Lake Forest Park

SAFE HIGHWAYS REPORT

March 2018

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3SQUAREBLOCKS

Contents

Executive Summary

The City of Lake Forest Park is a desirable suburban community that over 13,000 residents call home. True to its name, Lake Forest Park is defined by its proximity to Lake Washington and its forested, park-like ambiance. However, Lake Forest Park is also defined by two major highway corridors that traverse the community: Bothell Way (SR 522) and Ballinger Way (SR 104). While these corridors connect Lake Forest Park residents to jobs, services, and other regional opportunities, they also divide the community by their sheer size, traffic volumes, and outdated designs, which offer little in the way of accommodations for those not travelling in a car. Further, the same corridors connect the region's north and northeast areas to drivers who do not necessarily know they are coming through our community.

In 2016, the Lake Forest Park City Council adopted a Strategic Plan, which identified the need to proactively plan the SR 522 and SR 104 corridors to improve safety and community mobility.

This Strategic Plan goal came at a fortuitous time. In November 2016, regional voters passed Sound Transit 3, a $54 billion package to expand transit in the Puget Sound through 2041. Sound Transit 3 includes funding to improve SR 522 to accommodate planned bus rapid transit (BRT) service by 2024.

This Safe Highways Study is a product of the City's Strategic Plan. The Study documents preferred cross-sections and treatments along the SR 522 and SR 104 corridors. It is the City's intention that this Study's recommendations be informative to Sound Transit in the planning of the SR 522 corridor, identification of non-BRT improvements to seek other regional investments, and provide a starting point for regional investment along SR 104.

Guiding Principles

To guide this process, including the evaluation and selection of preferred corridor improvements, the Project Team began by establishing a set of guiding principles. These guiding principles are divided into three groups:

- Principles for the **overall project** apply to both corridors and how the Project Team conducts this Study.
- Principles for **SR 522** are specific to achieving the ultimate vision of a future BRT corridor that is also a community asset.
- Principles for **SR 104** focus on realizing a corridor vision that improves safety and mobility while maintaining rural character.

Recommendations

The Safe Highways Study synthesizes the outcomes of a nine-month process, which included document review, technical analysis, stakeholder interviews, interaction with a Technical Advisory Committee, and three community meetings. The findings of this report summarize community input and the Project Team's recommendations in the following areas:

- SR 104 cross-sections & intersection layouts
- SR 522 cross-sections & 145th Street/SR 522 intersection layout
- Non-motorized access to transit investments
- Additional considerations to achieve community goals, not tied to specific locations

Project Background

The City of Lake Forest Park is a desirable suburban community that over 13,000 residents call home. True to its name, Lake Forest Park is defined by its proximity to Lake Washington and its forested, park-like ambiance. However, Lake Forest Park is also defined by two major highway corridors that traverse the community: Bothell Way (SR 522) and Ballinger Way (SR 104). While these corridors connect Lake Forest Park residents to jobs, services, and other regional opportunities, they also divide the community by their sheer size, traffic volumes, and outdated designs, which offer little in the way of accommodations for those not travelling in a car. Further, the same corridors connect the region's north and northeast areas to drivers who do not necessarily know they are coming through our community.

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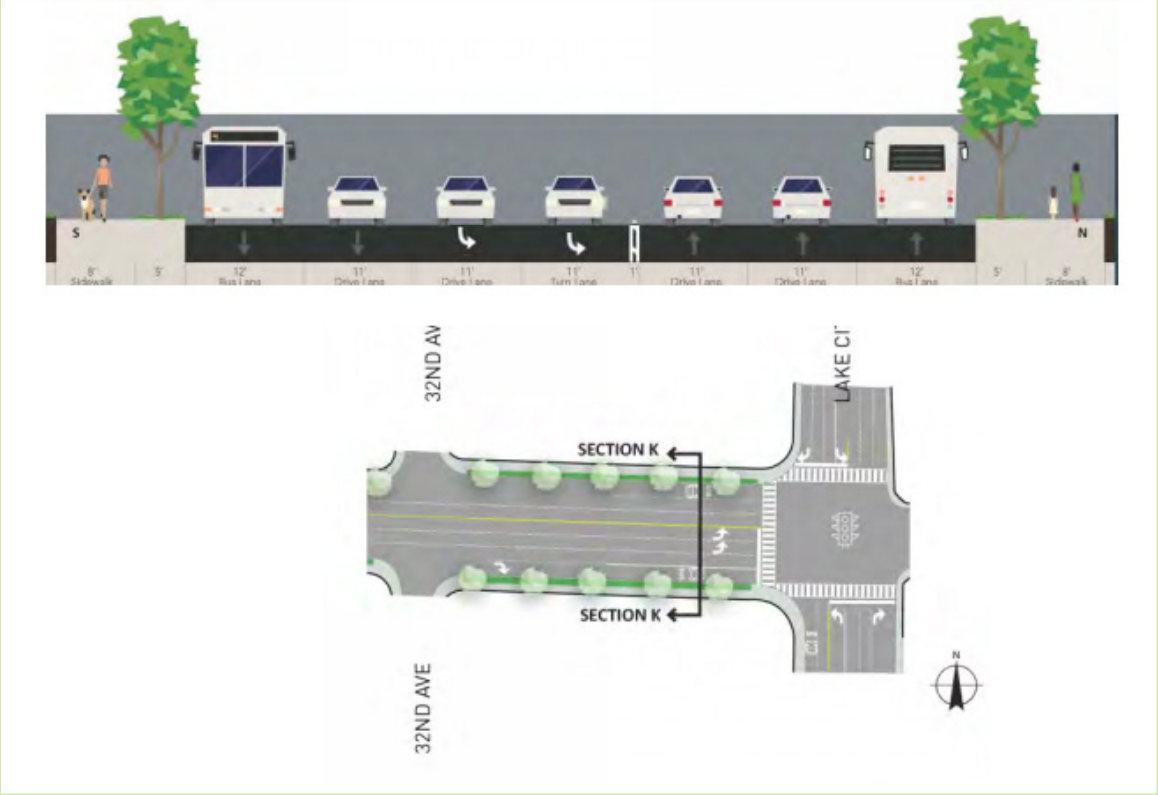
Sound Transit 3

Sound Transit 3 identifies funding to implement BRT between the 145th Street light rail station in Shoreline and the University of Washington, Bothell campus with potential lower frequency service to Woodinville. Sound Transit estimates that this eight-mile BRT service could generate up to 10,000 daily riders. Along SR 522, the project looks to provide continuous BAT lanes and seven pairs of stations, some in Lake Forest Park and others at points east in Kenmore and Bothell. The corridor would also feature three park & ride garages, one of which is assumed to be at the Lake Forest Park Town Center. The BRT service, which would run on 10-minute headways through Lake Forest Park, would be in place by 2024.

145th Street Multimodal Corridor Study

The City of Shoreline led a multimodal corridor study of 145th Street (SR 523), which connects to SR 522 at the southwest edge of this study area. Sound Transit 2 will provide a light rail station just north of 145th Street at 5th Avenue by 2023. The 145th Street study considered future improvements for pedestrian, bicycle, and transit connections along the corridor to improve access to the proposed Link light rail station. Proposed improvements included widening of 145th Street at the SR 522 signal to increase capacity and improve signal timings. The preferred street cross-section is shown in **Figure 1**.

Figure 1. Preferred Concept for NE 145th Street/SR 522



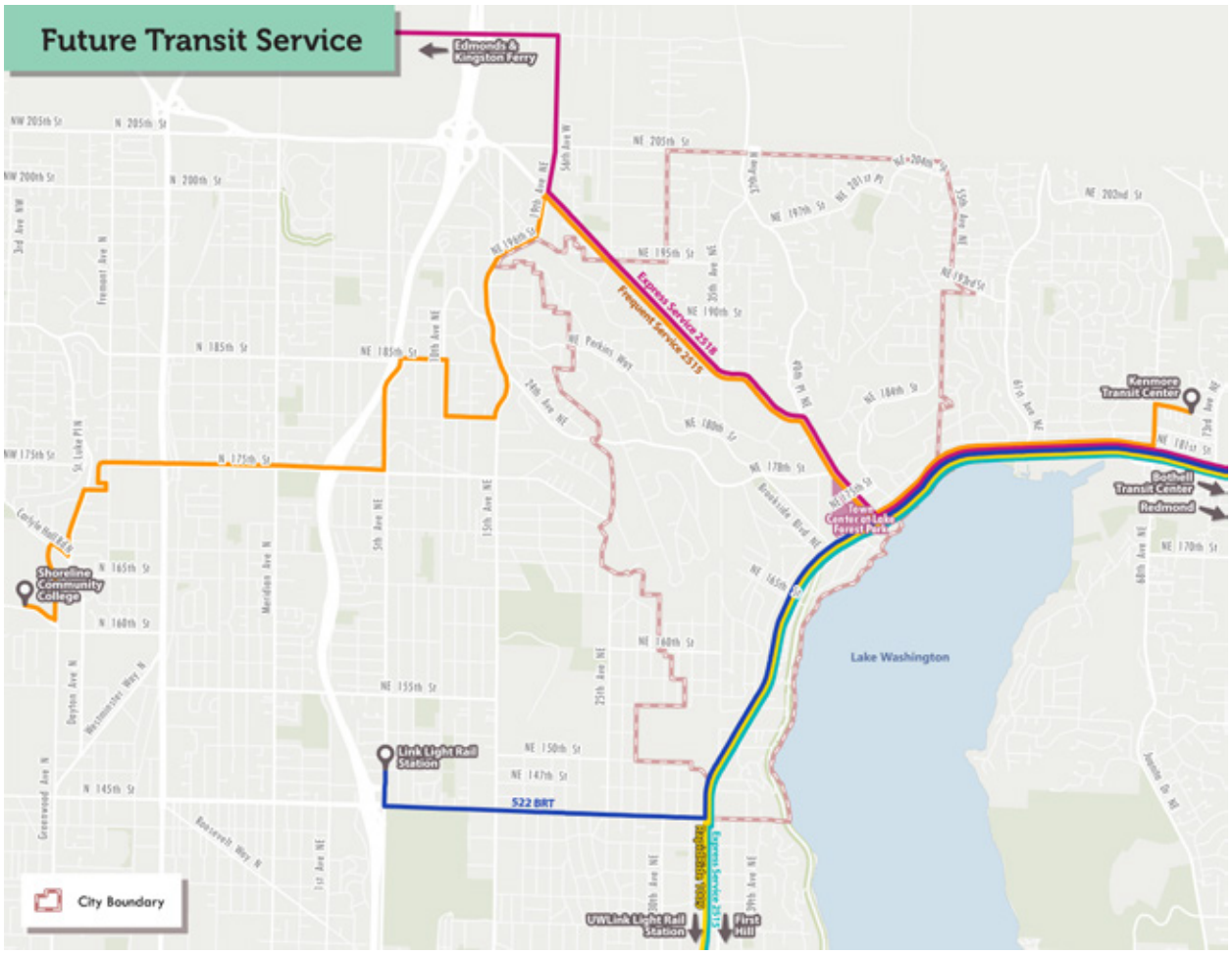
Source: 145th Multimodal Corridor Study, City of Shoreline, November, 2016

Metro Connects

King County's Metro Connects is a long-range vision for transit service within the county that was adopted in January 2017. The plan includes several routes within the Safe Highways Study area, including a Rapid Ride service line between the light rail Station at the University of Washington, Seattle campus and the Bothell Transit Center along SR 522. A new frequent service route is also planned between Shoreline Community College and the Kenmore Transit Center by 2025. The route would use SR 522 and SR 104. The Metro Connects plan also proposes an express route between the Edmonds/Kingston Ferry Terminal, Bothell, and Redmond, which would run along both SR 522 and SR 104 by 2040.

The planned new routes within the study area are shown in **Figure 2**.

Figure 2: Planned King County Metro Service Routes



Source: Metro Connects, King County Metro, 2017

Strategic Plan and Big Five Initiatives

Lake Forest Park's 2016-2020 Strategic Plan outlines the short- and mid-term priorities that will be delivered by the City to achieve its long-term goals and vision. The document provides an overview of the City's vision and values as well as the goals, services, and initiatives intended to help the City realize them. Goals outlined in the Plan include:

- Mobility
- Healthy Environment
- Community Vitality

- Public Safety and Access to Justice
- Accountable and Engaged Government

The Strategic Plan laid the foundation for five major projects—also known as the "Big Five"—that are intended to master plan the city's near term infrastructure and planning priorities. This Safe Highways Study is one of the Big Five. The other four include:

- Town Center Vision
- Safe Streets Study
- Healthy Creeks
- Parks, Recreation, Open Space and Trails Plan

Town Center Vision

As part of the $54 billion Sound Transit 3 package, Sound Transit will plan and build a BRT system in Lake Forest Park, better connecting the City to the region. It will include a stop at Town Center, 25 blocks of sidewalks along SR 522, and a park-and-ride garage likely in the vicinity of Town Center. This investment presents an opportunity for the Lake Forest Park community to shape the long-term vision for the heart of Lake Forest Park.

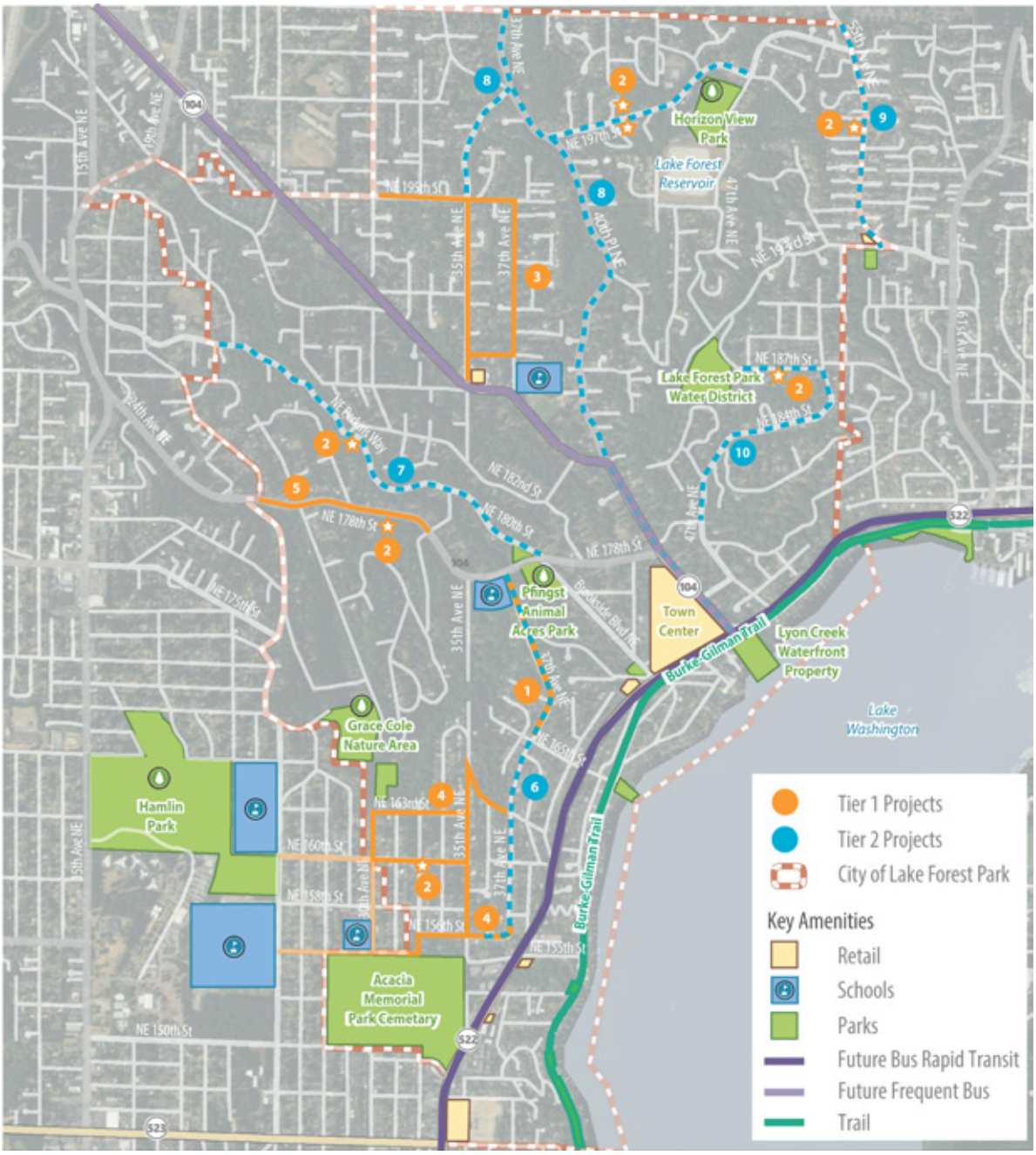
In early 2018, the City will be learning about the community's vision for its future by holding interviews with representatives from a number of Lake Forest Park neighborhoods, hosting Community Meetings, facilitating a workshop series, and hosting public open houses. The Town Center Vision will capture the community's long-term interests and serve as a framework to help the City Council develop policies regarding land use, zoning, and connections within Town Center.

