

## Summary and Recommendations

- Sound Transit’s public engagement was insufficient and once Lake Forest Park residents became aware of the impact on their community there was considerable public outcry.
- The 2020 design change to shift the roadway to the west greatly increased impacts and costs.
- Despite the additional cost and impact of the west shift, no alternatives were considered.
- The 2021 SEPA determination of non-significance was based on underlying technical assessments that did not fully encompass the environmental impacts of the west shift; the impact of over 100 property acquisitions, the removal of 391 trees, the construction of a nearly mile-long retaining wall as high as 16 feet all done in areas with severe slopes and stormwater runoff issues. SEPA reports such as the Noise and Vibration Technical Report were clearly insufficient given the impact of the west shift.
- The pollution created by construction moving over 90,000 tons of dirt and debris as well as the loss of the counteracting value of trees and shrubs will offset any environmental benefit from using electric buses.
- Continuous BAT lanes are not present throughout the planned route and are not essential to provide transit benefits.
- Due to a Sound Transit error including a congested section of 145<sup>th</sup>/30<sup>th</sup> to Bothell Way, the actual average time savings through Lake Forest Park will be less than two minutes, not 2.3 minutes.
- The enormous (and growing) cost of the project is completely out of proportion with expected benefits.
- CORE was unable to reproduce Sound Transit’s Google Maps screenshot of afternoon congestion showing a heavy red line and 5-14 minute travel times along the route planned for the new dedicated BAT lane construction. CORE data analysts saw much shorter times and were able to confirm a low likelihood of maximum delays.
- CORE’s Google traffic data analysis demonstrated that the likelihood of congestion over 50% only occurs from 145<sup>th</sup>/Bothell Way to 153<sup>rd</sup>/Bothell Way and 165<sup>th</sup>/Bothell Way to 41<sup>st</sup>/Bothell Way showing that bus queue jump are, indeed, a viable lower cost, lower impact alternative.

The city and community groups should pressure Sound Transit to consider either delaying the project or seriously investigate the bus queue jump option that is so successfully planned for the Seattle/Shoreline segment. The Google Maps analysis showing the viability of bus queue jumps should encourage the city to engage with a design firm to assess the feasibility, reduced environmental impact and reduced cost of a bus-queue option in Lake Forest Park. Community groups such as CORE should continue to communicate this information to Lake Forest Park residents and to the local press. Action is needed very soon since the likelihood of design changes may diminish as property acquisitions progress to completion.

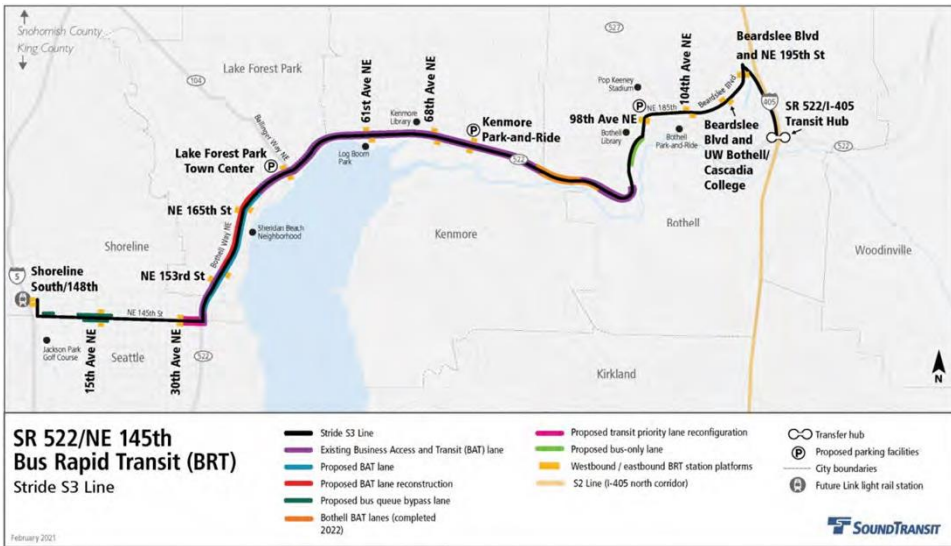
## 1. Introduction.

As part of the voter approved Stride 3 project, Sound Transit plans to build bus rapid transit (BRT) capability connecting to light rail and to communities north, east, and south of Lake Washington. The section of the Stride 3 project as illustrated in Figure 1 is known as SR 522/NE 145<sup>th</sup> BRT.



# SOUND TRANSIT SR 522/145TH BRT IMPACTS AND ALTERNATIVES IN LAKE FOREST PARK

Figure 1 - SR 522/NE 145th Bus Rapid Transit (BRT)



The current design calls for the addition of 1.3 miles of dedicated bus rapid transit lane through Lake Forest Park on the east side of Bothell Way running northbound. A dedicated bus lane already runs South on Bothell Way through town, so any construction or expense has no impact whatsoever on the speed and reliability of the bus in this direction.

There is broad support for public transit and the Stride 3 Project in Lake Forest Park, but there is also broad opposition to the current Sound Transit design due to the costs and permanent environmental damage to our community.

This report lays out the reasons why our community is asking Sound Transit to postpone this project, as they have with the originally scheduled Lake Forest Park parking garage, or re-design with bus-queue jump lanes as are proposed in other segments of the project corridor.

Though the Lake Forest Park segment makes up only a small portion of the proposed 9-mile bus rapid transit route, it comprises the lion’s share of the cost and environmental damage of the project. The project will shift Bothell Way to the West, remove nearly 400 trees, erect a nearly mile-long high retaining wall, and will force over 100 property owners to sacrifice some of their property and place them closer to the roadway. Sound Transit’s insistence on building this single dedicated northbound bus lane was done without exploring any potentially less environmentally damaging and costly alternatives that could provide equivalent benefits for bus riders regarding speed and reliability.

## 2. How Were Lake Forest Park Residents Informed About the Project?

Sound Transit maintains that they have provided considerable public engagement with affected communities, though since much of this engagement happened during COVID and did not reveal the full impacts of the project, many residents of Lake Forest Park were unaware until the Lake Forest Park city, CORE, and other groups began to communicate these impacts.

### 2.1 Sound Transit Outreach

Prior to the November 2016 vote on ST-3, there was no public disclosure of plans to construct a dedicated northbound bus lane through the heart of Lake Forest Park.



Voters in Lake Forest Park who supported Proposition No. 1, “Light-Rail, Commuter-Rail, and Bus Service,”<sup>1</sup> in November 2016 were totally unaware that Sound Transit planned to build a northbound dedicated bus lane on HWY 522/Bothell Way.

- Despite the comprehensive 2,700-word voter's guide and the obligatory 6-page full-color mailer Sound Transit was required to send to every household in Pierce, King, and Snohomish Counties, there was no mention of a plan to build a 1.3-mile-long bus lane through the heart of Lake Forest Park<sup>2</sup>.
- The proposition received varying levels of support across the three counties, with King County voting in favor by 59% to 39%, Snohomish County by 52% to 48%, and Pierce County voting against it by 56% to 44%. Lake Forest Park voted for it 54% to 46%.

Stride-3 Community Outreach efforts between 2018 and 2023 netted Sound Transit little meaningful citizen engagement.

- Between 2018 and 2023, Sound Transit's online meetings attracted less than 10% of Seattle, Shoreline, Lake Forest Park, Kenmore, and Bothell adults to their websites. Those few who visited the website averaged just 3.5 minutes per session and 3 page views.
- Approximately 640 people attended one of the on-site community meetings held between 2018 and 2023, 300 attended a 2023 Sound Transit-sponsored Lake Forest Park event. They attended because Citizens Organized to Rethink Expansion (CORE) sent out a city-wide mailer alerting citizens to the consequences and environmental impacts of this dedicated bus lane on our city, urging them to make their feelings known.

## 2.2 CORE Efforts to Inform Residents

Figure 2 - Excerpt from CORE Mailer to Lake Forest Park Showing Before and After



Beginning in 2022, Citizens Organized to Rethink Expansion (CORE) embarked on a campaign to inform Lake Forest Park residents about the impacts of the project through a series of communications, events, and initiatives:

## SOUND TRANSIT SR 522/145TH BRT IMPACTS AND ALTERNATIVES IN LAKE FOREST PARK

Date	Communication/Event/Initiative
	Mailed a flyer to 6,000 Lake Forest Park residents (see Figure 2). CORE raised considerable awareness by including a 3D rendering of the proposed wall – while Sound Transit provided only 2D overhead “roll-plots”.
Nov. 2022	CORE members attended a Sheridan Beach Community Club meeting with Sound Transit.
Feb. 2023	Creation of a web site <a href="https://lfpcore.org">https://lfpcore.org</a> .
Feb. 2023	Change.org petition <sup>3</sup> yields nearly 1,000 signatures from the Lake Forest Park area.
Mar. 2023	Sound Transit hosted open houses in Shoreline, Lake Forest Park, Kenmore, and Bothell. A total of 305 people attended- 240 in Lake Forest Park at Brookside Elementary. CORE had a booth at Brookside Elementary <sup>4</sup> and collected 165 signatures opposing the current design from a majority of those attending. CORE sent copies of the letter to the Sound Transit CEO Julie Timm and Board but never received a response or acknowledgement.
May 2023	Interview with Seattle Times reporter Mike Lindblom yields article <sup>5</sup> .
July 2023	CORE organized a rally for a Lake Forest Park City Council meeting featuring Sound Transit CEO, Julie Timm. More than 200 residents attended and provided two hours of public comment.
July 2023	King TV aired an interview of CORE members.
Aug 2023	Sound Transit held “Information Session” with CEO Julie Timm. CORE mailed a flyer prior to the event. The preceding rally and event drew over 400 residents and over two hours of public comments.
Oct 2023	CEO Timm and Sound Transit staff met with CORE, the Lake Forest Park Stewardship Foundation, and members of the Lake Forest Park City Council. They explain why the BAT lane is a must vs Q-jumps providing a Google Maps screenshot as justification.

### 2.3 Engagement with the Lake Forest Park City Leadership

The City of Lake Forest Park has made numerous efforts to inform residents and encourage Sound Transit to reconsider the plans for a dedicated northbound bus lane in Lake Forest Park:



Date	Communication/Event/Initiative
Oct 2022	The city wrote to Sound Transit requesting a more robust process to ensure the success of this project as it traverses our community.
Nov 2022	Lake Forest Deputy Mayor Tom French and Council Members Bodi and Furutani wrote Sound Transit asking to postpone plans here until 2044.
Dec 2022	The city sent a letter requesting a 90-day project pause “to hear our citizens concerns and work directly with the city and to develop new design requirements.” Sound Transit staff wrote and presented a report to the Sound Transit Board in January 2023 recommending against the 90-day pause, citing, among other things, that traffic delays could be as much as 10 minutes in Lake Forest Park during afternoon peak hours.
Sep 2023	CEO Timm wrote an official response to Lake Forest Park elected officials, denying the request for a 90-day pause – nine months after the request was filed!
Oct 2023	Lake Forest Park City Council wrote to the Sound Transit Board requesting a cost-benefit analysis comparing BAT lanes to q-jumps. To date, Sound Transit has not responded.

