

Appendix - Definitions & methodology for Title VI Analysis

Policies and definitions

The section below describes Sound Transit's approved policies for conducting and identifying major service changes, as well as for assessing their impacts on Title VI populations.

Service standards and performance measures

Service standards and performance measures are a set of guidelines used to design, evaluate and modify transit service. The standards and measures establish baselines to obtain optimum efficiency and effectiveness in the system on a short-term basis, while maintaining or improving the quality of service. Planning and day-to-day management of transit service is based on the established service standards and performance measures. The guidelines provide a multi-step process to identify the level and type of service that should be provided, as well as a process to implement any changes needed to meet established priorities.

Service standards and performance measures define the criteria for making major or administrative service changes, as well as guidelines and driving factors for the type of changes needed to ensure Sound Transit services are meeting the demand for regional transit in the Puget Sound area.

Defining major service changes

Resolution R2013-18, adopted by the Sound Transit Board of Directors in 2013, established policies for conducting equity analyses of major service changes and assessing the impacts on minority and low-income populations. This policy defines a major service change as follows:

- Any single change in service on an individual bus or rail route that would add or eliminate more than 25 percent of the route's weekly platform service hours;
- and/or moving the location of a stop or station by more than a half mile;
- and/or closing or removing a stop or station without replacement within a half mile.

Fare equity analysis policy and methodology

Sound Transit Board of Directors Resolution R2013-19 established policies for conducting equity analyses of fare changes impacting minority and low-income populations.

The policy directs Sound Transit to conduct a fare equity analysis prior to making any fare change to analyze potential adverse effects on minority and low-income populations and establishes the following thresholds for determining whether the proposed fare change would have a disparate impact on minority populations and/or a disproportionate burden on low-income populations:

- A disparate impact occurs when the minority percentage of the population adversely affected by a fare change is greater than the average minority percentage of the population of Sound Transit's service area.
- A disproportionate burden occurs when the low income percentage of the population adversely affected by a fare change is greater than the average low income percentage of the population of Sound Transit's service area.

Per Sound Transit's policy, if any disparate impact or disproportionate burden is found during the fare equity analysis, Sound Transit will consider steps to avoid, minimize, or mitigate the adverse impacts and reanalyze the modified changes to determine if the impacts are removed or lessened.

Adverse Effects

The adopted Sound Transit major service change policy, described above, also defines potential adverse effects of major service changes and thresholds for determining whether the proposed service change would have a disparate impact on minority populations and/or a disproportionate burden on low-income populations. The definitions are as follows:

- A potential adverse effect is defined as a geographical or time-based addition or reduction in service which includes but is not limited to: changes to span of service, changes to frequency of service, or elimination of routes or route segments.
- A disparate impact occurs when the minority percentage of the population adversely affected by a major service change is greater than the average minority percentage of the population of Sound Transit's service area.
- A disproportionate burden occurs when the low-income percentage of

the population adversely affected by a major service change is greater than the average low-income percentage of the population of Sound Transit's service area.

Per Sound Transit's policy, if any disparate impact or disproportionate burden is found during the service equity analysis, Sound Transit will consider steps to avoid, minimize, or mitigate the adverse impacts and reanalyze the modified changes to determine if the impacts are removed or lessened.

Definitions and data analysis

The following sections describe the data definitions and methodologies used by Sound Transit to develop estimates for Title VI populations within the Sound Transit service area for Title VI analysis of service changes.

Demographic analysis methodology and Title VI data definitions

Sound Transit uses census demographic data to identify Title VI communities (minority, low income and limited-English proficiency) for service equity analysis and calculates the systemwide or mode-specific average representation of these communities within the general population. Only minority or low-income status are used to determine if a disparate impact or disproportionate burden must be mitigated or analyzed. However, identifying limited-English proficiency (LEP) residents helps Sound Transit ensure that outreach efforts reach diverse customers. Sound Transit uses the 2010 Census Designated Tracts as the geographic basis for assessing the Title VI populations.

Sound Transit uses the most recent five-year demographic estimates available from American Community Survey (ACS). The ACS dataset identifies minority, low income and LEP populations as follows:

- **Minority:** Persons who self-identify as being one or more of the following ethnic groups: American Indian and Alaska Native, Asian, Black or African American, Hispanic or Latino, Native Hawaiian and other Pacific Islander.
- **Low income:** Persons whose household income is below 150% of the federal poverty level.
- **Limited English Proficiency (LEP):** Persons who identify a language other than English as their primary language and are not fluent in English.

The following sections describe the methodology for identifying each of the Title VI populations for the purposes of the annual service equity analysis.

Service area methodology

Most transit agencies in the United States define their service area as a buffered distance around each of their transit routes. Given the unique service characteristics of Sound Transit service – limited stops connecting regional urban and employment centers – the agency defines its service area based on a radial distance from each transit stop, rather than the transit route alignment. Table 1 below provides details on Sound Transit’s service area by stop type.

Table A-1 Sound Transit Service Area Definitions

Stop Type	Service Area (Miles)
Bus stop without parking	0.5
Rail station without parking	1.0
Major bus facilities with parking	2.5
Rail station with parking	5.5

Sound Transit Title VI Population Estimates

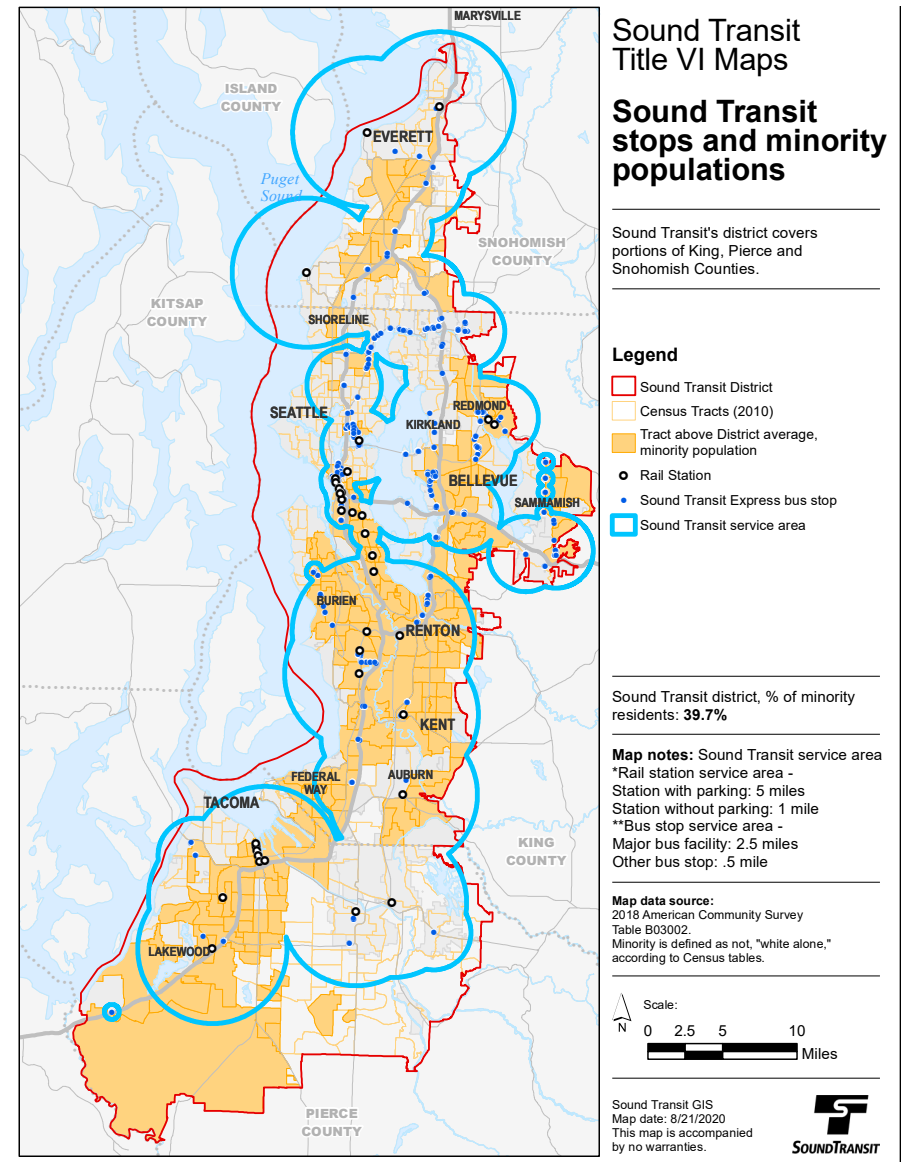
The population representation for any census tract is calculated using the percentage of area that falls within the district or mode's service area to estimate the specific number of people that fall within each of the Title VI categories. For example, if a census tract total is 10 acres, and 3 acres are in the service area, based on the previously identified methodologies, then 30 percent of the tract's total population, and in turn the respective Title VI populations, is considered to be within the service area. This methodology assumes an even distribution of population throughout the census tract.

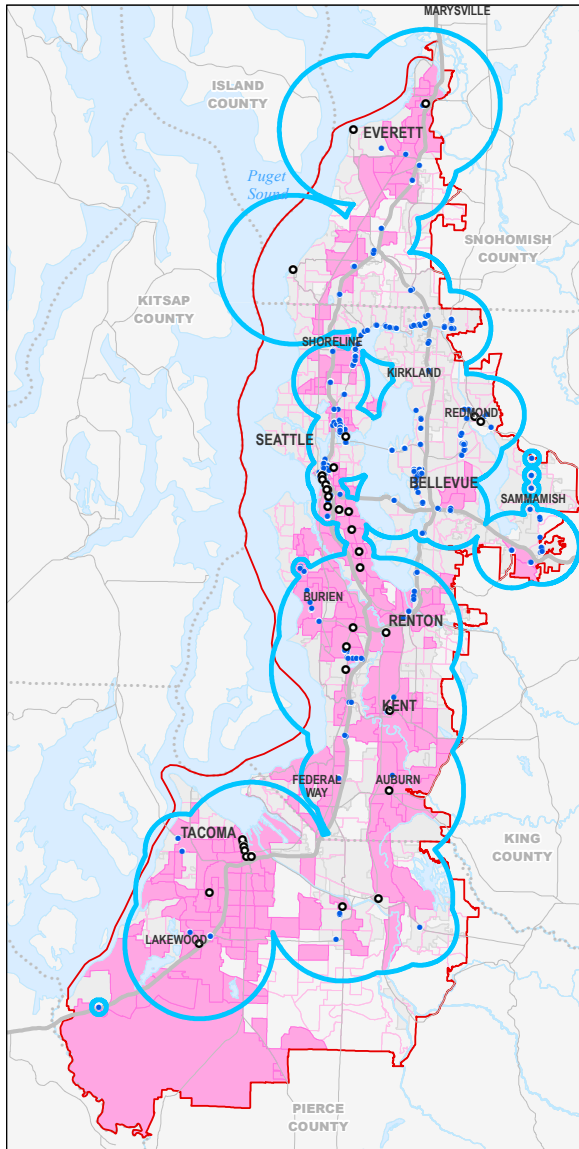
Using the demographic analysis and Title VI definitions previously outlined in this section, percentages for the three Title VI populations for the Sound Transit service area are identified by census tract and the district overall.

Table A-2 Sound Transit District Populations

Title VI Populations (2018)	Percentage of District Population
Minority	39.7%
Low income (150% poverty level)	16.4%
Limited-English proficiency	10.1%

Table A-2 shows the Title VI population averages for the Sound Transit service area using the American Community Survey 5-year estimates 2018 dataset. Minority and low-income averages serve as a comparison in the service change analysis to determine if mitigation must be considered, while LEP averages help to advise the outreach strategy. The maps on the next several pages (Maps A-1 to A-3) show census tracts with minority and low-income populations above the Sound Transit district average.





Sound Transit Title VI Maps

Sound Transit stops and low income population

Sound Transit's district covers portions of King, Pierce and Snohomish Counties.

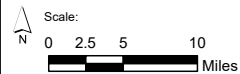
Legend

- Sound Transit District
- Census Tracts (2010)
- Tract above District average, low income
- Rail Station
- Sound Transit Express bus stop
- Sound Transit service area

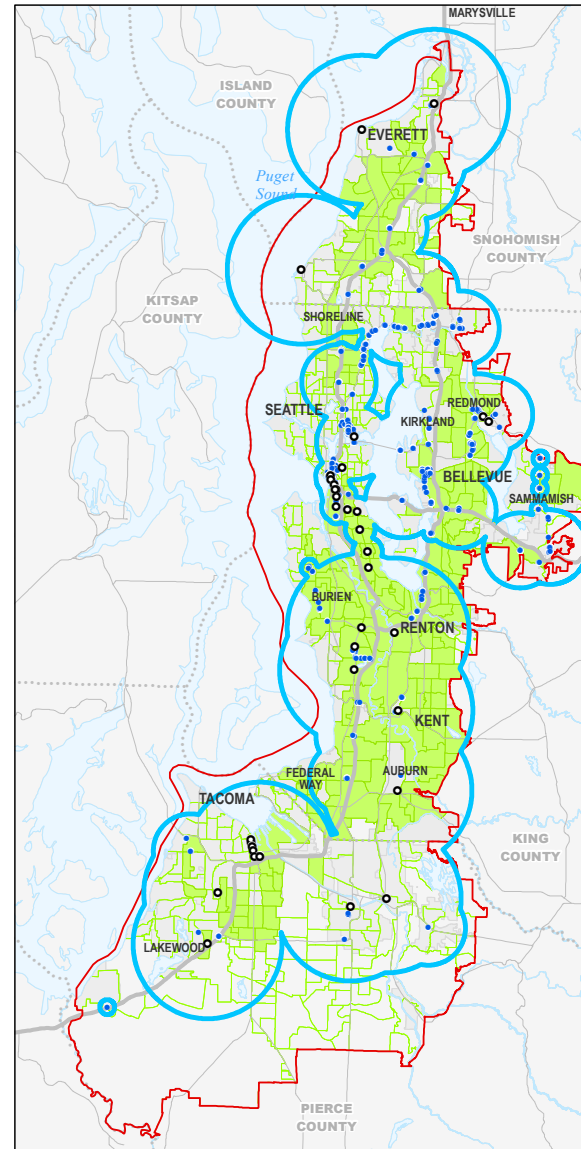
Sound Transit district, % of low income residents: **16.4%**

Map notes: Sound Transit service area
 *Rail station service area -
 Station with parking: 5 miles
 Station without parking: 1 mile
 **Bus stop service area -
 Major bus facility: 2.5 miles
 Other bus stop: .5 mile

Map data source:
 2018 American Community Survey
 Table C17002.
 Low Income is defined as individuals with a household income below 150% of poverty level.



Sound Transit GIS
 Map date: 8/21/2020
 This map is accompanied by no warranties.



Sound Transit Title VI Maps

Sound Transit stops and limited English proficiency populations

Sound Transit's district covers portions of King, Pierce and Snohomish Counties.

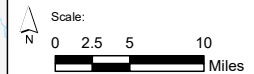
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- Sound Transit District
- Census Tracts (2010)
- Tract above District average, LEP
- Rail Station
- Sound Transit Express bus stop
- Sound Transit service area

Sound Transit district, % of limited English proficiency residents: **10.1%**

Map notes: Sound Transit service area
 *Rail station service area -
 Station with parking: 5 miles
 Station without parking: 1 mile
 **Bus stop service area -
 Major bus facility: 2.5 miles
 Other bus stop: .5 mile

Map data source:
 Limited English Proficiency (LEP) populations:
 2018 American Community Survey
 Table C16001.
 Limited English proficiency is defined as speaking English less than, "Very Well."



Sound Transit GIS
 Map date: 8/21/2020
 This map is accompanied by no warranties.



Comparison of affected populations by proposed service change

Table A-3 COVID Service Reductions March 2020-March 2021

Route	Is the population higher than the ST District Average? (2018 Census)			Type of proposed service change	Change in weekly platform hours	% change in platform hours
	Minority	Low-income	Limited-English proficiency			
510	No	Yes	Yes	Service reduction	-160.7	-37.8%
511	No	No	Yes	Service reduction	-52.7	-16.7%
512	No	Yes	No	Service reduction	21.3	1.8%
513	No	Yes	Yes	Service reduction	-76.9	-41.6%
522	No	No	No	Service reduction	-67.6	-6.0%
532	No	No	Yes	Service reduction	-189.2	-49.1%
535	No	No	Yes	Service reduction	-141.5	-26.8%
541	No	No	No	Suspension	-60.0	-100.0%
542	No	No	No	Service reduction	-78.6	-12.6%
544	Yes	No	Yes	Suspension	-505.0	-100.0%
545	Yes	No	Yes	Service reduction	-166.4	-10.7%
550	Yes	No	Yes	Service reduction	-186.4	-14.0%
554	Yes	No	No	Service reduction	12.6	1.5%
555	No	No	No	Service reduction	-90.0	-100.0%
556	No	No	No	Service reduction	-210.0	-100.0%
560	Yes	Yes	Yes	No change	-63.8	-8.0%
566	Yes	Yes	Yes	Service reduction	-126.8	-18.9%
567	Yes	No	Yes	Suspension	-270.0	-100.0%
574	Yes	Yes	Yes	No change	51.9	6.0%
577	Yes	Yes	Yes	No change	5.4	1.1%
578	Yes	Yes	No	Service increase	157.7	24.2%
580	Yes	Yes	No	Service reduction	-20.2	-23.7%
586	Yes	Yes	No	Service reduction	-59.4	-25.8%
590	Yes	Yes	No	Service reduction	-67.4	-7.4%
592	Yes	Yes	No	Service reduction	-112.0	-25.2%
594	Yes	Yes	No	No change	35.1	3.7%
595	No	Yes	No	Service reduction; new stop	-95.0	-51.4%
596	No	No	No	Service reduction	-13.3	-15.6%
Link	Yes	Yes	Yes	Service reduction	-508.8	-25.3%
Sounder North	No	Yes	Yes	Service reduction	-15.3	-43.8%
Sounder South	Yes	Yes	Yes	Service reduction	-72.8	-26.5%
Tacoma Link	Yes	Yes	No	No change	0.0	0.0%

Table A-4 Northgate Changes: Proposed Changes to September 2021 compared to March 2020 Baseline

Route	Is the population higher than the ST District Average? (2018 Census)			Type of proposed service change	Change in weekly platform hours	% change in platform hours	Avg. change in miles, one-way
	Minority	Low-income	Limited-English proficiency				
510	No	Yes	Yes	Service reduction	-160.7	-37.8%	0.0
511	No	No	Yes	Truncation	-52.7	-16.7%	-7.4
512	No	Yes	No	Truncation	21.3	1.8%	-7.5
513	No	Yes	Yes	Truncation	-76.9	-41.6%	-7.4
522	No	No	No	Truncation	-67.6	-6.0%	-6.4
532	No	No	Yes	Service reduction	-189.2	-49.1%	0.0
535	No	No	Yes	Service reduction	-141.5	-26.8%	0.0
541	No	No	No	Suspension	-60.0	-100.0%	0.0
542	No	No	No	Truncation	-78.6	-12.6%	-1.5
544	Yes	No	Yes	Suspension	-505.0	-100.0%	0.0
545	Yes	No	Yes	Service reduction	-166.4	-10.7%	0.0
550	Yes	No	Yes	Service reduction	-186.4	-14.0%	0.0
554	Yes	No	No	Service reduction	12.6	1.5%	0.0
555	No	No	No	Truncation	-90.0	-100.0%	-4.2
556	No	No	No	Truncation	-210.0	-100.0%	-4.0
560	Yes	Yes	Yes	No change	-63.8	-8.0%	0.0
566	Yes	Yes	Yes	Service reduction	-126.8	-18.9%	0.0
567	Yes	No	Yes	Suspension	-270.0	-100.0%	0.0
574	Yes	Yes	Yes	No change	51.9	6.0%	0.0
577	Yes	Yes	Yes	No change	5.4	1.1%	0.0
578	Yes	Yes	No	Service increase	157.7	24.2%	0.0
580	Yes	Yes	No	Service reduction	-20.2	-23.7%	0.0
586	Yes	Yes	No	Elimination	-59.4	-25.8%	-37.1
590	Yes	Yes	No	Service reduction	-67.4	-7.4%	0.0
592	Yes	Yes	No	Service reduction	-112.0	-25.2%	0.0
594	Yes	Yes	No	No change	35.1	3.7%	0.0
595	No	Yes	No	Service reduction; new stop	-95.0	-51.4%	0.5
596	No	No	No	Service reduction	-13.3	-15.6%	0.0
Link	Yes	Yes	Yes	Service reduction	-508.8	-25.3%	4.6
Sounder North	No	Yes	Yes	Service reduction	-15.3	-43.8%	0.0
Sounder South	Yes	Yes	Yes	Service reduction	-72.8	-26.5%	0.0
Tacoma Link	Yes	Yes	No	No change	0.0	0.0%	0.0

Route 510 Service Reduction / Stop Addition

Route 510 connects Everett locations to downtown Seattle during the peak-period and peak direction. Service was cut reduced from 42 to 30 daily trips in April 2020 due to COVID-19 and will remain at that level for the September 2020 service change. We are proposing to continue this service level through 2021 due to reduced ridership demand. This service level is a reduction of 37.8% of weekly platform hours compared the March 2020 baseline, which exceeds the 25% major service change threshold.

With the opening of the Northgate Link Extension in September 2021, we proposed to add the Mountlake Terrace Freeway station to Route 510 which allows customers from Routes 511 or 513 to choose to transfer to Route 510 or Community Transit routes serving downtown Seattle.

Passenger Impacts

The service reduction means passengers may have longer waits between trips. Trips would operate every 10 minutes during rush hour and up to 40 minutes just before/after rush hour.

Passengers not traveling to Mountlake Terrace Freeway Station may experience slight delays (1-2 minutes) as a result of the stop addition, and potentially more crowded buses from new passengers.

Assessment of Service Impacts

- **No disparate impact** - the proposed change impacts an area with a minority population of 39.1%, lower than the Sound Transit District average of 39.7%.
- **Disproportionate burden** - the proposed change impacts an area with a low-income population of 20.5%, higher than the Sound Transit District average of 16.4%.

Area	Minority	Low Income	LEP
Route 510	39.1%	20.5%	10.6%
District Average	39.7%	16.4%	10.1%

Maps showing percentages of minority, low-income, and LEP populations in the Route 510 service area by census tract can be found after the text in this section. Due to the determination of a disproportionate burden, results from public input and a review of alternatives will help shape the final proposal.

Fares Impact

There are no fare impacts from the proposed changes to Route 510 service.

Potential Alternatives Considered

Truncate at Northgate Station with higher frequency

- Higher frequency of 8-15 minutes would slightly reduce average wait times but result in longer travel times throughout much of the operating span of Route 510.
- Truncating would enable a simpler route structure, leading to a more straightforward trip planning. The split approach of Route 510 serving downtown directly and Route 512 truncating at Northgate means riders will have very different transit experiences depending on time of day.
- Ridership demand on Route 510 peaks early in the AM and PM periods, when traffic congestion is less severe on I-5 and downtown Seattle. As a result, truncation would result in longer travel times for most Route 510 riders.

Eliminate Route 510 and reinvest into an all-day Route 512 including peak

- This would also enable the elimination of Route 511 and result in a simpler overall service pattern.
- However, this alternative penalizes riders from South Everett and Everett Station by requiring them to pass through Ash Way P&R and Lynnwood TC, which are not inline with the I-5 HOV lanes.
- This service pattern appeared in the Phase 1 of the Northgate Link Connections restructure and received a substantial fraction of negative feedback, largely due to the reasons listed above.

Truncate every other trip at Northgate Station

- Typically Sound Transit designates a different route number for when termini change
- Splitting the Route 510 into two separate routes would result in longer wait times and a less consistent travel experience for customers

- This approach would address the concerns of customers who wish to keep Route 510 intact while also addressing the desire of customers in favor of truncation at Northgate

Eliminate Route 510 and reinvest into Sounder North

- Sound Transit only has easements from BNSF to operate 4 round trips within a 2 hour, 15 minute window in each peak period. Route 510 service span is much wider and not limited by other operating rules.
- Sounder North and Route 510 share common termini (Everett Station and King St Station/International District Station), but also serve unique markets, potentially displacing a large fraction of the Route 510 ridership base.
 - Route 510 serves South Everett P&R with 399 parking spaces
 - Sounder North serves Mukilteo (63 spaces) and Edmonds stations (259 spaces))
- Diverting ST Express platform hours into Sounder service would not result in a proportional increase in ridership
- Route 510 is the second most cost-effective ST Express route to operate, with a cost per passenger of only \$4.84 per boarding in 2019
- Sounder North required \$15.68 per passenger
- There is a \$1.75 fare premium for Sounder North
- For March 2020, Sounder North was scheduled to operate 8 daily trips compared to 42 for Route 510
- Sounder North delivers sometimes longer but more reliable run times
 - Sounder North has a scheduled run time of 59 minutes between Everett and King Street Station
 - Route 510 ranges between 50 and 85 minutes depending on time of day

Compared to these alternatives, the current proposal to reduce Route

510 frequency during lower demand period while keeping the route intact and adding the Mountlake Terrace Freeway Station results in the least disruption to the existing ridership base.

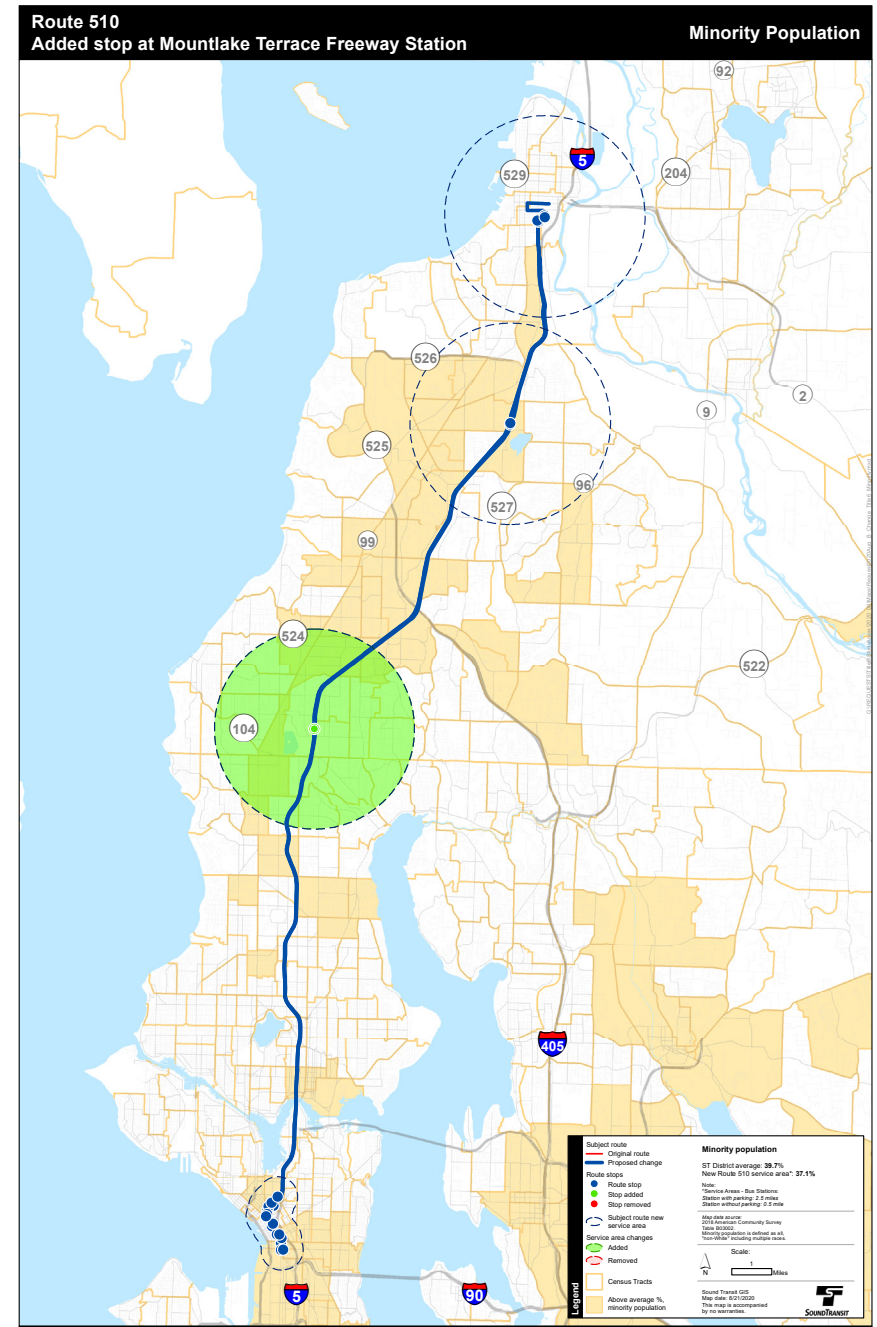
Route 510 departure times will be adjusted to accommodate displaced customers as a result of Sounder North service reductions. Travel time saving as a result of reduced traffic conditions may enable additional saving in operating costs. Potentially, these saving could be reinvested into slightly more service.