Safe Streets

Initiated in Fall of 2016, the Safe Streets effort focused on making Lake Forest Park's streets safer for all users and improving connections to transit and key amenities, such as parks, schools, trails, and retail. The final report, adopted by City Council in July 2017, recommends ten public realm investments identified by the community, which are broken into two priority tiers. Safe Streets did not address SR 522 and SR 104 specifically, but several of the project recommendations will provide safer connections to transit along these routes for people traveling on foot or by bicycle. A summary map from the project is in **Figure 3.**

Figure 3. Safe Streets Project Recommendations

Source: Safe Street Study, City of Lake Forest Park 2017.



Healthy Creeks

Lyon Creek is impacted by aging and inadequate infrastructure and severe fish passage barriers. In 2015, the City replaced a cluster of culverts and rebuilt one-half mile of streambed in the lower reach of Lyon Creek. The Healthy Creeks Study tackles the middle reach of Lyon Creek. The completed study has spun off the following projects:

- The Lyon Creek culverts at 35th Avenue NE, NE 185th Street, and SR 104 are undersized and create a barrier to fish passage. With flood reduction grant funds from King County and the Washington State transportation budget, the City is redesigning and planning to replace these culverts to improve stream health while maintaining critical infrastructure.
- Another culvert at 178th has been studied and its replacement is being designed by a King County Flood Control District grant.

Parks, Recreation, Open Space and Trails Plan

The Parks, Recreation, Open Space, and Trails Plan is assessing how well the City's parks, open spaces, and recreational programs are serving the community and proposing capital improvements to meet evolving needs.

Project Process

Technical Advisory Committee

The Safe Highways project benefited from expertise of a Technical Advisory Committee (TAC), which was comprised of volunteers from the following organizations:

- City of Shoreline
- City of Kenmore
- City of Mountlake Terrace
- City of Seattle
- WSDOT
- Merlone Geier Partners (Town Center Owner)
- Sound Transit
- King County Metro

The TAC met six times over the course of the project. Their role was to provide technical advice, from the perspective of their representative organizations or as transportation planning/engineering professionals.

During the meetings, the project team shared cross-section, intersection, and non-motorized access concepts and asked TAC members to provide input on potential fatal flaws and/or opportunities that could be leveraged with each investment. Summaries of the TAC meetings are included in **Appendix A**.

Interviews

In the late spring of 2017, the Project Team conducted a series of interviews to gain a better understanding of the two corridors. While these interviews were not comprehensive in terms of the stakeholders consulted, they provided information on the opportunities and constraints along the corridors, as well as regional efforts that should be considered. The interviews were conducted with the community and stakeholder groups listed below:

- TAC members
- Lake Forest Park Elementary
- Third Place Commons
- NW Kidney Center
- Residents (3)
- Lake Forest Park Stewardship Foundation
- Sheridan Beach Club
- Presbyterian Church
- Peruvian Consulate
- Third Place Books
- Windermere Realty
- Acacia Cemetery

A summary of the interview findings is included in **Appendix B**.

Council Involvement

The Lake Forest Park City Council, as the body that authorized this study, has been very engaged in reviewing recommendations and ensuring that community voices are heard. Between June 2017 and February 2018, the Council heard six status updates on the Safe Highways Study. Councilmembers also attended the three open houses and helped with outreach to specific neighborhoods with an interest in the project. Presentations made to Council in June through December 2017 are included in **Appendix C**.

Community Meetings

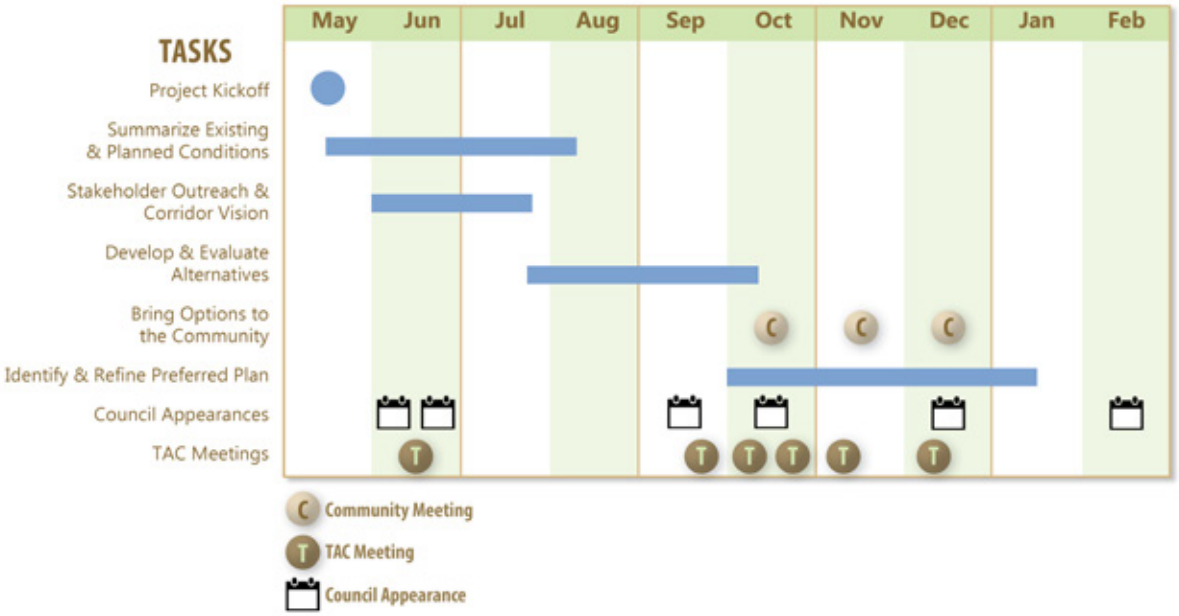
The Project Team facilitated three community meetings over the course of the project:

- **SR 104 Focused Meeting:** October 18th, 2017
- **SR 522 Focused Meeting:** November 14th, 2017
- **SR 104 & SR 522 Focused Meeting**: December 4th, 2017

The meetings included an introductory presentation by the Project Team and stations where community members could engage in one-on-one conversations about concepts and provide detailed input. All of these meetings were advertised through a variety of online methods (City website, community calendar, City email list, Social Media accounts). The third meeting was also advertised with a postcard sent to all Lake Forest Park residences. Summaries of public input received at each of the community meetings are included in **Appendix D**.

Timeline

The following timeline shows the schedule for completing the Safe Highways Study. The study began in early May 2017 with draft recommendations for Council available in early February 2018.



Development of Guiding Principles

To guide this process, the Project Team established a set of guiding principles. The value of the guiding principles is to develop a set of the foremost values sought by the study and to also use them to measure the success of the outcomes. These guiding principles were first developed by the Project Team, vetted by the TAC, and eventually heard by the City Council. The guiding principles are divided into three groups:

- Principles for the **overall project** apply to both corridors and how the Project Team conducts this Study.
- Principles for **SR 522** are specific to achieving the ultimate vision of a future BRT corridor that is also a community asset.
- Principles for **SR 104** focus on realizing a corridor vision that improves safety and mobility while maintaining rural character.

Overall Project

- Engage the community and respect neighborhoods

- Recognize each corridor's role in regional mobility and local mobility access
- Coordinate with state, regional entities, and neighboring cities to identify mutually beneficial solutions
- Create equitable corridors that provide safe and inviting travel for all people, regardless of mode, age, or ability

SR 522

SR 522 Today

- Address safety for all modes
- Complete BAT lanes and full sidewalk connections to support both BRT and local access
- Minimize impacts on neighboring properties (e.g. right-of-way, access, noise, visibility)
- Improve non-motorized access to transit and crossing opportunities to enhance local access
- Create a corridor identity/character and enhance the natural environment
- Be a leader in identifying innovative solutions, particularly at the Bothell Way/145th Street intersection

SR 104

SR 104 Today

- Address safety for all modes
- Maintain the corridor's unique identity and natural landscape
- Take a phased approach that provides benefits over time
- Consider draw on city's financial resources in selecting design solutions, as well as positioning improvements for regional, state and federal investment
- Protect natural environment and encourage low impact design approaches
- Plan corridor to discourage neighborhood cut-through traffic
- Minimize impacts on neighboring properties (e.g. right-of-way, access, noise, visibility)

As described in the following sections, these guiding principles provided a framework for the evaluation and selection of preferred corridor improvements.

SR 104 Corridor

SR 104 Cross-Sections

Tree-lined SR 104 today.

The SR 104 corridor connects Lake Forest Park to Shoreline, Mountlake Terrace, and Edmonds, including the Kingston Ferry Terminal. While this winding, tree-lined route is appreciated for its natural beauty, the corridor's curves, non-standard intersections, blind driveways, and inadequate multimodal facilities can make it potentially hazardous. As a regional state route and important local connection, the SR 104 corridor carries between 17,500 and 21,500 daily vehicles, and these volumes are expected to grow to between 19,400 and 23,800 daily vehicles within 20 years. Through Lake Forest Park, the majority of the corridor is lined by single-family housing, but the Town Center, Lake Forest Park Elementary, multifamily apartment complexes, and small businesses are also key features. Given all of these uses, SR 104 provides surprisingly few amenities for people traveling by any mode except by car. As the host community of this regional highway facility, it is up to the City of Lake Forest Park to seek better.

Existing Conditions, Opportunities & Challenges

- The **corridor cross-section** is generally one lane in each direction with turn pockets at major intersections. The right-of-way width varies from 60 feet to 90 feet depending on the segment. Numerous single-family homes have driveway access on SR 104, and weekly garbage collection occurs on the shoulder of SR 104.

Wide SR104 shoulder where weekly garbage collection occurs.

A transit stop next to the wide SR 104 shoulder.

- **Non-motorized facilities** to encourage walking and biking through the corridor are lacking. There is generally a sidewalk or asphalt paved walking path of varying quality on the north side of SR 104 with some short segments of sidewalk or paved path on the south side of SR 104, typically near a transit stop or major intersection. While portions of the corridor are missing dedicated space for people to walk, people are still walking in the shoulders to reach transit stops and final neighborhood destinations. There are no bicycle facilities on this corridor, yet it is the most direct route for cyclists to reach destinations like the Town Center, high-frequency transit stops along SR 522, and the regional Burke-Gilman Trail. The topography between uphill neighborhoods, the Town Center, and the lake also makes cycling along the corridor a challenge.

- Existing weekday average **daily traffic volumes** range from 17,500 near the north end of City limits to 21,500 near the Town Center, with volumes expected to grow to 19,400 and 23,800 by 2036. The speed limit is 30 miles to hour (MPH) and increases to 40 MPH in the blocks approaching Shoreline. Both existing and future forecasted AM and PM peak hour operations at intersections were analyzed.

- Study intersections **not meeting the LOS E standard today**: NE 178th Street; 40th Place NE

- Study intersections that **will not meet the LOS E standard in the future**: SR 522; NE 178th Street; 40th Place NE

- The **collision history** on the corridor is highest near the SR 522 junction, which is logical as this segment has the higher traffic volumes. Throughout the corridor a higher number of collisions occur at major intersections.

- **Transit service** provides connections to Horizon View, Shoreline City Center/Aurora Village, Shoreline Park & Ride, and Bellevue. Most of this service is peak hour and peak directional service only. Highest transit ridership is near the Town Center. Future service plans includes more frequent service and express service on SR 104.

- Overhead **utilities** are located close to the either side of the roadway. Existing stormwater system will need to be improved, modified, or undergrounded with widening or intersection realignment.

- Options for **intersection improvements** near commercial establishments need to consider right-of-way constraints, topography, roadway geometry, turning movements, as well as impacts to residences at other locations, including access.

Additional detail on the existing conditions, opportunities, and constraints are documented in the Planning Context Report, which is available in **Appendix E**.

Alternatives considered

Cross-section options developed to meet community goals include the following:

- **Option 1: Buffered Bike Lanes** – Provides dedicated space for people driving, walking, and biking, though the completion of sidewalks on both sides of SR 104 and bike lanes on each side of SR 104, which are separated from vehicular traffic by a two-foot painted buffer. Of the cross-section options considered, this option requires the most right-of-way.
- **Option 2: Multi-Use Trail** – Provides a shared, multi-use trail for people to walk and bike that is fully separated from vehicular traffic on SR 104. This is a narrower option than buffered bike lanes, but generally wider than the following two options.
- **Option 3: Complete Sidewalks** – This option completes sidewalks on both sides of SR 104, but does not provide bicycle facilities along the corridor, except for improved crossings at key intersections. Under this option, cyclists would continue to use the existing local roads to navigate through the City. This is the narrowest cross-section option considered.
- **Option 4: Hybrid of Multi-Use Trail and Complete Sidewalks** – This option considers provision of a shared-use trail for key portions of the corridor (nearby the Town Center and Lake Forest Park Elementary) that would connect to existing bicycle routes on local intercepting roads. Complete sidewalks would be constructed throughout the entire corridor to serve people walking. The width required by this option matches either the Multi-Use Trail or Complete Sidewalks option, depending on location.

High-Level Feedback

- There is a desire to provide facilities to support **more walking and biking** in the community.
- There is support for a **multi-use trail segment adjacent to the Town Center** (from approximately NE 178th Street to SR 522). This will improve access to attractions such as the Town Center, transit, and a signalized crossing of SR 522 to the Burke-Gilman Trail.
- There are concerns about providing a multi-use trail along the entire length of the corridor. **Separation is needed between people walking and biking**, especially because of the expected difference in travel speeds along the corridor hills.

Recommendation

- The Project Team recommends implementation of the **Buffered Bike Lanes cross-section** along most of the corridor, transitioning to the Multi-Use Trail cross-section (trail on the Town Center side) between NE 178th Street and SR 522.
- This provides a **continuous bicycle facility** and **avoids conflicts between people walking and biking** for most of the corridor, except nearby the SR 522/SR 104 intersection, where conflicts between vehicles and bicycles are viewed to be more hazardous. This concept also includes complete sidewalks on both sides of SR 104 to support walking through the corridor. **Figure 4** illustrates this recommendation.

- In developing this concept, the Project Team worked with King County Metro to **develop bus stop treatments concepts** that would be consistent with the Buffered Bike Lane Cross-Section. These bus stop concepts are shown in **Figure 5**.
- This recommendation is also **consistent with community feedback** received by the community (see **Appendix D**).