### 3. Sound Transit’s Design Change to Shift the Roadway to the West in 2020 Increased Costs and Environmental Impacts

As early as December 2015, Sound Transit knew the plan was to build a full northbound BAT Lane through Lake Forest Park<sup>6</sup>. Surprisingly, it wasn't until mid-2018 that it became publicly apparent that Sound Transit was committed to the singular approach of the full BAT Lane<sup>7</sup>. Then, in June 2020, Sound Transit announced they were “considering” shifting roadway construction to the west side of SR 522/Bothell Way<sup>8</sup>. However, the local stakeholders involved in this decision-making process, as well as the rationale behind it, remained unclear. The actual financial and environmental impacts and increased amount of property takes required only came to light with the publication of Sound Transit's SEPA submissions in March of 2021. Unfortunately, the details pertinent to this decision were buried within multiple documents and addendums, making it challenging for citizens to discern the true impact of this decision on Lake Forest Park. Then, late in 2023 it was revealed via a public records request that Sound Transit's reason for the shift was to avoid nine full property takes between 157th and 165th on Bothell Way. This decision and its implications were made nine months before issuing the SEPA Environmental Checklist and addendums. Sound Transit contractors largely completed significant portions of the underlying technical justification before this decision. Examples include the noise study in 2019, geotechnical borings (two borings in 2020, one in 2001), and none on fish-bearing Bsche'tla Creek.

### 4. Sound Transit Stride Never Considered Alternatives to the Northbound Dedicated bus lane in Lake Forest Park.

Sound Transit never considered or evaluated the cost/benefits of alternatives to the dedicated, northbound bus lane in Lake Forest Park. Sound Transit SEPA documentation and subsequent documents make this clear. From the start, the



plan to build a northbound, dedicated bus lane through the heart of our community was and still is the only plan Sound Transit ever considered.

Sound Transit offers a variety of rationales for this decision. Former Sound Transit CEO at the August 2023 Lake Forest Park Information Session attended by 400 Lake Forest Park residents said the BAT Lane here was critical. “Bus Rapid Transit, to be functional, requires a substantial number of BAT lanes. The more you reduce or change that, the more you degrade it into Rapid Ride Buses, which is not the voter’s mandate.” It is questionable whether voters in 2016 considered such a nuanced mandate when approving the 2016 ST-3 Proposition.

In the broader context of Stride 1, 2 and 3 projects, adding the 1.3-mile dedicated bus lane in Lake Forest Park increases BAT lane coverage by just 2%, and for Stride-3 increases BAT lane coverage by only 7%, from 47% to 54% across the entire stretch of the Stride-3 roadway.

How many potential bus riders would benefit from a faster speed?

- Because there already is a dedicated bus lane in Lake Forest Park going the other direction, it can only impact the speed of the bus going from the South Shoreline Light Rail station to Bothell Way.
- It also matters at peak hours, weekdays, Monday through Friday, in the afternoon when traffic is at its greatest. That equates to 18 buses.
- Assuming Sound Transit’s plan for running 6 buses per hour (18 buses total) and they are double articulated buses each at passenger capacity (150) equates to a maximum of 2,700 riders per day. To put that into perspective the 520 Bus is averaging less than 1,900 total boardings per day, 70% below pre-covid numbers.

Sound Transit did not even consider refinements to road width, nor support a speed reduction request from city leadership that may have allowed for narrower lanes and a calmer traffic environment.

## 5. The Devastating and Permanent Impact of Sound Transit’s Design in Lake Forest Park

The route through Lake Forest Park, unlike any of the neighboring Stride-3 communities, is primarily residential and heavily wooded. Preservation of the natural environment is a key value in Lake Forest Park.<sup>9</sup>

The toll on our community far exceeds any purported benefits, emphasizing the need for Sound Transit to reconsider its approach and explore alternative solutions that prioritize the well-being of our residents, the environment, and taxpayers.

The construction of a 1.3-mile dedicated northbound BAT Lane presents devastating and inequitable consequences for our community, far surpassing the impact felt by neighboring cities. The exorbitant expense born by taxpayers far outweighs the benefits derived by bus riders. This project will bring traffic perilously close to homes, condominiums, apartments, and businesses along Bothell Way. Large numbers will be forced to navigate entering and exiting directly into a BAT Lane from one of the 46 driveways and roads northbound from 145<sup>th</sup> and Bothell Way to Town Center, thereby exacerbating traffic congestion and safety concerns while impeding bus transit speed.

The environmental repercussions of this project are profound and lasting. Massive tree removals (394 trees 6” or larger DBH), hauling of tons of dirt and debris (90,000 tons, 64% of the Stride-3 total) replaced by lengthy concrete retaining walls, increased stormwater runoff, disturbances to fish-bearing streams, construction activities on unstable ravine slopes, and damage to sensitive areas are inevitable outcomes.



Sound Transit SEPA submissions in March of 2021 were insufficient and incomplete in terms of the roadway section in Lake Forest Park. Examples include heightened noise pollution (noise monitoring was measured in 2019, before the “West Shift” and before knowing the size and extent of the sound-reflecting retaining walls) and the establishment of permanent cut-through traffic patterns in our neighborhoods and near our schools. There were no studies on the impact of heat islands caused by the loss of trees, added impervious surface sound reflection and retaining walls.

The impact on Lake Forest Park is disproportionate, enduring, and fundamentally unjust. The toll on our community far exceeds any purported benefits, emphasizing the need for Sound Transit to reconsider its approach and explore alternative solutions that prioritize the well-being of our residents, environment, and taxpayers.

## 5.1 Property Impacts

There are 110 properties along the Lake Forest Park segment of Bothell Way scheduled for partial property acquisition and/or permanent easements for the project. Before the “west shift”, nine properties were scheduled for full acquisition. The Sound Transit Board is grateful that no residents will be forced from their homes, but many have their front or back doors much closer to the highway. Anecdotal evidence suggests that many affected residents are receiving offers that reflect only the square-footage of acquired property, without regard to any reduction in value of the main property, damage to the property during construction, or degradation in quality of life suffered through increased noise, heat, crime, or other factors.

Residents have raised concerns about property damage and lack of support from Sound Transit. Residents on the west side of Bothell Way are worried about:

- Property slippage: They fear their land could slide due to the construction project.
- Damage to drains and water supplies: their water and drainage systems run directly to the highway and could be affected by construction.

Residents expressed these concerns to the contractors hired by Sound Transit to handle property acquisition offers. They were allegedly told they could “sue” Sound Transit if their property suffers damage.

Residents and the City, CORE and others believe this is an irresponsible response. They argue that Sound Transit should, at a minimum, pay for an assessment of their properties and drainage systems before construction starts. This would establish a baseline and allow for fair compensation in case of damage, avoiding the need for lawsuits.

Residents are concerned that construction work between 153rd and 155th Street, given the steep terrain and history of landslides, poses a high risk to their properties, and residents from 155th to Towne Center are worried that carving 16 feet off the back half of their property (even WITH the retaining wall) without additional study of the topography, is irresponsible and lacks concern for public safety.

Though Lake Forest Park represents only 13% of the project distance, 56% of the property acquisitions and \$83 million in property acquisition costs are in Lake Forest Park.

## 5.2 Environmental and Aesthetic Impacts

### 5.2.1 Trees

Sound Transit published a Stride BRT Tree Factsheet <sup>10</sup>for the project in August 2023 with the table below.



# SOUND TRANSIT SR 522/145TH BRT IMPACTS AND ALTERNATIVES IN LAKE FOREST PARK

Table 1 - Sound Transit August 2023 Tree Removals By Category

Tree Removals by Category				
City	less than 6" Diameter	6 to less than 12" Diameter	12 to less than 24" Diameter	24" Diameter and greater
Seattle/ Shoreline	10 3	30 29	17 13	1 11
Lake Forest Park	33	186	122	50
Kenmore	3	8	0	0
Bothell	25	38	14	1

It is not surprising that the majority of tree removals (66%) are slated for Lake Forest Park since it is the most wooded and residential section of the project. The number of 391 trees was as of the publication of the 90% Sound Transit engineering drawings which include the tree inventory. That number is almost certainly going to rise with the seven additional property acquisitions which were approved by the Sound Transit Board in January 2024.

The above table reveals that 50 so called "landmark" trees with diameter 24" or greater will be removed in Lake Forest Park. This represents nearly 80% of the landmark trees scheduled for removal along the entire route.

**Over five acres of trees are slated for removal.** Replacing this magnitude of trees and shrubs in Lake Forest Park will exacerbate the existing issue of urban heat islands and create additional health hazards.

The conversion of tree canopy to concrete surfaces is creating islands of heat that were previously moderated by nature. In the face of climate change, this is an emerging health hazard. Uncontrolled growth can lead to unlivable communities. The EPA has recently called for action in the face of these risks. And locally, a quote from the August 5, 2023 Seattle Times article (Seattle's growth is heating up the region - literally<sup>11</sup>) says it all:

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*Around Lake Washington, trees are rapidly being replaced with a growing density of concrete, asphalt and other heat-absorbing surfaces in buildings, roads and other pieces of urban infrastructure. That produces what's known as an "urban heat island," and it's boosting temperatures around the Emerald City by at least 8 degrees Fahrenheit.*

*About 80% of area residents, even those in verdant, affluent neighborhoods, are now exposed to heat extremes much worse than the city's rural surroundings, according to a new study by Climate Central, a nonprofit, climate-science research organization.*

*"Most of the planet is warming due to human-caused climate change, but the built environment in cities amplifies both average temperatures and extreme heat," the study said.*





*By a wide margin, heat is the deadliest natural hazard in the U.S., and heat waves are growing hotter, longer and more frequent as climate change progresses, putting children and older adults especially at risk.*

*Among the 44 cities Climate Central analyzed, Seattle ranks in the top five for increased heat.*

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The cost to the community of this tree removal goes far beyond replacement cost. Using iTree<sup>12</sup>, Lake Forest Park will suffer the following losses and impacts:

- Loss of **350 pounds of pollution** removal per year
- Loss of **185 tons of carbon storage**
- Loss of **5 tons of carbon sequestration**
- Creating **118,000 gallons of additional runoff per year**
- Estimated replacement cost of **\$1.2 Million**

Sound Transit will fund tree replacements but there won't be sufficient space along Bothell Way for the replacement so any replacement benefits will not be in the immediate area and may not even be in Lake Forest Park. Since any replacements will take many years to mature, it's likely that the 20% of the population of Lake Forest Park that is 65 years of age or older will not live to see the benefits. Meanwhile that million full bathtubs of stormwater that would have been retained will be washed through residences on the way to Lake Washington.