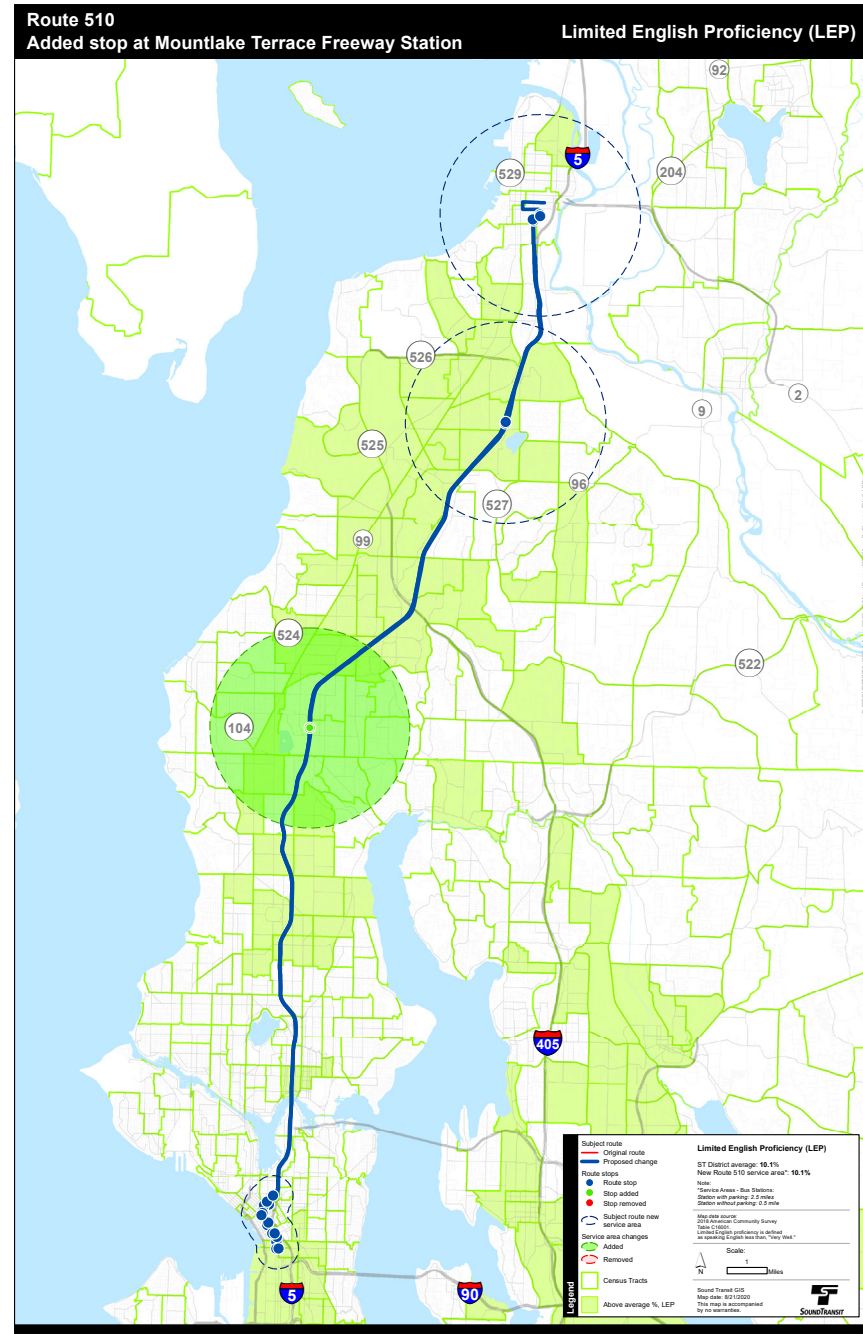
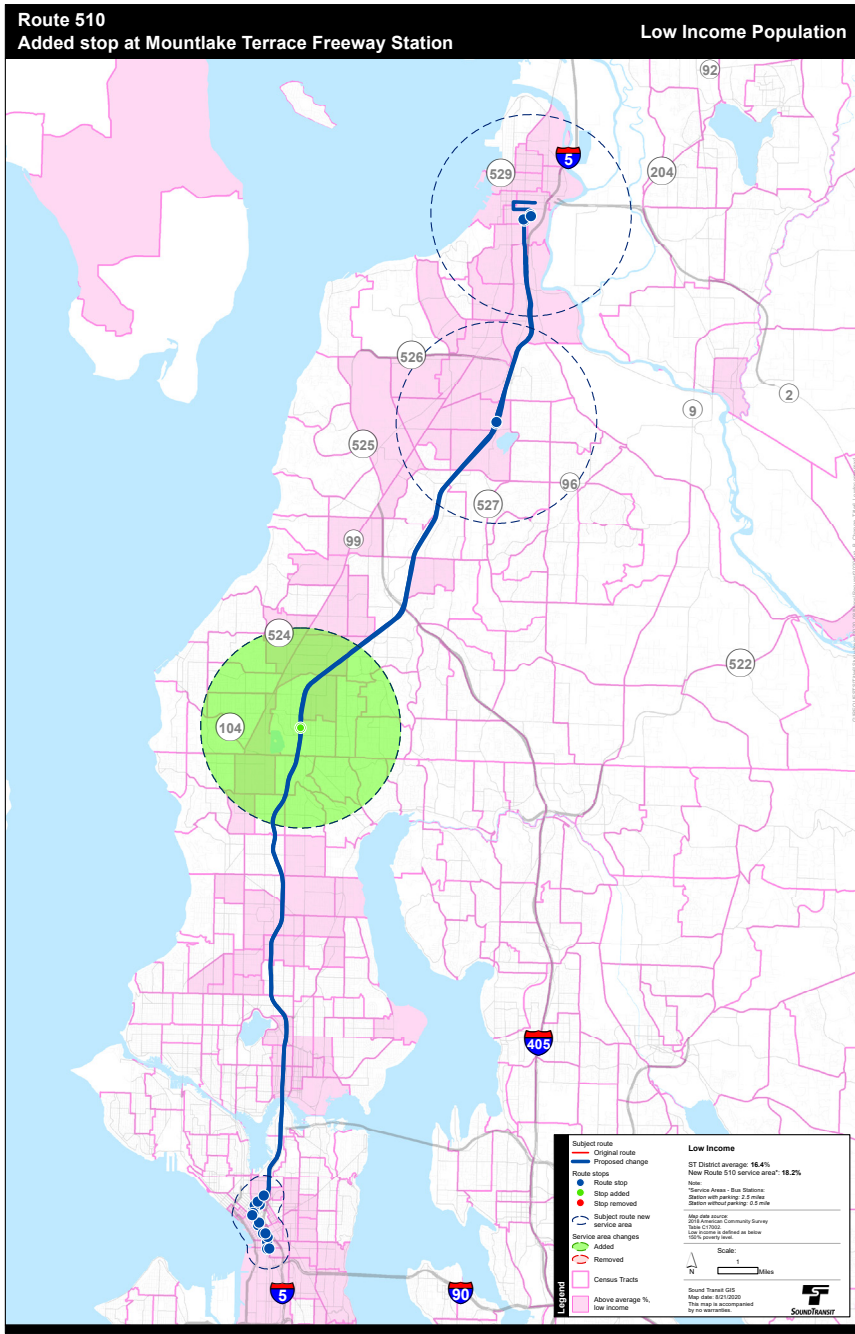
Public Input

Public input was received over prior phases of Northgate Link outreach, and in this service plan outreach proposal, respondents agreed with the service proposal, stating a preference to keep service from Everett to Seattle, but also wanting to have more reliable departure times or more frequent trips. We will continue to evaluate the reliability and ridership of this route to respond to any shifts as a result of the Northgate Link opening.

Findings

Allowing Route 510 to continue operating directly to downtown Seattle in September 2021 helps mitigate the impact of reduced service levels on both Route 510 and Sounder North. From a system level perspective, the proposed changes help balance between the need to save resources while avoiding substantial increases in travel time and the inconvenience customers from Everett would incur if required to transfer to Link at Northgate Station. With the new stop added at Mountlake Terrace, connections would be available from Everett to Northgate with one transfer.





Route 511 Truncation at Northgate Station

Route 511 connects Lynnwood Transit Center and Ash Way Park-and-Ride to downtown Seattle during the peak-period and peak direction. Service was cut reduced from 42 to 30 daily trips in April 2020 due to COVID-19 and will remain at that level for the September 2020 service change. We are proposing to continue this service level through 2021 due to reduced ridership demand. This service level is a reduction of 37.8% of weekly platform hours compared the March 2020 baseline, which exceeds the 25% major service change threshold.

With the opening of the Northgate Link Extension in September 2021, we proposed to add the Mountlake Terrace Freeway station to Route 510 which allows customers from Routes 511 or 513 to choose to transfer to Route 510 or Community Transit routes serving downtown Seattle.

Passenger Impacts

All customers currently using Route 511 would be impacted by this change to the service pattern. While Sound Transit believes this service will be more reliable and less subject to variability on I-5, we do recognize that travel times will not decrease for all trips. Customers traveling from Ash Way to Seattle during peak periods would have a couple options:

- Use Route 511 to Northgate and transfer to Link
- Use Community Transit routes 413/415 from Ash Way or route 402 from Lynnwood

In terms of Title VI populations, the reduction in percentages for all three categories is primarily attributed to the loss of direct service to Downtown Seattle, but the travel market would still be served with a frequent connection to Link.

Area	Minority	Low Income	LEP
Existing Route 511	38.8%	16.0%	10.7%
Proposed Route 511	34.3%	15.4%	9.5%
District Average	39.7%	16.4%	10.1%

Maps showing percentages of minority, low-income, and LEP populations in the Route 511 service area by census tract with corresponding proposed route and stop changes can be found after the text in this section.

Potential Alternatives Considered

Phase I of the Northgate Link Extension restructure conducted in 2019 suggested savings gained through truncation were proposed to be reinvested in frequency improvements and longer spans of service. This new proposal does not propose reinvestment of those savings.

Keep Route 511 intact but operate at reduced frequency

- Not truncating at Northgate would require 1/3 fewer trips to achieve comparable operating costs
- Practical implementation would translate to much longer waits between trips to Lynnwood and Ash Way as well as a loss of a new travel market

Public Feedback

Public input was received over prior phases of Northgate Link outreach. In this service plan outreach proposal, respondents understood the proposal and the rationale for terminating service at Northgate. While some passengers expressed a desire for direct routes to downtown Seattle, there were also requests for increased service levels, which this service change would bring in comparison to the no change scenario. We will continue to evaluate the reliability and ridership of this route to respond to any shifts in ridership patterns as a result of the Northgate Link opening.

Fares Impact

ORCA

- No fare difference via ST Express or Link
- Riders choosing to transfer to Community Transit Commuter Express service at the Mountlake Terrace Freeway Station would pay an addition fare, with the amount dependent upon the rider category.

Adult cash fare to downtown Seattle

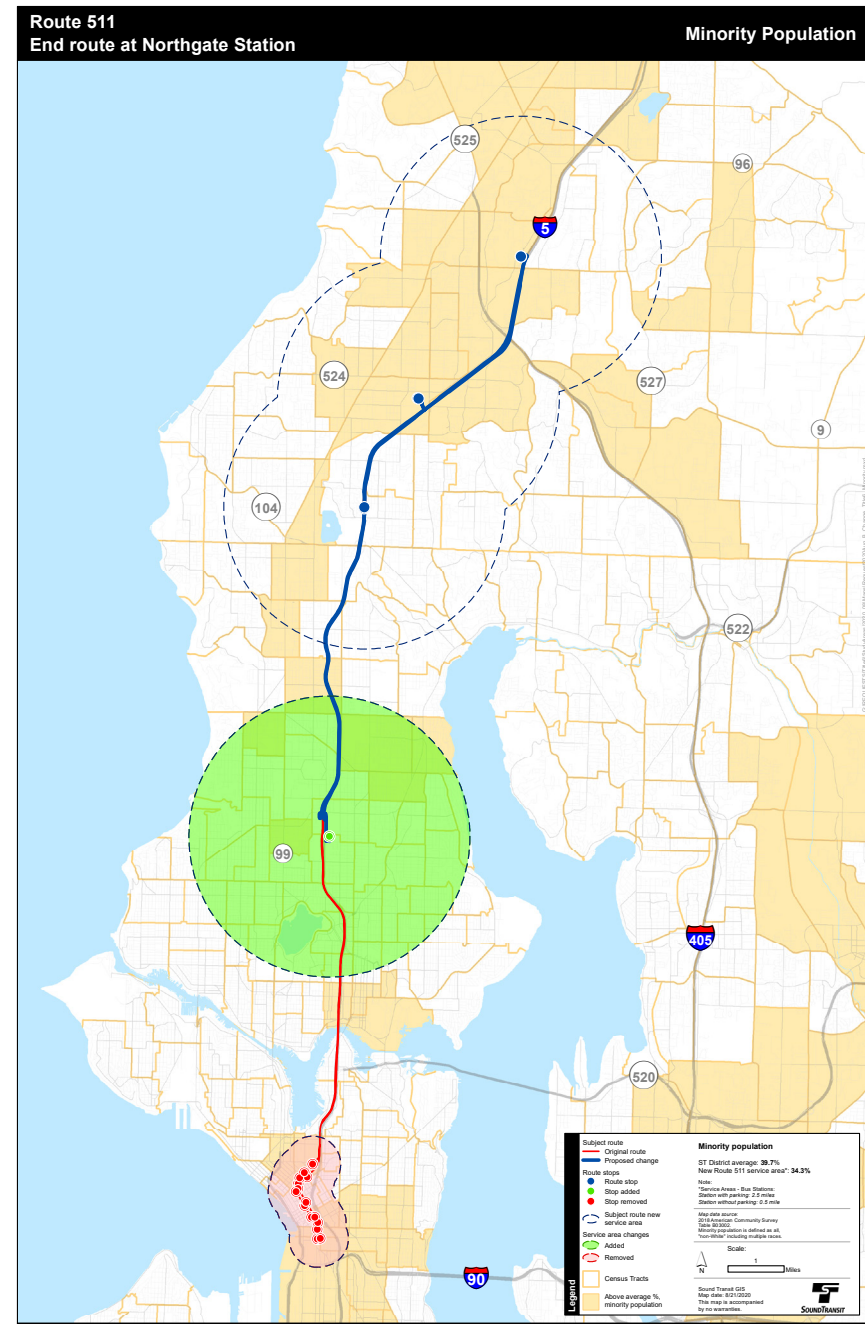
- Current fare = \$3.25
- \$3.25+\$2.75 if transferring with Link
- \$3.25+\$3.25 if transferring with ST Express
- \$4.25 if using Community Transit routes

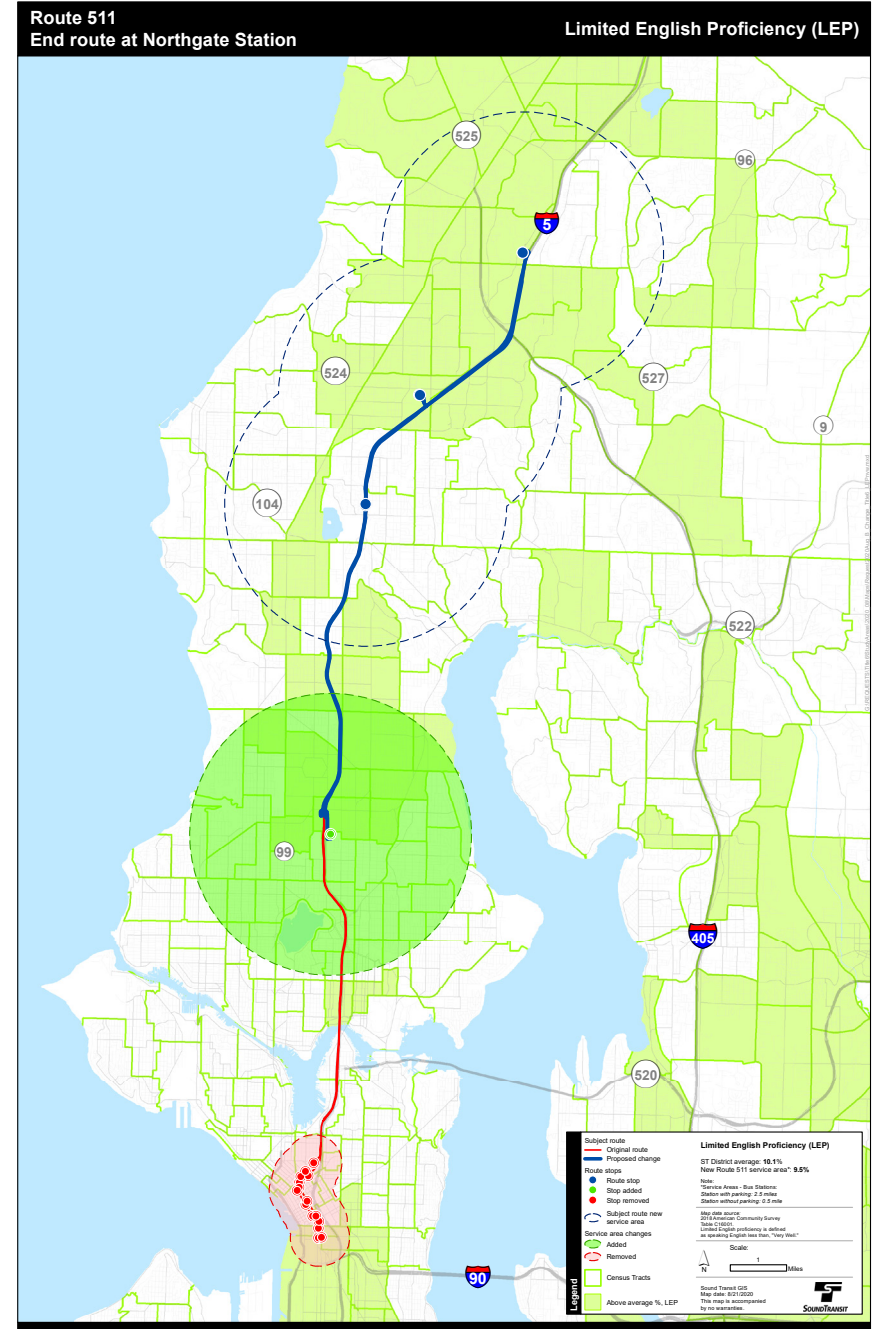
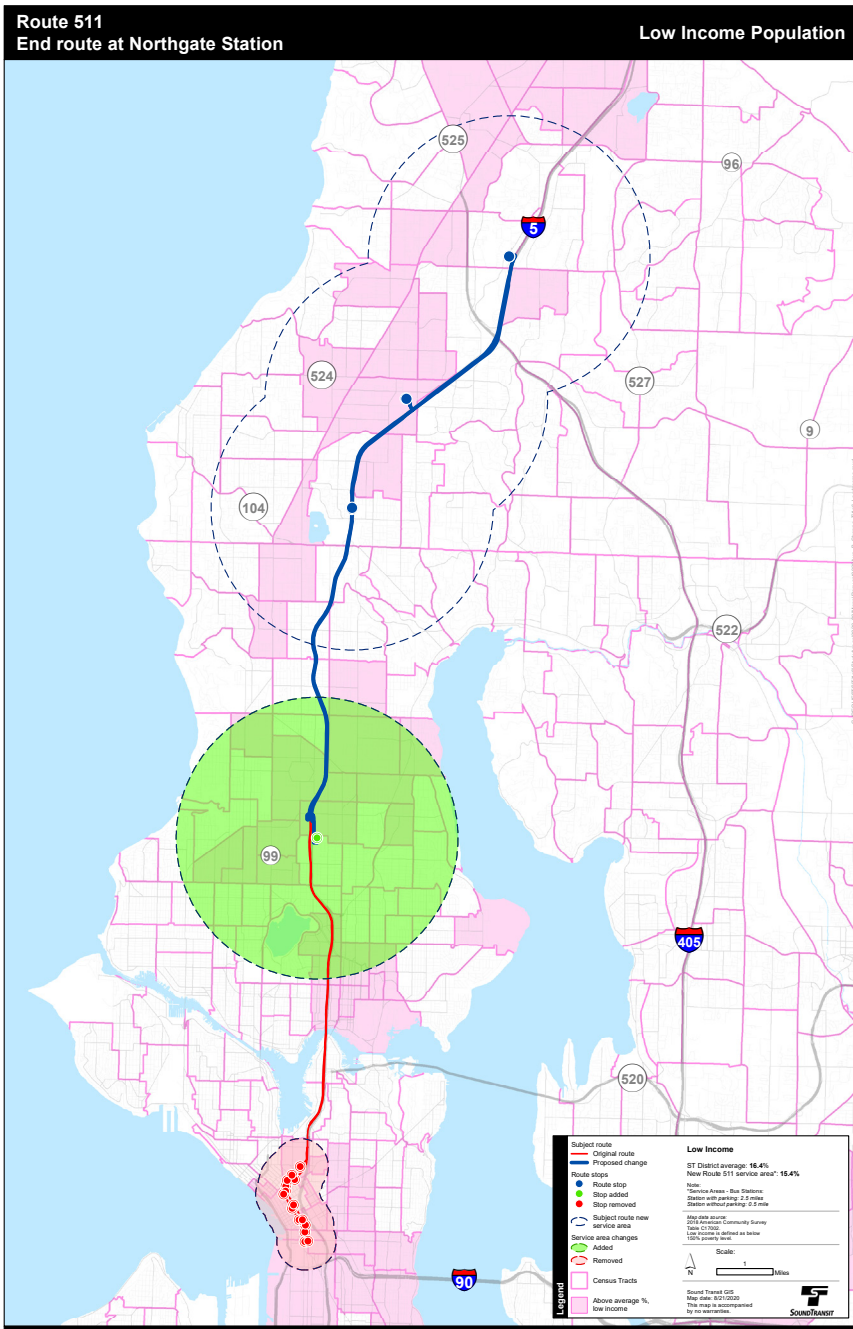
The Fare Equity Analysis determined these changes would result in no disparate or disproportionate impacts. More information can be found at the end of this appendix.

Findings

Changing Route 511 to operate to Northgate Link station allows for an improvement in the network connectivity from Snohomish County to North King County and Seattle. Survey results showed low income and minority populations that would be impacted in downtown Seattle as a result of these changes, but these customers would also have multiple options in travel between Snohomish County and Seattle.

Efficiently leveraging the significant public investment of this light rail extension is important for preserving the long-term health of the Sound Transit's operating budget. The proposed changes strike a balance between the need for Sound Transit to save resources while acknowledging negative externalities exist with shortening of this route.





Route 512 Truncation at Northgate Station

Route 512 connects Everett locations to downtown Seattle during off-peak periods or reverse peak directions. Service was not reduced for September 2020 and will not be reduced for March 2021 because demand remains resilient.

It is proposed to truncate Route 512 at Northgate Station when Northgate Link Extension opening in 2021 and remove the 145th St stop from the pattern to allow for faster run times. Customers wishing to continue to Seattle may transfer to light rail at Northgate or to ST Express/Community Transit express buses at Mountlake Terrace Freeway Station. Because truncating at Northgate Station involves adding and removing a stop by more than half a mile, this is a major service change.

Passenger Impacts

Synchronizing Route 512 with Link will change the overall number of daily trips. Daily trips will be slightly reduced on weekdays and see considerable increases for weekend. Depending on the origin and destination, the introduction of a transfer with Link will likely change travel times between -2 to +6 minutes. The proposed change impacts a significant number of passengers, approximately 4,154 average weekday boardings in 2019.

Customers may experience longer station access time by riding Link in downtown Seattle compared to the current Route 512 due to the denser spacing of bus stops compared to Link station. A substantial number of comments during Phase 1 and 2 of outreach centered on the degradation in user experience as a result of perceived safety around stations, new vertical circulation, and steep grades in downtown Seattle. Riders transferring from the Route 512 to the Route 510 would pay a higher fare if not using ORCA or if transferring to Community Transit commuter routes.

Assessment of Service Impacts

Route 512 is classified as a Low-income route because the fraction of the current route’s service area population exceeds the district average of 16.4% as shown below. This major service change is considered a disproportionate burden. The reduction in all three categories is primarily attributed to the loss of direct service to Downtown Seattle, but the travel market would still be served with a frequent connection to Link.

Area	Minority	Low Income	LEP
Route 512	38.7%	18.5%	10.9%
Proposed Route 512	35.1%	16.7%	10.0%
System/District Average	39.7%	16.4%	10.1%

Maps showing percentages of minority, low-income, and LEP populations in the Route 512 service area by census tract with corresponding proposed route and stop changes can be found after the text in this section.

Potential Alternatives Considered

Phase I of the Northgate Link Extension restructure conducted in 2019 suggested savings gained through truncation were proposed to be reinvested in frequency improvements and longer spans of service. This new proposal does not propose reinvestment of those savings.

Prior to the COVID crisis, ST Service Planning was considering frequency improvements to Route 512 on Sundays as a result of passenger overcrowding. Depending on budget availability, span may need to increase to match the first and last trains serving Northgate. We may adjust trip timing based on post-COVID passenger loads and light rail frequency, with particular attention being given to weekends. Travel time saving as a result of reduced traffic conditions may enable additional

saving in operating costs. Potentially, these saving could be reinvested into slightly more service.

Historically, the 145th St stops have been served by Route 512 to build a market for future Link service at this location. In practice this stop has not been well-utilized, and the removal of the park and ride for Lynnwood Link Extension construction has further eroded the ridership here. 2019 data indicates the ratio of boarding or alighting activity at this stop did not meet performance standards. However, this issue may be revisited if there are other yet to be identified reasons for maintaining service at 145th St. Sound Transit has been working with King County Metro to ensure reasonable alternatives exist to maintain a reasonable connection Northgate Station. Both agencies will solicit additional feedback from the public regarding Northgate-related route restructure design process.

Keep Route 512 intact but operate at reduced frequency

- Not truncating at Northgate would require 1/3 fewer trips to achieve similar savings
- Practical implementation would translate to much shorter periods 15-minute frequency, and longer periods of 30- and 60-minute frequency
- 43k revenue hours March 2020 baseline compared 27,702 with truncation at Northgate

Increase Sunday service to provide additional capacity

- Prior to COVID, Route 512 was regularly experiencing overcrowding on Sundays
- Truncation would allow for an increase in frequency to 15 minutes on Sundays, similar to weekdays and Saturdays

Operate Route 512 all-day, including peak

- This would also enable the elimination of Route 511 and result in a simpler overall service pattern.
- However, this alternative penalizes riders from South Everett and Everett Station by requiring them to pass through Ash Way P&R and Lynnwood TC, which are not in line with the I-5 HOV lanes.
- This service pattern appeared in the Phase 1 of the Northgate Link Connections restructure and received a substantial fraction of negative feedback, largely due to the reasons listed above.

Preserve access to NE 145th St stops

- Maintaining this stop pair would benefit the approximately 100 customers who board here on a typical weekday.
- Historically, the NE 145th St stops have been served by Route 512 to build a market for future Link service at this location. In practice this stop has not been well-utilized, and the removal of the park and ride for Lynnwood Link Extension construction has further eroded the ridership here.
- 2019 data indicates the ratio of boarding or alighting activity at this stop did not meet performance standards. However, this issue may be revisited if there are other yet to be identified reasons for maintaining service at NE 145th St.
- Sound Transit has been working with King County Metro to ensure reasonable alternatives exist to maintain a reasonable connection Northgate Station.

- Add additional Route 511 trips during off-peak hours to provide more capacity and frequency on the busiest part of the corridor

Alternate departures of routes 511 and 512 at 30 minutes each

- 15-minute combined service to Mountlake Terrace, Lynnwood TC, and Ash Way P&R;

- 30-minute service to South Everett P&R and Everett Station
- This would alleviate the need to operate more costly 512 trips
- This requires a substantial decrease in frequency for Everett locations

Phase I of the Northgate Link Extension restructure conducted in 2019 suggested savings gained through truncation were proposed to be reinvested in frequency improvements and longer spans of service. The current proposal does not involve reinvestment of those saving but is seen as the best compromise between achieving cost reductions and still preserving the functionality of off-peak travel in the I-5 North corridor. Additional adjustment may be made trip timing based on post-COVID passenger loads and light rail frequency, with particular attention being given to weekends. Sound Transit is seeking input on the importance of weekday vs Weekend frequency on Route 512 as well as access to NE 145th St stop area.

Travel time saving as a result of reduced traffic conditions may enable additional saving in operating costs. Potentially, these saving could be reinvested into slightly more service.

Fares Impact

ORCA

- No fare difference via ST Express or Link
- Riders choosing to transfer to Community Transit Commuter Express service at the Mountlake Terrace Freeway Station would pay an addition fare, with the amount dependent upon the rider category.

Adult cash fare to downtown Seattle

- Current fare = \$3.25
- \$3.25+\$2.75 if transferring with Link

- \$3.25+\$3.25 if transferring with ST Express
- \$3.25+\$4.25 if transferring with Community Transit at Mountlake Terrace Freeway Station

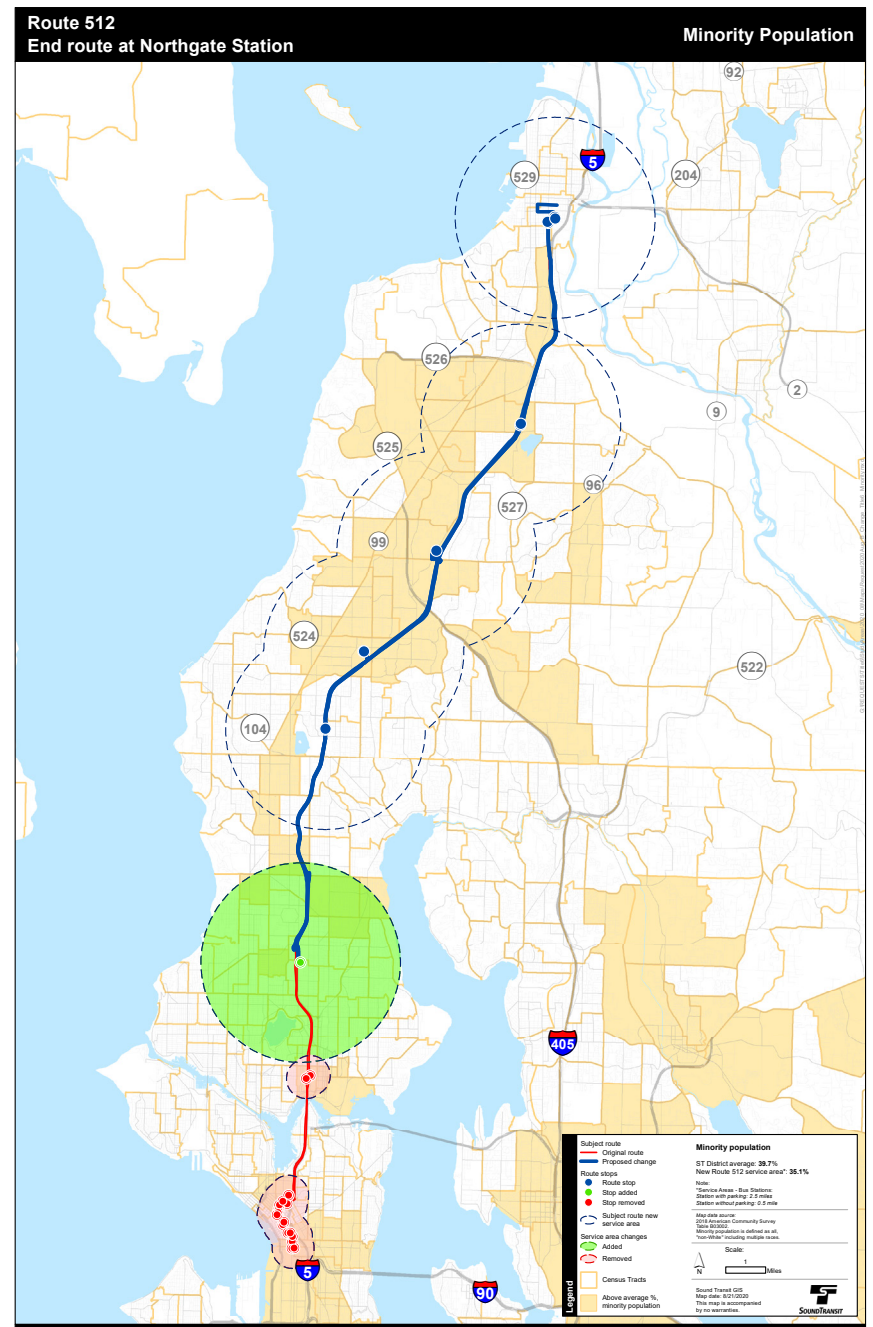
The Fare Equity Analysis determined these changes would result in no disparate or disproportionate impacts. More information can be found at the end of this appendix.

