

City of
Bellevue



Transportation Commission Study Session

DATE: March 28, 2019

TO: Chair Wu and Members of the Transportation Commission

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SUBJECT: Downtown Demonstration Bikeway Assessment & Proposed Next Steps

DIRECTION REQUESTED

Action (Endorsement)

Discussion

Information

At its March 28, 2019 meeting, staff will share with the Transportation Commission an assessment of the 108th Avenue Northeast Demonstration Bikeway Project. After which, staff seeks Commission endorsement to:

- retain the 108th Avenue Northeast Demonstration Bikeway with refinements to the design per community feedback and staff observations (implementation through Summer 2020); and,
- incorporate rapid-build bicycle facilities on Main Street between 108th Avenue Northeast and Bellevue Way as the next logical element of a downtown bicycle network (implementation through Fall 2019).

Attached is a draft transmittal letter for Commission discussion and action (Attachment 1). Staff requests Commission representation at the City Council's May 13 study session meeting to share insights and the transmittal letter.

Note: Multiple hyperlinks are included in this memo, requiring extensive Commission consideration. It will not be possible to review these materials in depth at the March 28 meeting. Staff offers to meet with Commissioners to review materials and answer questions in advance of the March 28 meeting.

Background

Guided by the City Council's Pedestrian and Bicycle Implementation Initiative (PBII) [Program Principles](#) and [Scope of Work](#), the Transportation Commission and staff are working with community stakeholders to advance the projects and programs identified in the [2009 Pedestrian and Bicycle Transportation Plan](#).

At its January 11, 2018 meeting, the Transportation Commission reaffirmed the 2009 Plan directive to implement a high comfort priority bicycle route through Downtown Bellevue. Voting five in favor and two opposed, the Transportation Commission recommended proceeding with implementation of a downtown demonstration bikeway project on 108th Avenue Northeast, from Main Street to Northeast 12th Street (see [Commission Transmittal Letter to the City Council](#)).

At its February 5, 2018 meeting (see [agenda materials](#)), the City Council voiced support for the demonstration bikeway project as a north-south priority bicycle corridor in the 2009 Pedestrian and Bicycle Transportation Plan that provides connections to regional bicycle routes. Councilmembers concurred with the Transportation Commission that a before-and-after study should be conducted to assess outcomes for all street users, including people bicycling, walking, driving, using transit, and transporting goods, based on data and community engagement (see [minutes](#)).

At its April 12, 2018 meeting the Transportation Commission endorsed an assessment framework for the 108th Avenue Northeast Demonstration Bikeway project informed by input from the Bellevue Downtown Association, industry best practices, and guidance documents from other communities (see [memo](#)). Staff is now prepared to share the results of its assessment of the demonstration bikeway having leveraged loop detectors, bluetooth readers, thermal sensors, video analytics, attitudinal questionnaires, street level and video observations, and conversations with residents, businesses, coach operators, and other stakeholders.

108th Avenue Northeast Demonstration Bikeway Project

The [Assessment Report](#) and [Technical Appendix Report](#) details the results of the 108th Avenue Northeast Demonstration Bikeway Project. These reports provide insights into community outcomes in safety, efficiency, and livability; in this next section is an overview of the results of monitoring through the month of December.

Safety Outcomes

- Collisions: There have not been any reported collisions between a motor vehicle and a person riding a bicycle along the 108th Avenue NE bikeway. The average number of collisions (all modes) in the previous 5 years was 28.8 collisions/year for the entire corridor.

In the 6 months, after period there were 14 collisions (all modes) which roughly equals the before average if expanded to a full year.

- Perceptions of Safety: The 108th Avenue NE Bikeway improved the public's feeling of safety and comfort for all road users: (i) People bicycling – 87% reported feeling “safer and more comfortable” compared to before conditions; (ii) People driving: 43% reported feeling “safer and more comfortable” compared to before conditions; (iii) People walking: 37% reported feeling “safer and more comfortable” compared to before conditions. Among respondents overall, 75% feel that bike lanes should be available to make roads safer, and 66% feel that bike lanes should be separated from motor vehicles.
- Traffic Conflicts & Interactions: Average bicycle sidewalk riding was reduced by 18% at NE 8th St and 8% at NE 4th St. 85% of bicyclist use the bike lanes at NE 4th St and NE 8th St. Main St had less sidewalk riding to begin with but also saw minimal change.