Figure 3 illustrates the many benefit of an urban forest.

Figure 3 - Summary of Urban Forest Benefits

## Summary of Urban Forest Benefits



**Pollution Abatement:** Urban forests serve as natural filters which improve water quality and air quality by trapping, absorbing, and transforming pollutants and excess nutrients, resulting in public health benefits, lower illness rates, and safeguarding ecosystems.



**Shade and Cooling:** Cities and metropolitan areas experience greater temperatures due to land use changes which alter the energy budget in an urban setting, known as the urban heat island effect. Through shading and evapotranspiration, urban forests mitigate the heat island effect through shading and cooling which lowers air and surface temperatures in densely populated regions.



**Stormwater Reduction:** Rainfall on impermeable surfaces, like concrete and asphalt, generates stormwater issues in cities, leading to problems such as flooding, water quality impairments, and reduced continuity of streamflow. In natural systems, rainwater interception and evapotranspiration minimize stormwater and reduce the reliance on costly engineered stormwater solutions.



**Wildlife Habitat:** Urban forests function as crucial wildlife habitats within the urban landscape, supporting a diverse range of species that have adapted to living alongside humans. These flora and fauna communities rely on these forests for essential resources, including refuge, food, water, and shelter, in an otherwise demanding environment.



**Carbon Sequestration and Storage:** Carbon dioxide (CO<sub>2</sub>), the primary greenhouse gas driving global warming, is absorbed, and stored by trees during photosynthesis. This sequestered carbon is stored in the plant tissues during the lifetime of a tree.



**Noise Buffering:** Urban forests and tree canopies serve as natural noise buffers, reducing sound from traffic and other sources. The reduction of nuisance noise is beneficial to human health and well-being and can minimize noise impacts which negatively affect wildlife habitat.



**Economic Benefits:** Trees bring numerous economic advantages, such as higher property values, increased business traffic, heightened demand, tourism attraction, reduced energy costs, and resident appeal. Research indicates that urban forest programs typically yield substantial returns on investment, believed to be 2:1 or more (Endreny 2018).



**Human Health and Wellness:** Urban trees provide intangible yet significant societal benefits including recreation, enhancing the aesthetics of city streets, and fostering community pride and identity. Research also shows that trees play a role in improving health outcomes, reducing stress, enhancing mental well-being including cognition, attention, and anxiety, clinical outcomes, and crime reduction (Wolf et al. 2020).

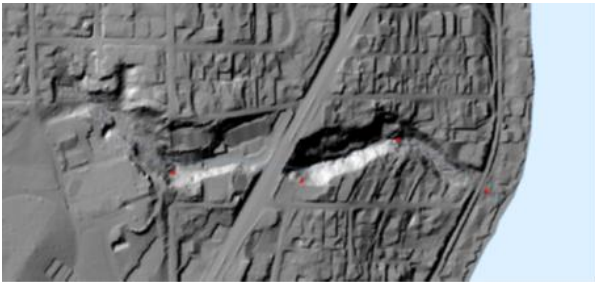
### 5.2.2 Stormwater Runoff and Soil Stability

Stormwater runoff is already a major problem for residents who live east of Bothell Way. Several residences have had to install sump pumps and other mechanisms to deal with stormwater runoff. As noted above, the removal of trees and shrubs that retain water will result in the addition of the equivalent of 1 million bathtubs of water to the stormwater runoff. Considering that many of the SEPA analyses appear to have been conducted without regard to the full extent of increased construction and tree removal of the “west shift” it appears doubtful that potential increases in stormwater runoff are adequately addressed in the design.

Three named streams cross the highway. These fish-bearing streams require state mandated culvert remediation. It is not clear how Sound Transit intends to cross Bsche'tla Creek, but it is in line for required culvert remediation. Additionally, the steep Bsche'tla Creek ravine immediately east of Bothell Way is extremely unstable, where a landslide forced evacuations of several households in recent years.

The figure below shows clearly how the deep ravine of Bsche'tla Creek runs through Bothell Way and the instability given the 90-foot drop to Lake Washington

Figure 4 - LIDAR Image of Bsche'tla Creek Ravine



### 5.2.3 Aesthetics

Despite the environmental damage, noise, and other impacts we shouldn't discount the overall aesthetic impact. The green, tree-lined gateway to our city will be replaced with a concrete corridor, nearly a mile-long, plagued by graffiti with the city charged with removal.

Sound Transit is charged with evaluating aesthetic impacts and in their 2021 SEPA Visual and Aesthetics report they say:

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*"...the combination of mature tree removal from foreground views and the installation of extensive retaining walls along Bothell Way (between 38th Avenue NE and a location north of NE 165th Street) would reduce the natural harmony of the project corridor"*

*"...in Lake Forest Park, specifically in the vicinity of NE 165th Street, the combination of tall retaining walls and the removal of characteristic tall trees in the foreground could be perceived as less compatible with the existing visual character, and residents of Lake Forest Park have expressed high sensitivity to tree removal. Therefore, on SR 522 in Lake Forest Park, adverse visual impacts would result at locations where both large retaining walls would be installed and tall conifer trees would be removed."*

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The Lake Forest Park segment is mostly residential, while the Kenmore and Bothell segments are mostly commercial. Only Lake Forest Park has adverse impacts noted in the SEPA report. It appears that adverse impacts to aesthetics have no bearing on the SEPA determination of non-significance.

## 5.3 Noise

Sound Transit says that there will be no appreciable increase in traffic noise after they widen Bothell Way, clear 391 trees and several hundred shrubs, erect in their place a nearly mile-long concrete retaining wall as high as 16 feet, and run 220 additional bus trips per day.

### 5.3.1 Will Noise Increase?

Instead of a more thorough Environmental Impact Statement, ST was able to do a less comprehensive SEPA Checklist which the agency then approved. Their conclusion – that the environmental impacts in Lake Forest Park are negligible.

Traffic noise is already at high levels for residences along Bothell. Traffic noise is not just a nuisance, it's also a serious health risk.

UW Professor Edmund Seto, a noted expert in exposure assessment and community noise impacts, stated in a July 2023 letter to CORE that:

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*“there is considerable scientific evidence supporting multiple health impacts of community noise. Noise contributes to annoyance and affects well-being. It affects the human endocrine system and the inflammatory pathway and is linked to high blood pressure and cardiovascular disease. Noise affects sleep quality. There is also ample evidence that noise has impacts on children’s learning.”*

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### 5.3.2 The Noise Analysis Was Deeply Flawed

The public comment period has long ago lapsed for the SEPA checklist and its deeply flawed Noise and Vibration Technical Report but here are some reasons why its conclusion is invalid:

#### 5.3.2.1 The Noise Analysis Was Done Before the Major Design Change to Shift the Roadway to the West

Sound Transit made a major design change in 2020, shifting the roadway to the west to avoid full property acquisitions on the East side of Bothell Way. A June 30, 2020 project update cited this change, pending Sound Transit Board approval.

The change dramatically increased the cost of the project in Lake Forest Park since the entire roadway had to be shifted to the west resulting in a nearly mile-long retaining wall up to 16 feet high and removal of hundreds of trees and shrubs.

The Noise and Vibration Report was dated March 2021, the same date as the SEPA Checklist. But it is more than curious that the report does not make a single reference to traffic noise reflected from the proposed retaining walls. The report’s noise modeling only has references to changes in the distance to the noise receiver and predicted bus noise impacts. Only short retaining walls were included prior to the west shift.

Professor Seto stated in a July 2023 letter to CORE:



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*“Vertical barriers (sound walls, retaining walls, etc.) can also reflect traffic noise, which can impact people on the opposite side of the street. Also, depending on the height of the wall, and the housing and other environments behind it, a portion of sound may diffract over the top of a barrier and affect people living behind the barrier. The impact of these reflections and diffractions can be quantified. Accepted traffic noise models, such as the Federal Highway Administration’s Traffic Noise Model 30.0, allow for accounting of the impacts of single barrier reflections in traffic noise assessment analyses.”*

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He goes on to say:

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*“Roadway development that removes vegetation can also adversely affect noise levels. Numerous studies have found that natural vegetation, if sufficiently tall, wide, and dense, can reduce road traffic noise.”*

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Page 24 of the SEPA report cites as data sources “Project design files in electronic format (CAD files) that were used to construct the noise models used in this analysis” though it doesn’t indicate which design files and version. The reference on page 54 - “In Segment 2, construction would occur on the east side of SR 522 from NE 145th Street to just before the start of Segment 3.” seems to indicate that the west-shift with its major construction of nearly a mile-long high retaining wall was not considered.

Further evidence that the west-shift is not encompassed by the report is at the bottom of page 54 where it says that construction would be closer to residents on the east than the west – “Residences in this project segment would be as close to the project construction as those described under Segment 1, with the closest residences identified at multifamily residences at 35th Avenue NE and NE 155th Place, and at single-family residences along both sides of SR 522 from NE 155th Street to NE 170th Street. These residences vary from as close as 10 to 15 feet from sidewalk construction to more than 50 feet from project construction in areas with minimal improvements. Construction of the BRT station at NE 165th Street would occur as close as 10 to 15 feet to a residence on the east side of Bothell Way, and 20 to 30 feet from residences on the west side of SR 522.”

There is a reference on page 53 “The use of pile-driving to install support piles or sheet piles may be required for construction of the three park-and-ride garages or the retaining walls proposed in Segments 1, 2 and 4, as described in Tables A-1 through A-4 of the SEPA Checklist” that could suggest that the report encompasses the west-shift since the March 2021 SEPA Checklist (Page 24) – “Six retaining (cut) walls of various lengths would be constructed on the west side of SR 522 between the NE 153rd Street Station Platform and where 41st Avenue NE meets SR 522. Three of these would be long walls (approximately 1,000 to 1,500 feet long).” Though it’s not clear if the noise report is referring to the same version of the SEPA Checklist, and the height of wall is not stated in the SEPA Checklist.

The most compelling evidence is on page 32 of the report that states that all monitoring was performed between October 6 and October 8, 2019. This is at least six months prior to the first official reference to the west shift where the nearly mile-long and tall retaining walls were introduced to the project.



### 5.3.2.2 The use of the transit noise model was inappropriate for the Lake Forest Park segment of this project.

Sound Transit used a transit noise analysis for our Lake Forest Park segment instead of the more substantive “Type 1” analysis that would have evaluated major project highway changes (such as the tall retaining walls) that may increase existing traffic levels. Such “multimodal” projects more aptly characterize the Sound Transit design which will substantially alter the existing highway. Instead, the analysis mainly covered only the bus traffic.

From page 26 – “This project is a bus transit project and would not add any new general-purpose through lanes; therefore, FTA methods were used for this noise and vibration analysis. Noise sources due to project operation would include: (1) bus operations, (2) traffic noise generated by vehicles using the park-and-ride garages, and (3) traffic noise generated by vehicles utilizing roadway improvement components of the project, such as new turn lanes.”