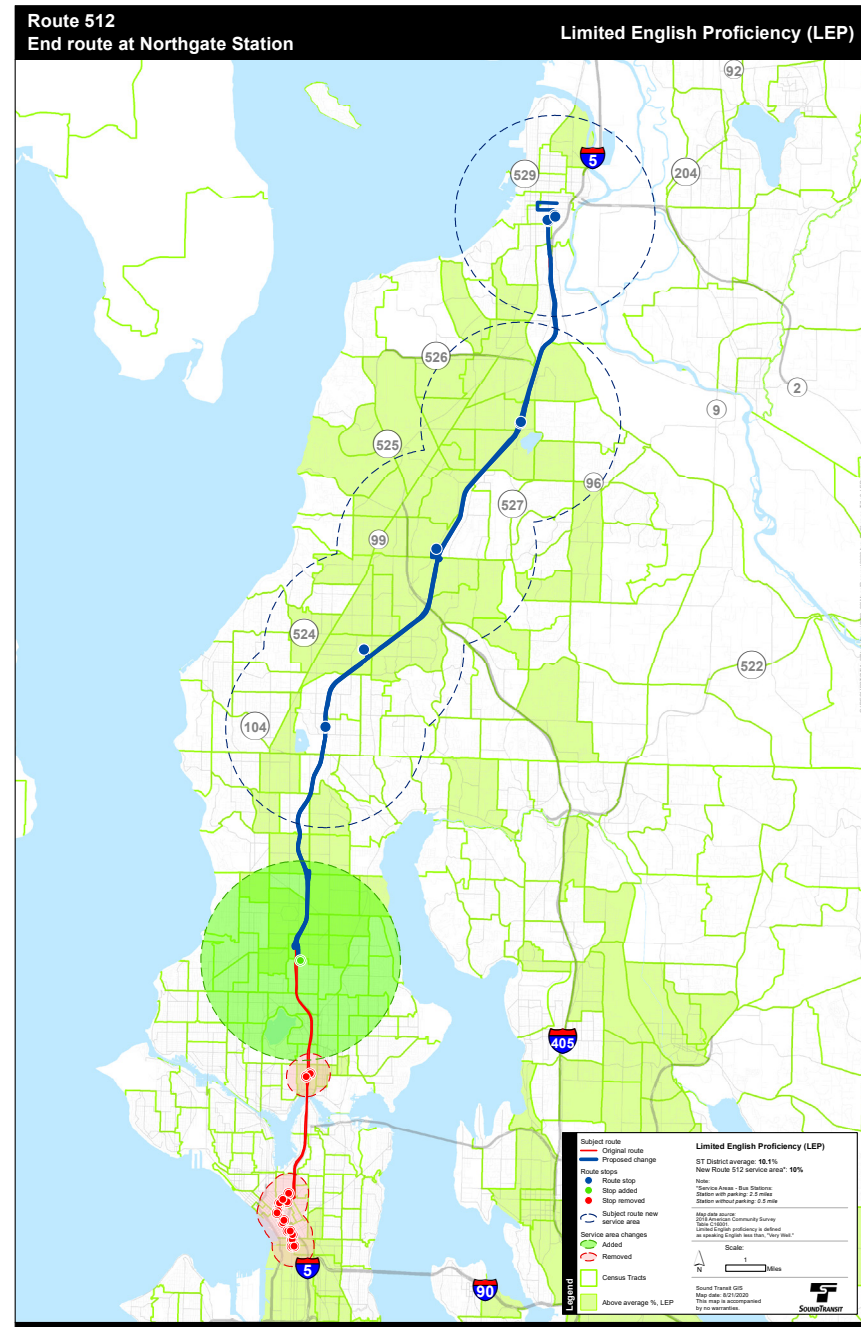
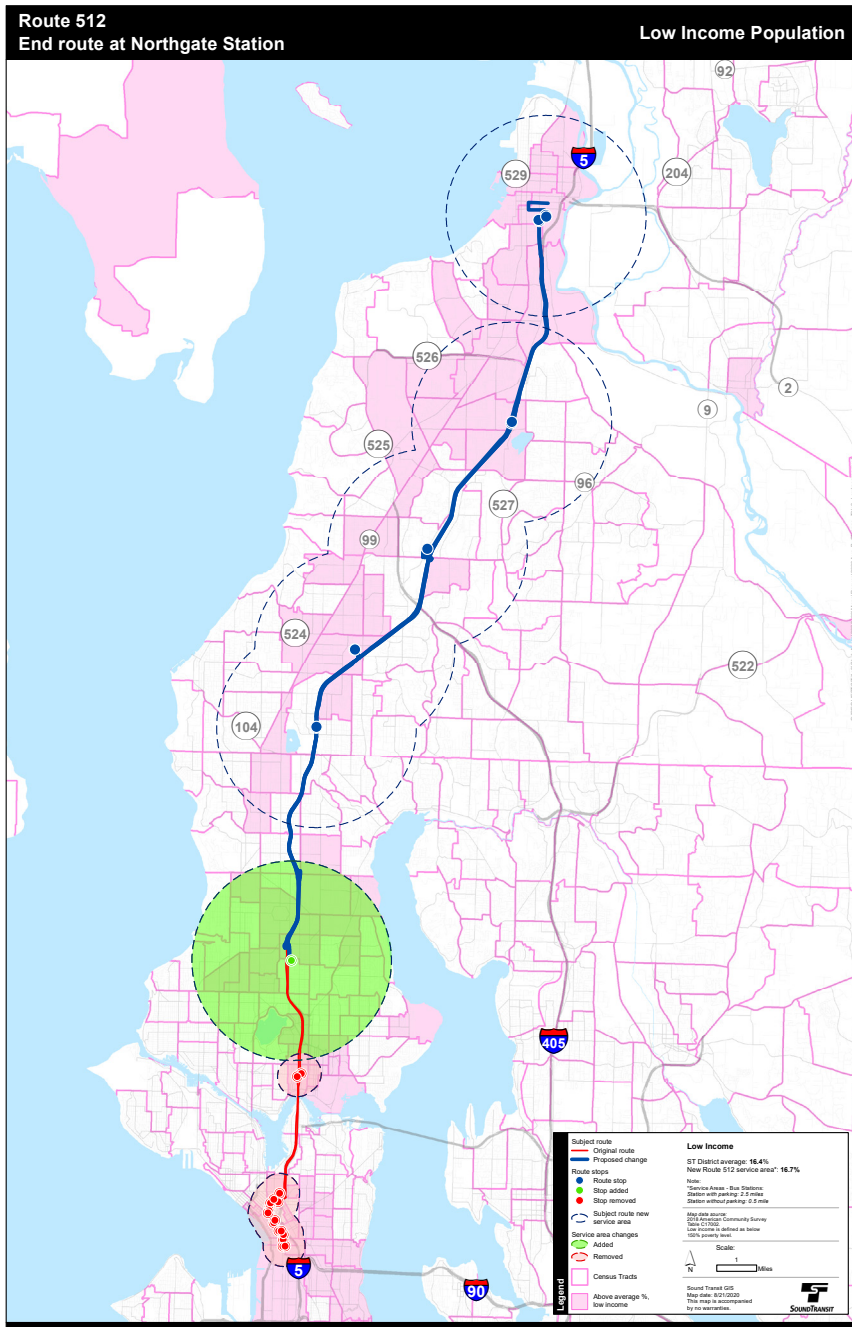
Public Feedback

Public input was received over prior phases of Northgate Link outreach. In this service plan outreach proposal, respondents understood the proposal and the rationale for terminating service at Northgate. While some passengers expressed a desire for direct routes to downtown Seattle, there were also requests for increased service levels, which this service change would bring in comparison to the no change scenario. We will continue to evaluate the reliability and ridership of this route to respond to any shifts in ridership patterns as a result of the Northgate Link opening.

Conclusion

Efficiently leveraging the significant public investment of this light rail extension is important for preserving the long-term health of the Sound Transit's operating budget. The proposed changes strike a balance between the need for Sound Transit to save resources while acknowledging negative externalities exist with shortening of this heavily utilized route.





Route 513 Truncation at Northgate Station

Route 513 currently services Seaway Transit Center, Casino Road, Eastmont Park & Ride, Mountlake Terrace, and downtown Seattle during peak periods and peak directions. Service was reduced from 20 to 12 daily trips in April 2020 due to COVID-19. September 2020 headways will be between 15-60 minutes for this reduced level of service.

It is proposed to add Ash Way Park & Ride and Lynnwood Transit Center to the stop pattern and truncate Route 513 at Northgate Station when Northgate Link Extension opening in 2021. Truncation of Route 512 at Northgate Station involves adding and removing a stop by more than half a mile thus, this is a major service change. Customers wishing to continue to Seattle may transfer to light rail or to ST Express/Community Transit express buses at Mountlake Terrace Freeway Station.

Passenger Impacts

Synchronizing Route 513 with Link and offsetting times with Route 511 will increase the overall number of daily trips relative to March 2020. Depending on the origin and destination, the introduction of a transfer with Link will likely change travel times between -2 to +6 minutes, while adding Ash Way P&R and Lynnwood TC to the stop pattern will result in longer travel times for Everett customers. Schedule reliability, however, is expected to improve. There were 646 average weekday boardings in 2019.

Customers may experience longer station access time by riding Link in downtown Seattle compared to the current Route 512 due to the denser spacing of bus stops. A substantial number of comments during Phase 1 and 2 of outreach centered on the degradation in user experience as a result of perceived safety around stations, new vertical circulation,

and steep grades in downtown Seattle.

Riders transferring from the Route 513 to the Route 510 would pay a higher fare if not using ORCA or if transferring to Community Transit commuter routes.

Assessment of Service Impacts

- **No disparate impact** - the proposed change impacts an area with a minority population of 37.6%, lower than the Sound Transit District average of 39.7%.
- **Disproportionate burden** - the proposed change impacts an area with a low-income population of 17.8%, higher than the Sound Transit District average of 16.4%.

The reduction in percentages for minority and low income populations is primarily attributed to the loss of direct service to Downtown Seattle, but the travel market would still be served with a frequent connection to Link.

Area	Minority	Low Income	LEP
Existing Route 513	37.6%	17.8%	10.0%
Proposed Route 513	35.4%	16.3%	10.1%
District Average	39.7%	16.4%	10.1%

Maps showing percentages of minority, low-income, and LEP populations in the Route 513 service area by census tract with corresponding proposed route and stop changes can be found after the text in this section.

Alternate Concepts Considered

Together with Route 511, reinvest saving of truncation by increasing span of service outside of peak period

- This would potentially increase ridership by creating new travel opportunities for customers with atypical work schedules.
- This alternative would be expected to have poor performance, given peak-period ridership is relatively low.
- If access to Ash Way P&R and Lynnwood TC was maintained, there may be timing overlaps with Route 512 which would require changes, potentially requiring a more complex service window for both routes.

Combine into one route with all trips going to Seaway with truncation to Northgate, no short turn at Ash Way

- This would result in significantly greater service levels for Everett riders.
- A single combined route would result in a more consistent travel experience.
- However, ridership at these stops is relatively low, leading to poor resource utilization.
- Route 513's cost per passenger was more than double Route 511's in 2019.

Eliminate 513 due to low ridership and rush hour only service

- Route 513 is the mostly costly per passenger among CT-operated routes.
- Ridership at Eastmont, Casino Rd, and Seaway TC amounted to only 200 average weekday boardings in 2019.

Operate Route 513 bi-directionally

- Phase I of the Northgate Link Connections restructure conducted in

2019. suggested savings gained through truncation were proposed to be reinvested in frequency improvements and longer spans of service.

- It also included new reverse-peak service to connect residents of northern King County with jobs in Everett.

The current proposal does not include full reinvestment of savings related to stop consolidation and truncation of Routes 511 and 513. Depending on budget availability, span may need to increase to match the frequency of trains serving Northgate. Sound Transit may adjust trip timing based on post-COVID passenger loads. This will depend on the final Link schedule. Travel time saving as a result of reduced traffic conditions may enable additional saving in operating costs. Potentially, these saving could be reinvested into slightly more service.

Fares Impact

ORCA

- No fare difference via ST Express or Link
- Riders choosing to transfer to Community Transit Commuter Express service at the Mountlake Terrace Freeway Station would pay an addition fare, with the amount dependent upon the rider category.

Adult cash fare to downtown Seattle

- Current fare = \$3.25
- \$3.25+\$2.75 if transferring with Link
- \$3.25+\$3.25 if transferring with ST Express
- \$4.25 if using Community Transit routes

The Fare Equity Analysis determined these changes would result in no disparate or disproportionate impacts. More information can be found at the end of this appendix.

Findings

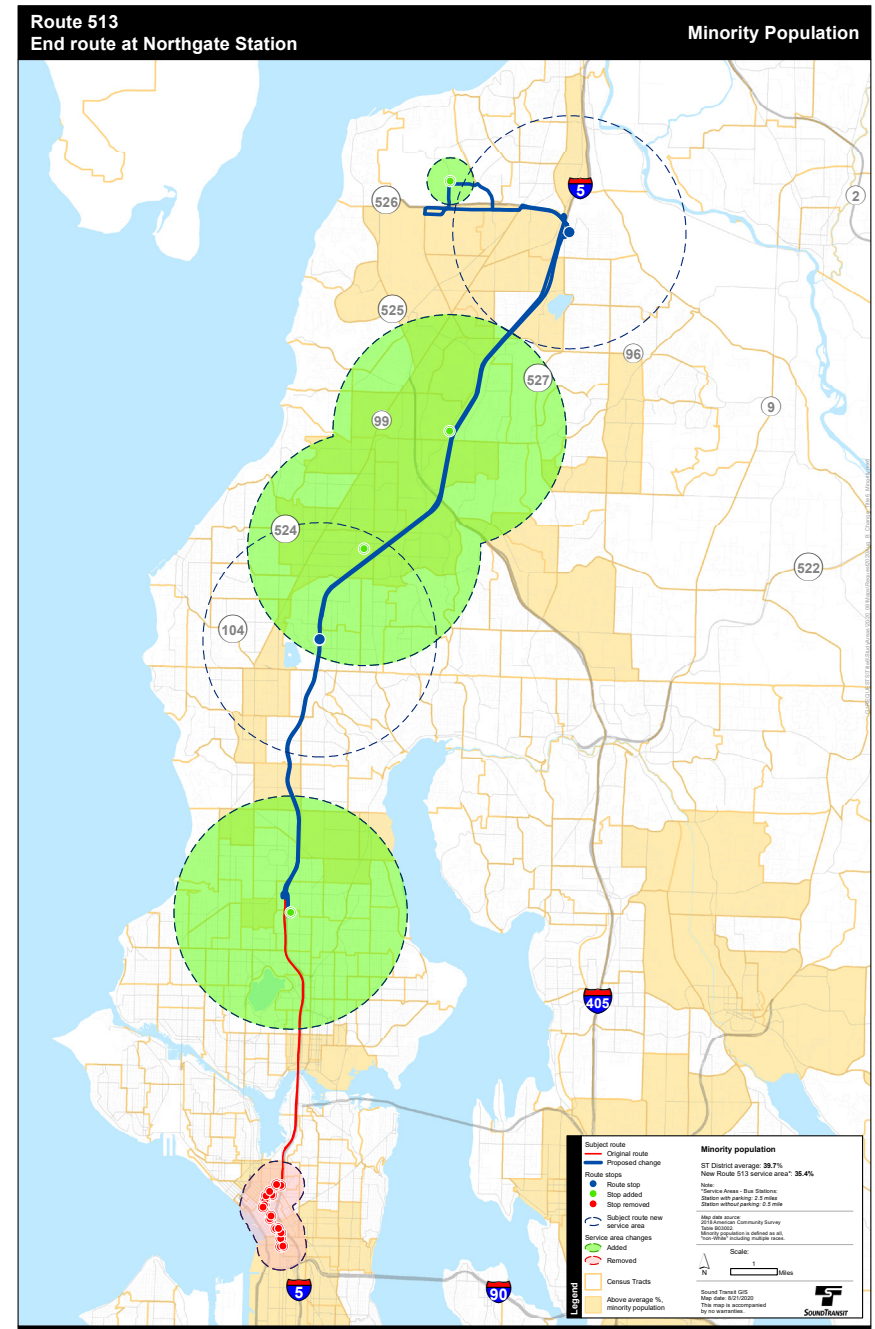
Changing Route 513 to operate to Northgate Link station allows for an improvement in the network connectivity from Snohomish County to North King County and Seattle. Survey results showed low income and minority populations that would be impacted in downtown Seattle as a result of these changes, but these customers would also have multiple options in travel between Snohomish County and Seattle.

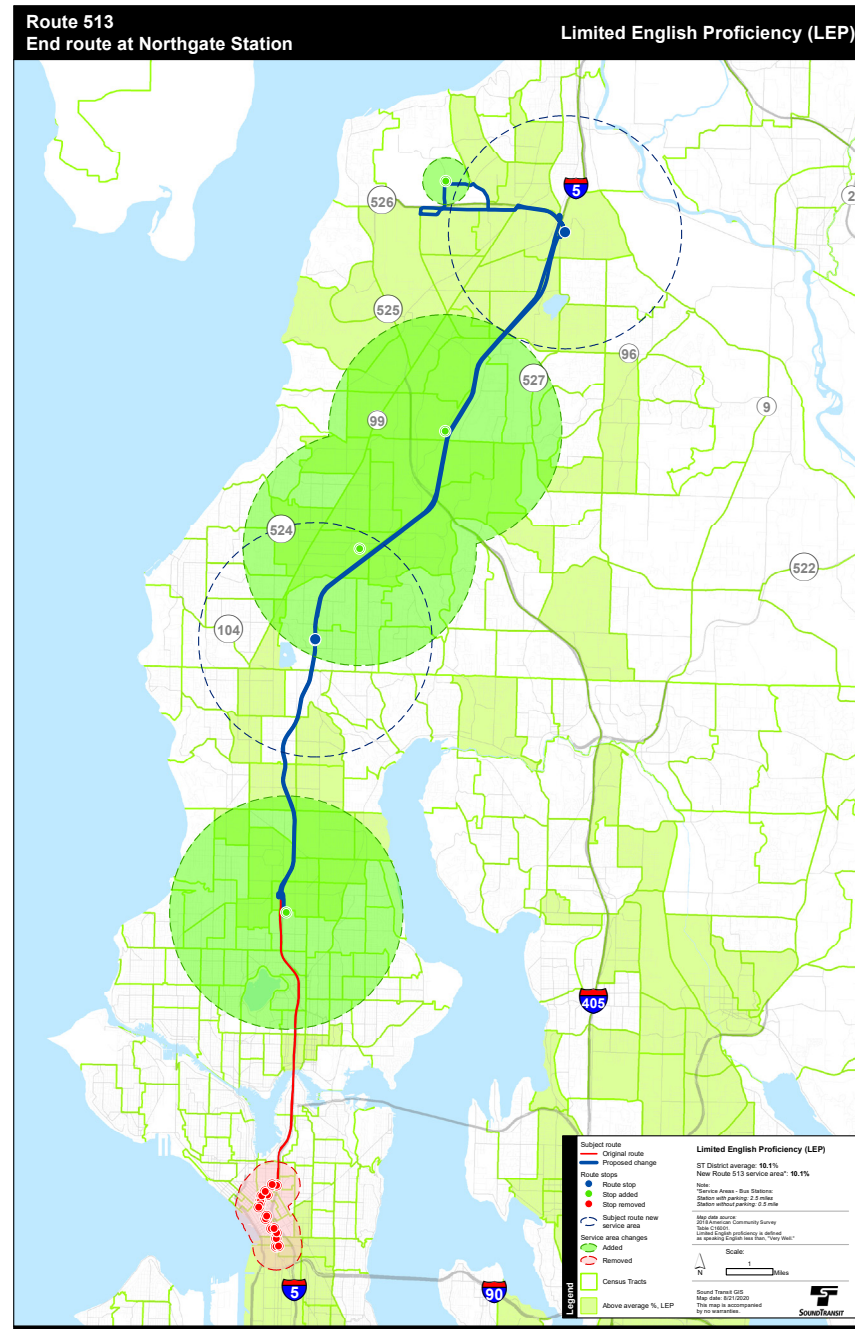
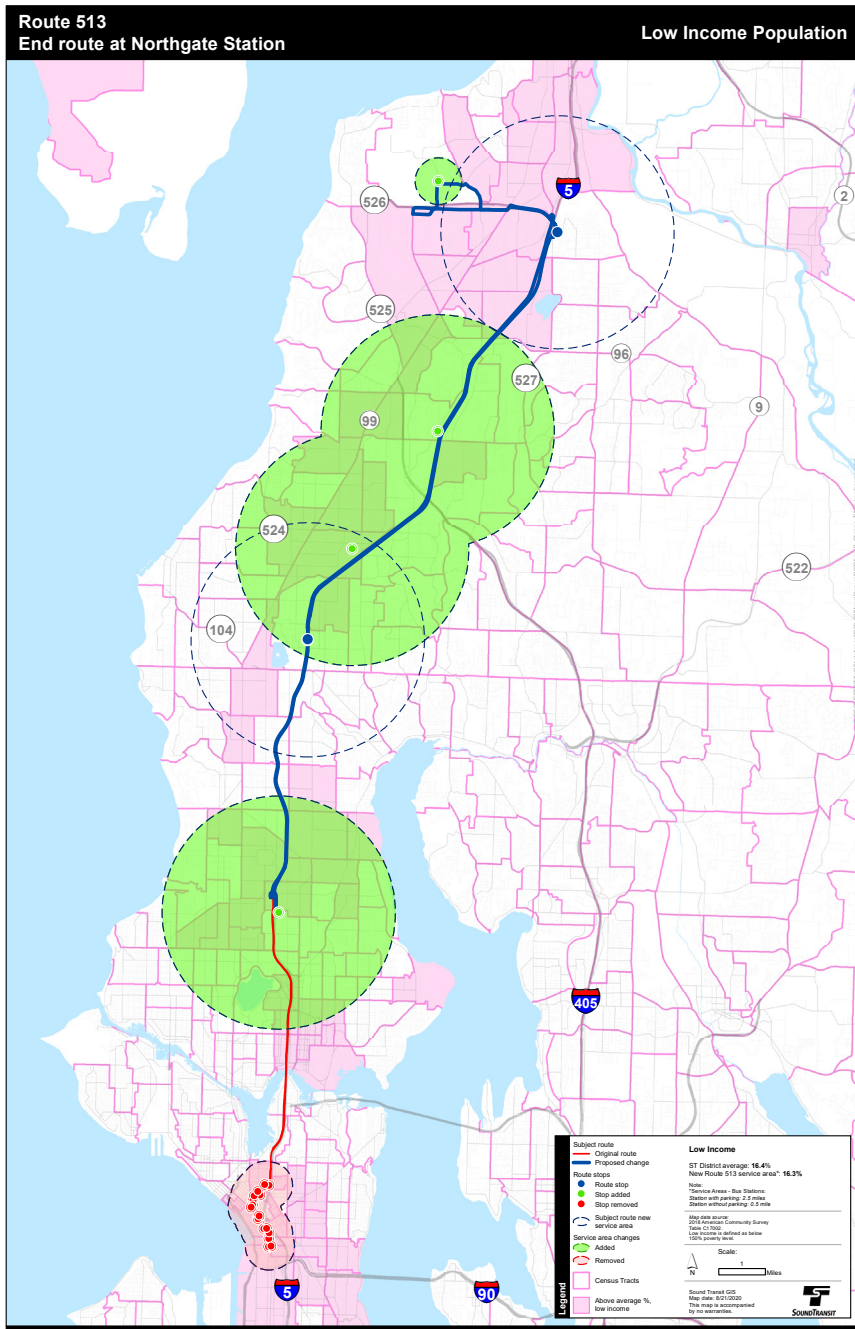
Public Feedback

Public input was received over prior phases of Northgate Link outreach. In this service plan outreach proposal, respondents understood the proposal and the rationale for terminating service at Northgate. There were concerns about the added stops at Ash Way and Lynnwood which would slow down the buses and increase chances of overcrowding. While some passengers expressed a desire for direct routes to downtown Seattle, there were also requests for increased service levels, which is much more likely compared to continuing to operate Route 513 to downtown Seattle. We will continue to evaluate the reliability and ridership of this route to respond to any shifts in ridership patterns as a result of the Northgate Link opening.

Conclusion

Efficiently leveraging the significant public investment of this light rail extension is important for preserving the long-term health of the Sound Transit's operating budget. The proposed changes strike a balance between the need for Sound Transit to save resources while acknowledging negative externalities exist with shortening of this heavily utilized route.





Route 522 Truncation at Roosevelt Station

Route 522 currently operates between Woodinville, Bothell and downtown Seattle, serving lake-side communities along SR 522 and Lake City Way. As part of the Northgate Link Extension opening in September 2021, we proposed to change service to operate to Roosevelt Station rather than continue onto I-5 and downtown Seattle. This would remove stops, and would be considered is a major service change. Customers wishing to continue to Seattle may transfer to light rail or use King County Metro Routes 322 or 361, which serve First Hill and South Lake Union, respectively.

Passenger Impacts

Service would operate every 15 minutes all day 7-days a week, which would be less frequent during peak periods but more frequent during the midday and on weekends. To address overcrowding, coordination between Sound Transit and King County Metro continues to schedule buses evenly to ensure a corridor frequency of at least every 5 minutes.

Assessment of Service Impacts

- **No disparate impact** - the proposed change impacts an area with a minority population of 32.1%, lower than the Sound Transit District average of 39.7%.
- **No disproportionate burden** - the proposed change impacts an area with a low-income population of 13.3%, lower than the Sound Transit District average of 16.4%.

The reduction in percentages for minority and low income populations under this proposal is primarily attributed to the loss of direct service to downtown Seattle, but the travel market would still be served with a frequent connection to Link.

Area	Minority	Low Income	LEP
Existing Route 522	32.1%	13.3%	8.0%
Proposed Route 522	28.8%	11.8%	7.1%
District Average	39.7%	16.4%	10.1%

Maps showing percentages of minority, low-income, and LEP populations in the Route 522 service area by census tract with corresponding proposed route and stop changes can be found after the text in this section.

Fares Impact

ORCA

- No fare difference via ST Express or Link
- Riders could choose to use King County Metro service which is \$2.75

Adult cash fare to downtown Seattle

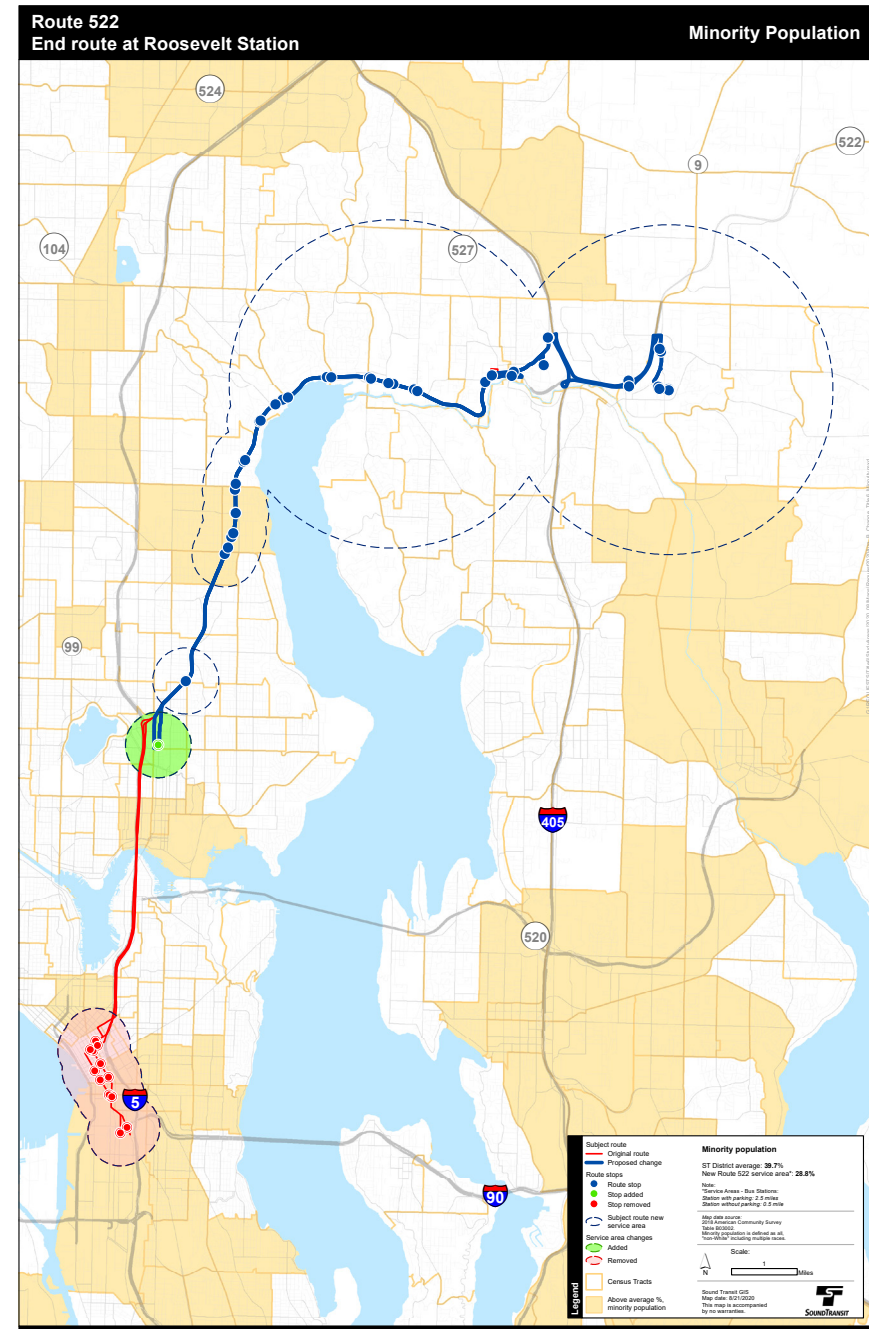
- Current fare = \$3.25
- \$3.25+\$2.50 if transferring with Link
- \$3.25+\$2.75 if transferring with King County Metro

