rd Street	B or better	B or better	B or better	B or better

Table 2 presents the existing and proposed travel times for the designs on 4th Avenue, and 23rd Street. Protected bike lanes on 4th Avenue result in an additional 14 second and 10 second travel time in the a.m. and p.m. peak hours, respectively. There is a minimal difference in travel time for either designs on 24th Street and for the 23rd Street design.

Table 2: Peak Hour Travel Times Summary

Street	Existing Travel Time (s)		Travel Time with Bike Lanes (s)		Change in Travel Time (s)	
	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.
4 th Avenue	49	58	63	68	+14	+10
23 rd Street	64	76	66	77	+3	+1

Tables 3 and 4 provide a listing of all intersections along 4th Avenue and 23rd Street and indicated the operating conditions for each traffic movement at each intersection. As well, an overall intersection LOS is provided.

Table 3: Traffic Conditions on 4th Avenue with Protected Bike Lanes

Intersection with 4 th Avenue	Movement		Operating Conditions							
			a.m. Peak Hour				p.m. Peak Hour			
			v/c ratio	Delay(s)	LOS	Queue (m)	v/c ratio	Delay(s)	LOS	Queue (m)
20 th Street	EB	Left/Thru/Right	0.47	7.2	A	14.7	0.47	7.6	A	15.8
	WB	Left/Thru	0.24	13.0	B	19.1	0.59	20.5	C	41.3
		Right	0.06	3.8	A	3.5	0.04	2.3	A	2.1
	NB	Left	0.40	14.2	B	25.9	0.49	21.3	C	21.4
		Thru/Right	0.81	23.6	C	113.7 [†]	0.57	14.9	B	57.9
	SB	Left/Thru/Right	0.27	8.4	A	15.7	0.58	13.7	B	47.6
Intersection Summary		0.81 (max)	14.3	B		0.59 (max)	13.5	B		
21 st Street	EB	Left/Thru/Right	0.17	10.2	B	11.7	0.27	9.9	A	15.7
	WB	Left/Thru/Right	0.30	13.1	B	20.4	0.43	16.3	B	30.0
	NB	Left	0.09	8.4	A	6.4	0.20	11.8	B	7.4
		Thru/Right	0.78	20.5	C	116.0 [†]	0.51	12.5	B	57.1
	SB	Left	0.13	11.2	B	5.2*	0.12	9.9	A	6.2*
		Thru/Right	0.43	11.8	B	46.1	0.88	25.2	C	151.0 [†]
Intersection Summary		0.78 (max)	16.2	B		0.88 (max)	18.7	B		
22 nd Street	EB	Left	0.35	20.4	C	23.9	0.36	21.0	C	23.3
		Thru	0.36	18.7	B	36.5	0.29	17.8	B	30.2
		Right	0.51	7.6	A	15.4	0.34	5.4	A	11.5
	WB	Left	0.12	16.6	B	8.5	0.16	16.9	B	12.6
		Thru/Right	0.23	15.0	B	21.6	0.39	17.6	B	35.2
	NB	Left	0.42	8.7	A	11.4*	0.57	14.4	B	16.8
		Thru/Right	0.60	8.4	A	29.7*	0.48	8.7	A	28.7
	SB	Left	0.08	7.3	A	2.9*	0.03	6.5	A	1.0*
		Thru/Right	0.41	7.5	A	25.8	0.57	8.3	A	30.8
Intersection Summary		0.60 (max)	10.7	B		0.58 (max)	11.7	B		
23 rd Street	EB	Left/Thru	0.06	13.8	B	6.4	0.06	13.8	B	6.1
		Right	0.13	4.8	A	6.8	0.05	3.6	A	2.8
	WB	Left/Thru/Right	0.14	11.0	B	8.3	0.12	10.4	B	7.5
	NB	Left	0.14	12.0	B	7.0*	0.15	12.0	B	8.9*
		Thru/Right	0.61	15.5	B	53.1	0.56	14.8	B	56.1
	SB	Left	0.11	10.5	B	6.9	0.07	9.9	A	5.1
		Thru/Right	0.50	13.8	B	54.5	0.59	15.7	B	68.6
Intersection Summary		0.61 (max)	13.4	B		0.59 (max)	14.1	B		