From page 27 – “Project noise: The analysis determined the noise levels that would be caused by the proposed project. In this case, the change in noise level would be related to the projected operational noise from the new BRT system, which was determined based on bus headways (buses per hour), speeds and transit station locations.”

The Federal Transit Administration (FTA), in their September 2018 publication Transit Noise and Vibration Impact Assessment (TNVIA), recommends using the Federal Highway Administration (FHWA) regulations for traffic noise analysis on projects where the highway noise sources dominate at all times. In Washington state, this would be the WSDOT regulations.

Despite having to move the entire highway to the west and erect a nearly mile-line high retaining wall, Sound Transit was able to avoid the more comprehensive WSDOT/FHWA requirements because the project is not funded by state or federal sources. They claim that this is not a “multi-modal project” since only transit improvements are planned. It seems they are legally within their rights to avoid state and federal requirements for noise analysis, but there will clearly be a major change to the highway.

### 5.3.2.3. Noise monitoring was done in the wrong locations and some affected properties will have severe noise levels

Noise monitoring locations selected didn’t reflect properties moved closer to the highway due to the west shift.

Based on FTA noise impact criteria from the Transit Noise and Vibration Impact Assessment (TNVIA), any increase in post-project noise levels for locations with existing noise exposure of 67dB or higher results in a severe impact (see table 4-5 on Page 28 of TNVIA). Concerning impact criteria, it says “The criteria are defined with the expectation that communities already exposed to high levels of noise can only tolerate a small increase.” Further stating “If it is not practical to avoid severe impacts by changing the location of the project, mitigation measures must be considered.”

The table in Appendix E of the Noise and Vibration Technical Report summarizes existing noise levels. Of the 67 analyzed Lake Forest Park properties in that table, 44 have existing noise levels putting them in the severe category and 23 have existing noise levels higher than 70db which was characterized in the report as “unacceptable for residential land use”. In addition, Appendix E appears incomplete, not including the homes on the west side of the roadway that should have been analyzed since they will result in the most significant noise impact from the project since vehicles will be closer than in the existing conditions.

Appendix E shows that 11 of the 44 properties in the severe category will have noise increases. Mitigation appears to be required for those properties.



# SOUND TRANSIT SR 522/145TH BRT IMPACTS AND ALTERNATIVES IN LAKE FOREST PARK

Here are some recent sound level recordings along Bothell Way today, near where ST specified existing (in 2019) levels of 77dB LAeq. Those levels are all in the severe category for traffic noise, but our recordings were even higher. All recordings were done with the NIOSH sound level app as averages of one-minute recordings.

Table 2 - Sound Level Measurements Done by CORE

Date	Time	Location	LAeq	Max
12/12/23	4:16PM	Outside private residence 16298 Bothell Way (165th intersection)	79.6	84.3
12/12/23	3:56PM	15848 Bothell Way NE residence, on street side of sound wall	83.9	100.0
12/12/23	3:53PM	15848 Bothell Way NE residence, behind and below private sound wall	70.6	76.7
12/23/23	3:48PM	Private residence at 15548 Bothell Way	82.9	88.9
12/23/23	3:43PM	Shannon Heights Apartments, 3820 NE 155th	80.0	84.0
12/12/23	3:40PM	15500 Bothell Way	78.6	84.3
12/12/23	3:32PM	Sheridan Market, outside front door	77.6	80.9

**Definitions:**

LAeq = average or equivalent sound level

Max = maximum dB during the one-minute recording

A group of residents on the east side of Bothell Way erected a sound wall between the highway and their residences many years ago. It appears that Sound Transit will remove that wall and they will experience at least a 20dB increase in noise levels at their residences. Here again, Sound Transit may have legally avoided mitigation with their limited analysis, but there is no doubt some residents will endure an even higher level of traffic noise.

CORE sent a letter<sup>13</sup> to the Lake Forest Park leadership on February 26, 2023 covering these shortcomings of the SEPA Noise and Vibration Report.

### 5.3.2.4. The Addition of 220 Daily Bus Trips Will Increase Noise on Bothell Way

There will be a substantial increase in bus traffic on Bothell Way since the project will add 220 daily bus trips. The majority will be new battery electric buses (BEB) which are much quieter than diesel buses, but only when idling and on initial acceleration. The SEPA report admits that “At cruising speeds of 35 mph or higher, BEBs produce noise levels that approach the noise levels of a diesel or hybrid bus due to the wind noise and tire roadway friction.” In his July 2023 letter to CORE, Professor Seto says:

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*“The noise from a moving bus is considerably louder than that of a typical passenger vehicle.... Shifting to hybrid and electric buses only slightly alleviates traffic-related noise. The figure below illustrates how tire-pavement noise is the major component of overall traffic noise. There is considerable current work and real-world demonstration projects examining the impact of pavement types that help reduce tire-pavement noise that may inform the design of new roadway development projects, particularly those involving heavier-vehicle bus and truck traffic”.*

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### 5.4 Traffic/Parking/Safety

The purpose of Transportation Technical Memorandum of the SEPA is stated as “to document the traffic operations, present the results of project traffic analyses, and document the project’s effects on all modes of travel.” Sound Transit has elected to postpone the 300-stall parking garage in Town Center until 2044, though it's a core component of their SEPA traffic analysis to support commuter parking. What about the parking demand that led to the inclusion of a 300 - stall facility? Now that the garage is postponed, where will those cars park? It would seem that either:

1. ridership will suffer since riders will avoid BRT – OR
2. more riders will park at Town Center and in the neighborhood – OR
3. there was no need for the parking garage in the first place.

Even if a small fraction of riders are in the second category above, parking pressures should have been better analyzed in the SEPA.

Many narrow residential streets will not allow emergency vehicles to pass if cars are parked carelessly on both sides of the street.

The project will also alter traffic features along Bothell Way. The two-way left turn lane from 153rd to 165th will be eliminated, preventing left turns at 38th and 39th and, making those who live along Bothell Way turn right into and out of their properties and forcing a huge increase in turn traffic at 165th. An increase in side street traffic will reduce pedestrian safety in areas without sidewalks.

There are 41, mainly residential driveways on the east side of Bothell Way. Drivers exiting these driveways, sometimes in blind corners, will have safety issues with large buses traveling in the near BAT lane.

### 5.5 Construction (Pollution, Safety)

Sound Transit did not consider the additional environmental impact of the expected two-year construction phase. An example is the release of CO<sub>2</sub>. The shift to the west meant 90,000 tons of dirt and debris must be moved in and out of Lake Forest Park, 64% of the total for all of Stride-3. This could require as many as 4,500 industrial dump truck loads, making 9,000 round trips. An industrial dump truck releases 7 and 10 pounds of CO<sub>2</sub> per mile. Nine thousand 20-mile round trips could equate to as much as 1,500,000 pounds of incremental CO<sub>2</sub> released into the atmosphere, compounded by the loss of up to 400 trees large trees.

Table 3 - Dirt and Topsoil Removal by City

City	Total Cubic Yard of dirt and topsoil moved (tons)	% by City
Seattle	8,440	6%
Shoreline	2,200	2%
<b>LFP</b>	<b>90,000</b>	<b>64%</b>
Kenmore	13,200	9%
Bothell	26,000	19%
<b>Total</b>	<b>139,840</b>	<b>100%</b>





## 6. Costs vs. Benefits

### 6.1 Weighing the Benefits of the Design

The 166-page SEPA Addendum H: Transportation Technical Memorandum emphasizes the overarching aims of Stride-3, highlighting a suite of capital investments to enhance bus transit speed and reliability along the corridor. This suite includes the implementation of business access and transit (BAT) lanes, transit queue bypass lanes, signal upgrades along with transit signal priority (TSP), modifications to existing signal timing, consolidation of bus stops, and Bus Rapid Transit (BRT) station enhancements.

Sound Transit has stated that the benefits of bus rapid transit stem from three guiding principles: speed, reliability, and increased ridership.

It is a matter of “transit principle.” According to Julie Timm, former Sound Transit CEO, “BRT, to be functional, requires a significant number of BAT lanes. The more you reduce or change that, the more you degrade it into Rapid Ride Buses, which is not the voters' mandate.” As stated earlier, there was no mention of BAT lanes in the 2016 voter material. The facts are that the proposed 1.3-mile northbound lane has no significant impact on increasing BAT lane coverage. Recall that there is already a dedicated BAT lane in the southbound direction.

- Overall, for Strides 1, 2, and 3, BAT lane coverage (counting HOV lanes on I-405 as BAT lanes) would increase just 2%, from 80% to 82%.
- Across Stride-3, adding the Lake Forest Park 1.3-mile northbound dedicated bus lane would increase BAT lane coverage across the 9 miles (16 miles in both directions) by just 7%, from 47% to 54%.

#### 6.1.1 Bus Speed Improvements

Sound Transit states that bus travel times will improve in Lake Forest Park by an average of 2.3 minutes. In Lake Forest Park these improvements are only in the Northbound direction. Bus travel times are not projected to improve southbound through Lake Forest Park because a dedicated bus lane is already in place that serves transit riders who, in the morning, are headed to the new South Shoreline Light Rail Station at 148th NE and NE 5th Ave.

The following information is based on Sound Transit data. Sound Transit frequently uses these data in presentations, notably the PPT presentation made by the staff to the Sound Transit Board, arguing not to honor the City of Lake Forest Park’s request for a 90-day pause to study alternatives. It compares “build” vs. “no build” travel times for sections along the route projected for the year 2042.