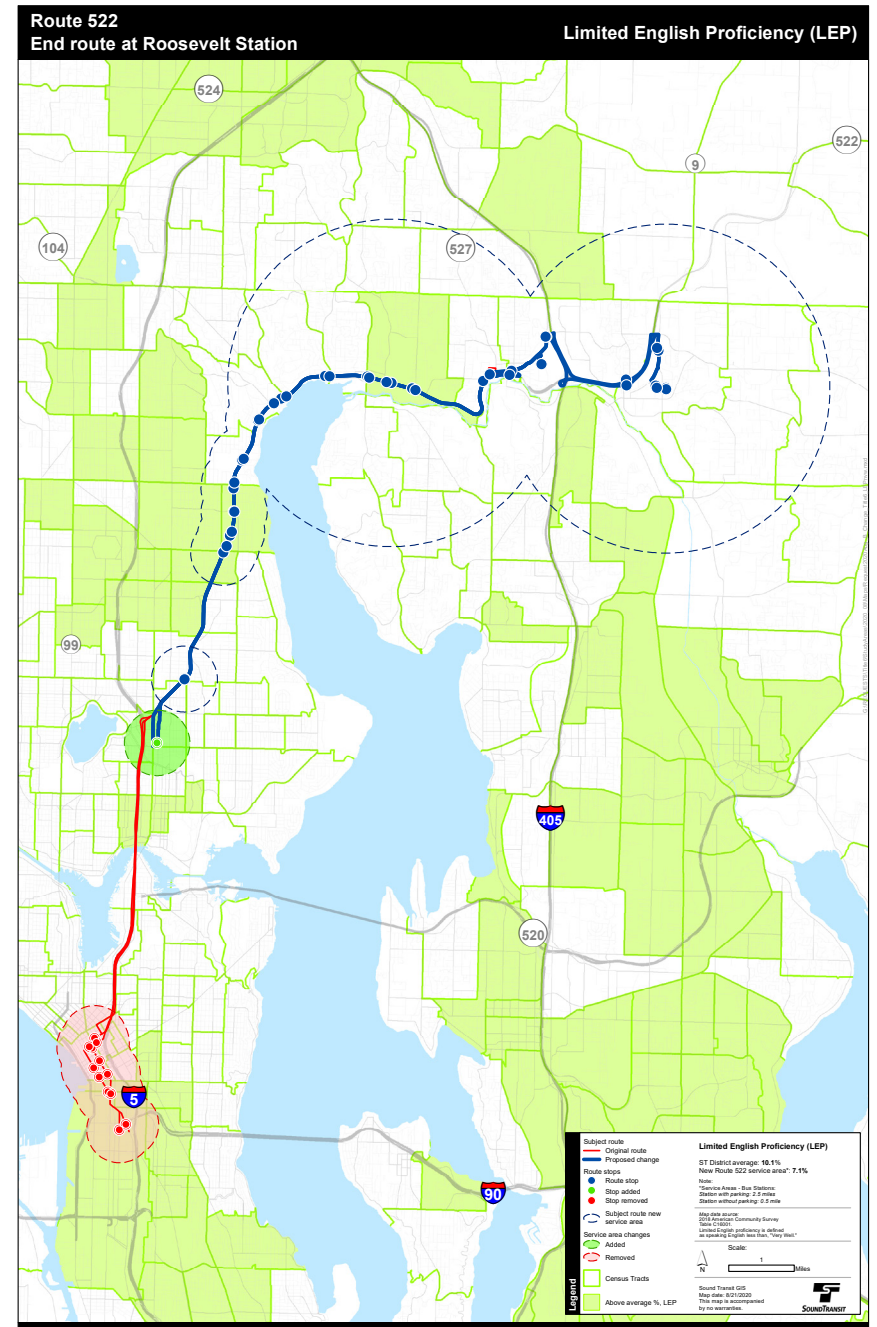
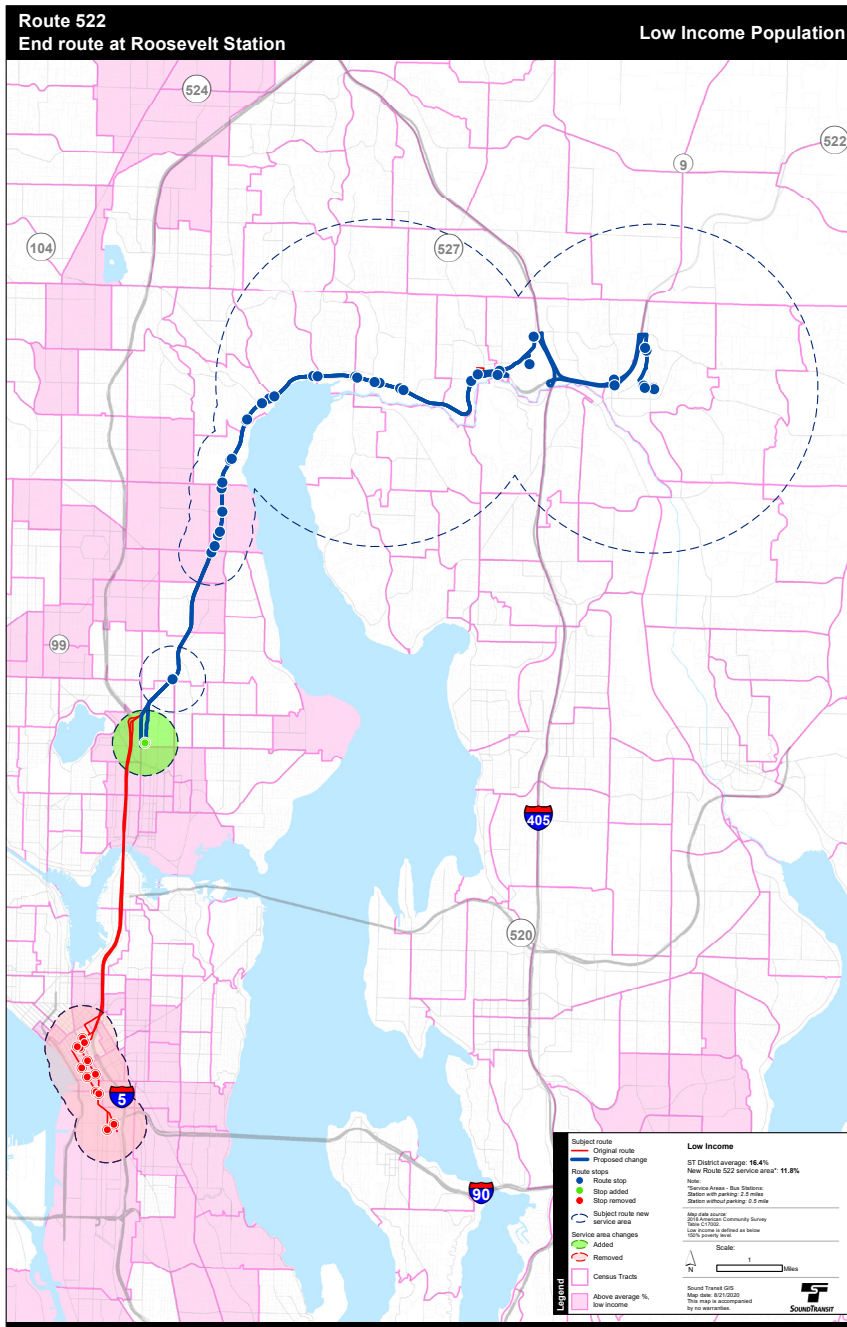
Public Feedback

Public comments on this proposal fell had several themes. First, there were several comments stating a preference for existing service patterns to remain rather than the service ending at Roosevelt Station due to the perception of increased travel times as a result of the transfer. Second, there was a strong demand for improved Link service levels to improve the transfer experience between routes. Lastly, there was a request for the service to terminate in the U District rather than at Roosevelt Station for improved connections.

Conclusion

Efficiently leveraging the significant public investment of this light rail extension is important for preserving the long-term health of the Sound Transit's operating budget. The proposed changes strike a balance between the need for Sound Transit to save resources while acknowledging negative externalities exist with shortening of this heavily utilized route. However, Sound Transit continues to explore improving Link headways to improve the transfer experience as a result of routes now connecting to Link stations rather than continuing to downtown Seattle.





Route 532 Service Reduction

Route 535 currently serves Everett, Ash Way and Bellevue on weekdays and Saturdays. Service was reduced to operate every 20 minutes during peak periods and every 30-40 minutes during the shoulder peaks. Reverse peak service was suspended due to low ridership. This service level implemented in September 2020 is being carried through 2021, and since the reduction in service exceeds 25 percent, this is a major service change that requires further evaluation.

Passenger Impacts

Longer wait times are expected with the reduction in service levels. However, ridership on this peak-oriented route is down due to work-from-home policies at major employers in East King County. Riders would have the option of using Route 510 to connect to Route 550 from Everett going to Seattle or wait up to an extra 15 minutes for the next trip. While not ideal, this service reduction allows for the continuation of all existing markets between Snohomish County and Seattle or Bellevue.

Assessment of Service Impacts

Route 532 is not classified as a low income or a minority route because the percent of these populations for this route does not exceed the district average. Therefore this change does not have a disproportionate burden or disparate impact.

Area	Minority	Low Income	LEP
Existing Route 532	38.6%	14.0%	11.3%
District Average	39.7%	16.4%	10.1%

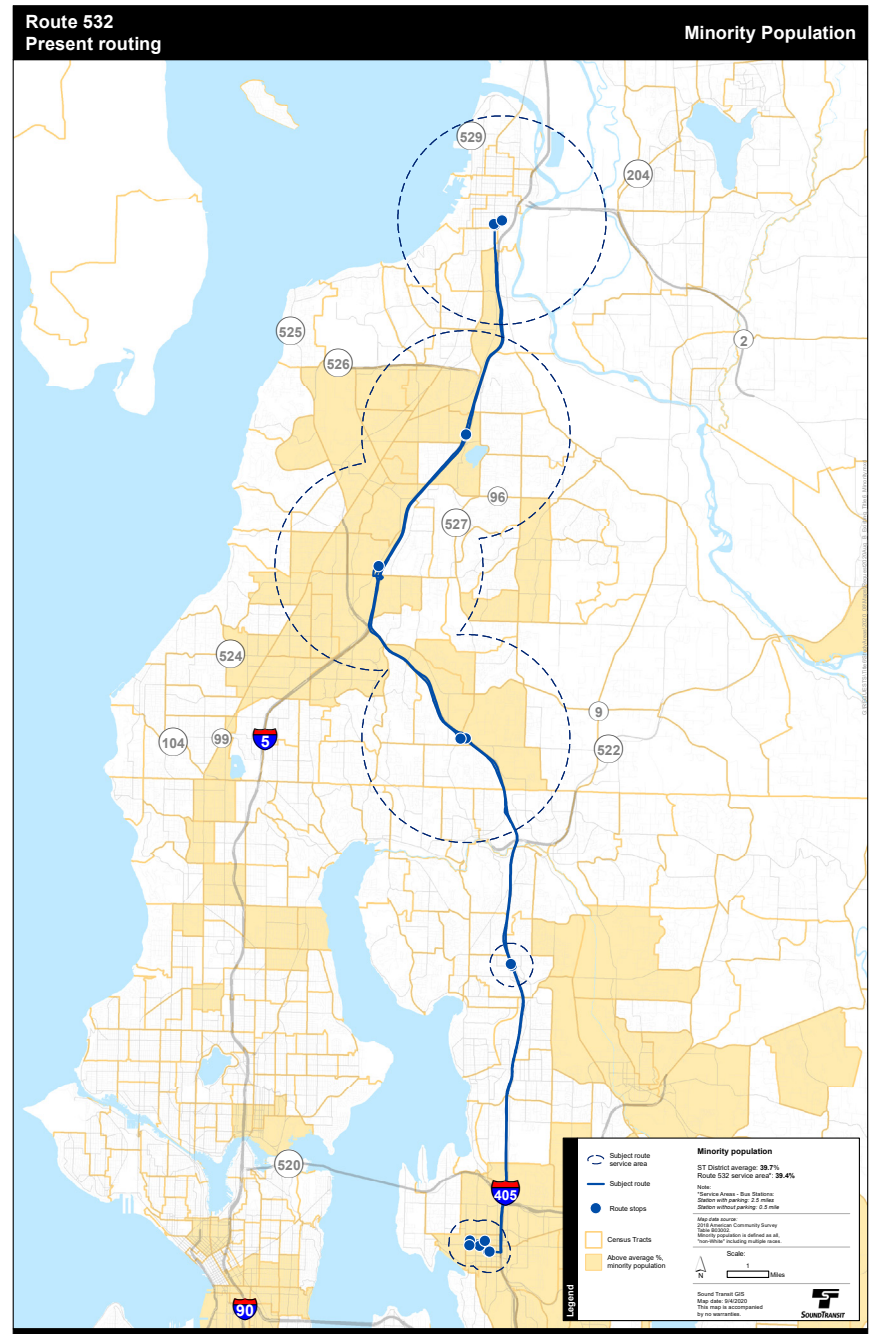
Maps showing percentages of minority, low-income, and LEP populations in the Route 532 service area by census tract can be found after the text in this section.

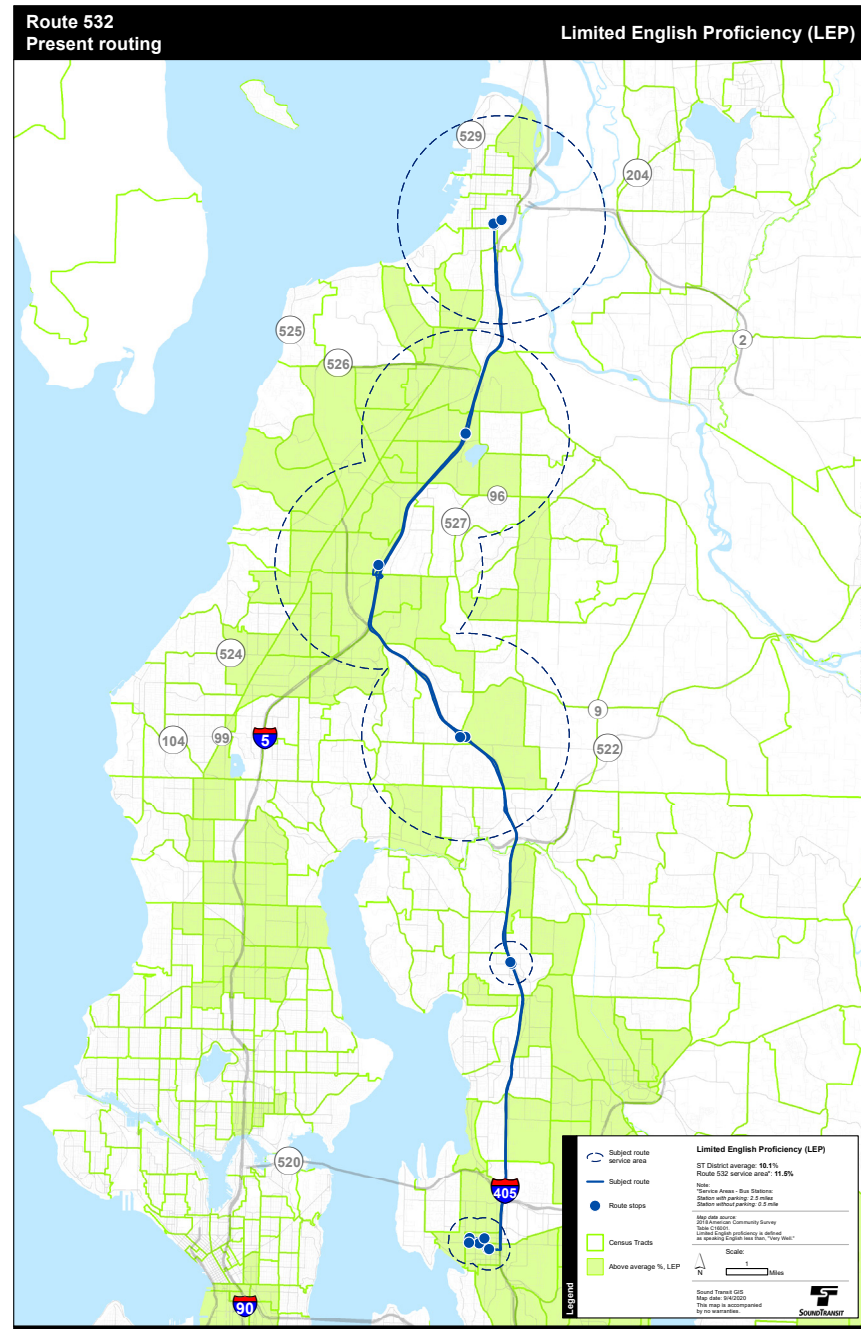
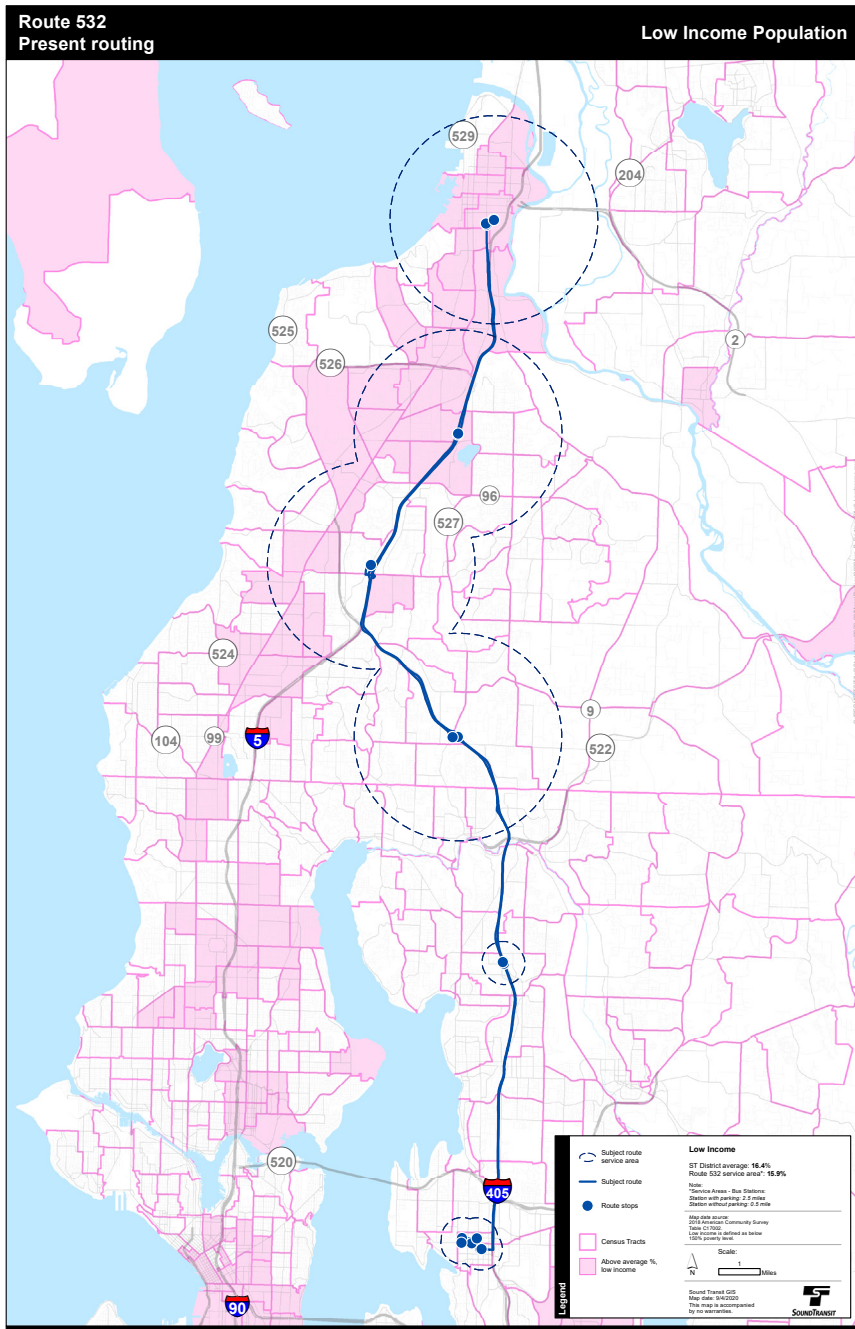
Survey Feedback

Respondents were relieved there were not routing changes or further reductions from the pandemic service levels.

Conclusion

The COVID-19 public health crisis has compelled numerous changes to Sound Transit service in the region, particularly to peak-period services connecting residents of Snohomish County to East King County. Making realistic projections about peak-period ridership demand is important for preserving the long-term health of the Sound Transit's operating budget. The proposed changes strike a system-level balance between the need for Sound Transit to save resources while acknowledging negative externalities with suspending several trips on the I-405 North corridor.





Route 535 Service Reduction

Route 535 currently serves Lynnwood, Bothell and Bellevue on weekdays and Saturdays. Service was reduced to operate every 30 minutes during peak periods and every 60 minutes during the midday and on Saturdays.

We proposed to carry over the September 2020 service level reductions thorough 2021 due to the current fiscal situation. The reduction of service by more than 25 percent results in this being a major service change.

Passenger Impacts

Longer wait times are expected with the reduction in service levels. Current ridership trends as well as the knowledge of ongoing remote work/learn status for Downtown Bellevue and UW Bothell, respectively. While not ideal, this service reduction allows for the continuation of the higher ridership corridor between Lynnwood and Seattle. Double deck buses are deployed to increase capacity in a social .

Assessment of Service Impacts

Route 535 is not classified as a low income or a minority route because the percent of these populations for this route does not exceed the district average. Therefore this change does not have a disproportionate burden or disparate impact.

Area	Minority	Low Income	LEP
Existing Route 535	36.8%	11.0%	10.3%
District Average	39.7%	16.4%	10.1%

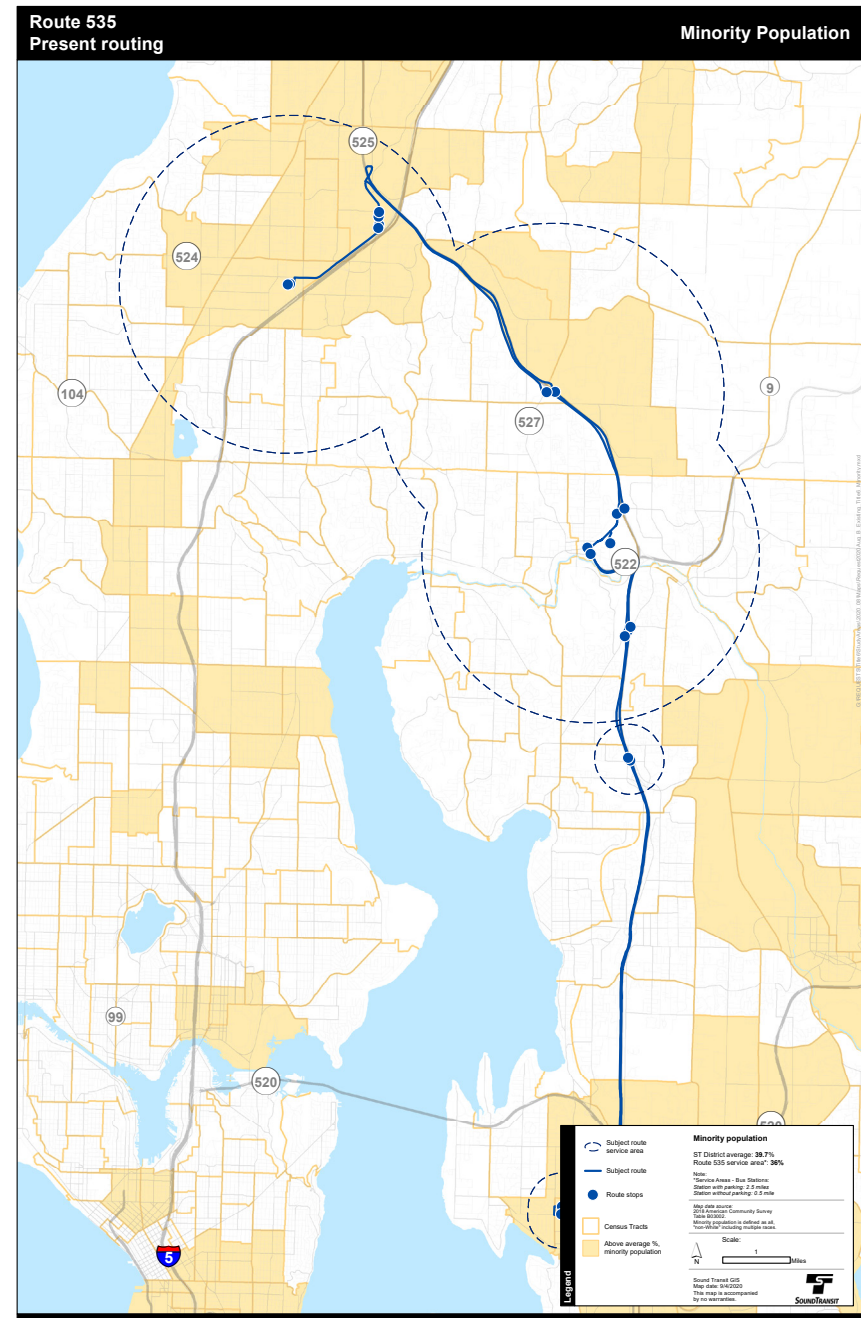
Maps showing percentages of minority, low-income, and LEP populations in the Route 535 service area by census tract can be found after the text in this section.

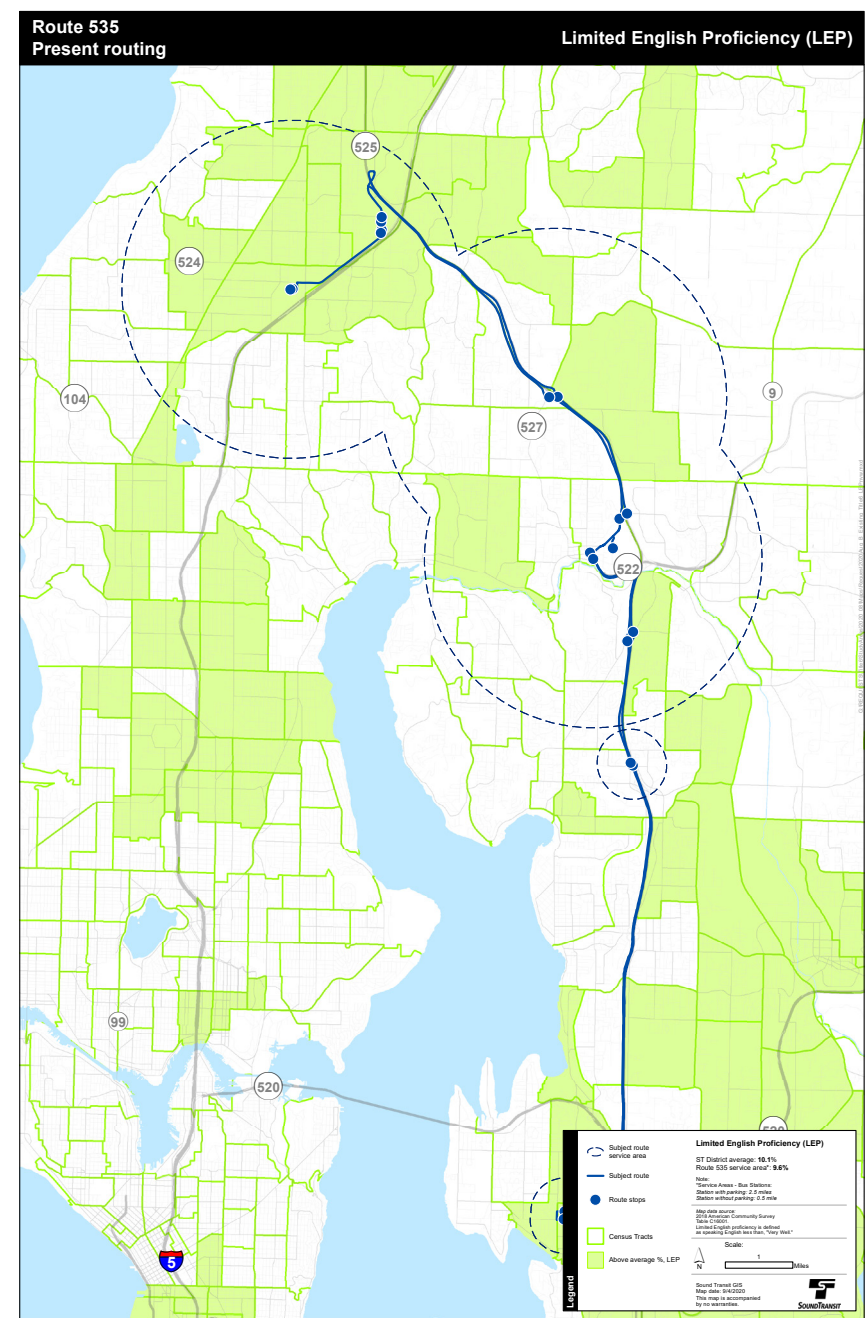
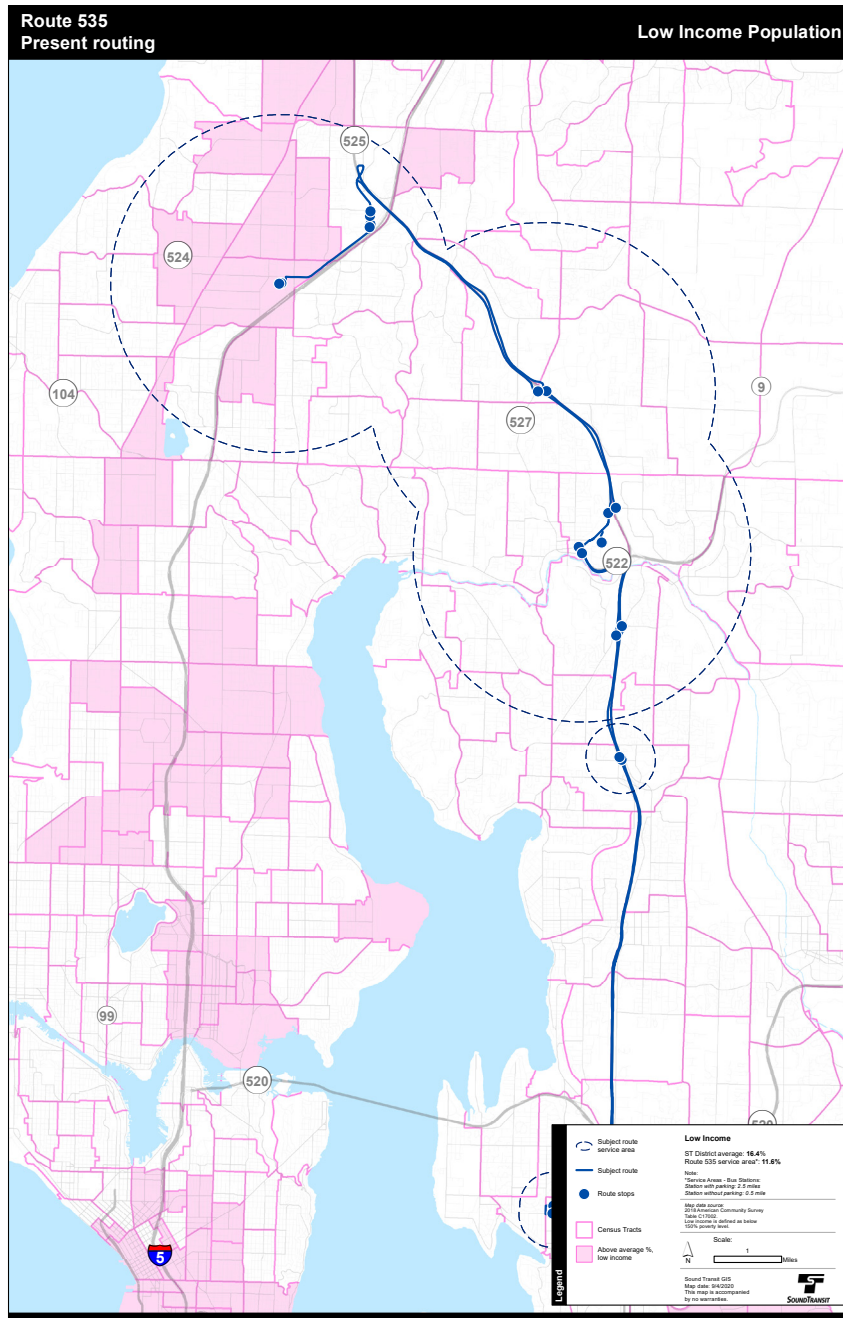
Survey Feedback

Respondents were relieved there were not routing changes or further reductions from the pandemic service levels. There was also concern that the route no longer covers UW Bothell class times.