* Note: Volume for 95th percentile queue is metered by upstream signal

[†] Note: 95th percentile volume exceeds capacity, queue may be longer

Table 4: Traffic Conditions on 23rd Street with Protected Bike Lanes

Intersection with 23 rd Street	Movement		Operating Conditions							
			AM Peak Hour				PM Peak Hour			
			v/c ratio	Delay (s)	LOS	Queue (m)	v/c ratio	Delay (s)	LOS	Queue (m)
Idylwyld Drive	EB	Left/Thru/Right	0.58	38.3	D	31.4	0.70	39.7	D	35.8
	WB	Left/Thru/Right	0.24	21.5	C	11.0	0.73	28.9	C	35.5
	NB	Left/Thru/Right	0.48	6.5	A	48.0	0.42	7.6	A	43.0
	SB	Left/Thru	0.35	5.6	A	24.9	0.52	8.5	A	52.5
		Right	0.08	1.4	A	4.3	0.13	1.6	A	6.6
	Intersection Summary		0.58 (max)	9.4	A		0.73 (max)	13.0	B	
Pacific Avenue	EB	Left/Thru/Right	0.34	11.7	B	16.3	0.41	13.4	B	20.4
	WB	Left/Thru/Right	0.25	11.6	B	11.8	0.45	14.6	B	21.3
	NB	Left/Thru/Right	0.10	4.5	A	6.5	0.41	7.5	A	22.3
	SB	Left/Thru/Right	0.07	5.5	A	6.1	0.18	5.0	A	10.1
	Intersection Summary		0.34 (max)	10.2	B		0.45 (max)	11.3	B	
1 st Avenue	EB	Left/Thru/Right	0.29	10.0	A	13.7	0.59	13.5	B	28.3
	WB	Left/Thru/Right	0.17	10.7	B	11.0	0.33	12.5	B	18.5
	NB	Left	0.16	10.7	B	9.1	0.22	12.5	B	9.1
		Thru/Right	0.47	10.7	B	28.8	0.47	11.1	B	29.7
	SB	Left	0.09	10.1	B	5.1	0.05	9.5	A	3.4
		Thru/Right	0.28	8.1	A	15.4	0.55	12.4	B	36.3
	Intersection Summary		0.47 (max)	9.9	A		0.59 (max)	12.3	B	

* Note: Volume for 95th percentile queue is metered by upstream signal

Table 4 Continued

Intersection with 23rd Street	Movement		Operating Conditions								
			AM Peak Hour				PM Peak Hour				
			v/c ratio	Delay (s)	LOS	Queue (m)	v/c ratio	Delay (s)	LOS	Queue (m)	
2nd Avenue	EB	Left	0.31	12.5	B	17.5	0.66	19.6	B	47.9 [†]	
		Thru/Right	0.14	6.0	A	6.0*	0.29	4.4	A	7.5*	
	WB	Left/Thru/Right		0.11	12.3	B	8.7	0.09	10.4	B	6.3*
		NB	Left	0.07	9.8	A	4.8	0.14	11.7	B	7.4
	Thru/Right		0.51	14.7	B	41.8	0.61	17.5	B	50.7	
	SB	Left	0.02	9.5	A	1.7	0.03	10.5	B	1.8	
		Through	0.37	12.5	B	28.6	0.59	17.1	B	47.9	
		Right	0.20	3.6	A	7.2	0.28	3.9	A	9.0	
	Intersection Summary			0.51 (max)	11.7	B		0.66 (max)	14.6	B	
	3rd Avenue	EB	Left/Thru/Right		0.08	2.0	A	0.0	0.10	13.2	B
WB			Left/Thru	0.10	11.2	B	7.1	0.16	12.0	B	9.4
		Right	0.09	3.8	A	3.8	0.20	4.8	A	6.6	
NB		Left	0.03	9.4	A	1.8	0.03	9.5	A	1.7	
		Thru/Right	0.24	8.4	A	13.4	0.36	10.0	B	21	
SB		Left	0.07	9.6	A	5.0	0.16	11.0	B	8.3	
		Thru/Right	0.24	9.4	A	14.3	0.40	11.3	B	24.9	
Intersection Summary			0.24 (max)	8.6	A		0.40 (max)	10.4	B		
4th Avenue	EB	Left/Thru	0.10	15.3	B	11.4	0.13	18.1	B	14.8	
		Right	0.00	0.0	A	0.0	0.06	4.8	A	3.5	
	WB	Left/Thru/Right		0.07	11.6	B	5.7	0.21	13.6	B	13.5
		NB	Left	0.09	10.9	B	7.2	0.15	11.1	B	9.8
	Thru/Right		0.68	19.0	B	83.2	0.58	15.9	B	74.4	
	SB	Left	0.17	12.6	B	9.6	0.08	10.1	B	5.5	
		Thru/Right	0.53	15.4	B	60.7	0.59	16.1	B	76.1	
	Intersection Summary			0.68 (max)	16.6	B		0.59 (max)	15.3	B	

* Note: Volume for 95th percentile queue is metered by upstream signal

[†] Note: 95th percentile volume exceeds capacity, queue may be longer

Economic Impact Studies

Reference #1: “Bike Lanes, On-Street Parking and Business: A Study of Bloor Street in Toronto’s Annex Neighbourhood” (Clean Air Partnership, 2009)

Summary-

The purpose of the study was to understand and estimate the importance of on-street parking to business.