Figure 4. Recommended SR 104 Cross-section Plan

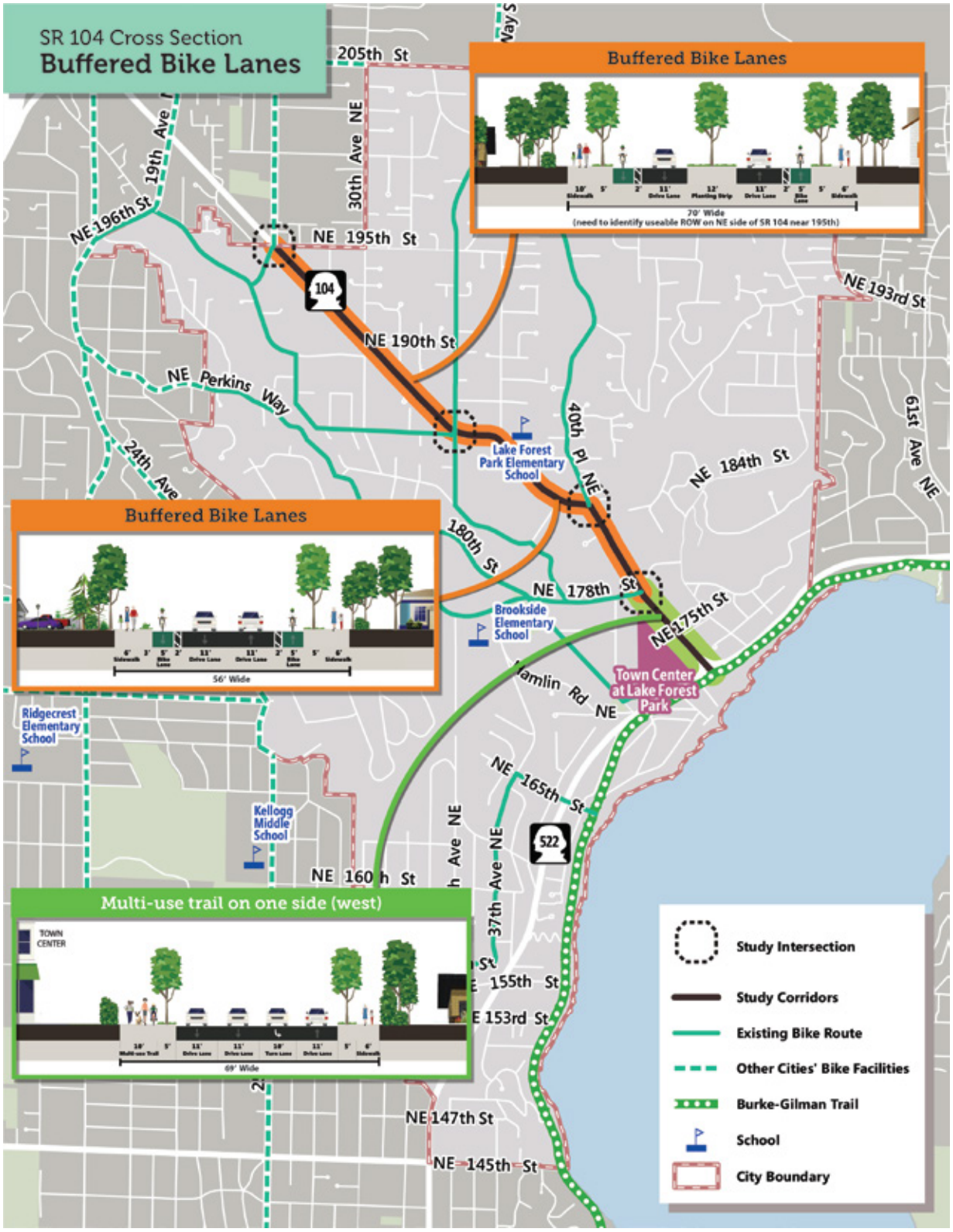
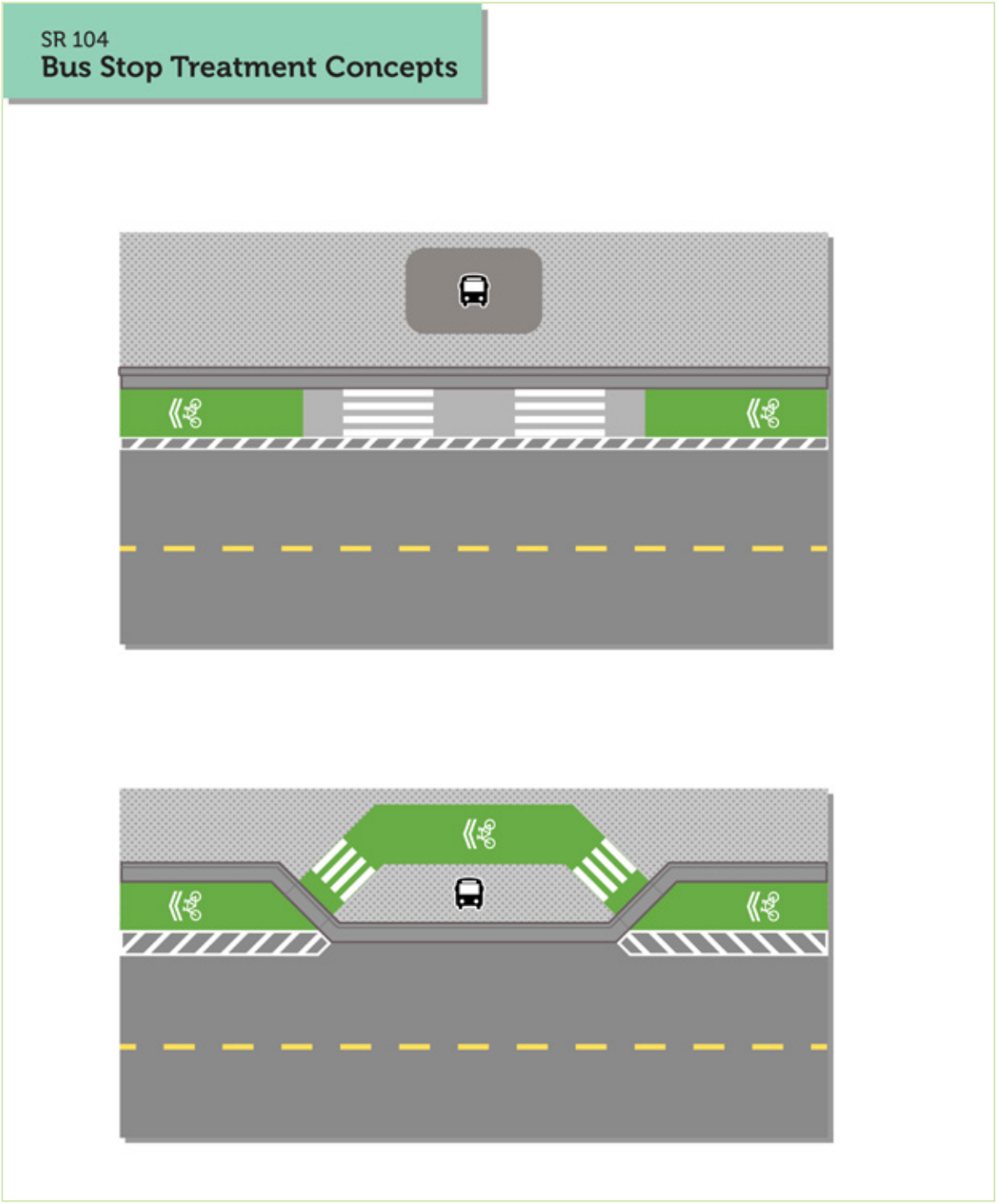


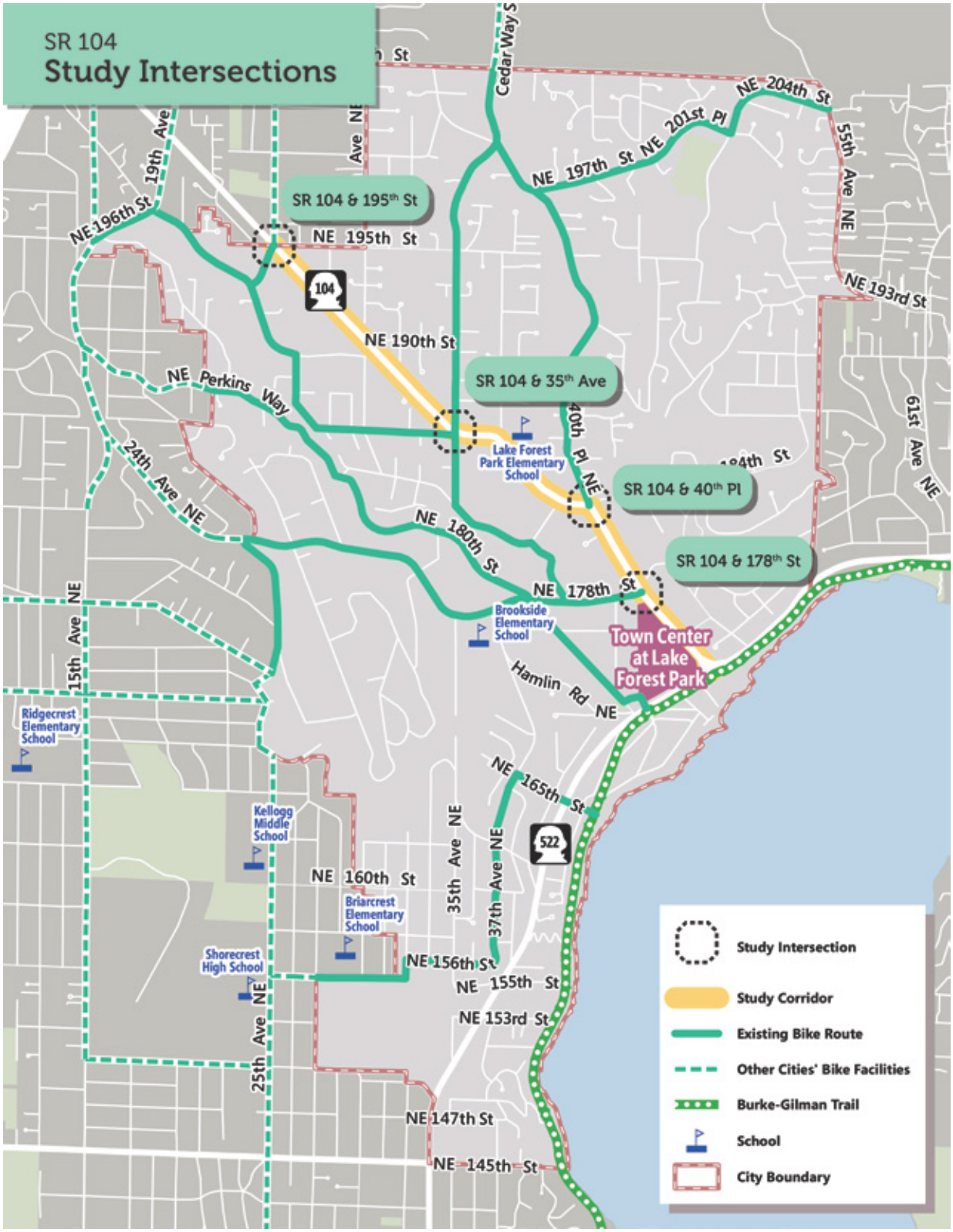
Figure 5. Bus Stop Treatment Concepts



SR 104 Intersections

The study intersections evaluated along SR 104 are mapped in **Figure 6**. The following section describes the existing and planned conditions at each intersection, the options developed, and the recommended intersection plan. Detailed roundabout operation results for each study intersection are shown in **Appendix F.**

Figure 6. SR 104 Study Intersections



NE 195th Street & SR 104

Background Information

This intersection is currently a five-leg signalized intersection with a right turn bypass from northbound SR 104 onto NE 195th Street. There is a stream crossing under NE 195th Street that then runs alongside 25th Avenue NE, crossing SR 104 south of the intersection. The intersection slopes downhill from north to south, and both NE 195th Street and the north leg of 25th Avenue NE have steep grades as they tie into the intersection.

Existing Conditions, Opportunities & Challenges

- The **five-legged intersection's operations** are LOS D (AM) and LOS C (PM). Even with anticipated growth along SR 104, future operations are similar.
- Surrounding **land use** includes single-family homes and multi-family housing. Pedestrian crossings are long and curb ramps are in poor condition.
- **Fourteen total collisions** have been recorded in the past three years. About half of the collisions were from vehicles making left-turns and not granting right-of-way. No collisions involved a pedestrian or cyclist.
- A **creek on the east side** and **topographic challenges** on the west side of the intersection limit the proposed intersection reconfiguration options.

Pedestrians waiting to cross near NE 195th Street intersection.

Alternatives Considered

Roundabout Alternative

A roundabout was evaluated for the intersection. The proposed layout evaluated is shown on **Figure 7.**

Figure 7. Roundabout Alternative, NE 195th Street & SR 104

Roundabout alternative features more of a peanut shape to accommodate the five legs and geometrics of the connecting roads.

The roundabout would replace the existing five-legged signal controlled intersection. Due to the number and angles of the roundabout approaches, a roundabout option at this intersection would likely be oblong, creating a peanut shape to reduce impacts to the adjacent properties.

The roundabout concept removes the signal maintenance costs, and reduces pedestrian crossing distances at each leg. However, overall walking distances around the intersection would increase, due to the need to cross multiple legs for what is now a single pedestrian movement.

Right-of-way impacts are extensive in this option and walls would be needed to avoid greater impacts. This option does not impact the building to the north, but requires significant walls on the west, east and south sides, and requires re-grading each of the approaches. This option would also have significant

stream impacts, as the culvert crossing the east leg of NE 195th Street would need to be replaced and extended to accommodate the roundabout footprint.

Signalized Alternative

An improved signalized intersection was also evaluated. The proposed layout is shown on **Figure 8**.

Figure 8. Improved Signalized Alternative, NE 195th Street & SR 104

The improved signalized option makes the intersection more compact and realigns pedestrian crossings.

The signalized alternative adds a pedestrian refuge island on the north corner of the intersection and reduces the curb return radii on the south leg to reduce pedestrian crossings lengths. This option requires reconstruction of the north corner and the north leg of 25th Avenue NE. While this alternative avoids impacts to culverts, existing walls and culverts are outdated and would likely be replaced as part of construction. This signalized option minimizes impacts to neighboring properties, right-of-way, and access.

Adding a pedestrian refuge island on the northwest corner provides pedestrians with shorter crossing distances and greater visibility, increasing the safety of pedestrians in the intersection, and reducing the amount of “flashing don’t walk time” allocated in the signal timing. The realignment of the northwest legs improves sight distance, although the southbound right-turning vehicles would have more than one approach to check before executing a right turn on red. Stop bars are shifted closer to the center of the

intersection, reducing the crossing distances for vehicles entering the intersection, increasing vehicle safety and reducing yellow and red signal times, which benefit operations.

Traffic Operations Analysis

The operational analyses of the proposed alternatives are summarized in **Table 1**.

Table 1. Operations Analyses of the Existing Intersection and Alternatives Considered for SR 104 & NE 195th Street

	AM Peak Hour		PM Peak Hour	
	LOS	*Delay (s)*	*LOS*	*Delay (s)*
Existing (No-Build)	D	40	C	32
Future 2036 Operations				
No Build	D	43	D	42
Roundabout Alternative	B	13	C	27
Signalized Alternative	D	39	D	54

From an intersection LOS standpoint, the roundabout alternative provides the lowest overall delay as it reduces the amount of time side street minor approaches must wait before entering the intersection. The signalized improvement option sees higher vehicle delays than the roundabout as it must allocate green time among all five legs.

Recommendation

- The Project Team recommends the **improved signalized intersection option**.
- While this option sees higher vehicular delays than the roundabout option (although still within City and WSDOT standards), it is more compact requiring **fewer impacts on adjacent properties and streams**.
- Additionally, the signalized option's compact footprint allows for **more direct pedestrian crossings**. By comparison, the large radius of the roundabout option would require pedestrians to make a circuitous route around the roundabout, often crossing more than one leg to get to their desired route.
- This option also received the **most community support** at the open houses and online comment forms.

35th Avenue NE & SR 104

Approach to 35th Ave NE Intersection. Street sign shows the sharp angle of intersection legs.

This is another a five-leg signalized intersection. NE 185th Street and 35th Avenue NE approach SR 104 from the south, creating a long pedestrian crossing and confusing geometry for drivers. Lyon Creek crosses under the northwest leg of the intersection, daylights between SR 104 and NE 185th Street, and then crosses beneath NE 185th Street. A culvert replacement for the NE 185th Street crossing and stream realignment has been an identified need for this intersection. Buildings are located close to intersection approach legs, and driveways are not well delineated.