Conclusion

The COVID-19 public health crisis has compelled numerous changes to Sound Transit service in the region, particularly to peak-period services connecting residents of Snohomish County to East King County. Making realistic projections about peak-period ridership demand is important for preserving the long-term health of the Sound Transit's operating budget. The proposed changes strike a system-level balance between the need for Sound Transit to save resources while acknowledging negative externalities with suspending several trips on the I-405 North corridor.





Route 541 Service Suspension

Route 541 is designed to provide peak-period service between the U District, Redmond Technology Station and Overlake Park & Ride via State Route 520. This service was originally proposed to be discontinued as part of the March 2020 service change, but feedback from last year's collaborative North East Mobility Project resulted in the select restoration of 9 trips to address potential overcrowding in the peak direction. This service was suspended due to COVID in March 2020 and remained suspended for the September 2020 service change.

As ridership during peak periods where telecommuting is a viable option is not expected to rebound significantly in 2021, we proposed to continue the suspension of Route 541 in 2021. Because suspending this route reduces platform hours by more than 25%, this is considered a major service change.

Passenger Impacts

Because Route 541 was suspended at the service change when the routes in Northeast King County changed, accurate boarding data is not available to estimate the number of affected customers. Customers traveling from Overlake P&R to the U District may connect with Route 542 via KCM Rapid Ride B Line or Route 269 at the SR-520/NE 40th St flyer stops. Travel between these locations therefore involves a new transfer and longer walk access times. Route 541 was not considered to be a minority or low income route, and alternatives remain available for these customers.

Area	Minority	Low Income	LEP
Route 541	36.5%	14.7%	8.1%
District Average	39.7%	16.4%	10.1%

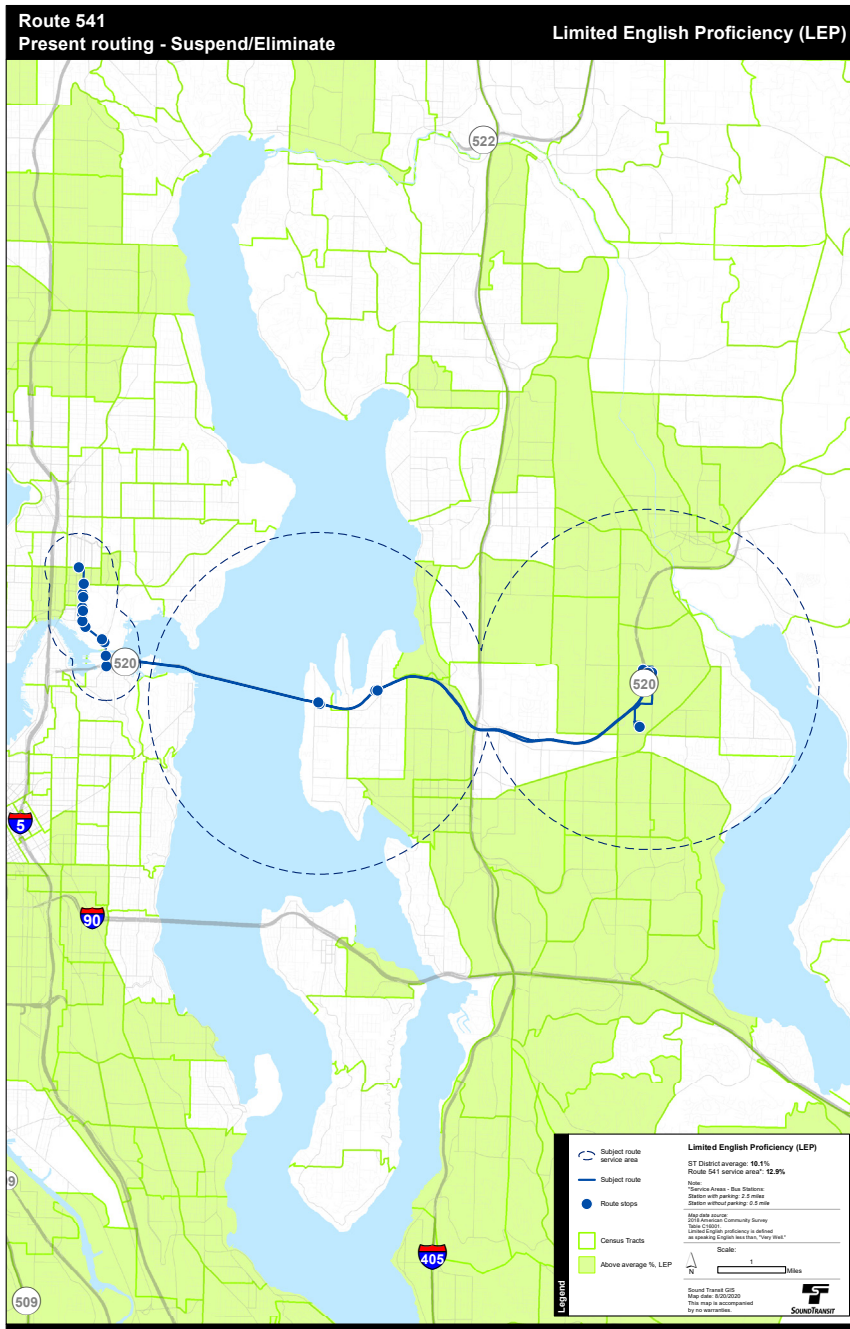
Maps showing percentages of minority, low-income, and LEP populations in the Route 541 service area by census tract can be found after the text in this section.

Public Feedback

No feedback was received on the continued suspension of this route.

Conclusion

As this route was proposed as mitigation for potential overcrowding on other routes along the SR 520 corridor, more recent ridership trends have led to the continued suspension of this route. We will continue to monitor ridership trends between U District and East King County and may make adjustments to service to respond to increases in passengers as well as changes to travel patterns as part of the Northgate Link Extension.



Route 542 Stop Deletion

Route 542 is designed to provide weekday service between the U District, Redmond Technology Station and Redmond Transit Center. During rush hour, service is extended to Green Lake Park-and-Ride. As part of mitigation of the closure of the Montlake Freeway Station in June 2019, service was expanded to run on evenings and on weekends.

As part of the Northgate Link Extension, we proposed to discontinue the peak period service to Green Lake Park-and-Ride due to its proximity to the Roosevelt Link Station. Service would continue to operate between Redmond and the U District seven days a week under this proposal.

Passenger Impacts

As of spring 2019, 166 passengers boarded and 121 passengers alighted at Green Lake Park-and-Ride, representing 11 percent of ridership on the route. These passengers who used Route 542 from Green Lake should use Link to the U District or to UW Station to connect with Route 542.

Area	Minority	Low Income	LEP
Existing Route 542	32.5%	14.3%	7.5%
Proposed Route 542	42.8%	12.9%	11.1%
District Average	39.7%	16.4%	10.1%

Maps showing percentages of minority, low-income, and LEP populations in the Route 542 service area by census tract with corresponding stop and route changes can be found after the text in this section.

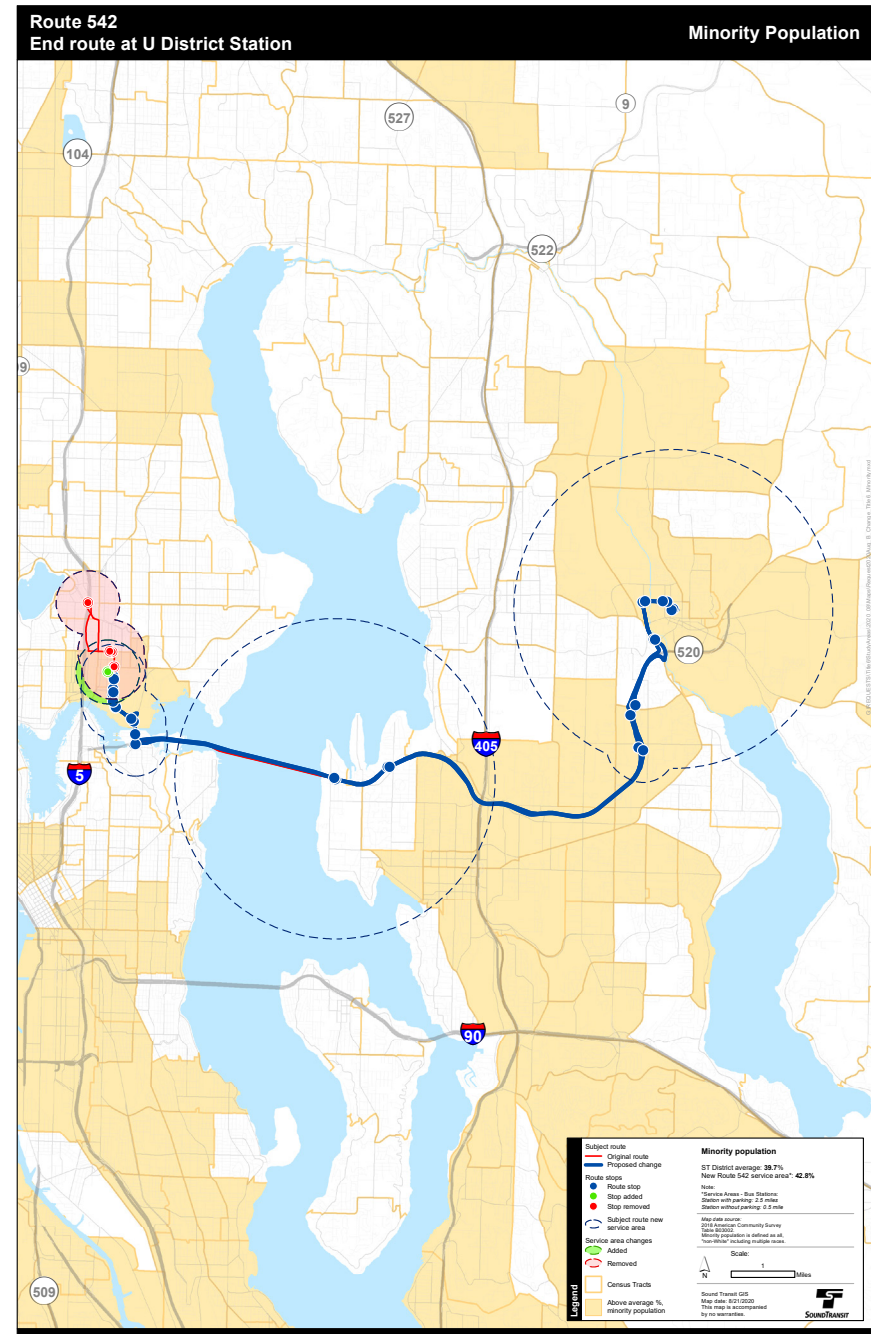
Public Feedback

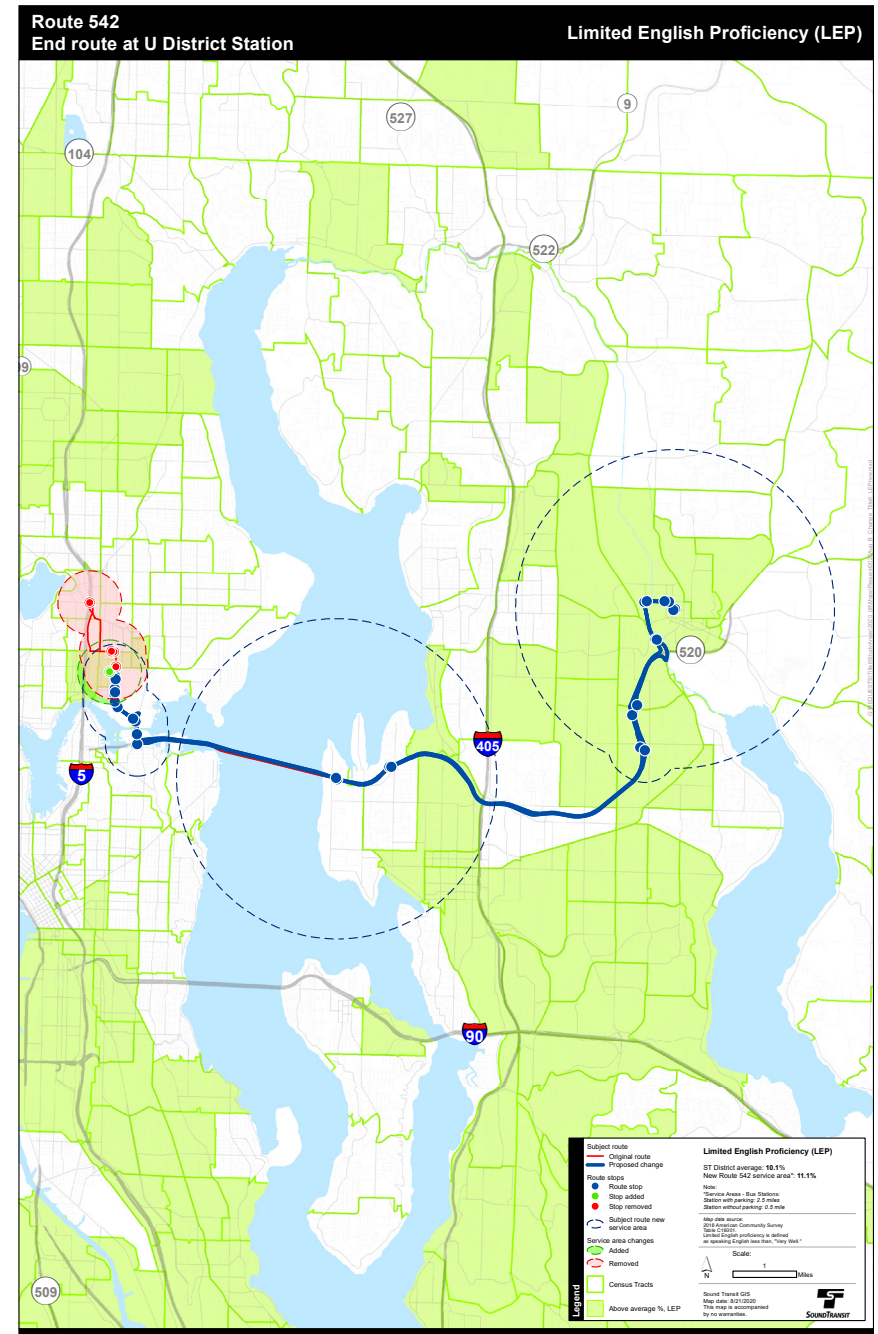
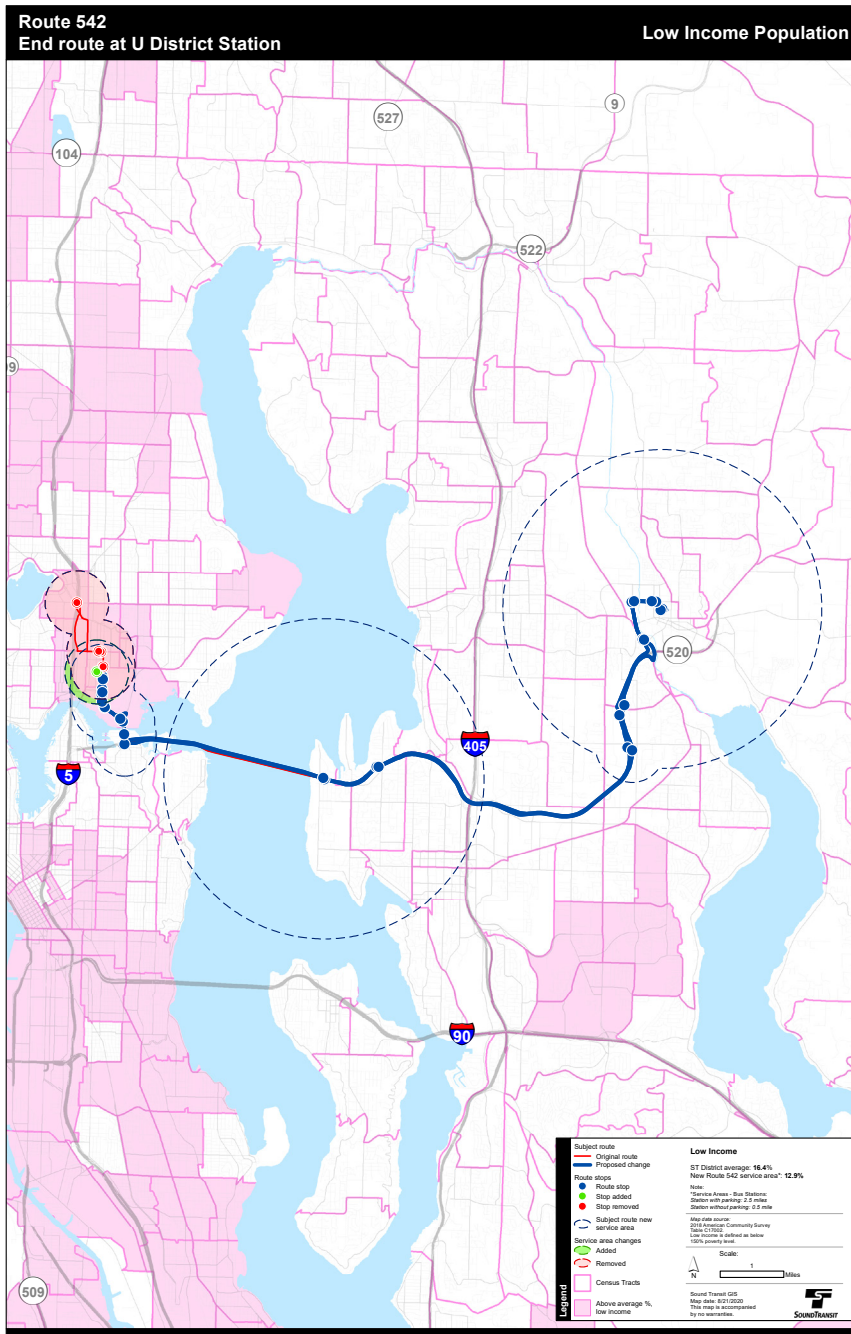
Some people had a preference to leave the current service unchanged, or to increase Link frequency and the Route 542 frequency to account for the transfer experience. Reliability in these connections was also essential for

making this proposal viable for these customers.

Conclusion

The COVID-19 public health crisis has compelled numerous changes to Sound Transit service in the region, particularly to peak-period services connecting residents between along the SR-520 corridor. Route 542 with its all-day, all-week service is still impacted by its focus on connecting communities to job centers that largely remain stay-at-home for the foreseeable future. This change allows for service levels to remain stable while meeting the need for Sound Transit to save resources. Continued focus on reliable connections helps ensure the service is useful to existing passengers after the change.





Route 544 Service Suspension

Route 544 is designed to provide peak-period service between South Lake Union, South Kirkland Park & Ride, Redmond Technology Station, and Overlake Park & Ride via State Route 520. A collaborative product of North East Mobility Project coordinated with changes to Routes 540 and 255, Route 544 operated for barely more than a week before it was suspended due to COVID. It will remain suspended for the September 2020 service change.

Ridership during peak periods where telecommuting is a viable option is not expected to rebound significantly in 2021. Therefore, we proposed to continue the suspension of Route 544 through 2021. Because suspending this route reduces platform hours by more than 25%, this is considered a major service change.

Passenger Impacts

Because Route 544 suspended operations after only 10 days of service, accurate boarding data is not available to estimate the number of affected customers. Customers traveling from Overlake P&R to South Lake Union may connect with Route 545 via KCM Rapid Ride B Line or Route 269 at the SR-520/NE 40th St flyer stops. Customers traveling from South Kirkland P&R to downtown Seattle may connect with Route 545 via KCM Route 255 at the Evergreen Point or Yarrow Point freeway stations. Travel between these locations therefore involves a new transfer and longer walk access times.

Area	Minority	Low Income	LEP
Route 544	42.4%	10.7%	10.9%
District Average	39.7%	16.4%	10.1%

Maps showing percentages of minority, low-income, and LEP populations in the Route 544 service area by census tract can be found after the text in this section.

Alternative Concepts Considered

Restore Route 544 instead of truncated Route 555/556.

- The restoration of Route 555 and the SR-520 portion of Route 556 is primarily a reaction to the potential for Route 271 overcrowding. The future of demand in the between the University of Washington and East King County will be highly dependent on the degree to which study/work from home policies remain in effect.
- Diverting 555 and 556 resources may impact the approximately 1,300 average weekday riders observed in 2019 to the benefit of an unknown number of Route 544 riders
- This would enable Route 544 frequencies of 30 minutes during peak periods, down from the originally proposed 15 minute service.

	March 2020			Alternative: Eliminate 555/556 for 544		
Route	Daily Platform Hours	Weekday Trips	Typical Frequency (minutes)	Daily Platform Hours	Weekday Trips	Typical Frequency (minutes)
555	19	17	30	0	0	0
556	42	19	30	0	0	0
544	102	49	15	61	29	30
Total	163	85		61	29	

- Sound Transit access to South Kirkland would be restored
- Because the Route 544 was a product of a collaborative planning effort between King County Metro, Kirkland, and Redmond, additional public comment is being sought on alternatives to continued suspension.

Service Area	Square Miles	Minority Population	Total Population	Percent Minority
Area Added by Route 544	25.0	54,738	124,362	44%
Route 555 / 556 Service Area	92.8	126,964	353,178	36%

- Restoring Route 544 would add approximately 55,000 people to the service area beyond the existing Route 555 and 556 service area. 44% of the added area is defined as a non-white or Latino.
- Suspending routes 555 and 556 would adversely impact existing riders. There are approximately 353,000 people residing within the existing service area, of which 36% are identify as non-white or Latino.

Reduce peak trips on Route 542 and to run partial Route 544 service

- Route 542 operates with peak frequencies of 15-minutes.
- Adjusting 542 peak frequencies to 30 minutes would free enough platform hours for 10 daily trips on 544.
- This would enable 60-minute frequencies during peak periods, below the minimum frequency target of 30-minutes.
- This would impact a substantial fraction of the approximately 2,600 average weekday Route 542 riders for an unknown benefit to Route 544 riders.

Route	March 2020			Alternative: Reduce 542 for 544		
	Daily Platform Hours	Weekday Trips	Typical Frequency (minutes)	Daily Platform Hours	Weekday Trips	Typical Frequency (minutes)
542	102.1	90	15	79	70	30
544	101.9	49	15	23	10	60
Total	204	139		102	80	

Service Area	Square Miles	Minority Population	Total Population	Percent Minority
Area Added by Route 544	8.9	26,013	69,838	37%
Route 542 Service Area	70.1	121,981	346,735	35%

- Restoring Route 544 would add approximately 26,000 people to the service area beyond the existing route 542 service area. 37% of the added area is defined as a non-white or Latino.
- Suspending Routes 542 would adversely impact existing riders. There are approximately 121,000 people residing within the existing service area, of which 35% are identify as non-white or Latino.

Reduce peak trips on Route 545 to run partial Route 544 service

- Adjusting 545 peak frequencies to 10 minutes would enable 10 daily trips on Route 544.
- Adjusting 542 peak frequencies to 30 minutes would free enough platform hours for 10 daily trips on 544.
- This would enable 60-minute frequencies during peak periods, below the minimum frequency target of 30-minutes
- This would impact a substantial fraction of the approximately 8,500 average weekday Route 545 riders for an unknown benefit to Route 544 riders

Route	March 2020			Alternative: Reduce 545 for 544		
	Daily Platform Hours	Weekday Trips	Typical Frequency (minutes)	Daily Platform Hours	Weekday Trips	Typical Frequency (minutes)
545	281.8	185	8	259	170	10
544	101.9	49	15	23	10	60
Total	384	234		282	180	

- Restoring Route 544 would add approximately 20,000 people to the service area beyond the existing Route 545 service area. 40% of the added area is defined as a non-white or Latino.
- Reducing frequency on Route 545 would adversely impact existing riders. There are approximately 209,000 people residing within the existing service area, of which 43% are identify as non-white or Latino.

Service Area	Square Miles	Minority Population	Total Population	Percent Minority
Area Added by Route 544	6.3	10,988	31,227	35%
545 Service Area	54.8	90,640	209,327	43%

The disparate impact of suspending Route 544 is partially mitigated by maintaining relatively higher levels of service on routes 542 and 545, which share Route 544's SR-520 corridor, operate throughout the day, and provide a greater number of connections to regional destinations. Ideally alternatives to restore Route 544 would avoid adverse impacts to other Minority or Low Income routes.

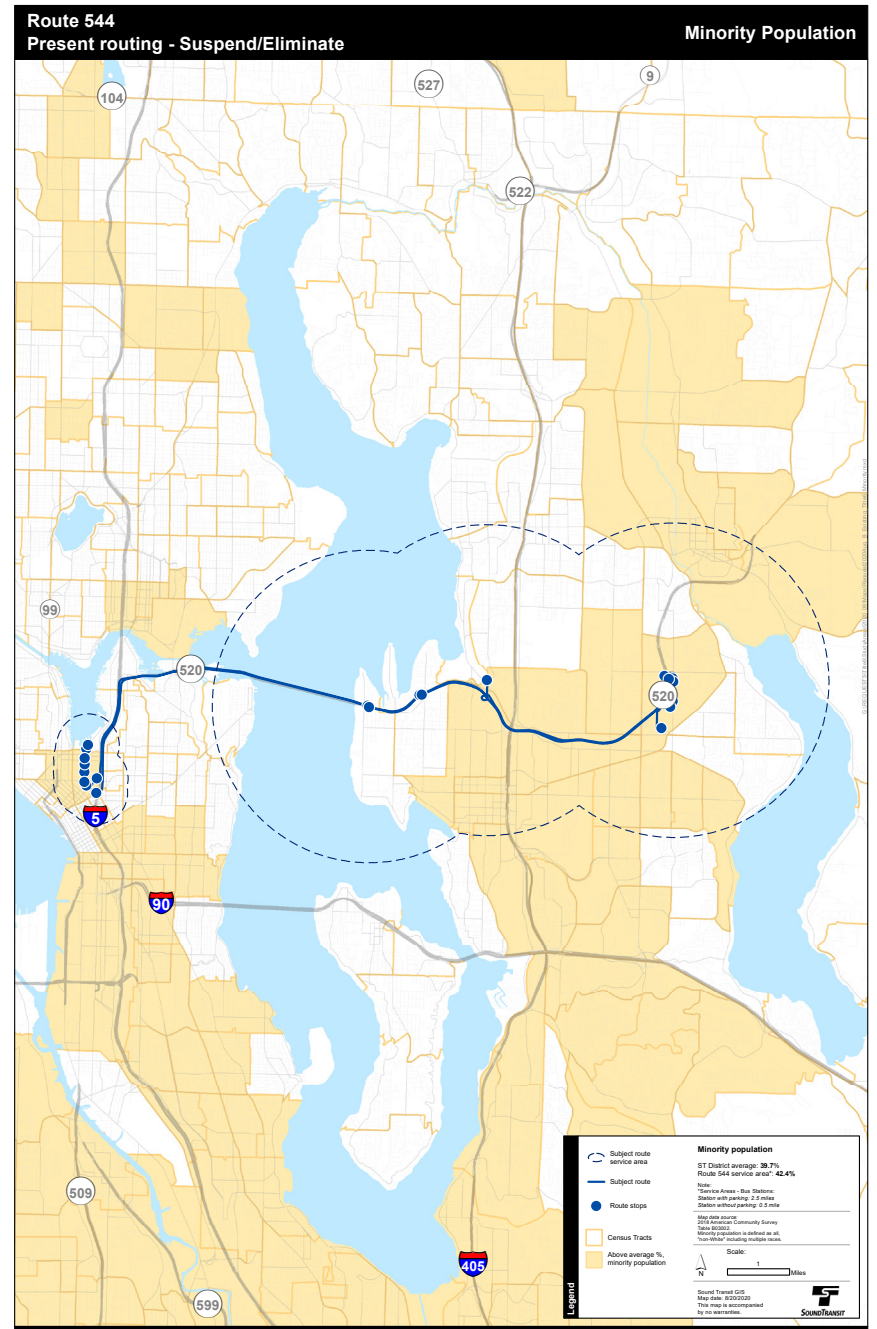
Public Input

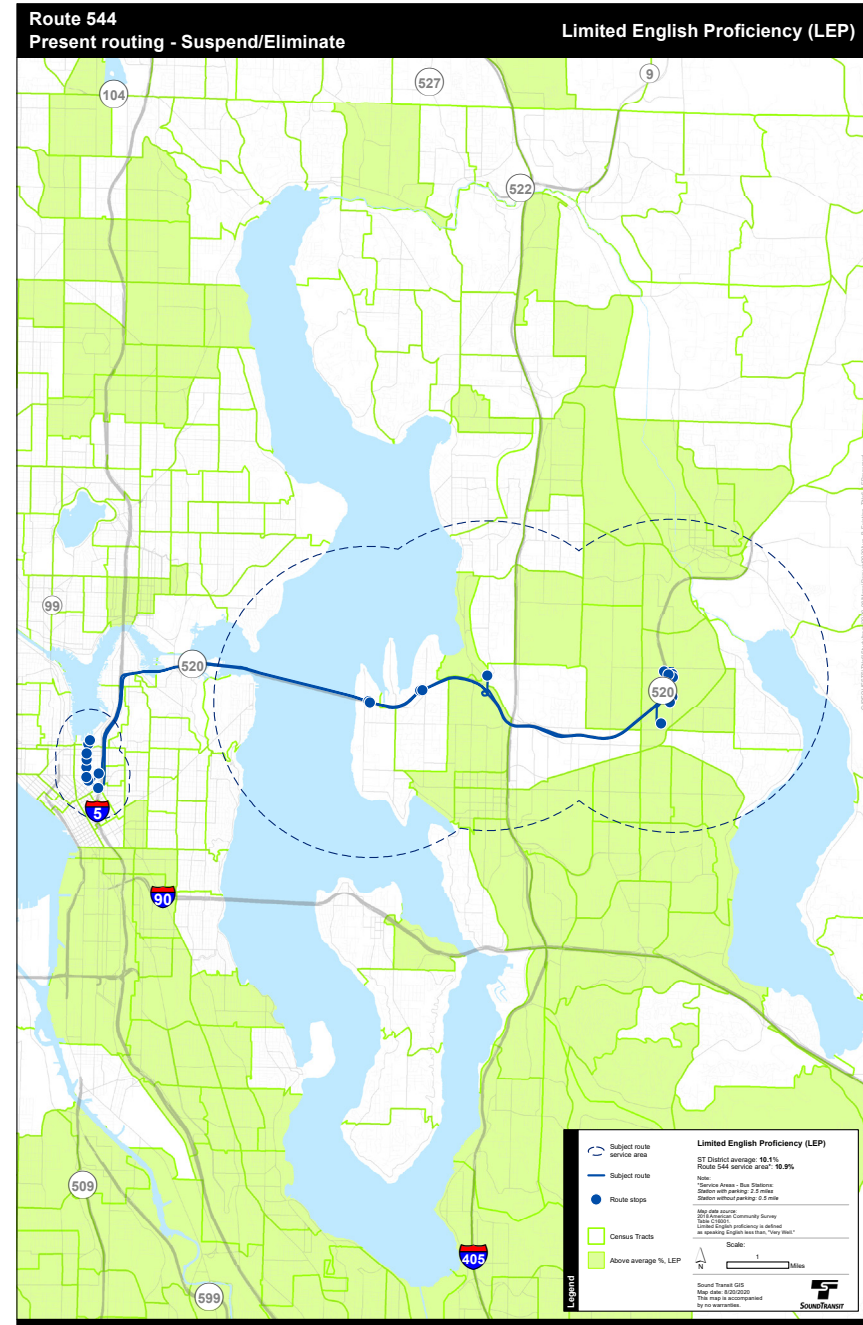
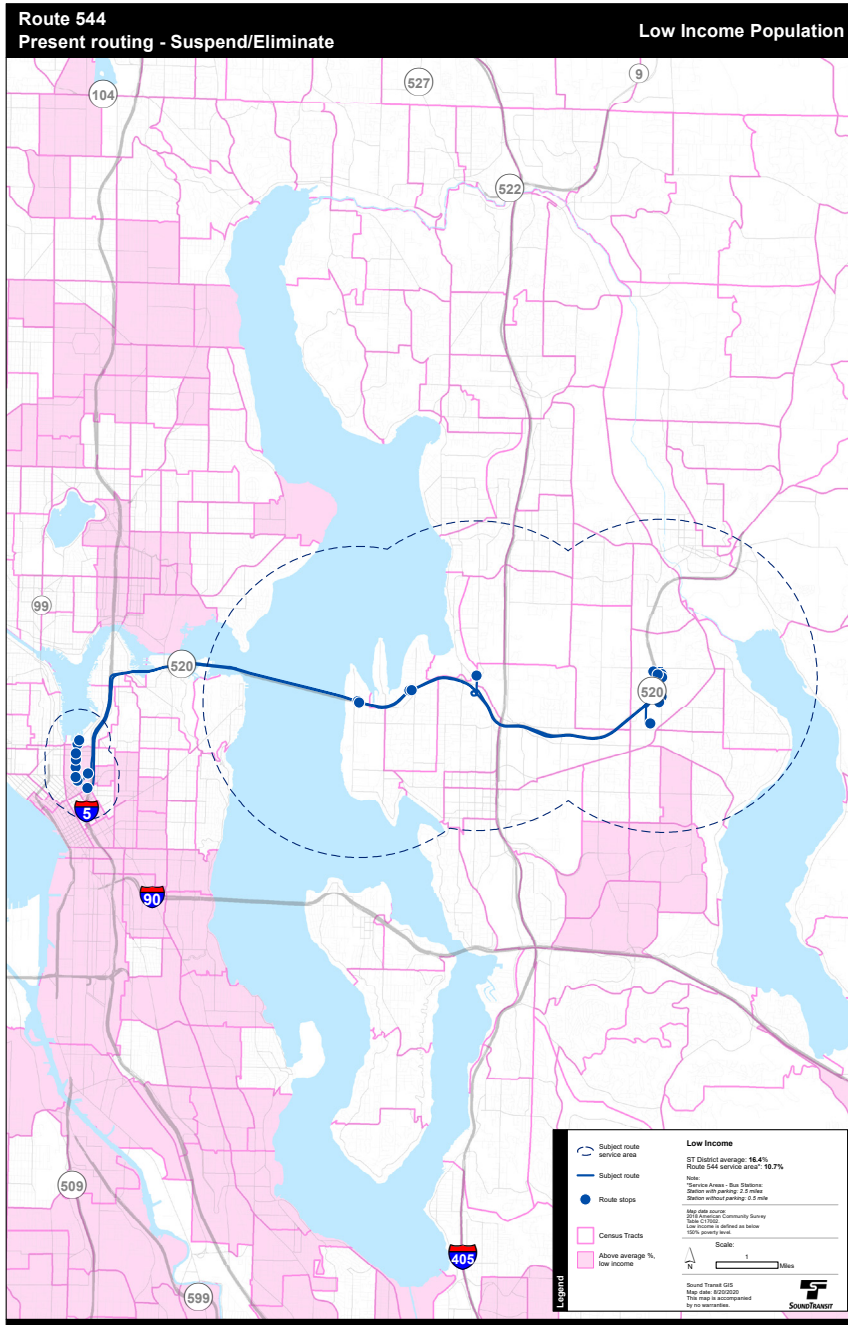
There was some interest in limiting service reduction and maintaining service on this route. However, many riders recognized that teleworking has resulted in reduced demand.