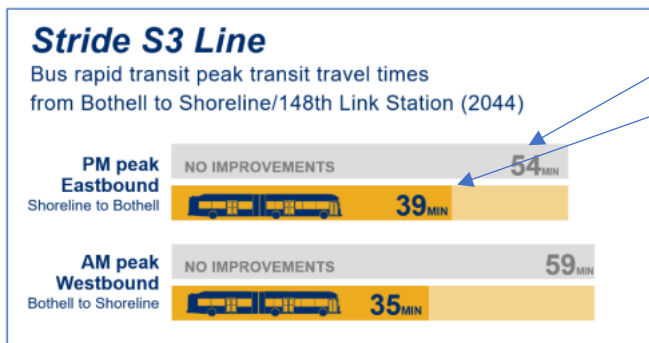
Figure 5 below shows an excerpt of the spreadsheet:



# SOUND TRANSIT SR 522/145TH BRT IMPACTS AND ALTERNATIVES IN LAKE FOREST PARK

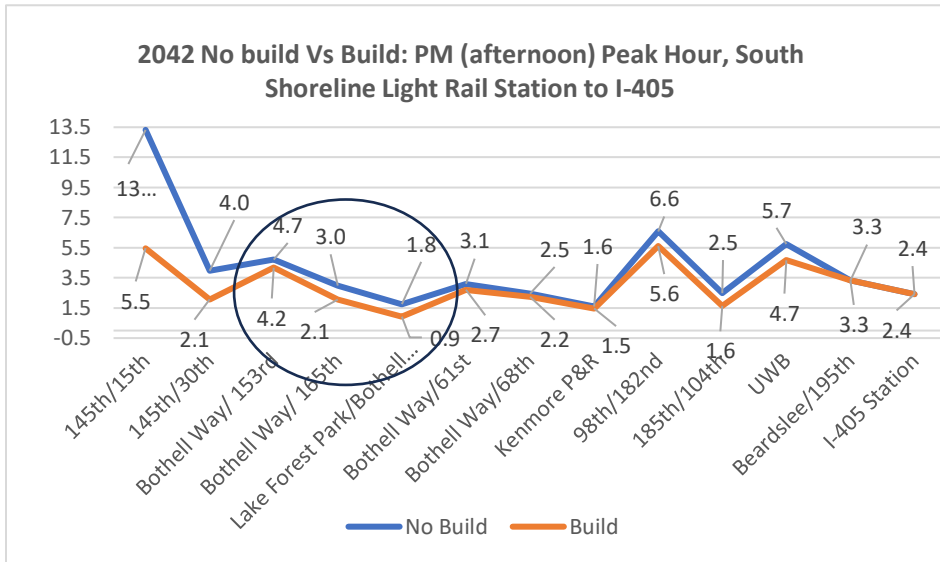
Figure 5 - Sound Transit Projected Bus Travel Times for 2042 in Minutes

Segment of Route	No Build	Build
5th/148th to 145th/15th	13.3	5.5
145th/15th to 145th/30th	4.0	2.1
145th/30th to Bothell Way/153rd	4.7	4.2
Bothell Way/153rd to Bothell Way/165th	3.0	2.1
Bothell Way/ 165th to Bothell Way/170th	1.8	0.9
Bothell Way/170th to Bothell Way/61st	3.1	2.7
Bothell Way/61st to Bothell Way/68th	2.5	2.2
Bothell Way/68th to Kenmore P&R	1.6	1.5
Kenmore P&R to 98th/182nd	6.6	5.6
98th/182nd to 185th/104th	2.5	1.6
185th/104th to UWB	5.7	4.7
UWB to Beardslee/195th	3.3	3.3
Beardslee/195th to 1-405 Station	2.4	2.4
<b>Total</b>	<b>54.4</b>	<b>38.8</b>



# SOUND TRANSIT SR 522/145TH BRT IMPACTS AND ALTERNATIVES IN LAKE FOREST PARK

Figure 6 - Bus Time Saved by Segment PM Peak



As expected, Figure 6 shows virtually no time saved in the build scenario for AM peak hour since a dedicated BAT lane already exists.

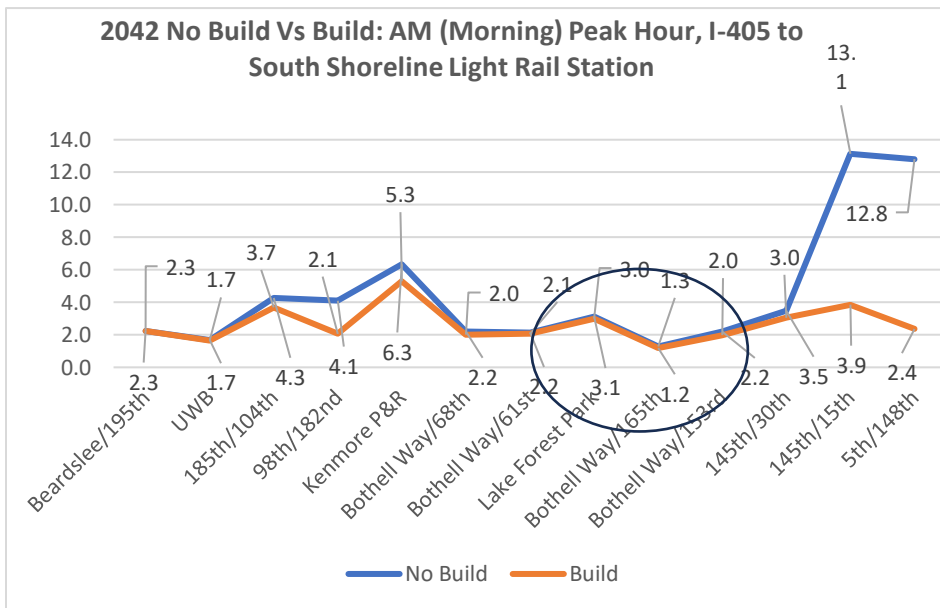


Table 4 shows the time saved at the end of each segment together with the percentage of time saved across the entire route. It shows that 62% of the total 15.7 minutes are saved in a 28-block stretch from the South Shoreline Light Rail Station to the NE 15th Ave bus stop on 145th NE without an extended dedicated bus lane.

It shows clearly that most of the time saved between build and no/build states occurs outside of Lake Forest Park, particularly along 145<sup>th</sup> where a dedicated BAT lane is not planned.



# SOUND TRANSIT SR 522/145TH BRT IMPACTS AND ALTERNATIVES IN LAKE FOREST PARK

Table 4 - PM Peak Hour Eastbound Build/No Build Times With Percent Time Saved

PM Peak Hours Eastbound: South Shoreline Light Rail Station to I-405 Station				
Year: 2042	No Build	Build	Time Saved	% of all Time
148th and 5th Ave	-	-	-	-
145th/15th	13.3	5.5	-7.9	50%
145th/30th	4.0	2.1	-1.9	12%
Bothell Way/ 153rd	4.7	4.2	-0.5	3%
Bothell Way/ 165th	3.0	2.1	-0.9	6%
Lake Forest Park/Bothell Way	1.8	0.9	-0.8	5%
Bothell Way/61st	3.1	2.7	-0.4	3%
Bothell Way/68th	2.5	2.2	-0.2	1%
Kenmore P&R	1.6	1.5	-0.1	1%
98th/182nd	6.6	5.6	-1.0	6%
185th/104th	2.5	1.6	-0.8	5%
UWB	5.7	4.7	-1.1	7%
Beardslee/195th	3.3	3.3	0.0	0%
I-405 Station	2.4	2.4	0.0	0%
<b>Total Time</b>	<b>54.4</b>	<b>38.8</b>	<b>-15.7</b>	<b>100%</b>

% of all time Saved: 62%  
Total minutes saved: 9.8

- Sound Transit delivers this impressive timesaving without a dedicated bus lane, using instead:
  - A roundabout at the intersection of 145<sup>th</sup> NE and NE 5<sup>th</sup> Ave just to the east of I-5
  - A 1000-foot “q-jump”; 500 feet on either side of NE 15<sup>th</sup> Ave on 145<sup>th</sup> NE)
  - Signalized lights.
- The data also shows a marginal increase in general-purpose traffic speed transiting Lake Forest Park in 2042 vs. 2024 of less than 30 seconds during the weekday, evening peak hours returning home on the bus from the South Shoreline Light Rail Station.

Sound Transit says, “Planned improvements in the current design are expected to improve speed and reliability significantly” and, “the SR 522/145th BRT project is designed to improve Stride (bus) speed and reliability by targeting peak congestion areas and traffic queues.” Speed (MPH) is helpful for drawing comparisons as it considers both time and distance and creates an apples-to-apples comparison of the impact of improving bus speed on 145th vs. Bothell Way.

It is important to understand that the “dedicated BAT lane” through Lake Forest Park is not a bus-only lane. Any car that needs to make a right-hand turn going northbound may use the lane. Between 145th and Bothell Way and Town Center, 44 streets, driveways, and turnoffs are on the east side of Bothell Way. These streets and turnoffs are the only way for 500 homes, condominiums, townhomes, and businesses to enter and exit Bothell Way.

Sound Transit’s data shows “build” Vs “no-build” scenarios, by showing the impact on bus speed (MPH) to normalize data and make comparisons easier. Based on the plans for 145<sup>th</sup>, which include a roundabout at 145<sup>th</sup> and 5<sup>th</sup> Ave NE, an 1100-foot queue jump, half on each side of 145th and 15th Ave NE, and the dedicated northbound bus lane in Lake Forest Park. The table below shows how fast the bus would travel in each segment, comparing the “build” vs. “no-build” scenario in 2042 in MPH.



# SOUND TRANSIT SR 522/145TH BRT IMPACTS AND ALTERNATIVES IN LAKE FOREST PARK

Table 5 - Build/No Build Speeds

Year: 2042	MPH No Build	MPH Build	% Increase in MPH
145th average MPH	5.2	11.9	129%
Bothell Way/LFP Average MPH	10.2	13.4	32%

Furthermore, the impacts greatly vary by roadway section, as the table below shows.

Table 6 - Build/No Build Speeds for 145th and LFP

	Year 2042	MPH No Build	MPH Build	% Increase in MPH Build Vs No-Build
145th	From S. Shoreline Light Rail station to 145th and 15th Ave	3.6	8.8	143%
	From 145th and 15th to 145th and 30th	10.6	20.3	92%
	<b>Total 145th</b>	<b>5.2</b>	<b>11.9</b>	<b>129%</b>
Bothell Way/LFP	145th & 30th to Bothell Way& 153rd	7.6	8.6	13%
	153rd to 165th	12.0	17.5	45%
	165th to Town Center	13.7	26.0	90%
	<b>All Bothell Way</b>	<b>10.2</b>	<b>13.4</b>	<b>32%</b>

Several things are important. The data Sound Transit uses projects commuters will transit Lake Forest Park an average of 2.3 minutes faster during the afternoon, weekday, and peak hour commute. That prediction includes a section on 145<sup>th</sup> from 30<sup>th</sup> Ave NE through the stoplight at 145<sup>th</sup> and Bothell Way. This data strongly suggests the following:

- The reason that the bus speed increases by only 13% between 145<sup>th</sup> and 30<sup>th</sup> NE and 153<sup>rd</sup> and Bothell Way has a great deal to do with the intersection of 145<sup>th</sup> and Bothell Way. This means some of the 2.3 minutes are in that section before heading northbound on Bothell Way, where the dedicated bus lane begins. SEPA documents a stoplight delay of 78 seconds at that intersection. Excluding that, **it reduces Lake Forest Park time saved to 61 seconds!**
- Bothell Way from 165th to Town Center shows the bus traveling at an average of 26 MPH, almost double the speed in the “no-build ” scenario. Half of the 0.6 miles of this section already has a dedicated bus lane.

It is important to note that BRT is designed to work together with light rail to deliver passengers to their destinations. Consequently, most trips will be two-seat rides on both a bus and light rail car. Two minutes of saving will quickly disappear when adding time to get to/from the light rail station and waiting for the light rail or bus. The July 2023 S3 FAQ <sup>14</sup>acknowledges that when comparing the old ST 522 Express to the new two-seat ride “We know that the change requires an adjustment from our riders. For many people, the change does add about 10 minutes to the trip”.