Existing Conditions, Opportunities & Challenges

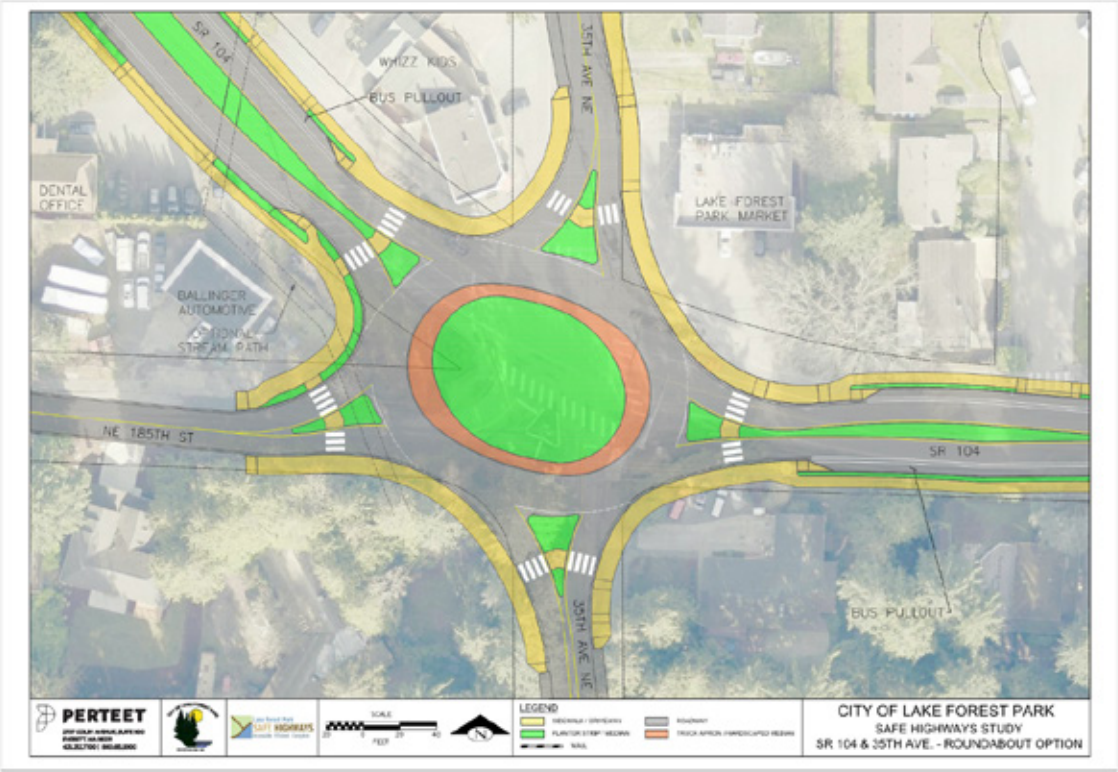
- The **five-legged intersection's operations** are LOS D (AM) and LOS C (PM). Even with anticipated growth along SR 104, future operations are similar. Collected turning movement volumes showed that traffic volumes on NE 185th Street are relatively low, and consolidation with the southern 35th Avenue leg is feasible.
- Surrounding **land uses** include a market with driveways close to the intersection, some service buildings, a school, and a collapsed culvert with repair plans under way. Proposed plans would need to consider culvert designs and stream restoration needs.
- Any proposed concepts should consider **pedestrian crossings**, especially for students destined for Lake Forest Park Elementary.
- **Nineteen collisions** have occurred at this intersection in the past three years; mostly rear-end collisions due to driver inattention. The remaining collisions involved hitting an object (utility pole, guardrail, fence, post), which involved speeding and/or driving under the influence (DUI). No collisions involved a pedestrian or cyclist.

Alternatives Considered

Roundabout Alternative

The roundabout alternative is shown in **Figure 9**.

Figure 9. Roundabout Alternative, 35th Avenue NE & SR 104



The roundabout alternative includes a large footprint and oblong shape to accommodate access to all five legs of the existing intersection.

The roundabout would replace the existing five-way signal controlled intersection and provides full access to and from NE 185th Street. Due to the number and angles of the roundabout approaches, a roundabout option at this intersection would likely be oblong, creating an oval shape to reduce impacts to the adjacent properties to the north while also providing the needed separation between NE 185th Street and 35th Avenue NE. The roundabout concept removes the signal maintenance costs, and reduces pedestrian crossing distances at each leg. However, overall walking distances around the intersection would increase, due to the need to cross multiple legs for what is now a single pedestrian movement.

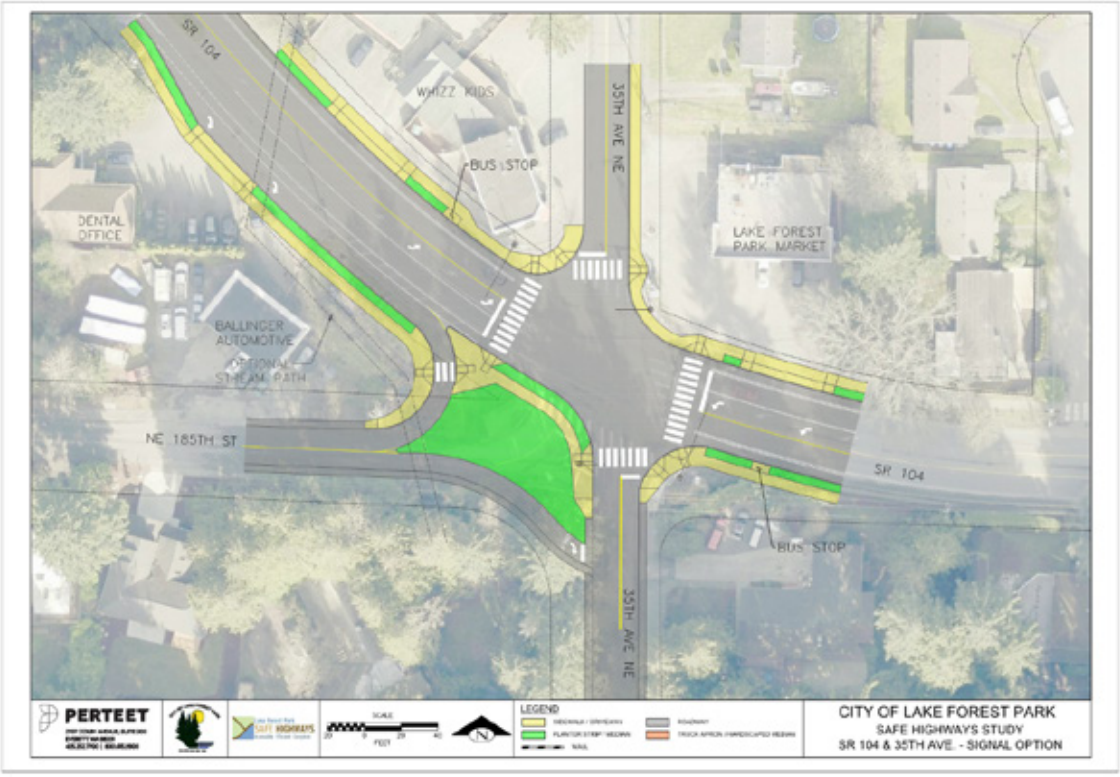
Future transit plans include improved bus service through the intersection, specifically using the eastbound (SR 104) through, southbound (35th Avenue NE) left, and westbound (SR 104) right turning movements. These movements were modeled in AutoTurn to ensure they could accommodate an articulated bus.

This option would impact businesses due to loss of parking, reduced access, and potentially the need for full property acquisition. Specifically, this alternative affects the access and parking for the property on the northeast corner (Lake Forest Park Market). There are also significant impacts to the property west of the intersection, between SR 104 and NE 185th Street (Ballinger Automotive), as well as the parking at the daycare (Whizz Kids) north of SR 104.

Signalized Alternative

The improved signalized alternative, which consolidates access points to create a four-legged intersection, was also evaluated. The layout for this alternative is shown in **Figure 10**.

Figure 10. Improved Signalized Alternative, 35th Avenue NE & SR 104



The improved signalization alternative eliminates direct access from NE 185th Street to create a four-legged intersection.

The proposed signalized improvement eliminates direct access from the NE 185th Street approach to create a four-leg intersection. Under this alternative, NE 185th Street can be accessed from southbound SR 104, but exits onto 35th Avenue NE. This option creates green space between SR 104 and NE 185th Street and a pedestrian refuge between NE 185th Street and 35th Avenue NE, and reduces the crossing length of 35th Avenue NE.

The proposed layout of the intersection minimizes impacts to adjacent properties, requiring minimal right-of-way acquisition.

Traffic Operations Analysis

A summary of the operational analysis is shown in **Table 2**.

Table 2. Operations Analyses of the Existing Intersection and Alternatives Considered for SR 104 & 35th Avenue NE

	AM Peak Hour		PM Peak Hour	
	LOS	*Delay (s)*	*LOS*	*Delay (s)*
Existing (No-Build)	D	42	C	34
Future 2036 Operations				
No-Build	D	48	D	42
Roundabout Alternative	B	13	B	14
Signalized Alternative	C	25	C	23

While both alternatives are expected to operate within standards, the roundabout alternative does experience less delay than the signalized alternative.

Recommendation

- The Project Team recommends the **signalized intersection option**.
- While the roundabout alternative operates with less vehicle delay, the signalized option **requires substantially less right-of-way**, resulting in fewer impacts to adjacent properties and the stream.
- Moreover, the improved signal alternative's more compact footprint provides the opportunity for a **safer pedestrian environment** (which is particularly important adjacent to the school).
- The **reclaimed green space** west of the intersection provides an opportunity to daylight the creek and otherwise repurpose this space for other community uses.
- This option also received the **overwhelming community support** at the open houses and online comment forms.

40th Place NE & SR 104

Background Information

This is a skewed, four-legged intersection with stop control for the southbound (40th Place NE) and westbound (NE 184th Street) approaches. The geometry of the intersection is problematic for many users, including misaligned legs that lead to confusion over which route is SR 104, and lack of sight distance which makes turning left onto SR 104 and pedestrian crossings hazardous. Moreover, the intersection lacks amenities for those choosing to walk or bike.

Existing Conditions, Opportunities & Challenges

- Surrounding **land uses** are mostly single-family homes with driveways onto SR 104. Proposed changes will need to consider neighborhood access.
- The stop-controlled intersection has **misaligned legs and can be confusing to navigate**. For drivers heading north on SR 104, 40th Place NE can be viewed as the natural through movement, rather than northbound SR 104, which requires drivers to bear left. Left turns from the side streets onto southbound SR 104 are especially difficult due to limited sight distance. The intersection operates at LOS F today and will further degrade in the future.
- Moreover, the **corner between 40th Place NE and NE 184th Street is very wide** with no pedestrian landing or marked crosswalk between the two approaches. The curb ramps on 40th Place NE are located 40 feet from the intersection, adding to the confusion of where to cross the stop controlled approaches.
- There is **no pedestrian crossing** of SR 104.
- The **angle of intersection legs and topography** pose challenges for any proposed improvements.

- **Thirteen collisions** have been reported in the past three years; seven collisions were vehicles hitting an obstruction. About one-third of the collisions involved speeding. One collision involved a cyclist nearby (not intersection related), however no additional data was provided.

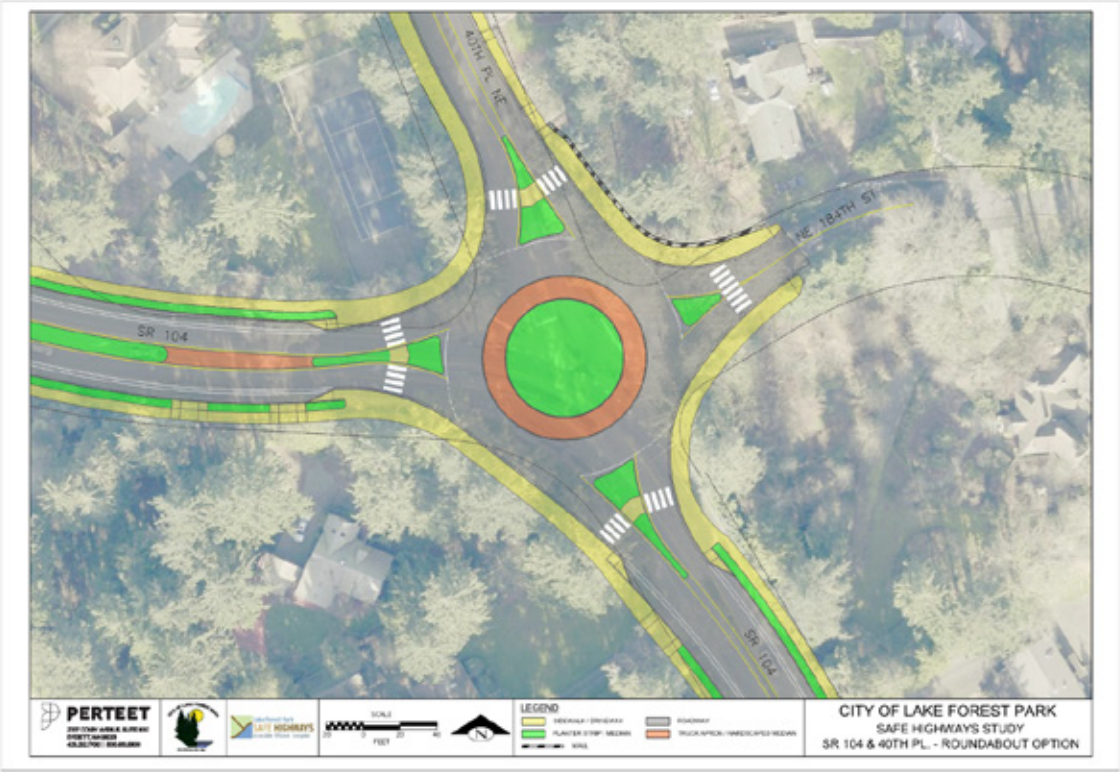
Looking up 40th Place NE at SR 104. There is a sharp curve to continue through on SR 104.

Alternatives Considered

Roundabout Alternative

The roundabout alternative is shown in **Figure 11.**

Figure 11. Roundabout Alternative, 40th Place NE & SR 104



The roundabout option provides safe side street access, as well as pedestrian crossing opportunities.

This option is a traditional four-leg single lane roundabout. Southbound through movements on SR 104 would make a right turn at the roundabout, and northbound through movements would be left turns. A short retaining wall may be needed on the northeast corner to minimize right-of-way impacts. Each adjacent property would maintain one point of access in and out of their driveway from SR 104 in both directions.

The roundabout provides pedestrian crossings for all legs, improved and more predictable traffic flow through the intersection, adequate sight distance and clear delineation for vehicles and pedestrians. Right-of-way impacts are greatest along the corners of the intersection as the roundabout footprint is larger than the existing intersection. However, existing buildings would not be impacted by the roundabout footprint.

Two-Way Stop Controlled Alternative

An alternative which considers more modest changes to the existing intersection is shown in **Figure 12**.

Figure 12. Two-Way Stop Controlled Alternative, 40th Place NE & SR 104

This Alternative considers more modest changes to the existing intersection, including more pronounced pedestrian crossings of 40th Place NE and NE 184th Street. This option does not provide a pedestrian crossing of SR 104.

This option preserves the existing traffic control at the intersection. The proposed changes better delineate the approaches of 40th Place NE and NE 184th Street by installation a curb and pedestrian area between the two legs. This shortens the pedestrian crossings of the side streets and makes them more pronounced, but does not provide for any crossing on SR 104.

The improved delineation of the side street approaches provides improved intersection sight distance by improving alignment of the legs with the intersection. The footprint of the proposed improvements is similar in size to the existing condition therefore there are minimal impacts to the adjacent properties.

Traffic Operations Analysis

The operational analysis for this intersection is summarized in **Table 3**.

Table 3. Operations Analyses of the Existing Intersection and Alternatives Considered for SR 104 & 40th Place NE

	AM Peak Hour		PM Peak Hour	
	LOS	*Delay (s)*	*LOS*	*Delay (s)*
Existing (No-Build)	F	>100	F	85
Future 2036 Operations				
No-Build	F	>100	F	>100
Roundabout Alternative	C	15	B	14
Improved Stop Control	F	>100	F	>100

For two-way stop controlled (TWSC) intersections, the level of service is measured by the worst stop controlled approach. As the mainline (SR 104) does not experience any delay, it is not considered. While constructing a roundabout at the intersection would introduce some delay into the through movements on SR 104, that delay is well within the operations standards set by WSDOT and the City.

Recommendation

- The Project Team recommends the **roundabout option**.
- While the roundabout does introduce some delay for the mainline through movements, the **delay for the side street approaches is greatly reduced**.
- The roundabout alternative offers the **opportunity to provide pedestrian crossings** of SR 104 as well as delineated crosswalks for the side street approaches.
- Moreover, the roundabout design may offer the ability to **calm traffic speeds along SR 104**.
- This option also received the **overwhelming community support** at the open houses and online comment forms.

NE 178th Street & SR 104

Background Information

The east and west legs of NE 178th Street are offset – the west leg intersecting SR 104 approximately 100 feet south of the east leg. Both legs of NE 178th Street are side-street stop controlled. While the west leg allows full access, a median was constructed at the east leg to prohibit left turns from NE 178th Street to southbound SR 104 (left turns from southbound SR 104 to the east leg of NE 178th Street are permitted). Both legs of NE 178th Street have steep grades intersecting SR 104. During the morning peak hours, queues from the SR 104 and SR 522 intersection often spill back into this intersection. Due to the grades and existing vegetation, there is limited sight distance on the eastbound approach, and many vehicles edge into SR 104 before entering traffic flow.

Existing Conditions, Opportunities & Challenges

- This **offset and side-street stop controlled intersection** is located north of the Town Center. The southern intersection with the west leg of NE 178th Street operates at LOS E in the AM peak hour and LOS F in the afternoon, with operations expected to further degrade as traffic grows in the future. The high delays are related to the difficulty making a left-turn onto northbound SR 104. The northern intersection with the east leg operates at LOS B/C and will continue to in the future. This portion of the intersection doesn't see as high of delays due to the restriction on turning left onto southbound SR 104.
- **Twenty collisions** were reported in the past three years; half of them related to left turns from eastbound NE 178th Street to northbound SR 104. One bicycle involved collision occurred because the bicyclist did not grant right-of-way to the vehicle. One severe collision involved a speeding vehicle headed southbound and colliding with a fence.
- While sidewalks are on both sides of SR 104 in this area, there is **no marked pedestrian crossing** at this location.