Conclusion

The COVID-19 public health crisis has compelled numerous changes to Sound Transit service in the region, particularly to peak-period services connecting residents along the SR-520 corridor. Making realistic projections about peak-period ridership demand is important for preserving the long-term health of the Sound Transit's operating budget. The

proposed changes strike a system-level balance between the need for Sound Transit to save resources and ensure all communities served by Sound Transit retain access to service.





Route 555 Service Change

Route 555 is designed to provide peak-period service between Northgate and Bellevue. This service was suspended due to COVID in March 2020 and remained suspended for the September 2020 service change.

As a fast connection between Bellevue and Northgate, we had originally proposed to restore this route to operate between Bellevue and the U District. Connections to Northgate would be available on Link. Because this involves the discontinuation of a stop with no replacement within a 1/2 mile, this is considered a major service change.

Passenger Impacts

In spring 2019, on average 267 passengers boarded and 74 passengers alighted at Northgate Transit Center, which represents 93 percent of ridership on this route. These passengers would now need to take Link from Northgate Station to connect with a Bellevue-bound bus at U District Station.

Assessment of Service Impacts

Route 555 is not classified as a low income or a minority route because the percent of these populations for this route does not exceed the district average. Therefore this change does not have a disproportionate burden or disparate impact.

Area	Minority	Low Income	LEP
Existing Route 555	30.3%	14.7%	7.6%
Originally Proposed Route 555	39.6%	18.0%	10.8%
District Average	39.7%	16.4%	10.1%

Maps showing percentages of minority, low-income, and LEP populations in the Route 555 service area by census tract with corresponding stop and

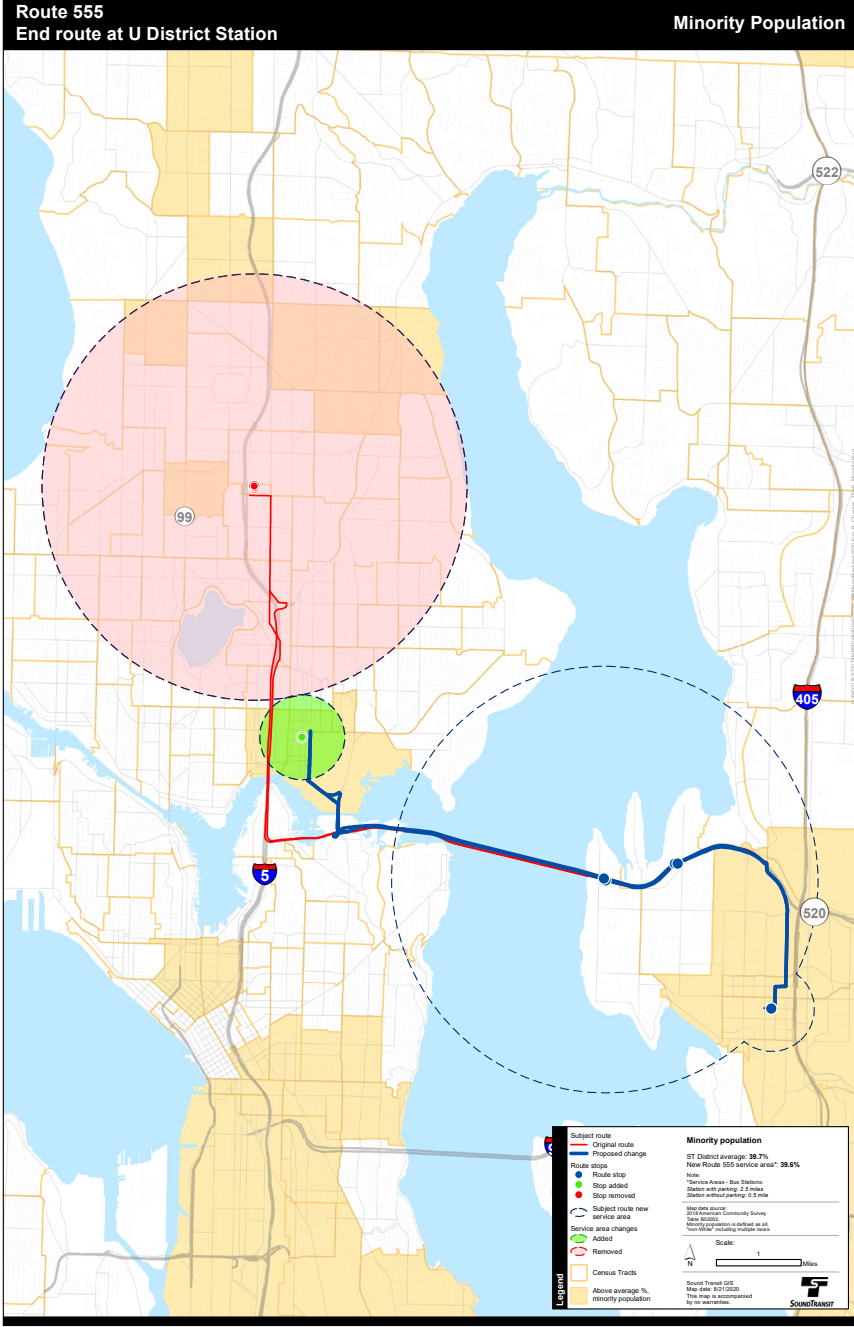
route changes can be found after the text in this section.

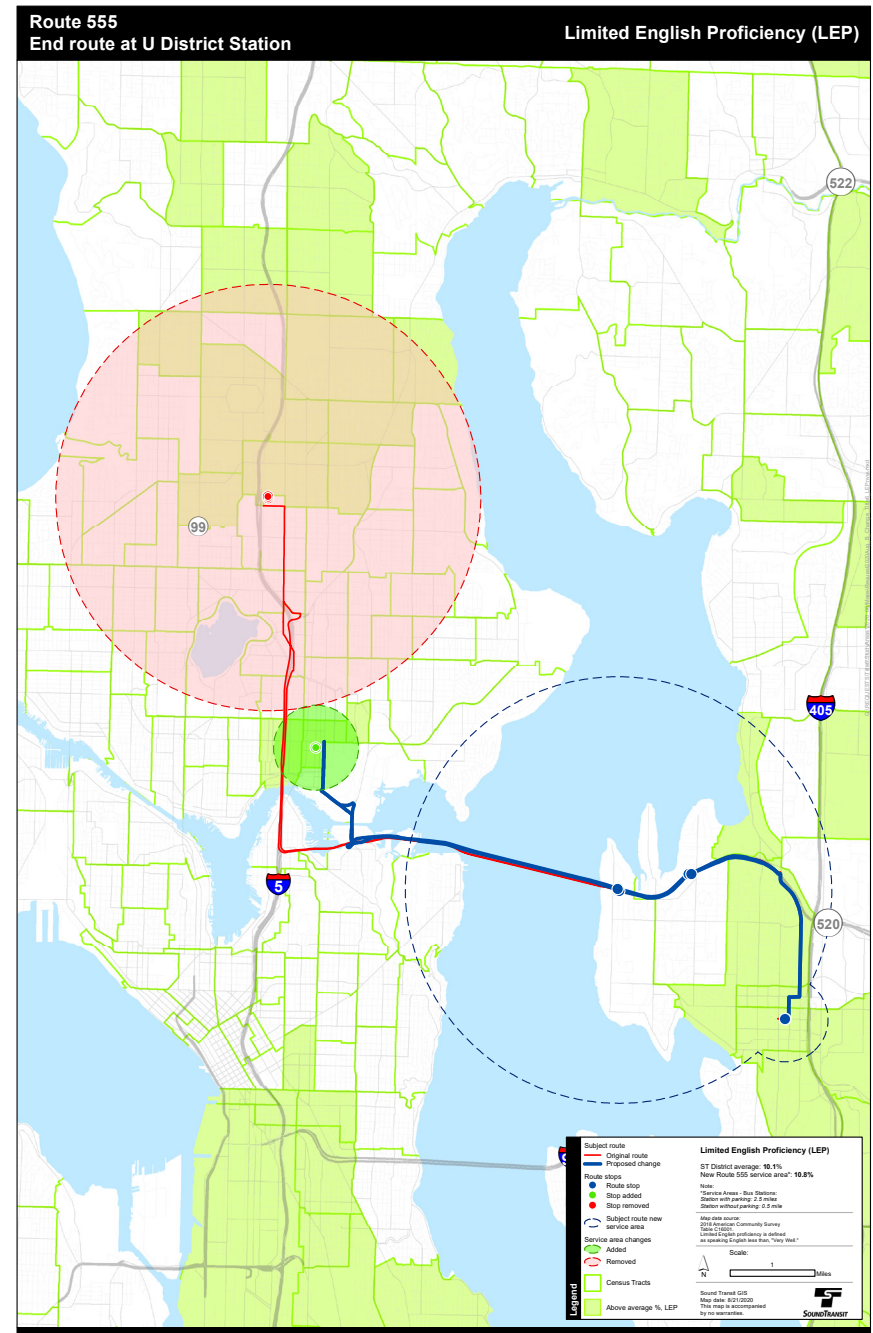
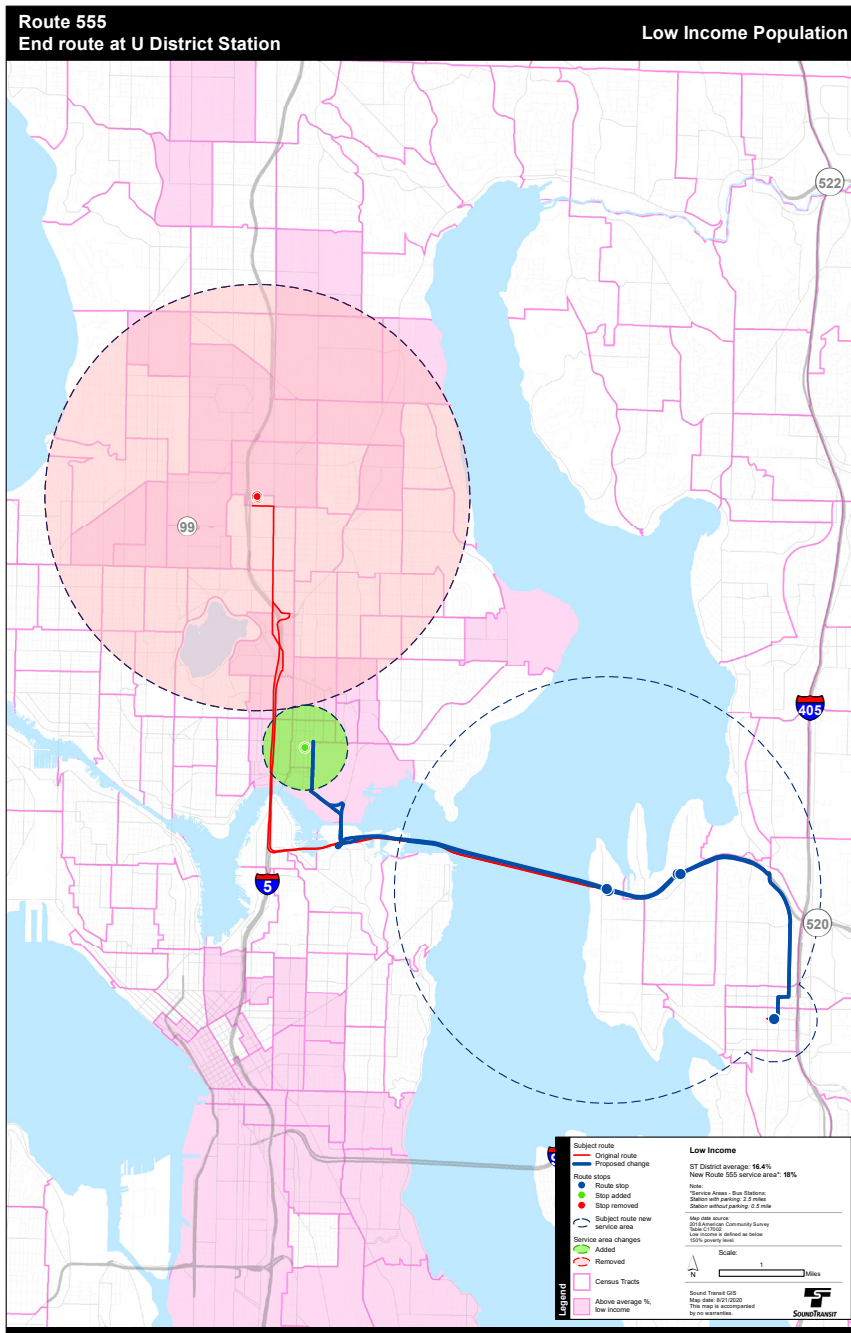
Public Feedback

There was a preference for improved service levels and to not change the routing of this service. There were also desires that any changes should happen as part of the opening of East Link rather than with Northgate Link. As with other service changes, there is a desire for improved service levels on Link and buses to account for transfers between bus and light rail.

Conclusion

With Title VI findings elsewhere along the corridor combined with the proportionally lower populations of minority and low income passengers along with the relatively infrequent level of service offered on this route, we have revised our proposal and are intending to continue service suspensions of this route. Passengers who would have used this route should use King County Metro 271, which serves the U District and Northgate or King County Metro 255, which serves the UW Station and the SR 520 freeway stations at Evergreen Point and Yarrow Point.





Route 556 Service Change

Route 556 is designed to provide peak-period service between Northgate and Issaquah via the U District and Bellevue. This service was suspended due to COVID in March 2020 and remained suspended for the September 2020 service change.

As a fast connection between Issaquah, Bellevue and Northgate, we had originally proposed to restore this route to operate between Issaquah and the U District. Connections to Northgate would be available on Link. Because this involves the discontinuation of a stop with no replacement within a 1/2 mile, this is considered a major service change.

Passenger Impacts

In spring 2019, on average 36 passengers boarded and 19 passengers alighted at Northgate Transit Center, which is roughly 7 percent of weekday ridership. These passengers would now need to take Link from Northgate Station to connect with a Bellevue-bound bus at U District Station

Area	Minority	Low Income	LEP
Existing Route 556	35.9%	14.7%	9.5%
Proposed Route 556	42.2%	12.5%	11.6%
District Average	39.7%	16.4%	10.1%

Maps showing percentages of minority, low-income, and LEP populations in the Route 556 service area by census tract with corresponding stop and route changes can be found after the text in this section.

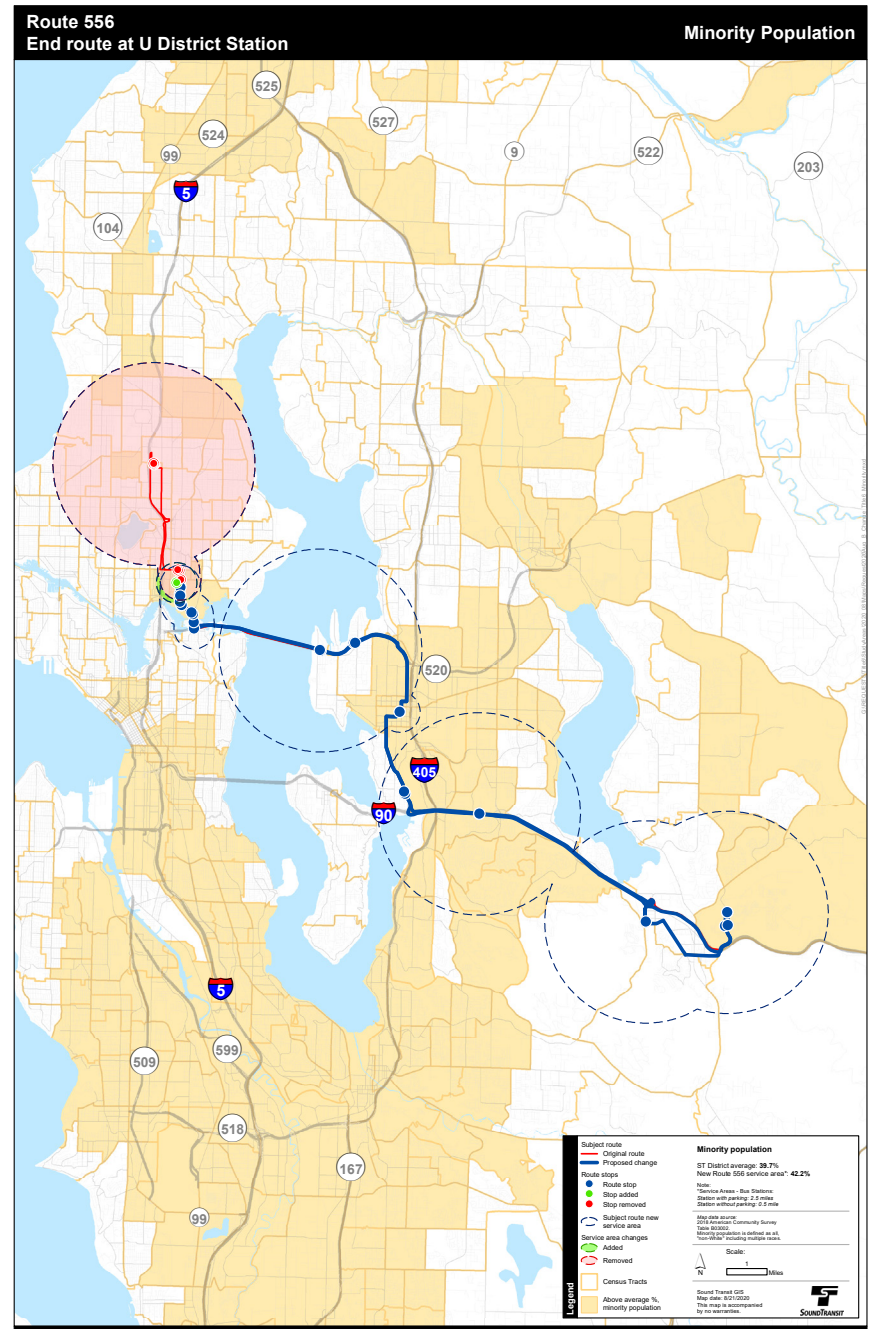
Public Feedback

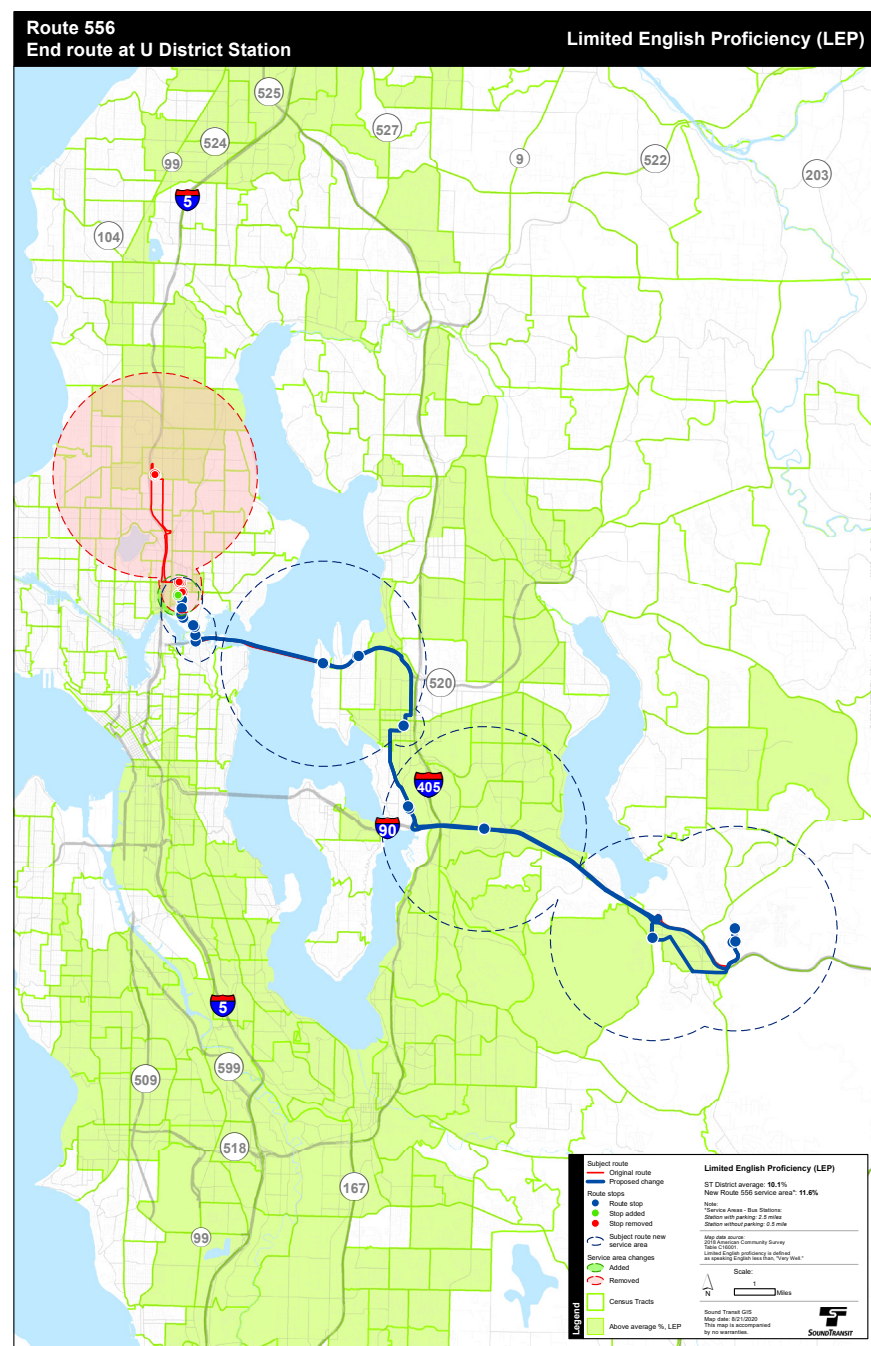
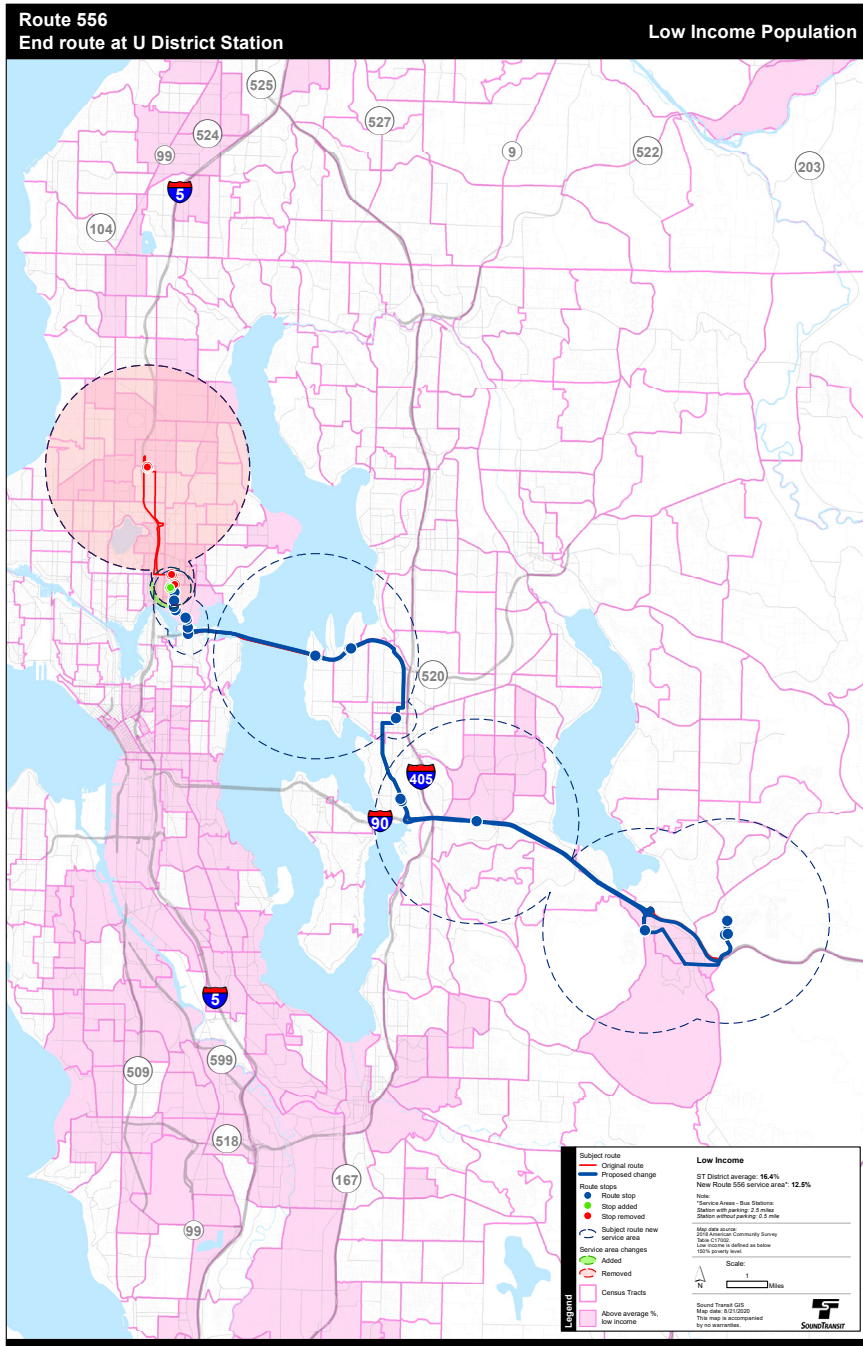
There was a preference for improved service levels and to not change the routing of this service. There were also desires that any changes should

happen as part of the opening of East Link rather than with Northgate Link. As with other service changes, there is a desire for improved service levels on Link and buses to account for transfers between bus and light rail.

Conclusion

The COVID-19 public health crisis has compelled numerous changes to Sound Transit service in the region, particularly to peak-period services connecting residents along the SR-520 corridor. Making realistic projections about peak-period ridership demand is important for preserving the long-term health of the Sound Transit’s operating budget. This change helped to address concerns of overcrowding on other routes while restoring a connection between Issaquah, Bellevue and the U District.





Route 567 Service Suspension

Route 567 is designed to provide peak-period service between the Kent Sounder Station, Bellevue and Redmond Technology Center. This service was originally intended to provide fast access between Sounder South service from Pierce and South King County to East King County, and thus is timed to peak-direction Sounder South arrivals at Kent Station. This service was suspended due to COVID in March 2020 and remained suspended for the September 2020 service change.

As ridership during peak periods where telecommuting is a viable option is not expected to rebound significantly in 2021, we proposed to continue the suspension of Route 567 in 2021. Because suspending this route reduces platform hours by more than 25%, this is considered a major service change.