Efficiency Outcomes

- Motor Vehicle Travel Time: Vehicle travel time changed by less than a minute. The average midweek travel time from north of NE 8th St to south of NE 4th St has decreased from 2.5 to 2.1 minutes southbound and 2.6 to 2.3 minutes northbound.
- Bus Delay: Overall, the average bus delay did not increase after the installation of the 108th Ave NE bikeway. The addition of the southbound to westbound right turn overlap reduced average bus dwell time by over 30% or roughly 15 seconds. Most common feedback from transit operators was that: the new facility better defines where to expect bicyclists; the new configuration is too narrow and tight; the bus queue jump is helpful when traffic is heavy (however it also confused some drivers); and, there is a potential conflict with bicyclists at the NB to EB right turn at NE 12th St.
- Automobile Delay: Overall, the calculated delays for the “After-Updated” conditions were consistent with what was predicted in the initial Before and After modeling. The model showed slight changes in delay that were consistent with changes in volumes observed in the after condition. The NE 6th St and 108th Ave intersection indicated slightly more delay in the After-Updated condition due to the added bus jump.
- Network Assessment: The demonstration bikeway did not impact the operations of other downtown intersections. None of the locations showed a significant increase in percent of time with a degree of saturation over 100. 110th/NE 4th was more saturated during the before period, which was likely attributed to the full road closure of 110th Ave NE south of NE 6th St.

Livability Outcomes

- Facility Use (Bicycle Volumes): Average daily bicycle ridership increased by 35 percent. Highest number of bicycles recorded in 1 hour was 32.
- Facility Use (Bicycle Share): During the first six months of the bike share pilot, 6,297 users took 27,905 trips using Lime bikes in Bellevue. At least 25% of users and 16% of trips traveled along the 108th Ave NE corridor, making it the most used corridor by bike share users Downtown.
- Facility Use (Vehicle Volumes): The change in peak hour vehicle volumes varied by intersection but overall was not significant for most intersections. Volumes decreased north

of NE 6th St in the AM peak but increased in the PM peak. The trend was the opposite for intersections south of NE 6th St.

- **User Satisfaction:** A plurality of questionnaire respondents feel that the demonstration bikeway strikes the right balance to address the needs of all street users, though many are undecided. Those who have biked and driven along the corridor alike like that bikes and cars are more separated. Those who have biked agree that more separation is warranted, with less confident riders being particularly supportive. Regardless of how respondents typically travel in Bellevue, 65% support building more bike lanes at other locations in Downtown.
- **Bicycle Level of Service:** The 108th Ave NE corridor went from having all street segments at an LTS 4 in “before” conditions (appropriate only for “strong and fearless” bicycle riders) to having 75% of street segments at an LTS 2 (appealing to “interested but concerned” bicycle riders) in “after” conditions. Among questionnaire respondents, people bicycling and driving alike feel more comfortable traveling along bike lanes that are buffered, physically separated, and painted green.
- **TNC and Freight Delivery:** The installation of vertical dividers reduced the amount of time that the bike lane was blocked by vehicles by 93%, from 81.9 minutes in a 3-hour period to 5.9 minutes. Gaps in the vertical dividers resulted in there still being instances where the bike lane was still blocked. Staff worked with TNC providers to designate load zones in the vicinity. New curbside passenger load/unload zones were established on both on 108th Avenue NE and on nearby cross streets, such as NE 4th Street.

Given the above takeaways, staff recommends Commission endorse retention of the 108th Avenue Northeast Demonstration Bikeway. And, since Transportation Levy funds were set-aside for 2019-20 to either remove or refine the 108th Avenue NE Demonstration Bikeway Project staff further proposes the following improvements to the design of this corridor per community feedback and staff observations:

- Add bicycle signals and evaluate signal phasing adjustments to enhance safety and traffic flow.
- Adjust midblock crosswalk layout at 108th / NE 2nd Pl to provide space for a northbound bike lane. This work would be done in conjunction with Traffic Engineering’s project to upgrade the flashing system to an RRFB.
- Enhance signage, pavement markings, and physical separation in select locations to help bicyclists navigate the corridor. These improvements will visually indicate to motorists that they are driving along a bicycle route and should use caution.
- Evaluate opportunities to create buffered/separated bike lanes for the south half of the block between Main Street and NE 2nd St. Implement as funding allows.
- Explore and implement solutions to increase planter box visibility (e.g. reflective tape, paint, delineators).
- Explore opportunities to reduce conflicts with pick-up/drop-off activities on corridor.

Each of these refinements to the 108th Avenue Northeast Demonstration Bikeway corridor and others still under consideration allow for flexibility to adapt to Bellevue’s evolving Downtown construction cycle. Implementation is anticipated between Summer 2019 and Summer 2020.

Main Street Bikeway Project

The Transportation Commission's January 11, 2018 decision to recommend to Council that staff proceed with implementing the downtown demonstration bikeway project on 108th Avenue Northeast was informed by an extensive consultative process considering four candidate corridors (see [map](#)). Commission recognized that Main Street stood out as the preferred second choice (see [minutes](#)) and staff was directed to focus its implementation of one north-south priority bicycle corridor (i.e., 108th Avenue NE) and return with the results to inform consideration of next steps in implementing the Downtown Bellevue bicycle network.