This study concluded that, the spending habits of cyclists and pedestrians, their relatively high travel mode share, and the minimal impact on parking all demonstrate that merchants in this area are unlikely to be negatively affected by reallocating on-street parking space to a bike lane. Rather, this change will likely increase commercial activity.

Reference #2: “Lessons From The Green Lanes: Evaluating Protected Bike Lanes In The U.S.” (Monsere et al., 2014)

Summary

The report examines protected bike lanes in five cities (i.e., Austin, Texas; Chicago, Illinois; Portland, Oregon; San Francisco, California; and, Washington, District of Columbia).

Overall, nearly three times as many residents felt that the protected bike lanes had led to an increase in the desirability of living in their neighbourhood (42%), as opposed to a decrease in desirability (14%). The remainder stated there had been no change in desirability.

Approximately 19% of intercepted bicyclists and 20% of residents who bicycled on the street stated that how often they stop at shops and businesses increased after the installation of the protected bike lanes. Few respondents indicated their frequency decreased (1% of bicyclists and 6% of residents). Most indicated no change.

Similarly, approximately 12% of the residents stated that they are more likely to visit a business on the corridor since the protected bike lanes were built. 9% indicated they were less likely. Most self-reported no change.

Reference #3: “The Economic Benefits of Sustainable Streets” (New York City DOT)

Summary

New York City Department of Transportation (DOT) determined the economic impacts of the installation of protected bike lanes at two project locations in Manhattan – on Columbus Avenue and on 9th Avenue.

The change in sales for locally-based businesses within the improvement sites before and after project implementation was compared to changes in the same period for the comparison sites as well as the respective borough as a whole.

The first project location was Columbia Avenue. After the construction of a protected bike lane on Columbus Avenue, local businesses saw a 20% increase in retail sales compared to the 9% increase on the section of Columbus Avenue where no changes were made. The results show that Columbus Avenue did grow substantially compared to similar nearby sites in each quarter. However, it did not outperform sales growth in Manhattan as a whole.

The second project location was 9th Avenue. The results showed that protected bike lanes had a significant positive impact on local business strength. After the construction of a protected bike lane on 9th Avenue, local businesses saw a 49% increase in retail sales. In comparison, local businesses throughout Manhattan only saw a 3% increase in retail sales.

Reference #4: “Vancouver Separated Bike Lane Business Impact Study” (Stantec, 2011)

Summary

Two separated two-way bike lane trial projects were constructed in Vancouver's downtown in 2010. To construct the separated bike lanes, road space was reallocated and a total of 172 parking spaces were removed (156 from Hornby St. and 16 from Dunsmuir St.). Some loading zones were moved and turn restrictions were introduced in five locations to reduce the risk of bicycle collisions, some parking was removed, the illegal use of some loading areas was eliminated, and pedestrians at some locations had to cross the bike lanes.

The study collected basic business economic data on rents, sales, vacancy and lease rates that would indicate the impact of the separated bike lanes, as well as data on the frequency of shopping visits by downtown or Metro Vancouver customers after the implementation of the separated bike lanes.

Based on a grade-level business survey, the financial impact of the bike lanes had been a loss of sales and a loss of profit. The total loss in sales is estimated at \$2.4 million over a year and the total loss in profit is estimated at \$480,000 over a year (assuming profit is approximately 20% of sales). These impacts were primarily attributed to the decrease in the number of on-street parking spots, increase in traffic congestion and decrease in accessibility for motor vehicle and pedestrian traffic that the project introduced.

References

1. Clean Air Partnership. Bike Lanes, On-Street Parking, and Business: A Study of Bloor Street in Toronto's Annex Neighbourhood. February 2009. Available at bit.ly/1kjDfC0. Accessed February 19, 2015.
2. Monsere, C., J. Dill, N. McNeil, K. Clifton, N. Foster, T. Goddard, M. Berkow, J. Gilpin, K. Voros, D. van Hengel, and J. Parks. Lessons From The Green Lanes: Evaluating Protected Bike Lanes In The U.S. Final Report, June 2014. Available

at http://ppms.otrec.us/media/project_files/NITC-RR583_ProtectedLanes_FinalReport.pdf. Accessed February 19, 2015.