Passenger Impacts

Prior to the onset of the COVID-19 pandemic, nearly 700 passengers used Route 567 between Kent Station and East King County. The route was suspended at the service change due to an operator shortage and significant passenger declines. Riders who used Route 567 still retained access via Route 566, which serves the same markets with additional stops in Renton. Travel between these locations did not require an additional transfer, but may have longer travel times due to trips not being timed to Sounder South as well as the additional stops in Renton.

- **Disparate impact** - the proposed change impacts an area with a minority population of 54.6%, higher than the Sound Transit District average of 39.7%.
- **Disproportionate burden** - the proposed change impacts an area with a low-income population of 17.9%, higher than the Sound Transit District average of 16.4%.

Area	Minority	Low Income	LEP
Route 567	54.6%	17.9%	17.5%
District Average	39.7%	16.4%	10.1%

Maps showing percentages of minority, low-income, and LEP populations in the Route 567 service area by census tract can be found after the text in this section.

Alternate Service Options

Reduce peak 566 service to restore 567 peak trips

- Route 566 currently provides 30 min peak hour/peak direction service from Redmond Technology Station in the morning and Auburn Station in the evening; Route 567 provides 20 min peak hour/peak direction service from Kent Station in the morning and Redmond Technology Station in the evening.
- Though Route 567 service is faster as it bypasses Renton, this would leave customers with 60 minute service to/from Auburn if we were to, for example, reduce the number of AM 566 trips in by two trips and PM 566 trips by 4 trips to restore partial 567 service. This could also reduce the span of service on the 566 as some of the trips would likely be the earlier peak hour trips that would be cut.
- These cuts would create several adverse effects for 566 passengers (longer wait times, less available trips in a shorter amount of time) while failing to create a sustainable solution for passengers looking to travel to Redmond quicker.

Reduce Sounder and/or 550 service to restore 567 service

- This alternative would eliminate a transfer between Sounder and 550 riders and will provide passengers a one seat ride. From a service

design perspective, this would be a lot of change for a segment of passengers (Route 567) who would not normally utilize these two services.

- This would also create severe adverse effects on Sounder South riders as service is already reduced significantly. The same can be said for Route 550 riders as this would likely result in reduced frequency (20-30 mins) and longer wait times for those passengers who are normally Route 550 riders.

The disparate impact of suspending Route 567 is partially mitigated by maintaining relatively higher levels of service on Route 566, which shares Route 567 SR-167/I-405 corridor. Route 566 operates with a longer span and provides a greater number of connections to regional destinations.

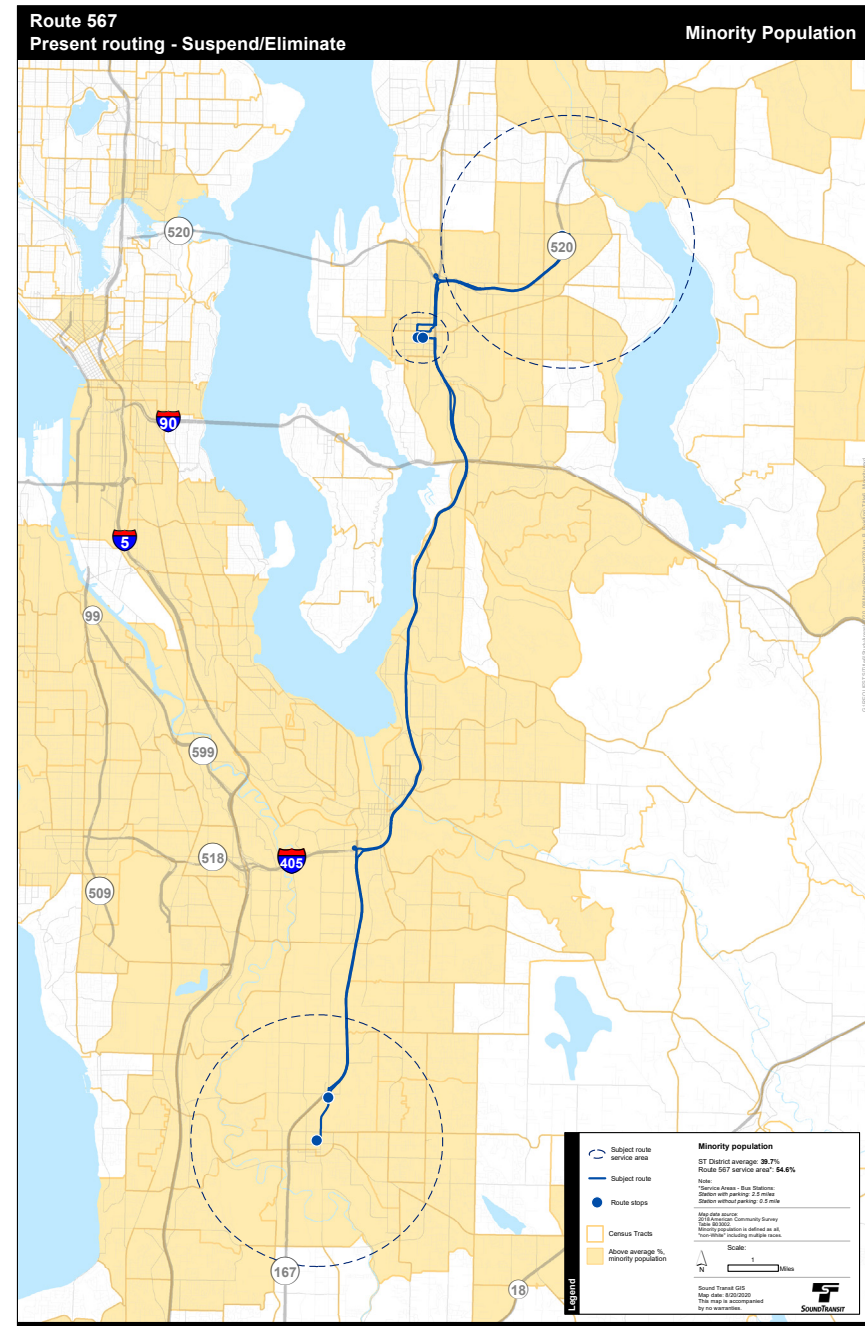
Route 567 was selected for suspension in late March 2020 due to Pierce Transit's limited ability to operate the service and significantly reduced ridership in Bellevue and Redmond. Prior to the COVID crisis, this route had been steadily growing as a result of jobs being added to Bellevue and Redmond.

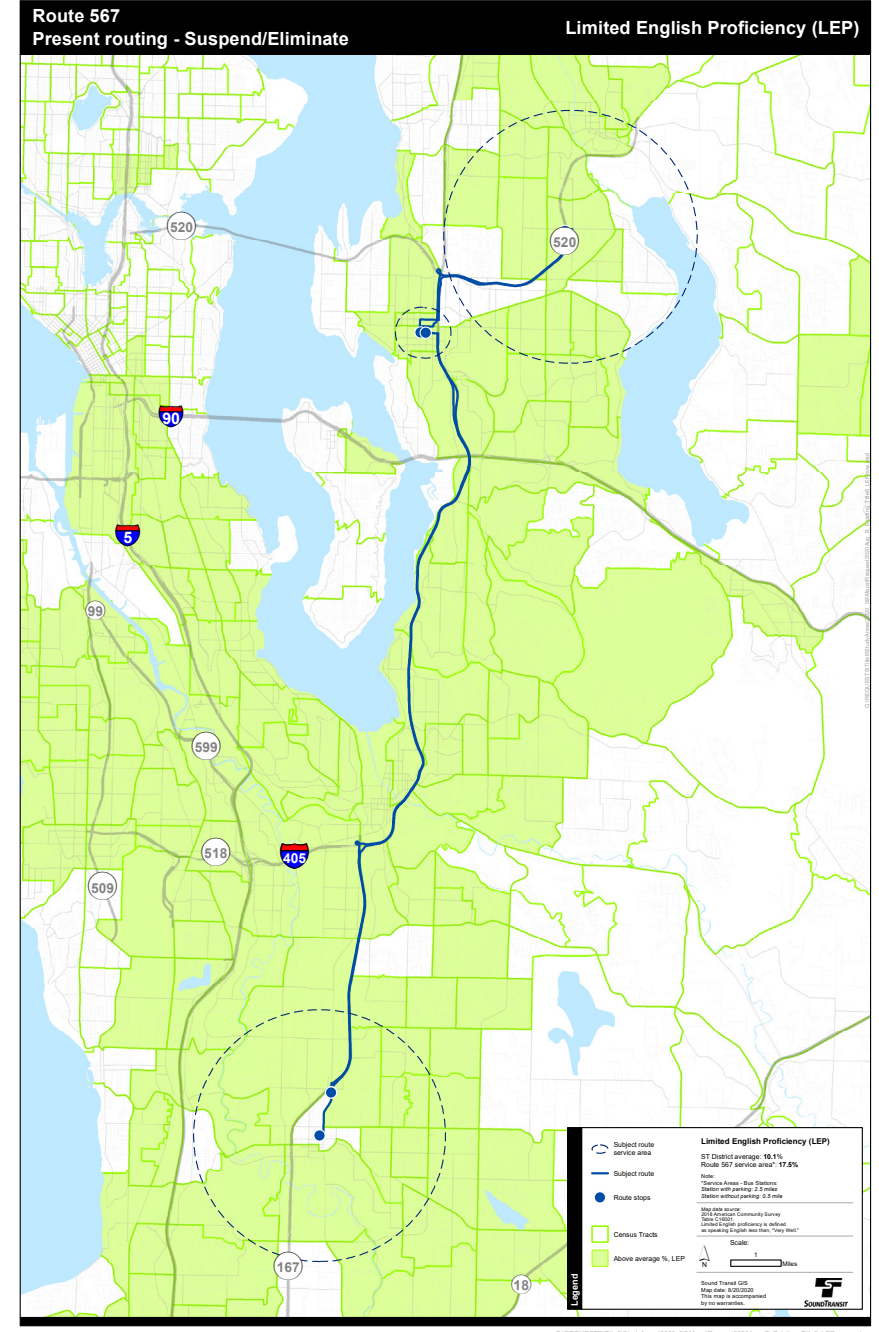
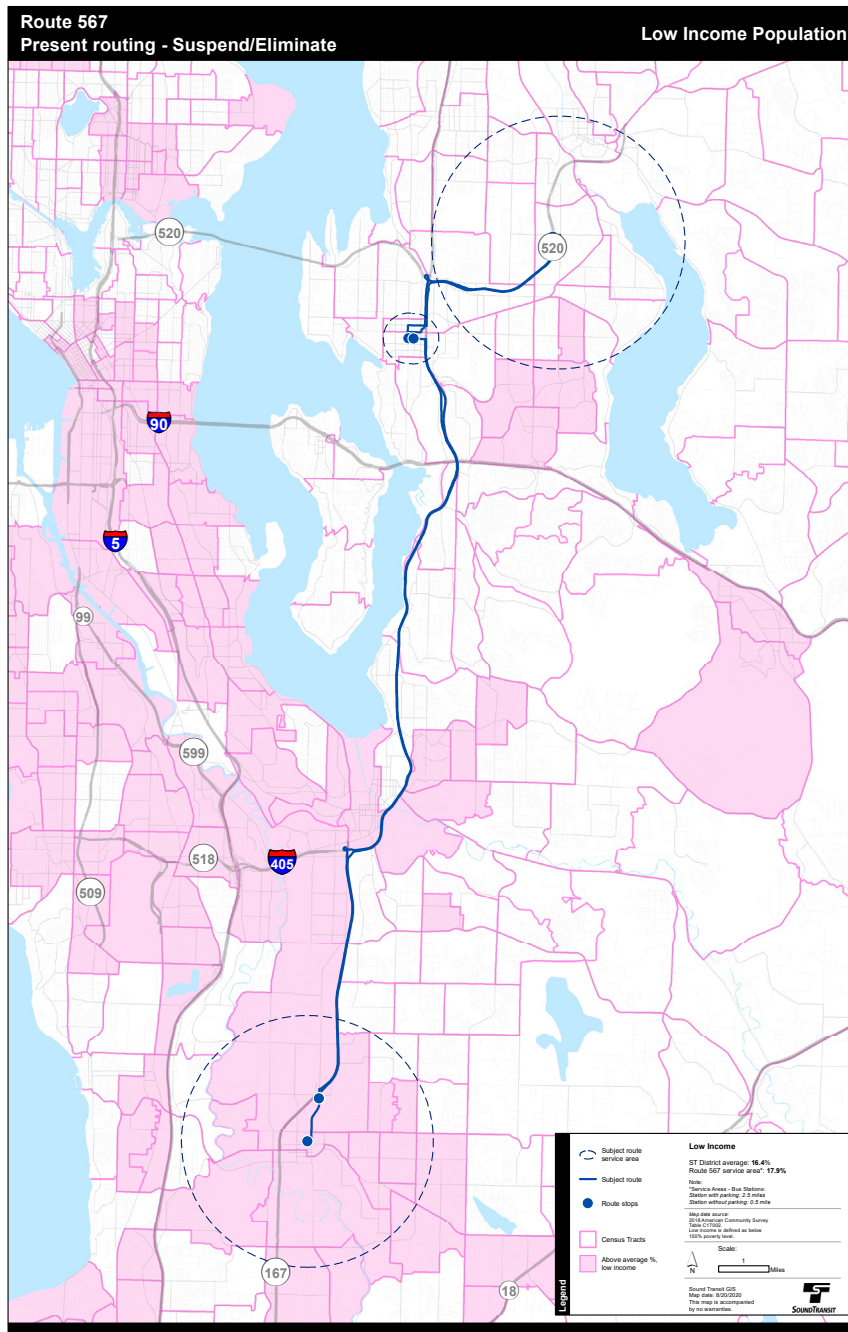
Public Feedback

No feedback was received on the continued suspension of this route.

Conclusion

The COVID-19 public health crisis has compelled numerous changes to Sound Transit service in the region, particularly to peak-period services connecting residents between South King County and East King County. Making realistic projections about peak-period ridership demand is important for preserving the long-term health of the Sound Transit's operating budget. The proposed changes strike a system-level balance between the need for Sound Transit to save resources and ensure all communities served by Sound Transit retain access to service.





Route 586 Service Elimination

Route 586 provides peak-period, peak-direction connection between Tacoma Dome Station, U-District and University of Washington Link Station via I-5. Service was reduced from 16 trips to 13 trips in April 2020 due to COVID -19 impacts and will remain at that level for the September 2020 service change. This is a major service change because the elimination of this route reduces platform hours by more than 25% and removes stops.

When Northgate Link Extension opens, destinations served by Route 586 will be entirely duplicative with high capacity transit (Link and Sounder South). Furthermore, the peak-only nature of this route and observed ridership make it expensive to operate on a per-rider basis. In 2019, Route 586 required the 2nd highest subsidy per boarding among ST Express routes at \$13.96. Therefore, we proposed to eliminate Route 586 in September 2021 and recommended passengers take Route 590 or Sounder and connect to Link.

Passenger Impacts

There were 422 average weekday boardings in 2019. Looking to the future, the ridership on this route will be highly dependent on learn/work from home policies affecting students and staff employees in the U-District.

Customers can use Sounder or Routes 590 during peak hours and transfer to Link light rail for service to the U-District and the University of Washington. Off-peak, customers may ride Route 594 and transfer to Link. The additional transfer introduces delay and inconvenience. Customers accessing U District and UW Link stations will require vertical conveyance. 2.9% of 586 customers surveyed reported having a disability. Notably only 1.9% reported living in a 0-Car household.

Scheduled travel times on Route 586 between Tacoma Dome Station and Seattle vary between 57-75 minutes in in the morning northbound direction and 62-109 minutes in the afternoon southbound direction. This variability is largely due to congestion on I-5 around downtown Seattle and in Pierce County. Total travel times using Route 590 vary between 61-84 minutes in in the morning northbound direction and 78-108 minutes in the afternoon southbound direction. This variability is largely due to congestion on I-5 around downtown Seattle and in Pierce County. Total travel times using Sounder vary between 80-82 minutes in in the morning northbound direction and 74-79 minutes in the afternoon southbound direction. This variability is largely due to scheduling constraints on BNSF track.

Assessment of Service Impacts

Route 586 is classified as a Minority Route because the fraction of the current route’s service area population exceeds the district average of 39.7% as shown below. Route 586 is also classified as Low Income Route because the fraction of the current route’s service area population exceeds the district average of 16.4%. This major service change proposal is considered a disparate impact and a disproportionate burden.

Area	Minority	Low Income	LEP
Route 586	45.4%	33.7%	9.6%
District Average	39.7%	16.4%	10.1%

Maps showing percentages of minority, low-income, and LEP populations in the Route 586 service area by census tract with corresponding stop and route changes can be found after the text in this section.

Fares Impact

Over 85% of customers on Route 586 used either the UW U-Pass or an ORCA Business Passport that allows unlimited travel on any mode at any fare. These customers would not experience a fare change as the result of this service change. Of the remaining 15 percent:

- Those customers who use ORCA and choose to ride Route 590/594 and transfer to Link will also see no change in fares;
- ORCA customers who choose to ride Sounder and transfer to Link will pay a higher, Sounder fare.
- Cash riders on Route 586 will pay a higher fare to transfer from either Sounder or Route 590/594 to Link.

Alternate Service Plans Considered

Maintain route with fewer trips (hourly service - total of 8 trips)

- Route 586 currently serves several essential workers that work at the UW Medical Centers in both Tacoma and North Seattle.
- Passengers would see their one seat ride to/from the U District intact. Once the Northgate extension is opened in September 2021, Route 586 can serve as replacement service in the case of Link/Sounder service failures or delays while deploying less vehicles for a bus bridge
- Would require resources to come from other cuts in nearby service such as Route 590 or Route 595 potentially putting the usability of those lines in jeopardy. Route 586 service would be much less frequent than it already is (30 min peak direction service) and span of service would decrease as a result.

Truncate at Angle Lake at existing service levels 30 minute frequency

- Route 586 Service to Angle Lake would be replaced by Link service.

Would create a two-seat ride with passengers potentially not even using Route 586 to travel to U-District. Alternative service would come from Route 574 and transferring to KCM Route 197 or Sounder to Link.

- There is also an issue of layover space. While there is an available bay at Angle Lake, the turnaround for the 586 would not be sufficient from an operations perspective.

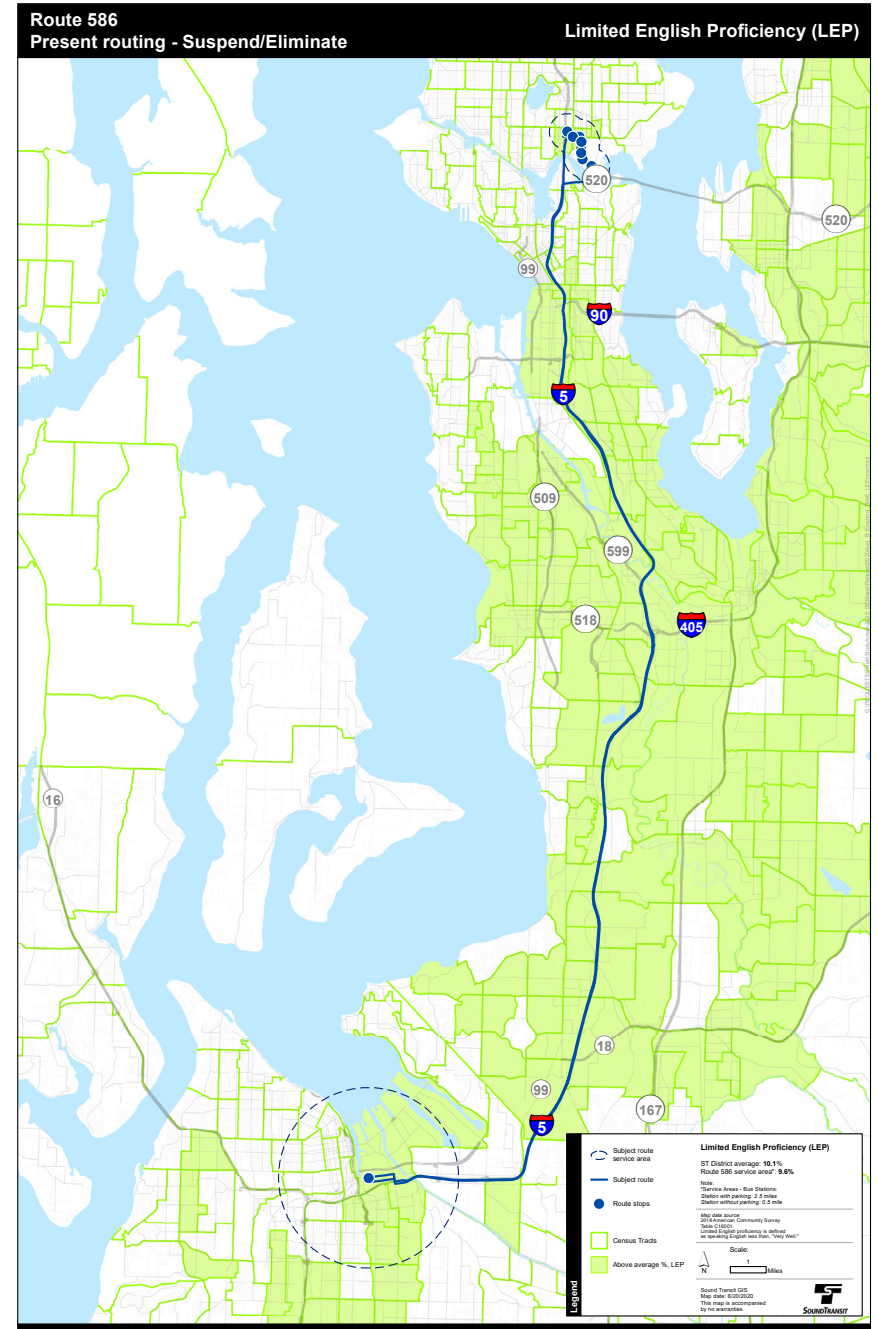
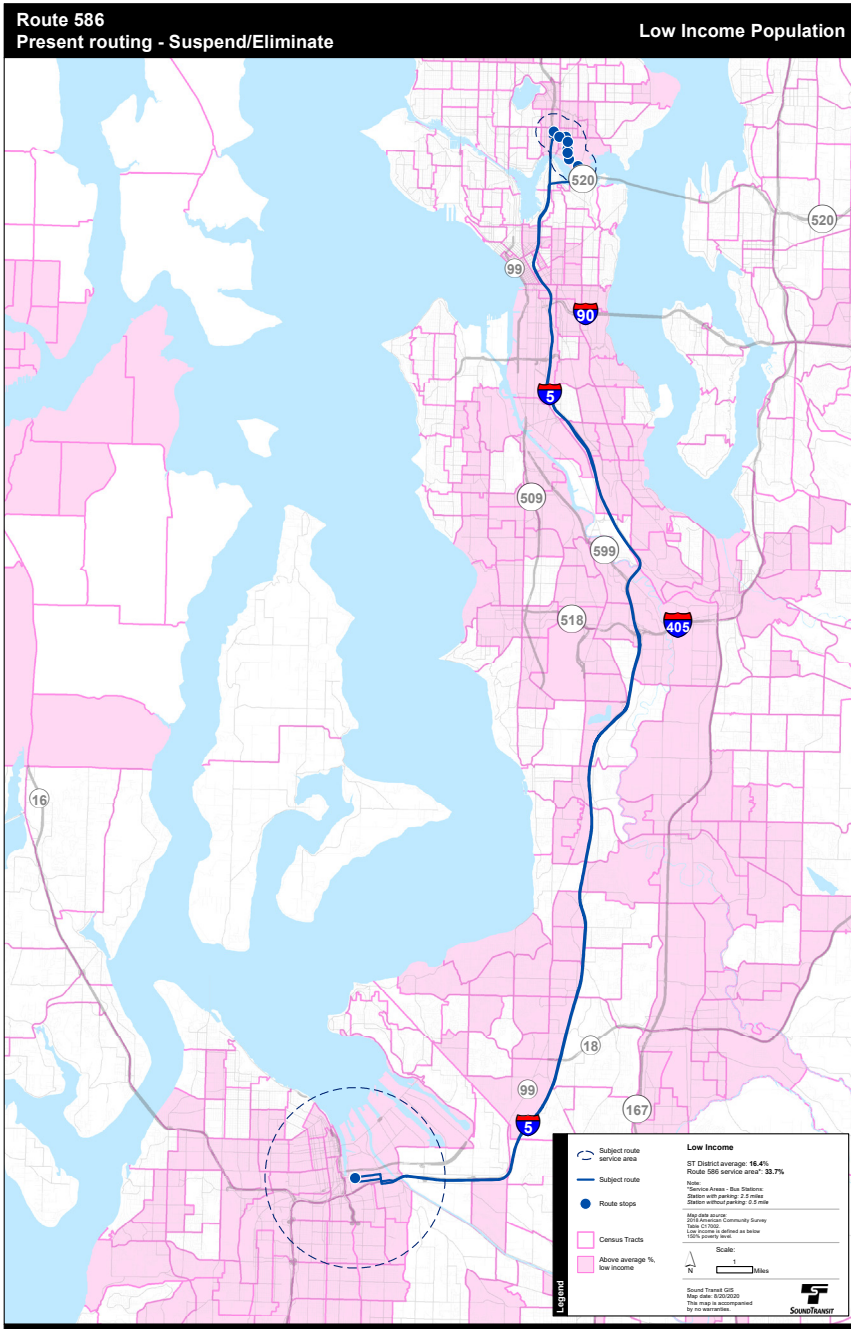
Maintain route by reducing Route 580, 590 and/or Route 596

- The amount of service restored to Route 586 would be determined by how much resources are pulled from one or all of these routes. As an example, if 4 am and pm peak hour trips are taken from Route 580, 4 am and pm peak hour trips are taken from Route 590 and 4 trips were taken from 596, this would create 12 available trips for Route 586.
- However, this also creates a service imbalance for those traveling to/from Puyallup, Downtown Seattle and Sumner as the service span and frequency of these routes would decrease. For the 596 in particular, this would create 60 minute or more frequencies.

Extend Route 592 to U District

- This option would not be financially or operationally feasible. Any cost savings from the Route 586 elimination would be used to cover non-revenue travel (buses travelling to/from home division to each terminal point to begin or end revenue service).
- The extensive travel time for passengers not looking to travel to Downtown Seattle would make the route unusable for former Route 586 passengers.

The disparate impact of suspending Route 586 is partially mitigated by maintaining relatively higher levels of service on Route 590 and Sounder. Route 590 operates with a longer span and provides a greater number of connections to regional destinations.



Route 592 Service Reduction

Route 592 currently serves DuPont Station, Lakewood Station, SR-512 Park & Ride and downtown Seattle during the peak periods on weekdays only. Prior to the emergency service reductions, Route 592 ran every 15 minutes during the peak periods.

We proposed to reduce the number of trips for Route 592 due to COVID-19 budget impacts, resulting in 20 minute frequencies. This reduced the route's platform hours by more than 25%, which is considered a major service change.

Assessment of Service Impacts

Route 592 is classified as a Minority and low income Route because the fraction of the current route's service area population exceeds the district average of 39.7% and 16.4%, respectively, as shown in the table below. This major service change proposal is considered a disparate impact and a disproportionate burden.

Area	Minority	Low Income	LEP
Route 592	48.2%	25.8%	9.2%
District Average	39.7%	16.4%	10.1%

Maps showing percentages of minority, low-income, and LEP populations in the Route 592 service area by census tract can be found after the text in this section.