Alternatives Considered

Roundabout Alternative

Preliminary traffic analysis shows that a two-lane roundabout would be needed to provide sufficient capacity during the AM and PM peak hours. Due to the terrain and the proximity of homes to the intersection, a multi-lane roundabout would result in up to six complete property takes, and would require a 10-to-20 foot wall along the north corner.

A single lane roundabout would function operationally for most of the day, outside of the peak hours. A concept was developed to determine the impacts and evaluate the additional benefits of a roundabout at this location. The evaluated roundabout alternative is shown in **Figure 13**.

Figure 13. Roundabout Alternative, NE 178th Street & SR 104

Figure 5. An oblong, peanut shaped roundabout could accommodate demands at the NE 178th Street intersection during most of the day, but not the peak hours.

Due to the offset between the approaches of NE 178th Street, a roundabout at this intersection would likely be oblong, creating a peanut shape to incorporate both sides of NE 178th Street into one cohesive intersection. Despite reducing the diameter of the roundabout to the lower end of single lane roundabout diameters (110 foot inscribed circulating diameter), a single lane roundabout would still require extensive retaining walls due to the existing topography which would impact homes resulting in multiple full property takes.

Additionally, if queues from the SR 522/SR 104 intersection spill back into the roundabout (as can happen during the peak hours), approaches would be unable to operate. For these reasons, the roundabout does not seem to be a viable alternative.

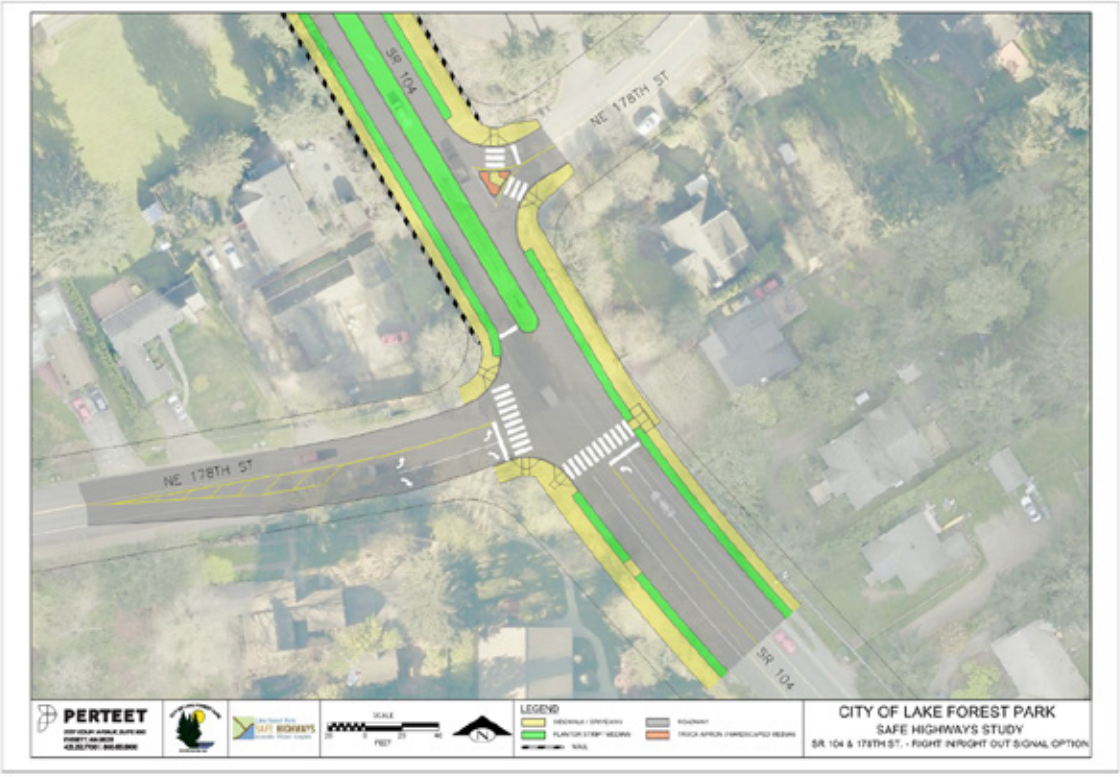
Signalized Alternative

Three potential layouts were considered for the signalized intersection alternative.

Signalized Alternative 1: NE Leg Right-In/Right-Out Only Option

The first signalized alternative is shown in **Figure 14**.

Figure 14. Signalized Alternative 1



This option signalizes the west leg of NE 178th Street and makes the east leg right-in/right-out only.

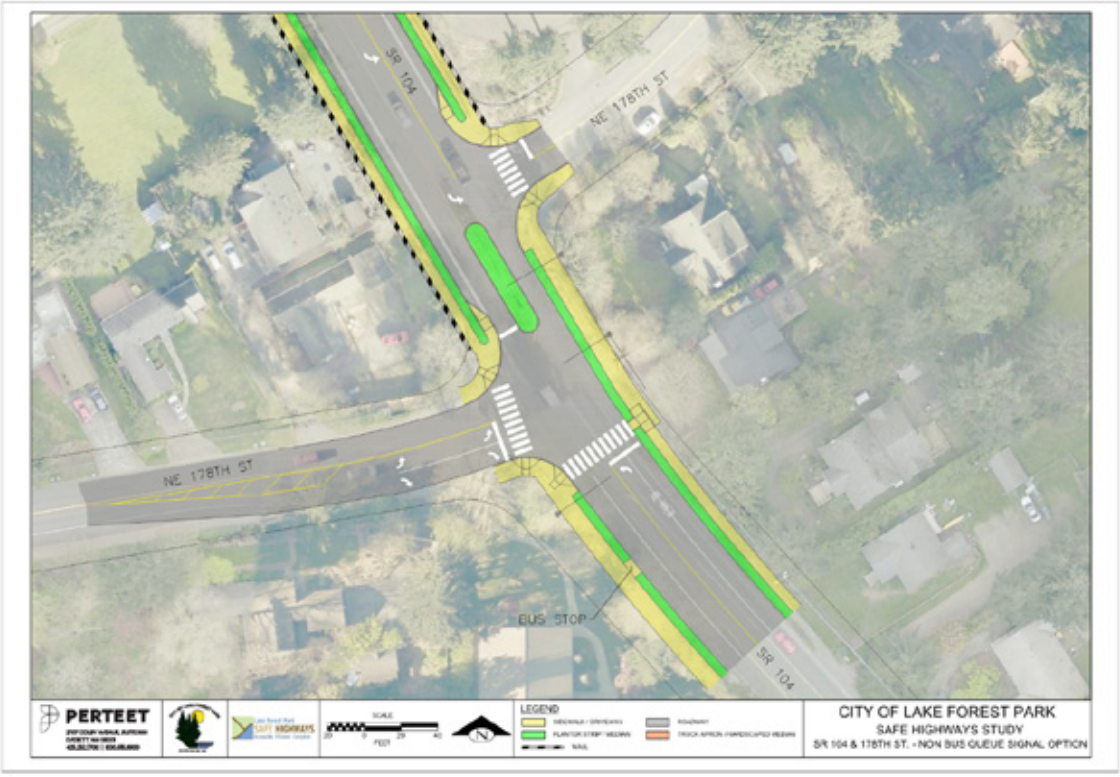
This option would turn the intersection into a signalized three-leg intersection and would reconfigure the East leg of NE 178th Street approach to be right-in/right-out only and stop controlled. This reduces the number of possible movements at the intersection and increases safety for vehicles turning in and out of the higher-volume west leg of NE 178th Street. This option would also create signalized pedestrian crossings where NE 178th Street (west leg) intersects with SR 104.

Signalizing the eastbound approach of NE 178th Street provides for protected left-turn movements and improves the safety for turning vehicles. Restricting the westbound leg to right-in/right-out access will reduce angle type collisions by removing the southbound left-turn movement from SR 104. The restricted access requires vehicles to detour southbound on SR 104 to NE 175th Street as either left-turns or U-turns. Alternative routes connecting to the neighborhood to the east of the intersection are limited.

Signalized Alternative 2: Southbound Left Turn Access Permitted Option

The second signalized alternative considered is shown in **Figure 15**.

Figure 15. Signalized Alternative 2



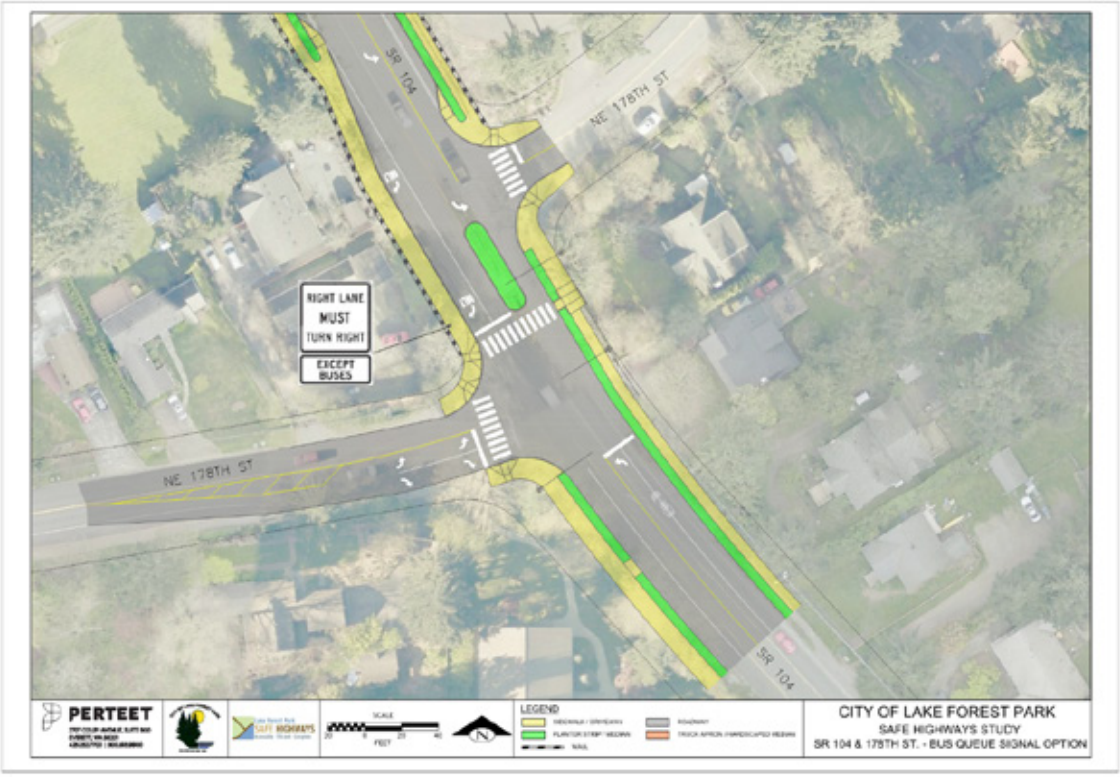
This option signalizes the west leg of NE 178th Street and retains left-in access to the east leg.

This is similar to the previous signalized option, but would retain left-in access from southbound SR 104 to the east leg of NE 178th Street, providing that movement with a signal phase. Retaining walls would be required on the east and west sides, north of the signalized intersection to minimize right-of-way impacts this alternative has the similar advantages to the previous signalized alternative, but with slightly better operations, due to green time given to the southbound left-turn.

Signalized Alternative 3: Bus Queue Jump Option

The final signalized alternative considered is shown in **Figure 16**.

Figure 16. Signalized Alternative 3



This option signalizes the west leg of NE 178th Street, retains left-in access to the east leg, and provides a southbound right-turn lane that can also serve as transit queue jump.

This option is similar to the previous signalized alternative, but adds a southbound right-turn lane that can also be used as a queue jump for southbound buses. This would allow buses to avoid the queue created by the signal, and access the planned stop south of the intersection.

Relative to what's on the ground today, operations would be slightly improved due to the addition of a southbound right-turn lane. However, there is not a high demand for southbound right-turn movements so the improvement is fairly small.

This option also considered moving the pedestrian crossing to the north leg of the intersection, resulting in a more central pedestrian crossing. However, the pedestrian crossing movement would then conflict with the eastbound left-turn movement, further reducing the operations of the signal.

Traffic Operations Analysis

A summary of the operational analysis is shown in **Table 4**.

Table 4. Operations Analyses of the Existing Intersection and Alternatives Considered for SR 104 & NE 178 Street

	AM Peak Hour		PM Peak Hour	
	LOS	*Delay (s)*	*LOS*	*Delay (s)*
Existing (No-Build)	E	49	F	>100
Future 2036 Operations				
No-Build	F	>100	F	>100
Roundabout Alternative	F	98	F	53
Signalized Alternative 1	E	71	C	30
Signalized Alternative 2	E	61	C	32
Signalized Alternative 3	E	79	C	30

A single lane roundabout was considered for this analysis. While the roundabout did show some improvement over the future no-build conditions, it did not meet LOS standards. A multilane roundabout was also considered but still operated at LOS F in the morning peak hour due to the conflict of the southbound traffic on SR 104 and the high eastbound right-turn volume.

The second signalized alternative had the best operational performance. For this alternative, the pedestrian movements are able to cross at the same time as the eastbound left-turn phase.

Queuing was also considered to evaluate the need to a shared right-turn and transit lane southbound. Queues from the signal at SR 104 and SR 522 are expected to spill back to the intersection of NE 178th Street during the AM peak hour. Southbound queues at NE 178th Street are minimal. Therefore, the bus lane would not by-pass many vehicles and the bus would likely get caught in downstream queues from SR 522, limiting the benefit it would provide.

Recommendation

- The Project Team recommends **Signalized Alternative 2**.
- This option **maintains southbound left-turn access from SR 104** to the east leg of NE 178th Street, which is a highly valued connection by the community.
- The Project Team **did not see a high value in providing the southbound right turn/queue jump** given its lack of operational benefits and high costs.

- Due to the size of roundabout required to function in this location, the associated impacts to the adjacent properties, and the poor operational performance, a **roundabout is not recommended** for this location.

SR 522

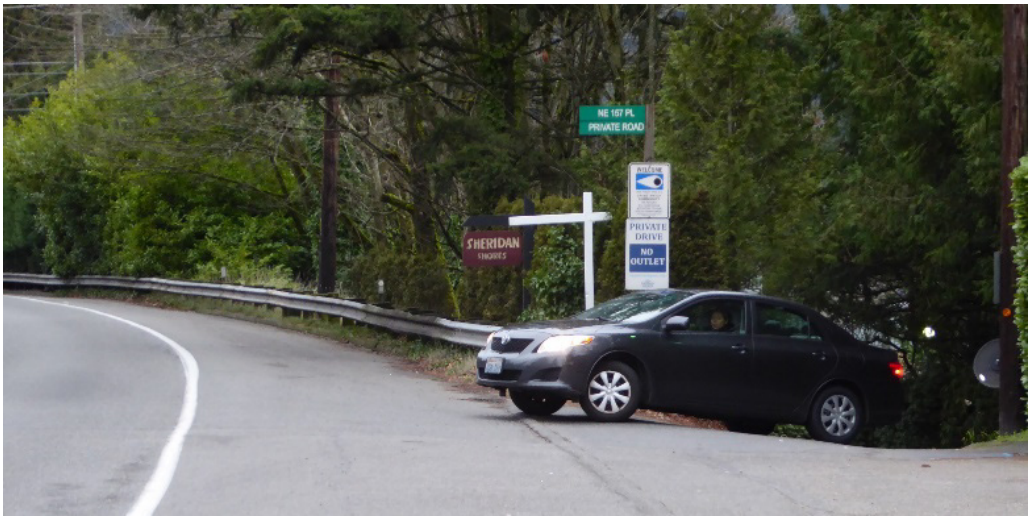
SR 522 Cross-section

State Route 522 is a major artery connecting Seattle with the Eastside with more than 50,000 weekday trips through Lake Forest Park. Carrying approximately 20 percent of all cross-lake trips, it is fittingly labeled as a "highway of statewide significance." It is also identified as a freight corridor connecting US 2 with I-5. It is this heavy usage of SR 522 that makes it an appealing location for BRT: it goes where people want to go. At the same time, SR 522 serves as a main travel route for Lake Forest Park residents, but it bisects the community, separating most residents from amenities along Lake Washington and the Burke-Gilman Trail.