# SOUND TRANSIT SR 522/145TH BRT IMPACTS AND ALTERNATIVES IN LAKE FOREST PARK

Another common destination, UW Seattle Campus, will face similarly longer travel times since the Metro 372 will not extend to Lake Forest Park, requiring a two-seat ride (and without delivering riders directly to buildings on campus).

## 6.1.2 Bus Reliability

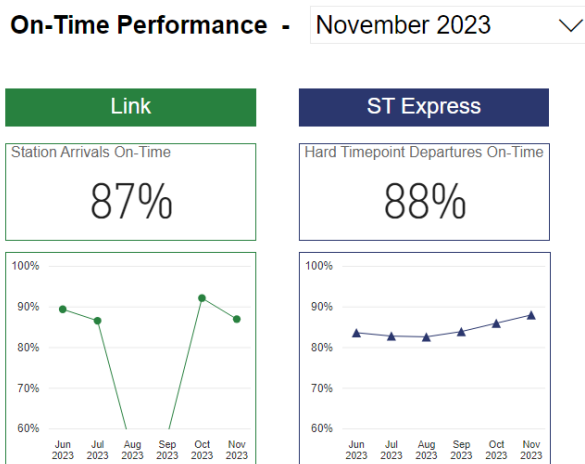
Reliability lies in the transit industry's well-established principle of keeping to a schedule. Many factors contribute to reliability, not the least of which is traffic congestion and its counterpart, inconsistent travel speeds. Other factors include early or late starts, inconsistent dwell and transfer times, operations and fleet maintenance, number of bus stops, and fare payment systems.

- Sound Transit sets riders' expectations about reliability, promising on their reporting website: *“You should expect consistent, reliable service that departs and arrives on time, allowing you to rely on Sound Transit to get you where you're going.”*
- Sound Transit’s reporting system for ST Express Buses ([Sound Transit Bus Reliability](#)) reports an 88% on-time performance. It is hard to imagine that adding a 1.5-mile dedicated northbound bus lane through Lake Forest Park could improve much on that metric.

Since the Stride 3 plan is to use the BRT to get passengers to light rail to continue their journey (e.g. to downtown Seattle), nearly all rides will be two-seat. Reliability must then also include the light rail part of the journey.

The figure below is from the Sound Transit Performance Tracker. Notice the precipitous dip (below the chart axis) for Link performance in August and September. This was before maintenance issues seriously impacted on-time performance at the beginning of 2024.

Figure 7 – Snapshot of November 2023 Sound Transit Performance Tracker



## 6.1.3 Ridership

522 Bus Boardings are far from Sound Transit's projections of 9,000 average daily boardings, far from the current average daily bus boardings of 1,900.

Nobody can accurately predict the future. For many years, Sound Transit has forecast 9,000 average daily bus boardings for the 522 bus. Sound Transit data show ridership on the 522 remains 65% to 75% lower than 2019, four years after COVID-19. (It is currently at 1,900 average daily boardings.) To grow from the current 1,900 average daily boardings to

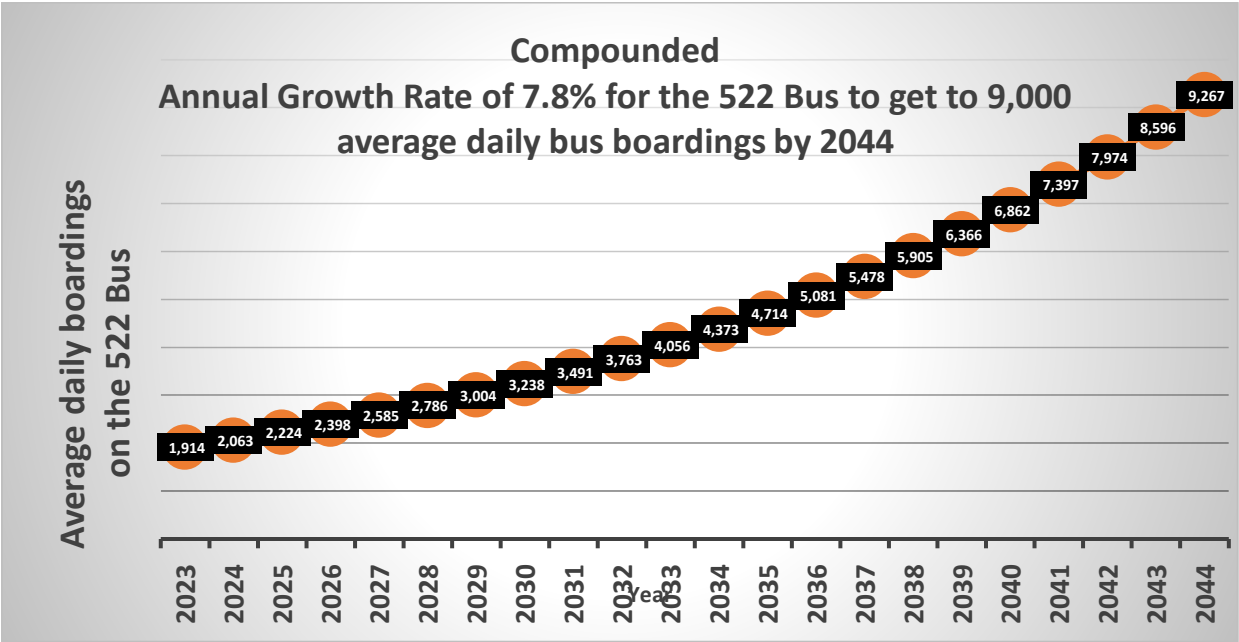


# SOUND TRANSIT SR 522/145TH BRT IMPACTS AND ALTERNATIVES IN LAKE FOREST PARK

9,000 in 2044 requires a compounded annual growth rate of almost 8% over the next 20 years to reach the goal of 9,000 average daily bus boardings (a 380% increase in average daily bus boardings).

The Puget Sound Regional Council forecasts “population growth of 1.1 percent per year and employment growth of 1.3 percent per year. At these growth rates, the region could experience up to 21 percent trip growth by 2042.”

Figure 8 - Required Growth to Achieve 522 Targets



And nearly 30% of average bus boardings occur on weekends, not weekdays. The average number of bus boardings per weekend day is virtually identical to the average daily bus boardings during the weekdays.

This means in 2044, there will be 6,000 average daily boardings during the weekdays, which includes boardings in both directions. It’s a reasonable assumption the average number of daily buses boarding in one direction would equal the number of boardings going the other direction, meaning a maximum of 3,000 bus riders could be boarding the 522 buses on the weekday headed east toward Bothell. Not all of these would be boarding the bus during the afternoon, weekday, peak hours.

## 6.2 The Enormous Cost Far Outweighs the Benefits

Once the decision was made to shift the road to the west, construction complexity, costs, and environmental damage drastically increased. Lake Forest Park costs far more than sections of Stride-3 roadway in Seattle/Shoreline, Kenmore, and Bothell.

- A 2.3-minute faster transit through Lake Forest Park during the weekday afternoon peak hours (4–6 p.m.) impacts a maximum of 12 buses. Assuming they are double articulated with a capacity of 150 riders, this investment benefits just 1,200 riders.
- In 2019, Sound Transit estimated the project's cost by City. Lake Forest Park will account for 55% of all Stride-3 capital costs of construction and property acquisition costs, and 67% of all Stride-3 property acquisition and permit costs (see Figures 5 and 6 below).



# SOUND TRANSIT SR 522/145TH BRT IMPACTS AND ALTERNATIVES IN LAKE FOREST PARK

- Despite comprising only 13% of the BRT route, the 1.3-mile Lake Forest Park segment will make up 55% of the cost (see Table 7 below).

Table 7 - Capital Costs (2019 Sound Transit Report Adjusted to 2024 Dollars)

Capital Costs 2018 Dollars Inflation Adjusted to 2024	Shoreline/ Seattle	Lake Forest Park	Kenmore	Bothell	Total
Property Acquisition and Permits	\$47,803,584	\$102,636,240	\$0	\$2,529,680	\$152,969,504
Construction and Construction Management	\$66,876,880	\$164,183,600	\$14,711,440	\$90,393,080	\$336,165,000
<b>Total</b>	\$114,680,464	\$266,819,840	\$14,711,440	\$92,922,760	\$489,134,504
<b>Percent</b>	<b>23%</b>	<b>55%</b>	<b>3%</b>	<b>19%</b>	<b>100%</b>

Figure 9 - Share of Property Acquisition and Permit Costs

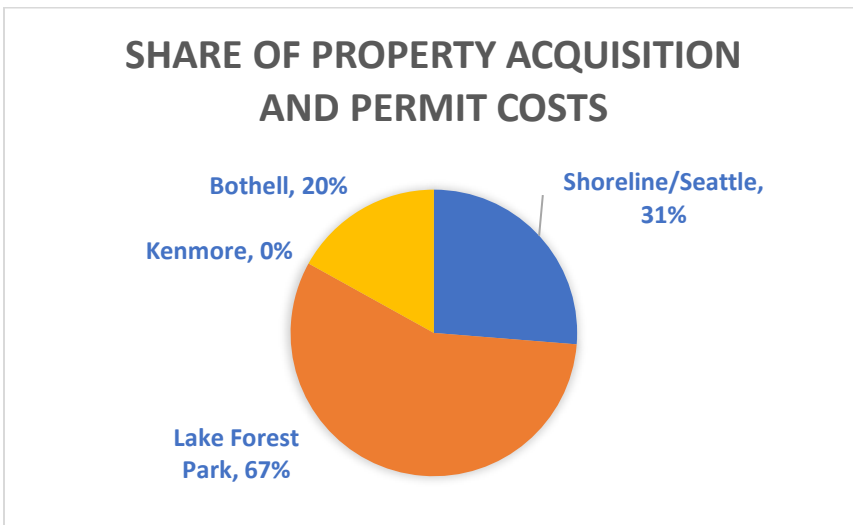
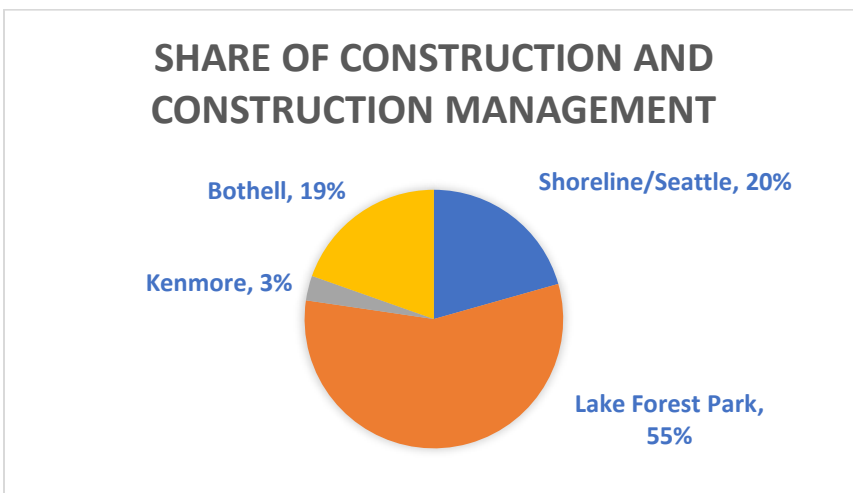


Figure 10 - Share of Construction and Construction Management Costs





Put into context, the cost to build a mile of roadway in Lake Forest Park is magnitudes greater than in Shoreline/Seattle, Kenmore of Bothell. Reducing the bus transit in Lake Forest Park by one-minute costs 3.7 times the average and building a mile of road costs 2.8 times the average.