3. New York City DOT. The Economic Benefits of Sustainable Streets. Available at <http://www.nyc.gov/html/dot/downloads/pdf/dot-economic-benefits-of-sustainable-streets.pdf>. Accessed February 19, 2015.
4. Stantec Consulting Ltd, Site Economics, and Mustel Group Market Research. Vancouver Separated Bike Lane Business Impact Study. Prepared for the Vancouver Economic Development Commission, City of Vancouver, Downtown Vancouver Association, Downtown Vancouver Business Improvement Association, The Vancouver Board of Trade, 2011.

Engagement Summary

The Administration has undertaken extensive and thorough engagement with stakeholder groups, internal civic divisions, and the general public. The following is a listing of all the formal engagement efforts for the project (does not include communications by telephone and email) since June 2014.

Stakeholder: The Partnership (Downtown Business Improvement District)
Meeting Dates: August 28, September 16, January 16.

Stakeholder: Saskatoon Cycles
Meeting Dates: August 29, September 16, January 16.

Stakeholder: Cycling Advisory Group
Monthly (six in total)

Interest Group: Tourism Saskatoon
Meeting: October 7

Interest Group: Combined Business Group
Meeting: November 20

Business and Property Owners: 4th Avenue and 24th Street
Open House: October 21

Business and Property Owners: 23rd Street
Meeting: January 23

General Public:
Open House: October 21
Shaping Saskatoon Online Engagement Tool – Fall 2014

October 21st -- Open House Event Summary

On October 21, 2014, the City hosted two open houses, inviting people to learn more about the protected bike lane concept and to provide feedback about the proposed 18-month demonstration project. Protected bike lanes on 4th Avenue and a combination of protected bike lanes and green lanes on 24th Street was presented. The open houses were facilitated by Doug Fast of Fast Consulting.

Approximately 70 people attended each of the open houses, which were held on the route of the proposed bike lane at Le Relais in Downtown Saskatoon. Twelve comment forms were received from stakeholders or businesses attending the stakeholder open house in the afternoon, and 43 participants at the public open house in the evening. The *Shaping Saskatoon* online forum generated another 15 comments, and a survey posted on the website was completed by 482 respondents.

It was found that the public and stakeholders are generally supportive of the Protected Bike Lane Project – 95% believe it will increase comfort for people riding bikes, 85%

believe it will improve the accessibility of Downtown, and 84% believe it will improve the attractiveness of Downtown.

February 24, 2015 – Comprehensive Stakeholder Meeting

On February 24, 2015, the City hosted a comprehensive meeting of community stakeholder groups and civic divisions. This meeting was facilitated by civic staff and attended by the following agencies and civic divisions:

- Cycling Advisory Group
- Saskatoon Tourism
- Partnership
- Riversdale BID
- Broadway BID
- Saskatoon Cycles
- Meewasin Valley Authority
- Saskatoon Chamber of Commerce
- North Saskatoon Business Association

- Fire Department
- Public Works Division
- Transportation Division
- Saskatoon Transit Services
- Saskatoon Police Service
- Community Services Department

This meeting provided an opportunity for stakeholders to and civic divisions to openly discuss the benefits and challenges that the project had for the community and their respective organizations. It was broadly recognized that this project had strong potential to benefit the vitality of downtown and to improve access to the downtown for people riding bikes without compromising current accessibility.



Protected Bike Lane Demonstration Project Stakeholder & Community Champion Meeting Summary February 24, 2015

Project Description

The Protected Bike Lane Demonstration Project is intended to demonstrate to the general public and stakeholders how protected bike lanes would look and feel for cyclists, pedestrians, and drivers in the downtown area.

Protected Bike Lanes physically separate people riding bikes from drivers, making this transportation option more attractive by increasing the comfort level and feeling of safety by 'protecting' cyclists from traffic. The lanes benefit drivers, as separate space for cyclists increases the predictability and comfort of driving. Protected lanes also reduce 'sidewalk riding' which is beneficial for pedestrian safety.

Engagement Strategy and Outcomes

The Protected Bike Lane Demonstration began as a community-initiated project to introduce protected bike lanes, to improve cycling as a strategy, and to create a vibrant and healthy downtown. A Stakeholder and Community Champion Meeting was held on February 24, 2015, to provide an opportunity for continued involvement of stakeholders and community champions throughout the process. This meeting is in addition to the previous two Open Houses held in October 2014; online engagement; a survey; and ongoing meetings with stakeholder groups.

The meeting began with a brief overview of the process to date; technical and design considerations; route options; and the meeting purpose. Attendees participated in a facilitated discussion about issues, possible solutions, and areas of shared agreement. City staff were in attendance to hear concerns, answer questions, provide input for possible solutions, and record the discussion.