Existing Conditions, Opportunities & Challenges

- **Along a large portion of the corridor are single-family homes with driveway access only on SR 522.** Weekly garbage collection occurs on the shoulder of SR 522 for residents along the east side of the corridor. In some areas residents park vehicles on the gravel roadway shoulder. Widening to add BAT lanes could impact access to these homes. More dense multi-family housing and retail/services are at the south end of the corridor south of NE 153rd Street.
- **Frequent and express King County Metro and Sound Transit routes serve this corridor.** The BAT lane is complete southbound through the corridor, however a northbound BAT lane is not present between just north of NE 145th Street to just south of the Town Center. Portions of this section have a two-way center left turn lane that could be reallocated to make space for the northbound BAT lane.
- **Topography poses challenges.** The roadway is cut into the hillside so the west side homes are generally at a higher elevation than SR 522. On the east side, the grade drops towards the water.
- **Major sidewalk gaps.** No sidewalks exist north of 38th Avenue NE to just south of the Town Center (except for short segments near transit stops), making it unsafe for people to walk along SR 522 through this length. People can walk and bike on the Burke-Gilman trail parallel to the corridor, but access is limited because of steep slopes towards the water and limited signalized crossings.
- **The corridor is congested during peak hours.** Vehicles frequently queue southbound in the AM peak period and northbound in the PM peak period. Transit vehicles stopping in-lane just south of NE 145th Street block the southbound through lane, causing queue spillback and potential signal failures.

- **Overhead utilities are located close to the side of the roadway**. Downed trees due to wind can disrupt power lines and service.

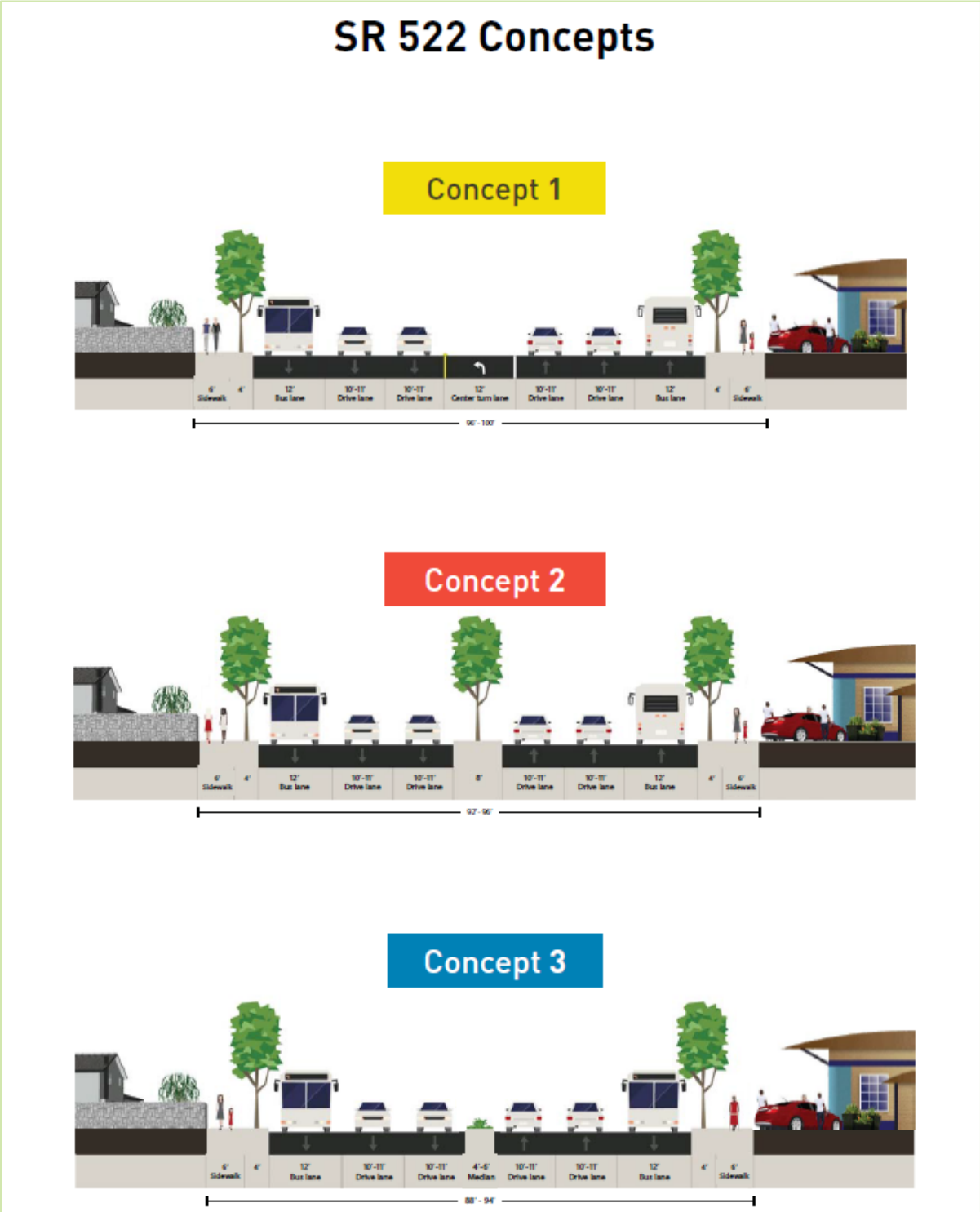


Alternatives Considered

Three alternative cross-sections were developed to meet the guiding principles listed earlier in this document. All of these cross-sections anticipate completion of the BAT lanes in both directions, provision of sidewalks on both sides of SR 522, and enhanced access control. These cross-sections vary in terms of their treatment in the center of SR 522 – either a median or center turn lane. The concepts are described below and shown in **Figure 17**.

- **Concept 1:** Complete sidewalks, BAT lanes, turn lane
- **Concept 2:** Complete sidewalks, BAT lanes, wider median
- **Concept 3:** Complete sidewalks, BAT lanes, narrower median

Figure 17. Concepts Considered



Three cross-section concepts for SR 522.

High-Level Feedback

The Project Team received extensive feedback on the proposed SR 522 cross-sections, which is summarized in the **Appendix D**. Unlike SR 104, where there was a fair amount of community consensus for the Buffered Bike Lane Alternative, there is no community consensus on the appropriate cross-section treatments for SR 522. Notably, the need for sidewalks and the removal of two-way left turn lanes spurred passionate community debate.

One group that has been particularly vocal in its viewpoints about appropriate treatments for SR 522 has been the Sheridan Beach Community Club (SBCC). The Club is comprised of residents of the Sheridan Beach and Sheridan Heights neighborhoods, which are adjacent to SR 522 through a portion of the study area. The following items were repeated by members at both the community meetings and submitted online to the project website:

- Minimize impacts to private property, including considerations like access and noise
- Maintain as much greenery as possible – walls and more urban treatments are not the character of Lake Forest Park
- Do not include sidewalks on both sides of the street. Between 39th Avenue NE and Lake Forest Park Animal Hospital (approximately 41st Avenue NE), want sidewalk on the eastside of SR 522 only
- Maintain two-way-left-turn lane access wherever possible
- Consider noise levels/sound mitigation where appropriate
- Reduce speed limit on SR 522 to 35 MPH

One criticism of this effort was that it did not include a full survey to better understand existing right-of-way lines and noise analysis to identify noise impacts along SR 522. To this end, the Club has requested that Sound Transit perform a full survey and noise analysis early in its study.

Recommendation

The recommended cross-sections for SR 522 were developed through an iterative process that included incorporating feedback from members of the community, TAC, City staff, as well as professional input from the Project Team. The Project Team recommends cross-sections along SR 522, as depicted in **Figure 18**.

Figure 18. Recommended SR 522 Cross-section Plan

There are other components of the Project Team's SR 522 recommendations that are worth noting here:

- **New Signals:** The recommended cross-section plan (**Figure 17**) shows two new signals along the corridor at NE 149th Street and 39th Avenue NE. These signals are proposed to provide safe pedestrian crossings, neighborhood access (including U-turns), and help manage platoons of traffic, as they are assumed to be enabled with intelligent transportation systems capabilities. The Project Team modeled these signal locations and found they did not have a detrimental impact on overall traffic operations, while greatly assisting neighborhood access and making SR 522 less of a barrier for the community.
- **47th Avenue NE Closure:** The Project Team recommends that Sound Transit take a closer look at the need for direct access from 47th Avenue NE onto SR 522. Many community members have identified this location as hazardous from a sight distance perspective. With the re-design of SR 522, this access point should be re-evaluated from a safety and access perspective.
- **Community Character**: One of the guiding principles for the SR 522 corridor was to "Create a corridor identity/character and enhance the natural environment." The selection of treatments along SR 522 should consider this principle, including the placement of public art, the design and placement of walls, materials selected, and introduction of trees and other natural elements such as "living walls" into the corridor.
- **Speed Reduction:** One item that has near consensus from the Lake Forest Park community is the desire to reduce speeds to 35 MPH along SR 522. While this corridor is a state route, it functions more as a City arterial. The introduction of BRT and Rapid Ride are expected to draw more pedestrian traffic to the corridor, as well as vulnerable users. Speed reduction has documented safety benefits. It also reduces road noise, another key interest of Lake Forest Park residents who live nearby the corridor.
- **Noise Abatement:** Until noise analysis is performed, it is unclear the extent to which BRT improvements on SR 522 will lead to noise impacts. Community input indicated a heightened awareness of road noise and the desire for full mitigation of any noise impacts. Methods discussed with the community include sound walls, use of quiet pavements, increased greenery,

and speed reduction. Sound Transit should consider these approaches, as well as others, in treating any noise impacts related to the BRT project.

- **Community Safety:** As the SR 522 corridor is modified to accommodate regional BRT, key features of the roadway, including lane widths, driveway intersections, shoulder, and retaining walls will be updated. With these changes, the City supports the inclusion of additional safety features, including walls and/or barriers, if needed to protect adjacent households.
- **Full Survey**: Many of the concerns raised by the Sheridan Beach Community Club would be addressed by performing a thorough survey of the SR 522 corridor to accurately identify right-of-way lines. The Project Team supports the recommendation to perform that survey early in Sound Transit's process.

SR 522 & 145th Street Intersection

The intersection of SR 522 and 145th Street is an important pinch point that significantly impacts the function of the overall corridor, and has specific relevance to future function of planned BRT. As an intersection that straddles the jurisdiction of several agencies, including WSDOT, Seattle, Shoreline, King County, and Lake Forest Park, any solutions proposed will likely need to receive approval from a variety of agencies. It is recommended that Lake Forest Park be active in regional forums and in direct communications to promote the preferred intersection configuration.

Existing Conditions, Opportunities & Challenges

As the intersection of two busy state routes (SR 522 and SR 523) at the gateway of Seattle's Lake City, Shoreline, and Lake Forest Park, this intersection experiences high vehicle demands during much of the day. The intersection serves as an important connection to I-5 for much of the North Shore, and will also be an important route to Shoreline's light rail station, when service begins in 2023.

The intersection will also serve as a transfer point for transit services including the Sound Transit BRT (east-west on 145th Street to north-south on SR 522) and King County Metro Rapid Ride (north-south on SR 522). There is severe congestion that occurs during both commute periods. During the PM peak hour the intersection operates at LOS E, and is expected to worsen in the future absent future capacity improvements.

Many of the concerns voiced by the community regarding this intersection centered around the function of the downstream in-lane bus stop. Currently, the bus is able to jump the southbound queue from SR 522 at NE 145th Street, cuts in front of the traffic, and then stops in-lane blocking southbound traffic just south of the intersection. Concerns indicated that there was no way to get around the bus, and several community members told of close calls with rear-ends and or side swipe type crashes as vehicles try to merge around the stopped bus.

Addressing this intersection is challenging for multiple reasons including:

- Limited right-of-way and building set-back.
- High left-turn demand to and from the west leg of NE 145th Street.

- Capacity constraints south of 145th Street where the roadway becomes Lake City Way.

As described earlier in this document, the City of Shoreline led a multimodal corridor study of 145th Street in preparation for light rail service that will be accessible from a station nearby 145th Street & 5th Avenue by 2023. The 145th Street study considered future improvements for pedestrian, bicycle, and transit connections along the corridor and proposed widening 145th Street at the SR 522 signal to increase capacity and improve signal timing. Specifically, these improvements included widening the westbound leg to allow for dedicated dual left-turn lanes, which allows for more efficient signal phasing.

Alternatives Considered

A guiding principle for the SR 522 corridor is to "Be a leader in identifying innovative solutions, particularly at the Bothell Way/145th Street intersection." As such, the Project Team evaluated further improvements to this intersection beyond those proposed in the 145th Multimodal Study. All three of the alternatives assume the widening of the west leg (145th Street) and signal rephrasing proposed by Shoreline. In addition, these improvements look to address the specific bus/car conflicts identified by the community. All three alternatives described below were developed in conjunction with King County Metro to improve bus service, the pedestrian experience, and vehicle safety and operations around the stops.

Stop Configuration Alternative 1: Shift Stops South

The first option is shown in **Figure 19**.

Figure 19. Option 1, NE 145th Intersection

This alternative shifts the southbound bus stop on Lake City Way further away from the 145th Street intersection.

This option retains a stop location on the south leg of the intersection, but shifts it further south, so that vehicles would have more warning that the bus is stopping, and have more opportunities to move around the bus when stopped.

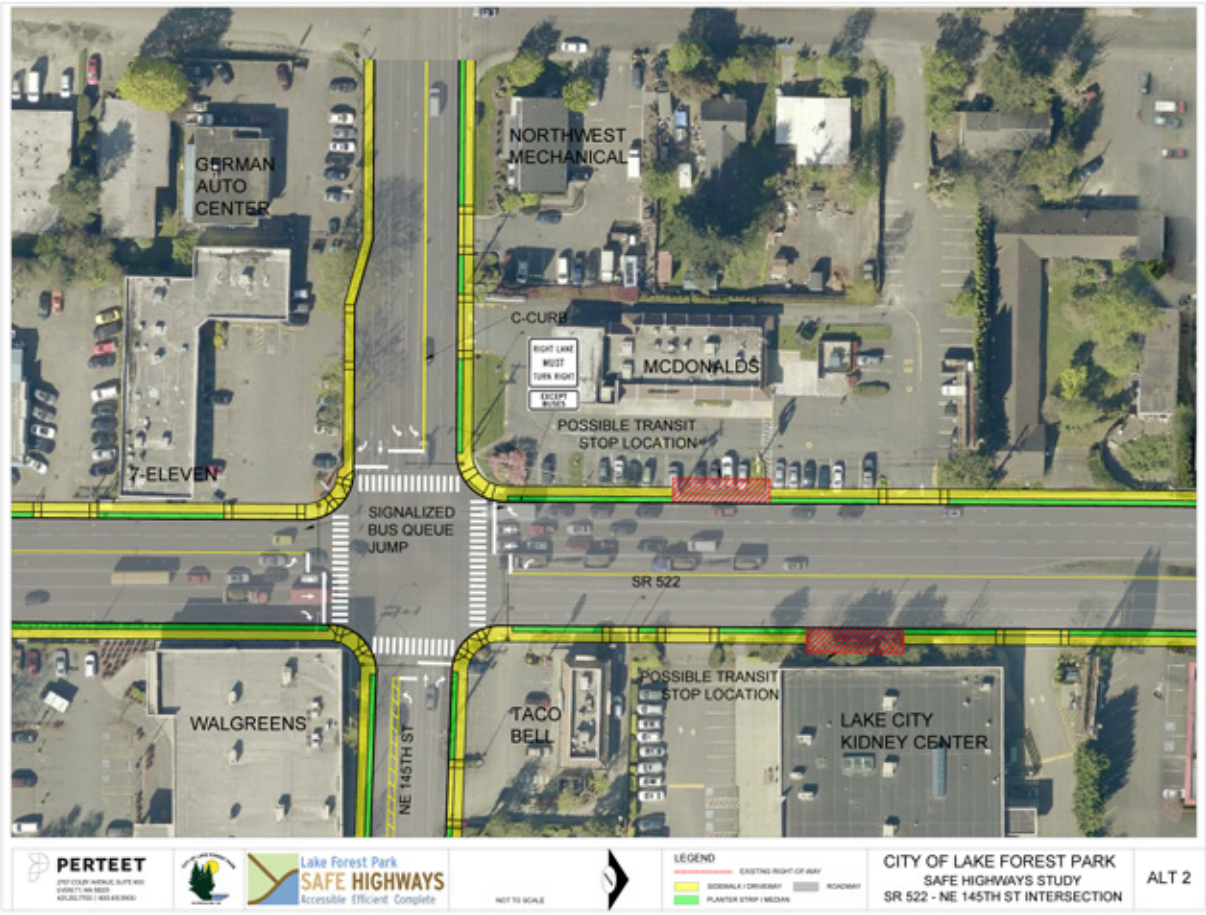
One downside of this configuration is that it does not provide a co-located stop for the Sound Transit BRT, which turns right at NE 145th Street. Pedestrian connections transferring between routes would require crossing an arterial to make a connection.