Table 8 - Cost Per Mile Comparison

City	Cost to Save a Minute of Transit Time by City and Overall	Index Cost Per Minute Saved	Cost to Build a Mile of Roadway	Index of Cost per Mile of Roadway
Seattle/Shoreline	\$9,579,970	0.4	\$62,258,667	1.3
<b>Lake Forest Park</b>	<b>\$94,331,176</b>	<b>3.7</b>	<b>\$135,800,000</b>	<b>2.8</b>
Kenmore	\$7,060,846	0.3	\$3,523,529	0.1
Bothell	\$39,452,555	1.6	\$44,511,765	0.9
<b>Overall Cost</b>	<b>\$25,425,131</b>	<b>1.0</b>	<b>\$48,575,366</b>	<b>1.0</b>

ST-3, which in 2016 was to cost \$58 billion and has ballooned to an estimated \$148 billion today, should have the Sound Transit Board of Directors and Staff constantly looking for opportunities to save money while delivering value to transit riders.

## 7. The Sensible Alternative to a Dedicated BAT Lane

Since October 2022, the City of Lake Forest Park, CORE, and the Lake Forest Park Stewardship Foundation have tried to engage and convince Sound Transit to examine an alternative approach to a northbound dedicated bus lane (BAT).

The obvious alternative would be to use queue bypass lanes, which are roadway lanes that enable buses to bypass traffic congestion or a traffic queue. This is the basic roadway design used on 145<sup>th</sup> Street to significant effect.

### 7.1 Sound Transit’s Argument That a Dedicated BAT Lane is Needed in Lake Forest Park

Sound Transit CEO Timm and Stride-3 staff met with CORE and the Stewardship Foundation in October 2023. They presented a PowerPoint document using screenshots from Google Maps to explain why the BAT lane is the only viable option for Stride-3 through Lake Forest Park. There is no need for a BAT lane running in the other direction because there already is one. Their argument was supported by an accompanying technical memo “Understanding Sound Transit’s Stride 3 Design Approach”. The PowerPoint and technical memo are not available on Sound Transit’s web site, but they did report on the Google Maps data in their September “Platform” blog <sup>15</sup>citing:

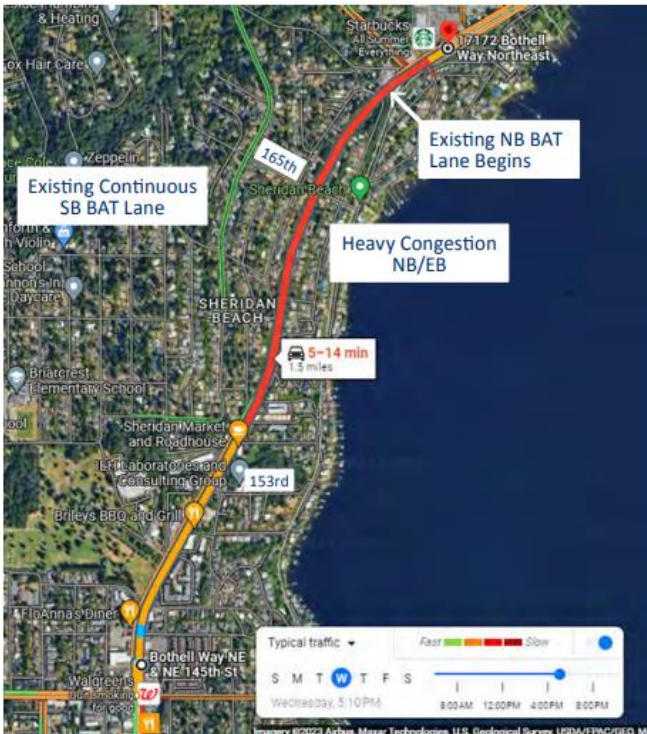
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*The simple answer is that traffic congestion along SR 522 forms a ‘queue’ of traffic that runs virtually the entire length of Lake Forest Park. So to bypass this congestion, there needs to be a queue bypass lane (a roadway lane that allows buses to bypass traffic) that is equally long. And in Lake Forest Park’s case that means BAT lanes.*

# SOUND TRANSIT SR 522/145TH BRT IMPACTS AND ALTERNATIVES IN LAKE FOREST PARK

...Just pull up Google maps around morning commute and evening commute and you will see a heavy red line running through Lake Forest Park.

Figure 11 - Excerpt from Sound Transit PowerPoint of Google Maps Screenshot



MAP 2 – Existing PM peak traffic conditions, SR 522

They assert that the “outbound PM afternoon commute sees even greater congestion [than its AM counterpart] represented in red, extending approximately 1.5 miles from near NE 145th Street to Town Center.”

- “Because of this, a person traveling northbound along this stretch of roadway at 5:10 p.m. on a typical weekday will see a travel time of 5–14 minutes.”
- “A BAT lane connecting intersections is necessary to provide the transit priority lanes that would allow buses to bypass the full extent of congestion and maintain reliable travel times both now and into the future when traffic congestion may increase further.”
- “A BAT lane will allow buses to bypass congestion from NE 145th Street to 41st Ave NE, resulting in travel times that are 2–9 minutes faster on average than what riders experience today.”
- “The travel times provided by Google Maps are independent and reproducible.”

## 7.2 Sound Transit’s Google Maps Argument is Wrong

The screenshot used by Sound Transit in Figure 7 does look like heavy congestion during the afternoon peak but though Sound Transit makes assurances the data are reproducible, CORE data analysts could not reproduce this level of heavy congestion.

Google Maps can be used for “live” traffic or “typical” traffic.

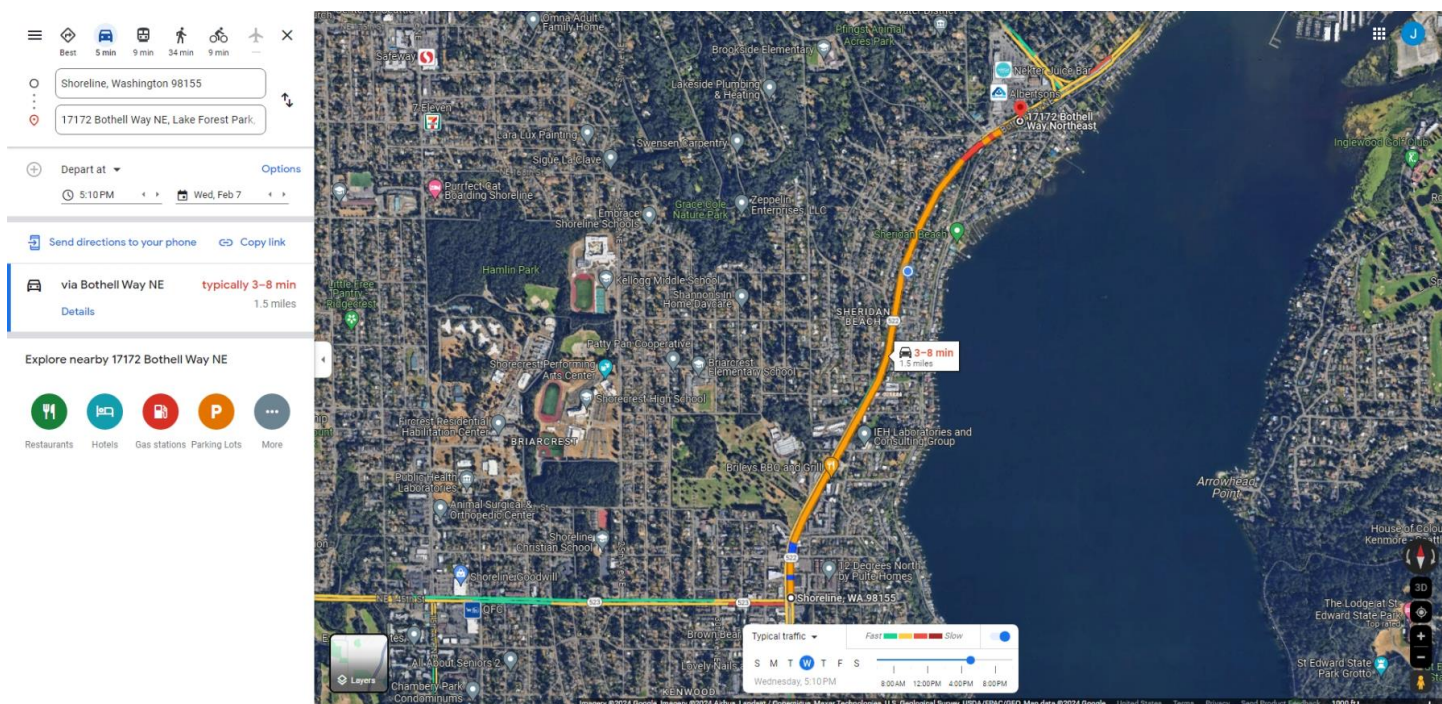


# SOUND TRANSIT SR 522/145TH BRT IMPACTS AND ALTERNATIVES IN LAKE FOREST PARK

When CORE started to dig deeper and found that although anyone can use Google Maps, it is much more difficult to get to the underlying data and definitions. We couldn't find a definition of "typical" from Google, but reports indicate that it is taken from averages of historical data. Typical times almost certainly include pre-Covid traffic data when congestion was more severe. Also note that typical travel time is expressed as a range, but the color of the line represents the worst-case scenario.