With Transportation Levy funding available to build on the Downtown bicycle network in 2019, staff brings forward an assessment of two Main Street alternatives for Commission consideration and recommended action at its March 28 meeting. Currently, a westbound bike lane on Main Street exists between 103rd Avenue and 106th Avenue, and an eastbound bike lane exists between 103rd Avenue and 105th Avenue. Both directions feature dedicated bike lanes through the Bellevue Way intersection today.

The Main Street bikeway project alternatives build upon these existing bike lanes on Main Street and will establish a continuous east-west connection to the 108th Ave NE Demonstration Bikeway Project.

Alternative 1

- In the eastbound direction, Alternative 1 extends the existing buffered bike lane on Main Street from 105th Avenue to 108th Avenue by repurposing one eastbound travel lane. (Note: This second eastbound lane has been closed during peak periods since 2017 due to Alamo Manhattan II construction.)
- In the westbound direction, Alternative 1 installs a parking-protected bike lane on Main Street from 108th Avenue to 106th Avenue and enhances the existing striped bike lane into a buffered bike lane between 106th Avenue and Bellevue Way. This alternative involves repurposing a westbound travel lane from Bellevue Way to 108th Avenue.

Alternative 2

- In the eastbound direction, Alternative 2 extends the eastbound buffered bike lane on Main Street from 105th Avenue to 108th Avenue by repurposing one eastbound travel lane. (Note: This second eastbound lane has been closed during peak periods since 2017 due to Alamo Manhattan II construction.)
- In the westbound direction, Alternative 2 extends the existing striped bike lane on Main Street from 106th Avenue NE to 107th Avenue and installs a buffered bike lane between 107th Avenue and 108th Avenue. Alternative 2 maintains two westbound travel lanes.

Both alternatives were evaluated in SimTraffic to determine the impact to overall operations; summarized below for the PM Peak Hour comparing intersection vehicle delay (seconds/vehicle) and Level of Service (see Attachment 2 for additional details).

Intersection	Existing		Alternative 1		Alternative 2	
Bellevue Way/Main St	54.6 secs	D	55.0 secs	D	51.8 secs	D
106th/Main St	21.7 secs	C	39.7 secs	D	21.0 secs	C
108th/Main St	17.6 secs	B	35.5 secs	D	24.5 secs	C

As noted in the above table, there are more significant impacts on intersection LOS with Alternative 1 than Alternative 2. Removal of one westbound travel lane in Alternative 1 would increase intersection delay at both 106th Avenue NE and 108th Avenue NE. In Alternative 2, impacts to intersection LOS are only limited to 108th Avenue NE.

In addition to intersection delay, staff assessed the impact of Alternative 1 and 2 on travel time along Main Street. This effort evaluated travel times in both directions from just west of Bellevue Way to just east of 108th Avenue. Compared to existing conditions, travel times in Alternative 1 increased in both directions during the PM peak hour, while travel times in Alternative 2 stayed the same.

Direction	Existing	Alternative 1	Alternative 2
Eastbound (Bellevue Way to 108th)	2.3 mins	2.4 mins	2.3 mins
Westbound (108th to Bellevue Way)	1.7 mins	2.6 mins	1.7 mins

Bellevue recognizes it must consider the broader context within which its transportation network evolves—how it preserves and enhances economic vitality, community character, human health, and environmental resources—in addition to serving peoples’ mobility needs. It is in this context that implementation of the Main Street Bikeway Project demonstrates:

- Progress towards Council adopted performance targets in the [2009 Pedestrian and Bicycle Transportation Plan](#); Policy PB-2 states: “Within 5 years (**2014**) implement at least one completed and connected east-west and north-south bicycle route through Downtown Bellevue.” [Note: Main Street is identified as priority bicycle corridor in the 2009 Plan].
- Commitment to the [Bellevue Downtown Association recommendation](#) – arising from the [Downtown Demonstration Bikeway Project](#) consultative process – that asserts that more can be done to implement a well-connected and comfortable bike network in Downtown Bellevue that meets the community’s expectations for improved safety and mobility.
- Commitment to residents who approved the [Neighborhood Safety, Connectivity and Congestion Levy](#) in November 2016 that includes dedicated funding (approximately \$1M/annually) to implement bicycle facility improvements in the [Bicycle Rapid Implementation Program](#) (including Main Street; identified as Project PBC-13).

Given the above considerations, staff recommends Commission endorse implementation of the Main Street Bikeway Project (Alternative 2) through Fall 2019 as the next logical improvement to the downtown bicycle network.

ATTACHMENTS:

- Attachment 1 – Draft Commission Transmittal Letter to the City Council
- Attachment 2 - SimTraffic Performance Report of Main Street Project Alternatives