There are also limited locations for the stop to be located south of its existing location. Due to existing driveway access and lack of building setbacks there would likely be additional property acquisition required to relocate the stop. Moreover, the City of Seattle has raised the concern that moving the bus stop south may lead to jay walking by pedestrians who do not want to travel out of direction between their bus stop and their destination.

Stop Configuration Alternative 2: Relocate Stop to BAT Lane North of NE 145th Street

This stop configuration is shown in **Figure 20**.

Figure 20. Stop Configuration Alternative 2



This option moves the southbound bus stop to the nearside of 145th Street, which could serve both southbound King County Metro routes and westbound BRT services.

This stop configuration allows the bus to stop in a BAT lane north of 145th Street, without impacting downstream through traffic. Both King County Metro Rapid Ride and Sound Transit lines could use this stop, removing the need for pedestrians to cross NE 145th Street for transfers. A transit queue jump would be installed as part of this improvement to allow the bus to shift into the through lane southbound in advance of general-purpose traffic.

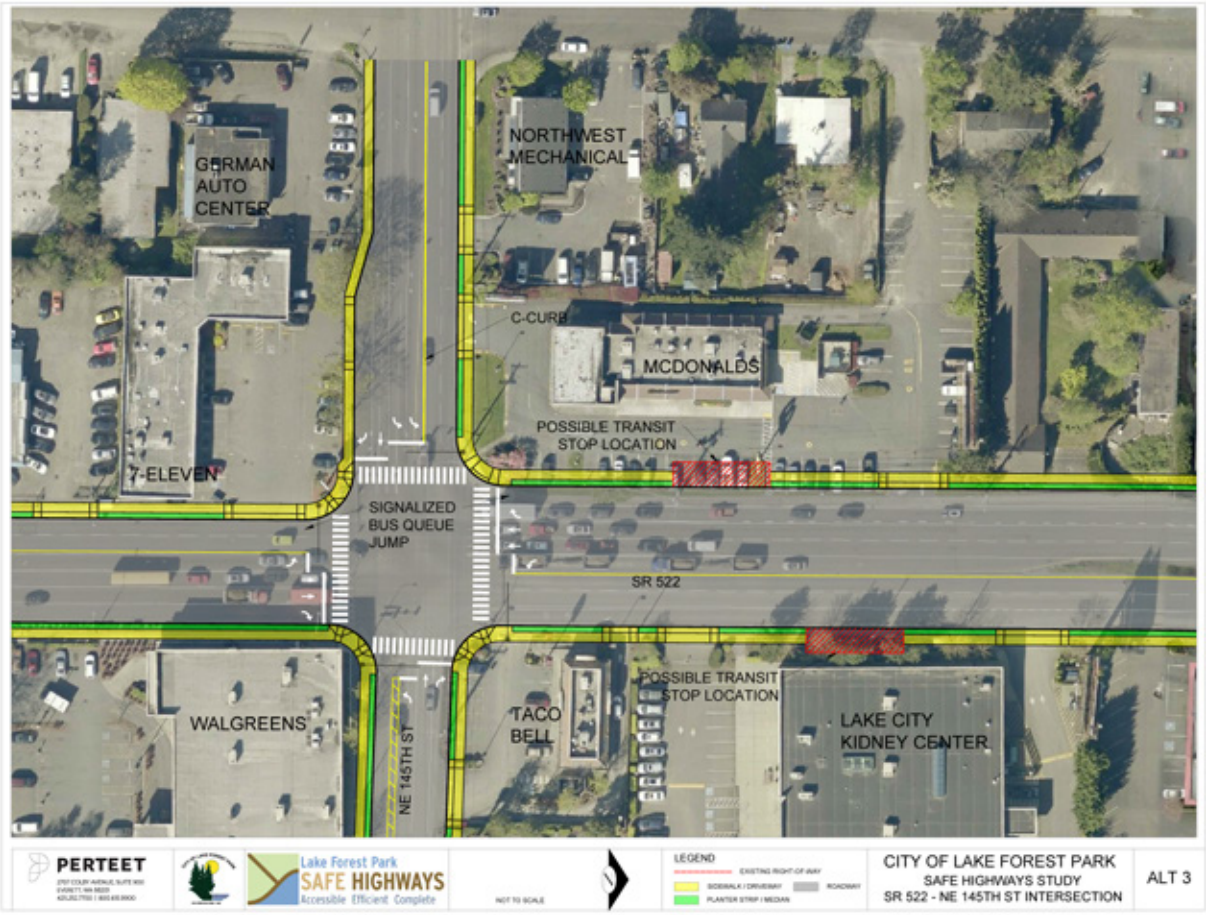
The configuration would have some impacts to the property northwest of the intersection (currently home to McDonalds), but these would be limited to areas adjacent to the stop to allow for the Rapid Ride fare payment hardware and shelter to be installed.

The southbound right-turn is a high demand movement at this intersection. Locating the bus stop north of the intersection increases the southbound queue due to right-turning vehicles not being able to access the right-turn lane upstream of the bus stop. Additionally, the bus would stop within the right-turn lane, blocking right-turn on red and right-turn overlap movements. These conflicts could potentially add southbound delays.

Stop Configuration Alternative 3: Adding a Southbound Transit Lane

This stop configuration is shown in **Figure 21**.

Figure 21. Stop Configuration Alternative 3



This option widens the north leg of the intersection to provide a transit lane that is separate from the right-turn lane.

This configuration also moves the transit stop north of the NE 145th Street intersection, but adds a transit only lane southbound. Both King County Rapid Ride and Sound Transit BRT could use the proposed stop, allowing for easy transfers. The additional lane southbound would increase the crossing length for pedestrians crossing the north leg of SR 522.

Since the buses would have their own lane, the southbound right-turn lane would not be blocked by the proposed stop location. A separate bus phase would be needed to manage southbound through and right-turning buses. As such, southbound right-turn on red movement would be prohibited, as buses would be approaching from the right as drivers are looking to the left for conflicting traffic. The separate bus phase would allow the bus to avoid the southbound queues for both through movements and right-turn movements, while not blocking right-turning movements. While this is a fairly unusual configuration that needs to be further studied prior to implementation, a similar set up exists at the intersection of Spring Street and 6th Avenue in Seattle. The Project Team modeled intersection operations for all three concepts and found this option to provide the lowest delay for all users of the intersection.

Significant property impacts are expected due to the space required to build an additional lane. The impacts would most likely affect the parking on the McDonalds property northwest of the intersection.

Recommendation

- The Project Team recommends **Stop Configuration 3**.
- This configuration provides the **best overall intersections operations**, as it results in the shortest southbound queue, since it does not block downstream through movements or southbound right-turn movements.
- This configuration also offers the ability to collocate the BRT station with King County Metro services, which provides the **best pedestrian environment and supports transit transfers**.
- However, it should be noted that this is by far the **most expensive option**, as it has significant property impacts.
- The **placement of the transit-only lane outside of the right-turn lane is unusual**, but not unprecedented in the region. Adequate signage and traffic control would be necessary to ensure driver understanding of how the how the intersection functions.
- Given the importance of this intersection to the overall function of the corridor, the Project Team believes that the **operational benefits offered by this option warrant the additional cost** and challenges related to intersection configuration. Input received at the open houses and online also indicated that this is the community-preferred option.

Non-Motorized Access to Transit

The purpose of this section is to increase mobility options for the local community and make it easier to walk and bike to transit stops on SR 522. These improvements are identified to enhance and support local ridership on the planned Sound Transit BRT.

Existing Conditions, Opportunities & Challenges

Observations of the existing conditions include:

- **Challenging topography.** Steep grade changes exist from the north side of SR 522 to the south side of SR 522 near the water and the Burke-Gilman Trail. This makes it difficult to bike and walk to/from transit on SR 522.
- **City streets provide indirect routes.** Curving local roads with unconnected street ends can require lengthy, circuitous routes to access SR 522. There is a potential to formalize existing footpaths or explore new street connections.
- **Limited crossing locations.** Signalized crossings of SR 522 are limited to five locations: SR 104, NE 170th Street, NE 165th Street, NE 153rd Street, and NE 145th Street. There are large sections where no crossings are feasible, and almost the entire corridor north of NE 38th Avenue NE to the Town Center have no sidewalks.
- **Town Center.** A plan to redevelop the Town Center is underway. This plan can help inform and implement improvements near the Town Center, where the highest transit ridership Citywide exists.

Alternatives Considered

Numerous non-motorized project ideas were considered throughout this process, stemming from conversations held during the Safe Streets process, interviews with stakeholders, ongoing discussions with City Staff, input heard at the three Safe Highways open houses, comments submitted through the project website and via email, and professional judgement and connectivity analysis (see **Appendix G**). This report focuses on non-motorized projects that would make it safer and easier to walk or bike to bus stops along SR 522, whereas the Safe Streets effort had a broader focus on non-motorized projects Citywide.

The project team brought 12 initial project ideas to the Lake Forest Park community at the November 14, 2017 Open House on SR 522. Nine new project ideas emerged from this meeting, which were then brought back to the community at the December 4, 2017 Open House. The project ideas outlined below (and included in **Figure 22**) represent the compilation and synthesis of the input received on non-motorized access to transit in Lake Forest Park.

Please note that additional engineering study is needed prior to design and construction of any of the projects listed in this plan.

Figure 22. Non-Motorized Project Map

Non-Motorized Access to Transit Projects considered in the Safe Highways Study.

Project 1a. Multi-Use Path on SR 104

This project would add a physically separated multi-use path, like the Burke-Gilman Trail, on SR 104 from NE 178th Street to SR 522 to provide an all ages and abilities facility for bicyclists, pedestrians, skaters, wheelchair users, and joggers that is separate from vehicle traffic. This report also recommends signalizing the NE 178th Street & SR 104 intersection to provide a designated crossing for people walking and biking, as well as providing sidewalks and buffered bike lanes north of NE 178th Street, as discussed in the section on SR 104.

This project would serve as a key connection between the Burke-Gilman Trail and Interurban Trail, as well as from Lake Forest Park neighborhoods to transit stops on SR 522 and the Town Center.

An example of how a multi-use path could look on SR 104

Project 1b. 44th Avenue NE Pedestrian/Bicycle Route

Instead of the multi-use path along SR 104 proposed in Project 1a, this community-proposed project would create a route behind the Town Center for people walking and biking through a combination of sidewalks, bike lanes and/or sharrows. Improvements would be made on NE 178th Street, 44th Avenue NE, Brookside Boulevard, and NE 170th Street. This would encourage crossing SR 522 at Starbucks instead of the intersection at SR 104. It is important to note that between 2012 and 2017, there were two collisions between a motor vehicle and cyclist at the intersection of 44th Avenue NE and NE 178th Street – both of which involved the motorist turning left onto 44th Avenue NE from NE 178th Street. This should be carefully considered if the City moves forward with designing this project.

Existing conditions on 44th Avenue NE
Sources: Google Maps 2017; threepullpa.com

Sidewalk with landscape buffer and bike lane

Example of a sharrow

Project 2. Town Center Pedestrian Connections

This project would provide a designated pedestrian path into the Town Center from the NE 170th Street bus stop in front of Starbucks. The exact route is to be determined, but it would follow desired pedestrian routes. This project would require coordination with the Lake Forest Park Central Subarea Plan process and Merlone Geier, the Town Center Owner.

Examples of pedestrian path in parking lot and wayfinding
Sources: Cyburbia.org user Dan; Oran Viriyincy Flickr; Google Maps 2017

Existing conditions at bus stop

Project 3a. SR 522 / SR 104 At-grade Crossing Improvements

As a near term project, modify the existing crosswalks at the SR 104/SR 522 intersection to improve the crossing experience for people walking and biking to/from bus stops, the Town Center, and the Burke-Gilman Trail. Treatments could include enhanced crosswalk striping, signal phasing, and widening the curb ramp and sidewalk on the island to better accommodate people walking and biking. The City should explore opportunities to shorten the crossing distance by potentially narrowing the general purpose travel lanes to 10-11 feet.

Existing conditions at the intersection of SR 522 and SR 104.
Source: Google Earth 2017

Project 3b. Pedestrian/Bicycle Bridge at the Town Center

As a long term project, pursue funding to build a pedestrian and bicycle bridge over SR 522 that connects the Town Center to the Burke-Gilman Trail and bus stop on the east side of SR 522. At a larger scale, this project will also provide better connections to the neighborhoods and the Interurban Trail. This project would require coordination with the Central Subarea Plan process and WSDOT.

Example of a pedestrian/bicycle bridge in Shoreline.
Source: Otak

Project 4. SR 522 / NE 170th Street Crossing

Improve the existing crossing of SR 522 at NE 170th Street. This crossing serves one of the most frequently used bus stops in the City. Improvements could include:

- Enhanced crosswalk striping
- Add sidewalk and curbs to the gas station corner, providing an expanded waiting area for people on foot and bike
- Improved signal phasing
- To further reduce conflicts people walking across SR 522 and left turning vehicles, consider modifying the signal to add a protected eastbound left turn from the driveway adjacent to Starbucks to northbound SR 522

Further recommendations for improving walking and biking conditions on NE 170th Street are described below.

Existing conditions at the intersection of SR 522 and NE 170th St.
Source: Google Earth 2017

Project 5. Brookside Elementary Safe Routes to School

Add a sidewalk on 37th Avenue NE from just south of NE 178th Street, where the existing sidewalk ends, to NE 165th Street. Given this project's proximity to Brookside Elementary, it is preferable to include a landscaped buffer to provide additional pedestrian safety. This project will provide a grade separated, contiguous route between the bus stops on SR 522 at NE 165th Street, Brookside Elementary, and Pfingst Animal Acres Park, making it easier and safer for people of all ages to walk to public transit. (This is Project #1 in the Safe Streets report.)

Existing conditions on 37th Avenue NE

Sidewalk with landscaping buffer.
Source: threepullpa.com

Project 6. 37th Avenue NE Traffic Calming

Incorporate traffic calming measures on 37th Avenue NE between NE 178th Street and NE 156th Street, as well around the corner onto NE 156th Street. Specific treatments have not been selected, but can include traffic circles, chicanes, a raised intersection at NE 165th Street, speed humps, or other proven traffic calming measures after further engineering evaluation.

37th Avenue NE is designated as a bike route between the Interurban Trail and Burke-Gilman Trail, and traffic calming would help make this route more accommodating to cyclists of all ages and abilities and people walking to bus stops. This project could also remove parking on one side of the street to help minimize conflicts and provide space for traffic calming improvements. (This is Project #6 in the Safe Streets report.)

Existing conditions on 37th Avenue NE during morning/evening commutes

Example of a traffic circle. Source: Re:Streets

Project 7. Briarcrest Safe Routes to School Sidewalks

Provide the following improvements to create safer routes to schools for Briarcrest Elementary, Kellogg Middle School, and Shorecrest High School. These improvements designate walking areas along routes that have historically seen conflicts between modes. Coupled with traffic calming, they make it easier and safer for people of all ages to walk or bike to public transit. (This is part of Project #4 in the Safe Streets report.)

- A sidewalk in the following locations:
  - 35th Avenue NE (NE 162nd Street to NE 160th Street)
  - NE 162nd Street (35th Avenue NE to 37th Avenue NE)
  - NE 156th Street/37th Avenue NE (35th Avenue NE to NE 157th Street)
- Traffic calming measures, such as chicanes/bulb outs, speed humps, or traffic circles on 35th Avenue NE and NE 162nd Street

Sidewalk with landscaping buffer.
Source: threepullpa.com

Bulb outs and speed humps.
Source: Payton Chang

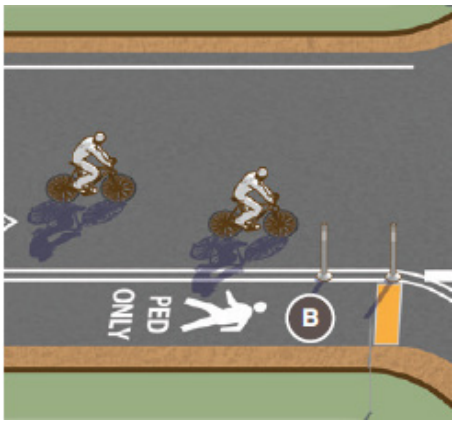
Project 8. Briarcrest Safe Routes to School Walking Paths

Provide the following improvements to create safer routes to school for Briarcrest Elementary, Kellogg Middle School, and Shorecrest High School.