Here is what we got when trying to replicate "typical" Sound Transit's Google traffic screenshot using Wednesday 5:10 PM typical traffic with the 1.5-mile route. Even though it incorrectly includes .2 miles where there is already a dedicated BAT lane beyond 41st, it's still much shorter time than Sound Transit has in their screenshot (3-8 minutes vs. 5-14 minutes):

Figure 12 - Typical Wednesday 5:10PM Traffic as Derived by CORE

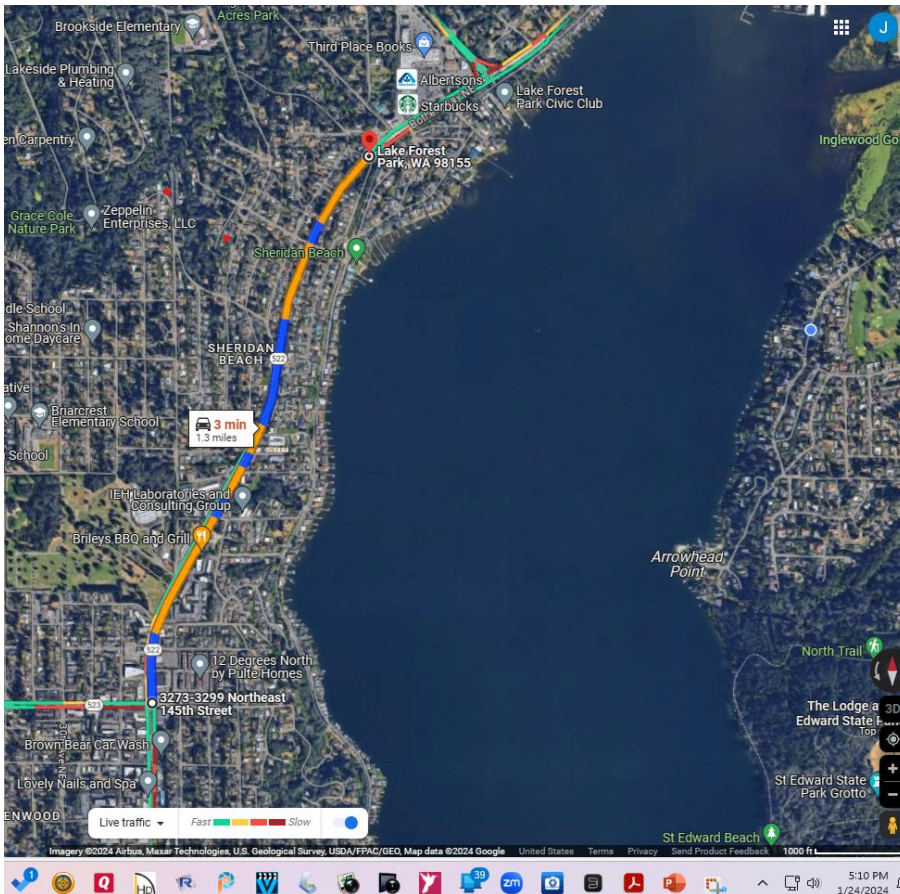


A screenshot of "live" traffic on Wednesday, Jan. 24, 2024, at 5:10PM appears below. Note that the travel time is listed as **three minutes**, whereas the "typical" used for the same day and time by Sound Transit is listed as 5-14 minutes.



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Figure 13- Live Traffic From Google Maps



The above screenshots were captured just using the Google Maps interface. To get a more accurate representation of when, how much, and exactly where congestion occurs along our Lake Forest Park segment, CORE contracted with a company that specializes in providing detailed extracts of Google traffic data. That way, we could analyze a mountain of actual prior traffic data without selecting each day/time/route individually. In doing so, we could tell not only how long it takes to travel parts of the route, but also the likelihood of the worst-case scenario (aka the “heavy red line”). Using the accumulated historical Google data, CORE attempted to reproduce the screenshots in the Sound Transit presentation, looking at “typical data for Wednesday, at 5:10 p.m.” every Wednesday over five years. We were unable to reproduce it. The most extended delay we found was 12 minutes, which rarely occurred. Google may use the word “typical,” but “typical” does not mean frequent or all the time. Google Maps data also demonstrates that weekday traffic is lighter on Monday and Wednesday.

Using these data provided another benefit: the ability to analyze the probability of maximum congestion within small segments of the route to understand more discretely the probability of a lengthy delay occurring and where delays are most likely during the weekday afternoon return trip from the South Shoreline Light Rail Station. We did not do a westbound version of the extract because a dedicated bus lane is already running in that direction. Our extract specification was:

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- Extract data for NE 145<sup>th</sup> Ave, specifically:
  - From NE 145<sup>th</sup> Ave and 5<sup>th</sup> Ave NE to the intersection of Bothell Way NE.
  - Subsets of 145<sup>th</sup>, specifically:
    - NE 145<sup>th</sup> and 5<sup>th</sup> Ave NE to NE 145<sup>th</sup> and 17<sup>th</sup> Ave NE (the bus stop).
    - NE 145<sup>th</sup> and 17<sup>th</sup> Ave NE (the bus stop) to NE 145<sup>th</sup> and 30<sup>th</sup> Ave NE (the next bus stop).
- Extract data from the Intersection of NE 145<sup>th</sup> 30<sup>th</sup> Ave NE to Bothell Way NE and 41<sup>st</sup> Ave NE, where the bus lane begins just before Lake Forest Park Town Center.
  - Subsets of this section, specifically:
    - NE 145<sup>th</sup> and 30<sup>th</sup> Ave NE to Bothell Way NE and 153<sup>rd</sup> NE
    - From Bothell Way NE and 165<sup>th</sup> NE
    - From Bothell Way NE and 165<sup>th</sup> to 41<sup>st</sup> Ave NE.
- The extracts we pulled provided data daily, in 10-minute periods, through each month studied. The data included the minimum, median, average, and maximum time observed for each increment and an extract for March 2019.
- They also tie sectioning off sections of the roadway, much like Sound Transit’s data set comparing build Vs no-build times between bus stops.

The data shows that two sections of the roadway in Lake Forest Park (in yellow below), from NE 145th to 153rd NE and from Bothell Way NE and 165<sup>th</sup> to 41st Ave NE, have the greatest probability of a delay. Building q-bypass lanes in these two sections would address the most likely sections to face extended delays. **This, indeed, illustrates the viability of the bus queue jump alternative.**

The longer transit time is on the 1.6-mile stretch of 145<sup>th</sup> between 7 and 12 minutes, vs. the 1.3-mile stretch of 522 between 145th and Bothell Way to 41st, which is between 4 and 8 minutes.

Table 9 - Maximum Traffic Time by Road Sections

4 p.m. to 6 p.m.	March, 2023				
Univariate Analysis of Maximum Traffic Time by Road Sections	Median Minutes	Average Minutes	Minimum Minutes	Maximum Minutes	Probability of Occurrence of Max Minutes
I5&145th to 145th&17th	4	4.12	3.00	6.00	4%
145th&17th to Bothell Way	6	5.60	4.00	7.00	8%
All of 145Th	9	9.30	7.00	12.00	15%
145th&Bothell Way to 153rd LFP	3	2.61	2.00	3.00	61%
Bothell & 153rd LFP to 165th LFP	3	2.89	2.00	5.00	2%
165th LFP to 41st	2	1.59	1.00	2.00	54%
All of Bothell WAY LFP	5	5.12	4.00	8.00	10%

These insights, matched with the right engineering solutions, will provide a design that will optimize bus transit time while minimizing disruptions to our community's aesthetics, environment, and quality of life. Whether these solutions involve shorter dedicated BAT Lanes or longer queue-pass lanes doesn't matter.

Using extended queue-pass lanes or shorter BAT lanes on the two sections in yellow and leaving the 12 blocks between 153rd and 165th as is, but with signalized lights would have profound implications. There would be no need to shift the



roadway west; no need to cut down hundreds of trees and haul nearly 100,000 tons of dirt and debris; no need to build extensive, noise-generating, and graffiti-attracting retaining walls; no need to do nine full home condemnations; require far fewer partial property takes and temporary easements; and cost hundreds of millions of dollars less than the current plan.

This lack of a data-driven solution to increasing bus transit speed through Lake Forest Park should not be allowed to continue. Alternative designs should have been studied years ago. Prioritized, targeted engineering solutions based on probabilistic traffic congestion analysis means everyone wins: Sound Transit, Lake Forest Park, transit riders, and taxpayers.

## 8. Endnotes

<sup>1</sup> <https://kingcounty.gov/~media/depts/elections/how-to-vote/voters-pamphlet/2016/11/201611-local-edition.ashx?la=en>

<sup>2</sup> 2016 King County General Election Voters Guide, pp. 28-29;47-50. 2016 Vote ST3 Mailer, pp. 2,3

<sup>3</sup> [https://www.change.org/p/stop-the-deforestation-of-lake-forest-park-from-impacts-from-stride-s3-sr-522-ne-145-brt?utm\\_source=share\\_petition&utm\\_medium=custom\\_url&recruited\\_by\\_id=24efbb60-3e75-11ed-bbf5-c95a6f062c0b](https://www.change.org/p/stop-the-deforestation-of-lake-forest-park-from-impacts-from-stride-s3-sr-522-ne-145-brt?utm_source=share_petition&utm_medium=custom_url&recruited_by_id=24efbb60-3e75-11ed-bbf5-c95a6f062c0b)

<sup>4</sup> <http://tinyurl.com/yc7etamn>

<sup>5</sup> <https://www.seattletimes.com/seattle-news/transportation/lake-forest-park-neighbors-denounce-bus-lane-plan-that-removes-trees/>

<sup>6</sup> Dec. 2015 map showing full northbound BAT lane in Lake Forest Park -

[https://www.soundtransit.org/sites/default/files/ST3\\_145th\\_SR522BRT\\_11252015\\_11x17.pdf](https://www.soundtransit.org/sites/default/files/ST3_145th_SR522BRT_11252015_11x17.pdf)

<sup>7</sup> 2018 May June Open House Summary Full BAT Lane LFP pg. H4

<sup>8</sup> June 2020 ST West Shift FAQ Release - <https://www.soundtransit.org/sites/default/files/documents/sr522-brt-west-side-faq>

<sup>9</sup> See LFP 2008 Legacy 100 Year Vision

([https://www.cityoffp.gov/DocumentCenter/View/362/LFP\\_LegacyProjectReport\\_May08\\_FINAL\\_PRINT?bidId=](https://www.cityoffp.gov/DocumentCenter/View/362/LFP_LegacyProjectReport_May08_FINAL_PRINT?bidId=)) and 2015

Comprehensive Plan Update ([https://www.cityoffp.gov/DocumentCenter/View/2578/LFP\\_Comprehensive-Plan\\_2015\\_Vol1?bidId=](https://www.cityoffp.gov/DocumentCenter/View/2578/LFP_Comprehensive-Plan_2015_Vol1?bidId=))

<sup>10</sup> <https://www.soundtransit.org/sites/default/files/documents/StrideBRT-tree-factsheet.pdf>

<sup>11</sup> <https://www.seattletimes.com/seattle-news/seattles-growth-is-heating-up-the-region-literally-see-where/>

<sup>12</sup> Analysis performed with iTree ECO - [i-Tree Eco \(itreetools.org\)](http://itreetools.org)

<sup>13</sup> <http://tinyurl.com/ms5yrh6a>

<sup>14</sup> <https://www.soundtransit.org/sites/default/files/documents/stride-program-faq-july-2023.pdf>

<sup>15</sup> <https://www.soundtransit.org/blog/platform/stride-s3-bat-lane-ga>