Attendees were made aware that a summary of the discussion would be included as part of a report to be presented at the Standing Policy Committee on Transportation on March 9, 2015 and the March 23rd, 2015 Council Meeting. In addition to the discussion, attendees were welcomed to provide written feedback after the meeting.



Participants discussed concerns with the project, primarily the issue of a proposed route adjoining the Transit mall. As the conversation continued, the participants identified potential solutions to manage the Transit mall issue in the short-term, for the long-term benefit of demonstrating protected bike lanes. It was identified that joining bike lanes to a transit hub could also be seen as a beneficial connection. The meeting concluded with participants discussing how to show support for the project through the next steps in the process.

Stakeholder Engagement Summary

Representatives from organizations with an interest in Saskatoon's city centre and/or the cycling strategy were identified as stakeholders and potential community champions. These groups were sent email invitations with follow-up phone calls to ensure the invitation was received and to clarify the purpose of meeting.

Representatives from the following organizations were in attendance:

- Saskatoon Cycles
- Cycling Advisory Group
- The Partnership
- Riversdale Business Improvement District
- Broadway Business Improvement District
- Meewasin Valley Authority
- Saskatoon Tourism
- North Saskatoon Business Association

The following internal stakeholders were also in attendance:

- Transportation
- Roadways
- Fire
- Transit
- Police
- Active Transportation Plan
- Parking

The discussion began with addressing concerns, identifying potential solutions, and identifying points of shared agreement and support for the project. The following themes arose throughout the discussion:

1. Route Locations
2. Transit Mall
3. Infrastructure and Facilities
4. Success Factors



1. Route Locations

Route options previously proposed along 4th Avenue and 24th Street were reviewed in the presentation, with an explanation of the new proposal for 23rd Street and postponing 4th Avenue due to the University Bridge construction and closure.

A concern was raised among some participants that because of the Transit mall, cyclists might choose to use 24th or other routes to bike through downtown, limiting the number of cyclists using the protected lane during the demonstration. It was suggested that a combination of quantitative and qualitative measures could be used as indicators of success.

It was pointed out that 23rd Street would be a better route for people wanting to bike to the downtown as a destination point. A link to the Meewasin trails would also serve recreational cyclists who would be more comfortable cycling on paths and separated bike lanes. There was understanding among participants that although in the short-term 23rd Street has limitations as a through-way for those cycling through the downtown along this route; it would be in the best interest to support this location choice in order to move forward with the demonstration and cycling strategy in the long-term.

2. Transit Mall

The Transit mall was identified as a potential barrier to cyclists using the protected lane. However, it was also pointed out that for those biking downtown as a destination it may not be an issue compared to those cycling through downtown.

Participants discussed issues and solutions for managing the pedestrian/cyclist/vehicle interactions when transitioning from a protected bike lane to a transit mall. Suggested solutions included adding signage and related infrastructure to ensure bikes would be walked through the mall, and education and monitoring to ensure rules were followed. It was generally agreed that, while the Transit mall poses potential issues in the short-term, these can be overcome.

3. Infrastructure and Facilities

Addressing infrastructure needs, especially at the Transit mall location, was of importance to the group. Suggestions were made for adequate signage, use of fencing, and ongoing maintenance of the new infrastructure. It was recommended that more facilities would need to be provided for parking bikes if we expected more people to be biking downtown. Consideration for accessibility needs and safety was discussed. There was discussion about maintenance of the lanes, especially clearing of snow, with the recommendation that maintenance be contracted for the duration of the pilot.



4. Success Factors

Questions arose about what indicators would be used to measure project success. There was some discussion about possible indicators, including number of users, increase in number of bikes downtown, perception of safety while using the protected lanes, and increased perception of visiting downtown as a destination.

Participants identified the need for raising awareness and education for pedestrians, cyclists, and drivers as an important element. As well, participants asked if there would be monitoring and response to issues throughout the demonstration. A link between the demonstration project and the Active Transportation Plan was identified as a potential benefit.

Next Steps

Stakeholders at the meeting voiced their overall support for the project and asked how they could demonstrate their support beyond this meeting. They were informed of the committee and council process and dates that the project report would be presented.

If the project is approved, an engagement and communications plan will be prepared, for implementation throughout the demonstration period. Administration will continue to work with stakeholders and community champions, ensuring that there is flexibility and responsiveness to issues that may arise during the pilot.

Administration will invite stakeholders to participate in determining the key measures and success indicators. Stakeholders offered to share information to raise awareness, educate users, and promote the demonstration of protected bike lanes. Regular updates to Council, stakeholder groups, and the general public will be provided.

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March 2, 2015