- A painted pedestrian walking area in the following locations:
  - NE 160th Street (Potential for an upgrade as Phase 2)
  - 35th Avenue NE (NE 160th Street to NE 156th Street)
  - "Walking Wednesday" Routes
    - NE 163rd Street
    - 30th Avenue NE
    - NE 155th Street/NE 156th Street to 35th Avenue NE
- Traffic calming measures, such as chicanes, speed humps, or traffic circles along NE 160th Street

This project requires collaboration with the City of Shoreline, who would be responsible for completing walkways that link to Lake Forest Park school property. The City may also consider lowering the speed limit on NE 160th Street and potentially other streets. (This is part of Project #4 in the Safe Streets report.)

Existing conditions on Walking Wednesday route



Painted pedestrian walking area.
Source: FHWA, Small Town and Rural Multimodal Networks

Project 9. NE 155th Street Trail Connection

Formalize the existing, informal pedestrian/bicycle trail that connects 35th Avenue NE and NE 155th Street and add lighting for safety. While the existing dirt path is accessible for some people, others such as those in wheelchairs cannot easily navigate it. This project provides more direct pedestrian/bicycle connections to bus stops along SR 522.

Existing informal trail looking west to 35th Avenue

Existing informal trail looking east to the intersection of NE 155th/SR 522

Project 10. Burke-Gilman Trail Wayfinding

Add wayfinding signage along the Burke-Gilman Trail and at SR 522 BRT stops that provides information on the best route to access transit stops, the Town Center, Burke-Gilman Trail, and Interurban Trail.

This project will help ensure people walking and biking know the safest and most direct route to or from transit.

Currently, there is no signage to identify which trail access point and route is the fastest, has the fewest hills, or is safest for children. Likewise, if you arrive by transit to the Town Center, it is not clear how to best access the Burke-Gilman Trail.

Example wayfinding signage.
Sources: LADOT; SDOT

Project 11. Hamlin Road Sidewalks

Upgrade the existing walking path with extruded curb to a wider, full sidewalk with landscaping buffer on Hamlin Road (Brookside Boulevard to 37th Avenue NE). Additionally, clear sight distance obstructions (e.g. vegetation) at the intersection of Hamlin Road and 37th Avenue NE to make people walking more visible to motor vehicles.

Existing extruded curb on Hamlin Road.
Source: Google Maps 2017

Sidewalk with landscaping buffer.
Source: washingtoncountyinsider

Project 12. 41st Avenue NE Trail Connection

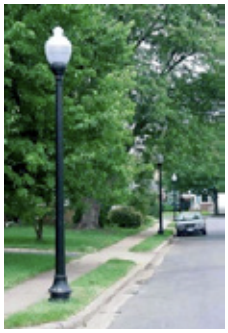
Pave the existing, informal, dirt pedestrian/bicycle trail that connects 41st Avenue NE to the Burke Gilman Trail, enabling people to walk on the Burke Gilman Trail to access the Town Center.

Existing informal trail looking toward the Burke Gilman Trail.
Source: Google Maps 2017

Project 13. 39th Avenue NE Pedestrian Improvements

Add sidewalks and lighting on 39th Avenue NE east of NE 165th Street, as well as on the walking path near the Veterinary clinic that connects 39th Avenue NE to SR 522. This would be an alternative walking route to SR 522 for accessing the Town Center.

Existing conditions on 39th Ave NE.
Source: Google Maps 2017



Sidewalk and lighting example.
Source: avgreenteam.wordpress.com

Project 14. SR 522 Crossing Improvements at NE 165th Street

Improve the pedestrian crossing of SR 522 at NE 165th Street. There is some community support for a pedestrian bridge or underpass at this location. However, if an overpass or underpass is not possible, provide improvements at-grade. Potential at-grade improvements include high-visibility striping, signal timing revisions (e.g. five second pedestrian lead similar to the signal at NE 170th Street), and a wider painted area for people walking, as shown in the photo below.

Existing conditions NE 165th St.
Source: Google Maps 2017

Example of wide crosswalk striping.
Source: FHWA

Project 15. Staircase Improvements

Provide maintenance and improved lighting at the existing staircases off SR 522 near the 39th Avenue NE southbound bus stop, and off NE 165th Street north of 39th Avenue NE. (It is important to note that these staircases run through private property, so this project is not fully in the City's control.)

Existing staircases off NE 165th St and SR 522 near 39th Ave.
Source: Google Maps 2017

Project 16. Southeast City Traffic Calming

Provide traffic calming to discourage cut through traffic on 35th Avenue NE/38th Avenue NE, NE 148th Street, 37th Avenue NE, and NE 153rd Street. Specific treatments have not been selected, but could include traffic circles, speed humps, or other proven traffic calming measures after further engineering evaluation.

Existing conditions at 37th Avenue NE & NE 150th Street
Source: Google Maps 2017

Example of a mountable traffic circle.
Source: City of Madison

Project 17. NE 147th Street Sidewalks

Due to community concerns regarding cut through traffic and speeding on NE 147th Street, extend the sidewalk on NE 147th Street east of SR 522 to 37th Avenue NE. This area will likely see redevelopment given recent City upzoning, so there will be an increasing need for sidewalks on this corridor.

Existing conditions on 147th Street looking east.
Source: Google Maps 2017

Project 18. Shore Drive Safety Improvements

Several community members expressed concern about the blind corner at the intersection of Shore Drive NE and Beach Drive NE. There is a lack of clarity for drivers regarding who has the right of way – Shore Drive or Beach Drive. Moreover, cars parked north of this intersection on Beach Drive NE hinder visibility. This is a potential safety concern for people walking, biking, and driving in the area, including people who walk along these routes to access the bus stop at NE 165th Street.

This project would add a yield sign for motorists traveling southbound on Beach Drive NE, the minor street approach. Additionally, this project would prohibit parking adjacent to the Burke-Gilman trail just north of this intersection for 50-100 feet, using red curbs and/or "No Parking" signs. While parking is at a premium near the trail in the summer, these recommendations will help improve safety.

Existing conditions at the intersection of Shore Drive NE and Beach Drive NE.
Source: Google Maps 2017

Project 19. New SR 522 Signalized Crossings

The SR 522 section of this report recommends adding new traffic signals on SR 522 at NE 149th Street and at 39th Avenue NE. These signals would include a pedestrian phase, marked crosswalks, and a pedestrian refuge island in the center of SR 522. Overall, these crossings will make SR 522 less of a barrier by reducing the distance people will have to walk to access a controlled crossing.

Pedestrian crossing button at a traffic signal, and a traffic signal example.

Project 20. Improve Street Connectivity Through New Street or Trail Connections (unmapped)

Explore opportunities to improve street connectivity between neighborhoods and the Town Center and transit stops. This can include looking at connecting existing street ends and exploring opportunities to create connectivity easements.

For example, several community members expressed a desire for a trail that connects the two street ends of 35th Avenue NE, one of which is west of Brookside Elementary School. This would also connect into 33rd Avenue NE. This connection would provide a more direct route to walk or bike to bus stops along SR 522. Currently, it takes up to 20 minutes to walk from 35th Avenue NE near Brookside to the bus stops at NE 165th Street. This connection would reduce the maximum walking time to 15 minutes. Travel time savings would be even greater with another connection to NE 165th Street.

Example of a trail connection.
Source: J Smith for Visit Philadelphia

Project 21. Parking Monitoring Program (unmapped)

Implement an on-street parking monitoring program near BRT stops. This can include time-limited parking or Residential Permit Zone parking to discourage "hide-and-ride" behavior.

Residential Permit Zone in Seattle.
Source: Seattle Met

Additional Project Ideas Heard

A few additional ideas were mentioned through the public outreach process that are being explored as part of the Safe Streets effort looking at non-motorized access to the Town Center:

- Project 4 recommends improvements to the intersection of SR 522 & NE 170th Street. Numerous community members have expressed an interest in providing designated facilities for people walking and biking on NE 170th Street and on the street in front of the Fire Station.
- Countless members of the community have requested a sidewalk that connects the Lake Forest Park Animal Hospital to the Town Center, including a designated safe path from the animal hospital to Willows Park, since people currently walk through the Chevron parking lot and jaywalk across Hamlin Road NE to access the pedestrian bridge in the park.
- One community member shared that pedestrians are illegally crossing Beach Drive NE east of SR 104, and cars/bikes do not know to look for them, which is a safety hazard.
- Pedestrian safety improvements are needed at the intersection of 44th Avenue NE & Brookside Boulevard NE. It is a tough corner for pedestrians due to poor sightlines. Community input indicates that cleaning up the vegetation would help improve sightlines.
- Enforcement is needed at the intersection of the Burke-Gilman Trail and NE 165th Street. Cyclists do not stop, and this is a safety hazard.

High-level Feedback

While there was some level of community support for almost all the project ideas described above, some of the projects were more widely supported than others. This section describes the feedback received for these preferred projects at the final Open House on December 4, 2017.

Project 3b – an overpass over SR 522 at SR 104 – received widespread support from the community. Two individuals expressed that they did not support the bridge, as Project 3a is more cost effective, but the majority of participants preferred a bridge to at-grade crossing improvements. This intersection is not

easy to navigate on foot or bike today, and with the future BRT service, improvements for active transportation users are critical.

Numerous participants also supported **Project 4** – crossing improvements at the intersection of SR 522 and NE 170th Street near Starbucks – as well as creating designated areas for people walking and biking on NE 170th Street. The recent signal timing revision that gives pedestrians a head start walking across SR 522 in advance of vehicle traffic was praised, but many found the intersection still difficult to navigate on foot and bike.

Throughout the Safe Streets and Safe Highways process, **Project 5** has by far received the most support among community members, which would add a sidewalk on 37th Avenue NE from just south of NE 178th Street to NE 165th Street. "This is the street where improvements for walking and biking are most needed," said one Open House participant. This is a key north-south spine in Lake Forest Park, and its proximity to Brookside Elementary and Animal Acres Park, coupled with motorists' tendency to speed downhill on 37th Avenue NE, make this corridor a prime candidate for a sidewalk.

The most controversial topic during the Safe Highways open houses was whether or not to build sidewalks on the west side of SR 522. Some Lake Forest Park residents were strongly opposed to sidewalks on this side, including members of the Sheridan Beach Community Club, while other community members strongly supported having sidewalks on both sides of SR 522. Many felt that **Project 13** was a preferable alternative, since it would provide a quieter, more enjoyable, parallel walking route to the Town Center along 39th Avenue NE. Therefore, Project 13 ranked highly through this process.

As an extension of Project 13, some residents would also like a new pedestrian path that connects from 39th Avenue NE to Hamlin Road NE to avoid having to walk on the section of SR 522 from the Lake Forest Park Animal Hospital to the Town Center that does not currently have sidewalks. Others were not supportive of this idea, as it would require cutting through private property. Despite these differences, there seems to be strong support among Lake Forest Park residents to build a sidewalk that connects the Lake Forest Park Animal Hospital to the Town Center, including a designated safe path from the animal hospital to Willows Park so people do not have to walk through the Chevron parking lot.

Project 14 – SR 522 Crossing Improvements at NE 165th Street – also received widespread support from the community. Many open house participants and nearby residents prefer a pedestrian bridge or underpass at this location to at-grade improvements. Some strongly favored a bridge; others strongly favored an underpass, noting that "an overpass at NE 165th Street would be unsightly." Underpasses can feel dangerous, but can work with good lighting and design. The planned pedestrian underpass in Kenmore was mentioned as a great example. However, if a bridge or underpass is not possible, participants would still like to see at-grade improvements to better connect the Sheridan Heights and Sheridan Beach neighborhoods, as well as provide safer access transit along SR 522.

Recommendation

This report recommends that the City work opportunistically to secure funding to plan, design, and construct as many of the projects highlighted in this section as possible. **Table 6** presents the Project Team's assessment of how each of these projects perform in meeting key objectives of this plan, with the highest performing projects included first. **Table 7** outlines a breakdown of each evaluation criteria.

Lake Forest Park SAFE HIGHWAYS
Accessible Efficient Complete

Table 5: Project Prioritization Results

Project #	Project Description	Broad Community Support	Positive Impact on Many Users	Location with History of Collisions	Feasible and Achievable	Encourages People to Walk or Bike	Costs Aligned with Budget Constraints	Total
1a	Multi-Use Path on SR 104	5	2	2	1	2	1	13
1b	44th Avenue NE Pedestrian/ Bicycle Route	5	2	2	2	1	1	13
3a	SR 522 / SR 104 At-grade Crossing Improvements	5	2	2	1	2	1	13
4	SR 522 / NE 170th Street Crossing	5	2	2	1	2	1	13
6	37th Avenue NE Traffic Calming	5	1	2	2	1	2	13
8	Briarcrest Safe Routes to School Walking Paths	5	1	2	2	1	1	12
10	Burke-Gilman Trail Wayfinding	5	2	0	2	1	2	12
14	SR 522 Crossing Improvements at NE 165th Street	5	2	1	1	2	1	12
3b	Pedestrian/Bicycle Bridge at the Town Center	5	2	2	0	2	0	11
5	Brookside Elementary Safe Routes to School	5	1	0	2	2	1	11
13	39th Ave NE Pedestrian Improvements	5	1	0	2	2	1	11
19	New SR 522 Signalized Crossings	5	2	0	2	1	1	11
7	Briarcrest Safe Routes to School Sidewalks	5	1	0	2	2	1	11
2	Town Center Pedestrian Connections	5	2	0	1	1	1	10
15	Staircase Improvements	5	1	0	0	2	2	10
18	Shore Drive Safety Improvements	5	1	0	2	0	2	10
21	Parking Monitoring Program	5	1	0	2	0	2	10
9	NE 155th Street Trail Connection	0	0	0	2	2	2	6
11	Hamlin Road Sidewalks	0	1	0	2	2	1	6
12	41st Ave NE Trail Connection	0	0	0	2	2	2	6
16	Southeast City Traffic Calming	0	1	0	2	1	2	6
17	NE 147th Street Sidewalks	0	1	0	2	1	1	5
20	New Street or Trail Connections	0	1	0	1	2	1	5

Table 6: Project Prioritization Criteria

Multiple community members supported the project during Safe Highways and Safe Streets processes (i.e. something that came up over and over)	5= Yes
	0= No
Project will have a positive impact on many users	2= Impacts a high number of users
	1= Impacts a medium number of users
	0= Impacts a low number of users
Addresses location with a history of collisions	2= High collision location or includes serious bike/ped collisions
	1= History of bike/ped collisions (not serious)
	0= None of above
Project is feasible and achievable	2= Under City control and/or could easily be accomplished in 6 years
	1= May require some coordination and/or would take 7-20 years to accomplish
	0= Not in City's control and/or would take 20+ years to accomplish
Encourages people to walk or bike	2= Exclusive facility (e.g. buffered sidewalk, trail, separated bike lane, RRFB/enhanced crosswalk)
	1= Shared facility (e.g. sidewalk w/o buffer or one side, bike lane, sharrow, non-enhanced crosswalk, wayfinding, ADA improvements)
	0= Other
Project costs are aligned with City budget constraints	2= High (<$100k)
	1= Medium ($100k - $3M)
	0= Low (>$3M)
Total potential score:	**15**

Additional Recommendations - Citywide

In addition to the numerous recommendations in this report, which are specific to SR 104, SR 522, or locations that are critical for providing non-motorized access to transit services, there are some key community goals that should be considered, which transcend specific geographies.

One of these community goals relates to community character and resilience. Undergrounding of utilities has long been a desire for Lake Forest Park. Overground utilities detract from the park-like atmosphere of the community and sometimes compete for space that could otherwise be used for walking or biking. Beyond these concerns, the number of trees in Lake Forest Park makes overground utilities impractical, as windstorms can take out power for entire neighborhoods multiple times in a season. As such, the City strongly urges that utility undergrounding be incorporated into any corridor construction projects, as this would be the most cost effective time to make this improvement that would benefit Lake Forest Park residents for generations.

The second important community value is being a responsible steward of the environment. With any of the improvements recommended in this report, it is expected that designs will consider their impact on the environment, including impacts on local creeks, storm water runoff, wildlife, and the reduction of trees. Lake Forest Park prides itself on its green ethos – the outcomes of the Safe Highway Study should be no exception.

Acknowledgments

Mayor Jeff Johnson

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Catherine Stanford
Semra Riddle
John Wright
Phillippa Kassover
Mark Phillips
Tom French
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