Alternatives Considered

Reduce service to DuPont to preserve Lakewood service

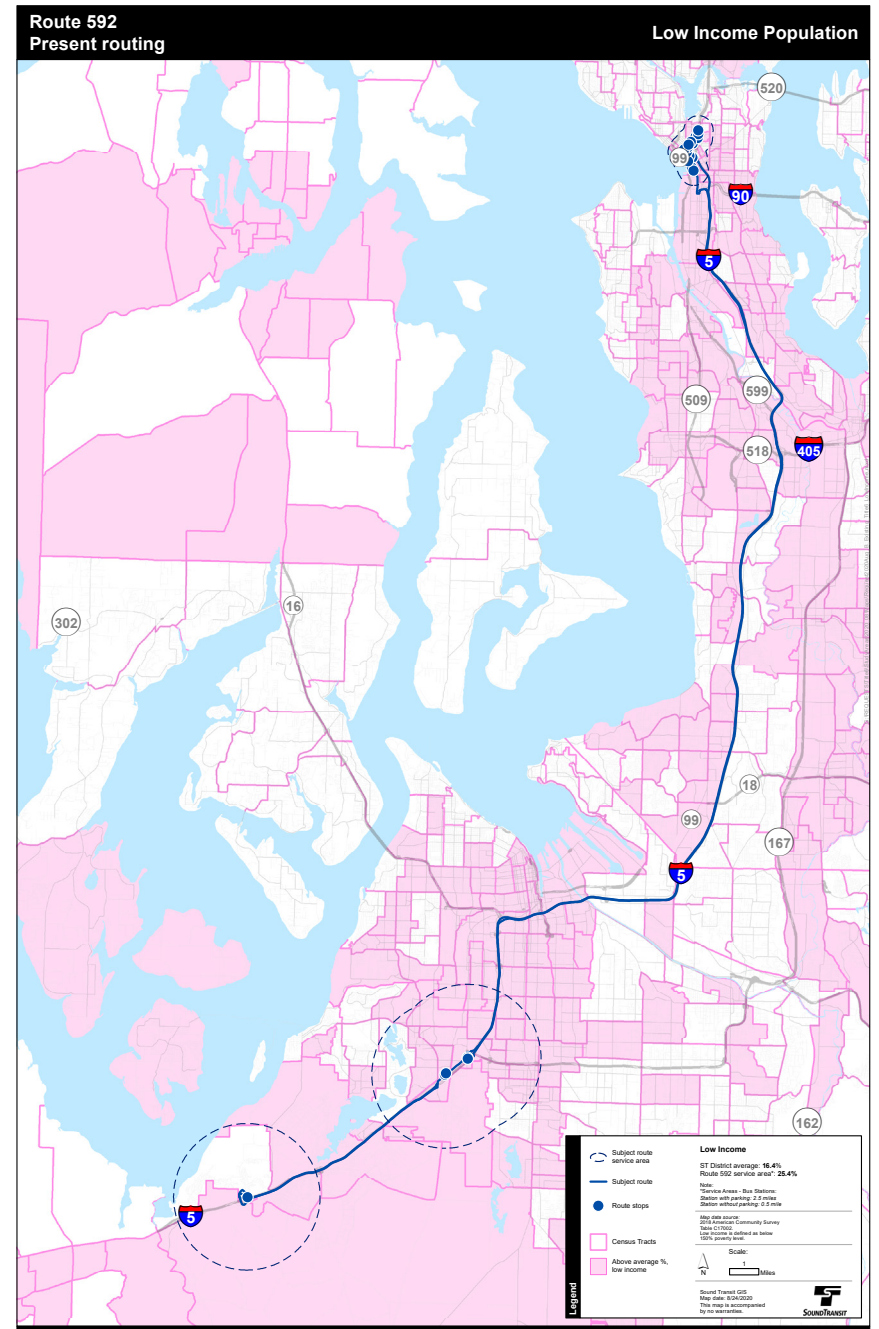
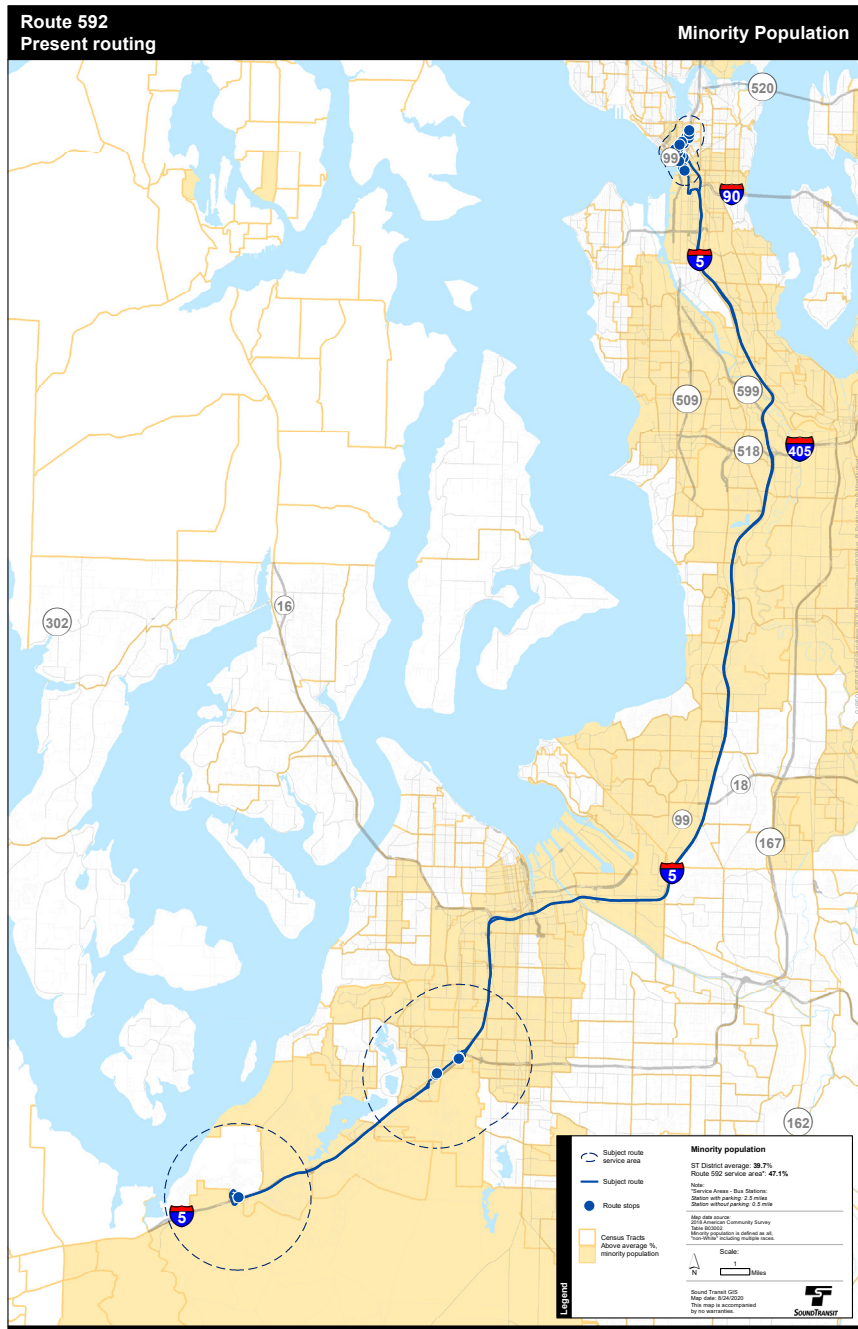
One proposal was to reduce DuPont service to every 30 minutes to preserve 15-minute service to Lakewood. This alternative was not pursued due to the complexity of this alternate service proposal. While Lakewood has higher populations of low income and minority, Sounder South also provides connections from these communities.

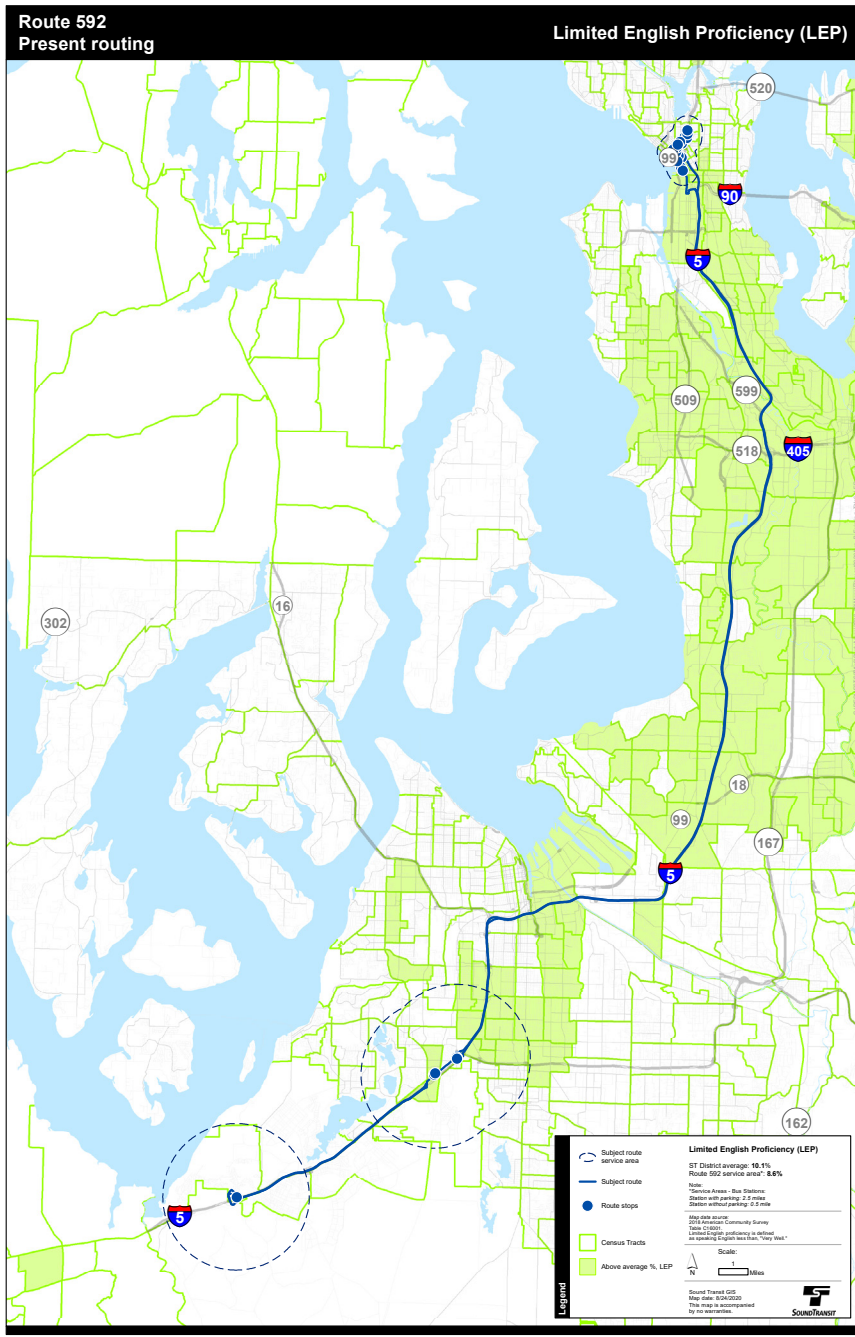
Survey Feedback

Comments regarding this route primarily focused on the changes to parallel Sounder South service.

Conclusion

The COVID-19 public health crisis has compelled numerous changes to Sound Transit service in the region, particularly to peak-period services connecting residents of Pierce County to Downtown Seattle. Making realistic projections about peak-period ridership demand is important for preserving the long-term health of the Sound Transit's operating budget. The proposed changes strike a system-level balance between the need for Sound Transit to save resources while acknowledging negative externalities with suspending numerous Sounder trips that were derived through extensive collaboration with other agencies/jurisdictions and the public.





Route 595 Service Reduction and Stop Addition

Route 595 currently serves Gig Harbor, Tacoma Community College Transit Center, SODO Busway and downtown Seattle during the early peak periods on weekdays only. The current scheduled frequencies are every 45 minutes during the early AM and PM peak periods pre COVID-19.

We proposed to carry over the September 2020 service level reductions and add a stop at Tacoma Dome Station to mitigate passenger overcrowding on Route 590. The reduction of service by more than 25 percent results in this being a major service change.

Passenger Impacts

Longer travel times are expected with the addition of Tacoma Dome Station to the route pattern. Current ridership trends have indicated that there is additional capacity between Tacoma and Seattle on this route that is underutilized. Social Distancing due to COVID-19 mitigation procedures prevent buses for traveling at or slightly above capacity per normal operations therefore less seats available.

Assessment of Service Impacts

Route 595 is classified as a low income route because the fraction of the current route's service area population exceeds the district average. This major service change is considered a disproportionate burden. Adding a stop at Tacoma Dome increases the percentage of each category, but does not change the categorization of the route.

Area	Minority	Low Income	LEP
Existing Route 595	35.5%	19.7%	5.8%
Proposed Route 595	38.9%	23.4%	6.9%
District Average	39.7%	16.4%	10.1%

Maps showing percentages of minority, low-income, and LEP populations in the Route 595 service area by census tract with corresponding stop and route changes can be found after the text in this section.

Potential Mitigation Strategies

Coordinate with Pierce Transit Route 102 and eliminate all Route 595 trips (590 covers the Tacoma to Downtown Seattle portion of Route 595)

- This alternative would maintain a vital connection for riders looking to travel to/from Gig Harbor. The savings from the complete elimination of the 595 could potentially be invested in services like Route 590 to Downtown Seattle or Route 586 to the U District.
- This creates a multiple seat ride for passengers looking to travel to Downtown Seattle. Furthermore, Pierce Transit's Route 102 is currently suspended due to covid-19 budget impacts. The elimination of 595 would be fully contingent upon Route 102's restoration as there would be no transit options for customers traveling to/from Gig Harbor.

Pierce Transit however, has not indicated a date at which Route 102 would return to service.

Fares Impact

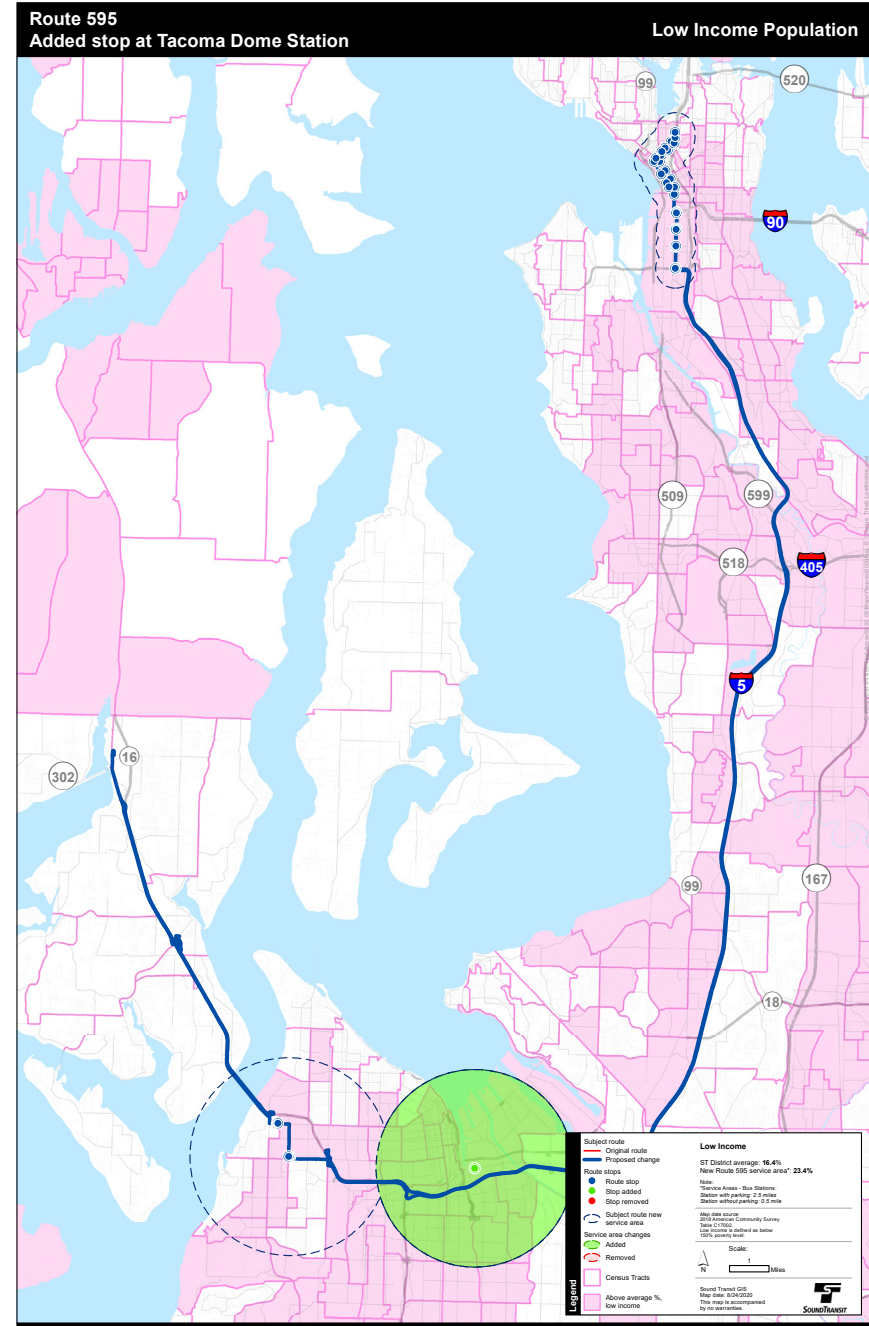
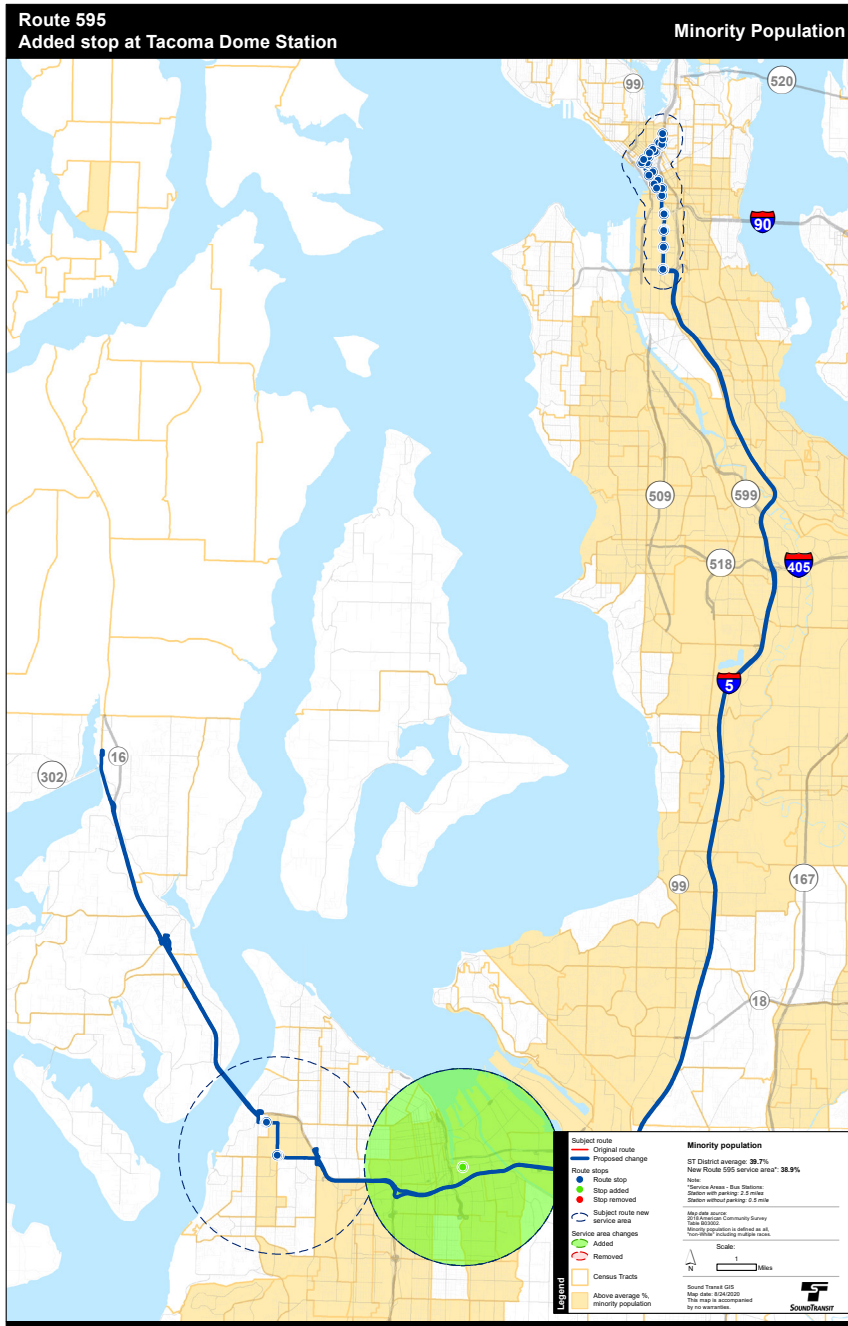
There are no fare impacts from the proposed changes to Route 595 service.

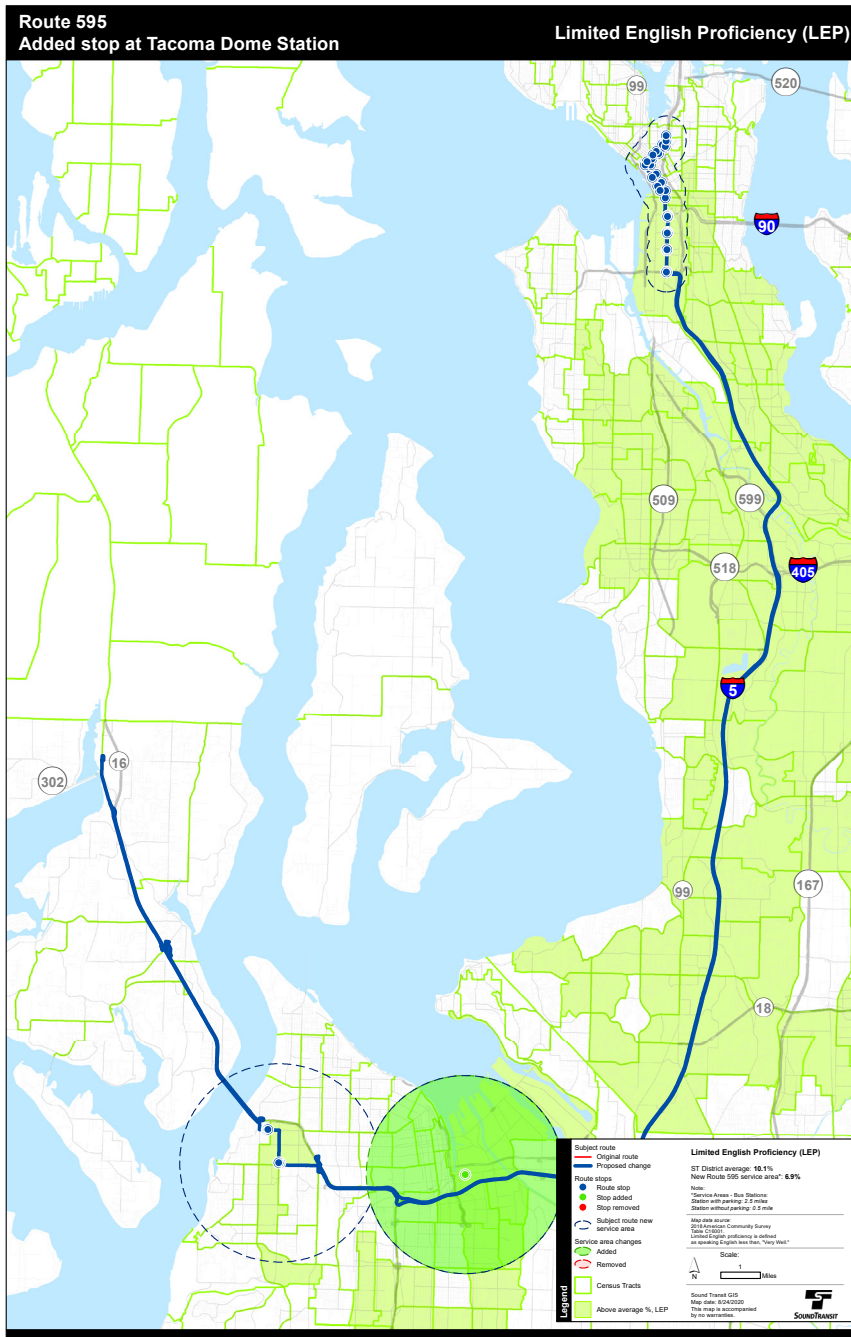
Survey Feedback

Only one comment was received which expressed approval of the additional deviation to Tacoma Dome Station.

Conclusion

The COVID-19 public health crisis has compelled numerous changes to Sound Transit service in the region, particularly to peak-period services connecting residents of Pierce County to Downtown Seattle. Making realistic projections about peak-period ridership demand is important for preserving the long-term health of the Sound Transit's operating budget. The proposed changes maintain access to communities served by Route 595, address potential crowding on Route 590 and strike a system-level balance between the need for Sound Transit to save resources while acknowledging negative externalities with suspending numerous Sounder trips that were derived through extensive collaboration with other agencies/jurisdictions and the public.





Sounder North Service Reduction

Sounder North provides peak hour commuter rail service between Seattle and Everett during weekdays. Half of the 8 one-way trips on Sounder North were suspended due to COVID-19 and the subsequent stay at home order. With passenger increases less likely to occur due to the global health crisis, we are looking to carry over the suspension of the 4 Sounder North trips into 2021. Operating at this level results in a reduction of 50% of weekly platform hours compared the March 2020 baseline, which exceeds the 25% major service change threshold.

Passenger Impacts

Prior to COVID, about 1,500 passengers utilized Sounder North. Currently, ridership ranges between 100 and 150 passengers per day, which is a 90 percent reduction in ridership. Current service levels support the current ridership demand, with alternatives available on Sound Transit Route 510 between Everett and Seattle as well as Community Transit services between Seattle and Edmonds or Mukilteo.

Area	Minority	Low Income	LEP
Sounder North	35.0%	17.5%	10.3%
District Average	39.7%	16.4%	10.1%

Maps showing percentages of minority, low-income, and LEP populations in the Sounder North service area by census tract can be found after the text in this section.

Alternative Concepts Considered

Souder North: Eliminate service completely; shift resources to 510

- This alternative would alienate a rider base that was dependent on Souder North; Passengers would experience on average longer travel times on route 510 with more stops and freeway traffic than they would experience traveling on a dedicated right of way on Souder North.
- Passengers from Mukilteo and Edmonds would need to shift to Community Transit service, which is less reliable and may be unable to handle the additional capacity

Fold Souder North into Souder South; send every other trip north to Everett

- Alignment as currently presented cannot be connected or altered due to existing Souder North station platform lengths.
- Additionally, railroad crews for Souder North and South are out of different divisions, and this concept would require extensive coordination and approval from our operator BNSF.

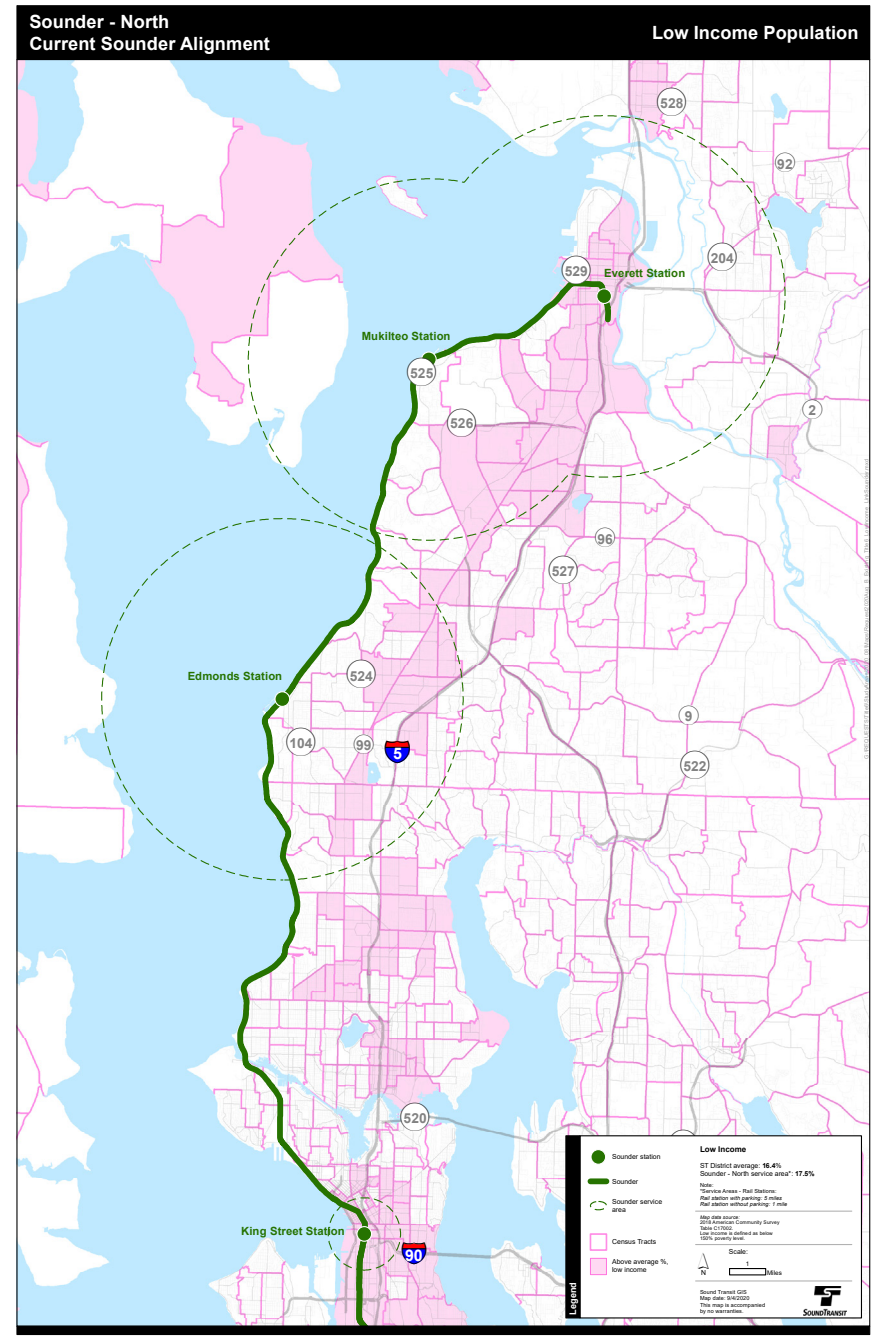
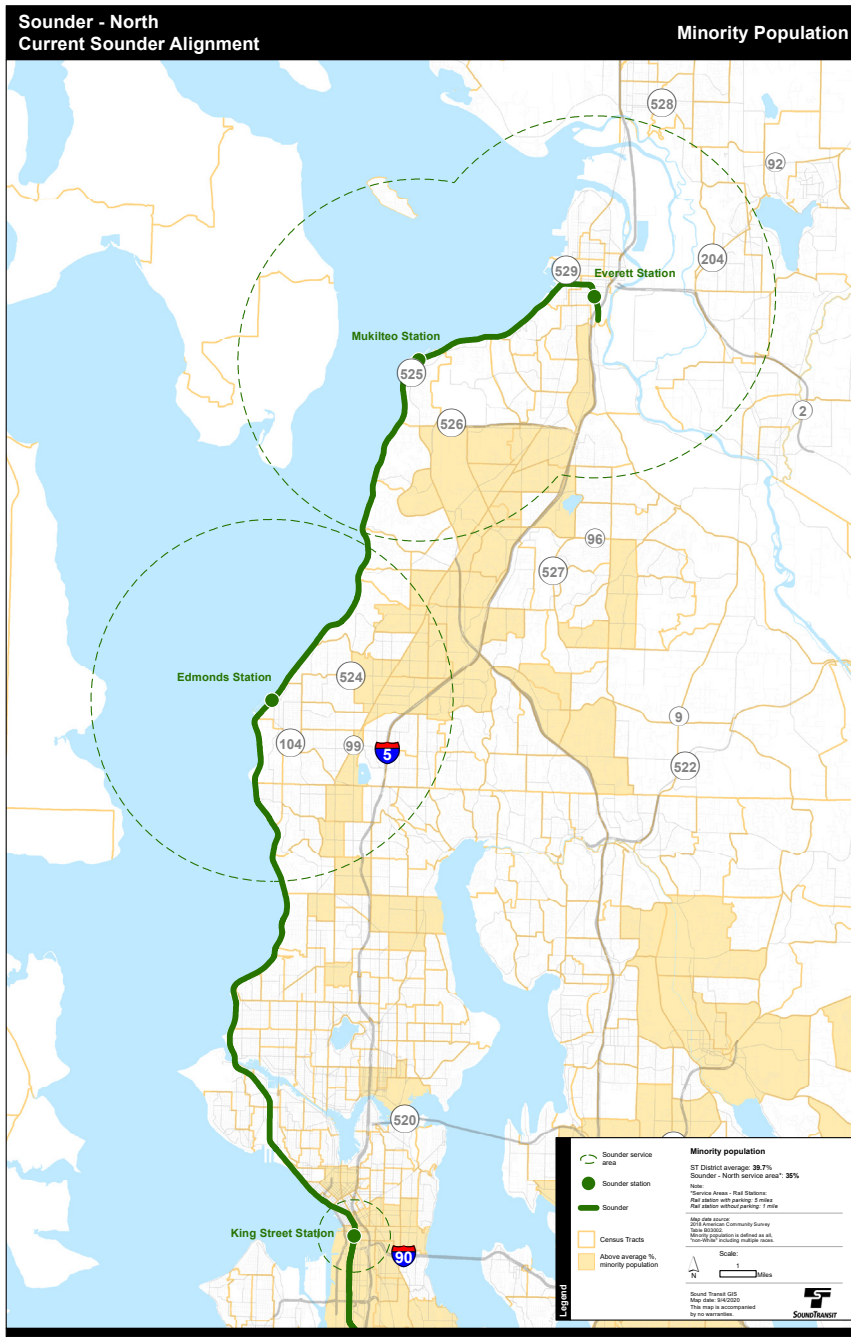
Findings

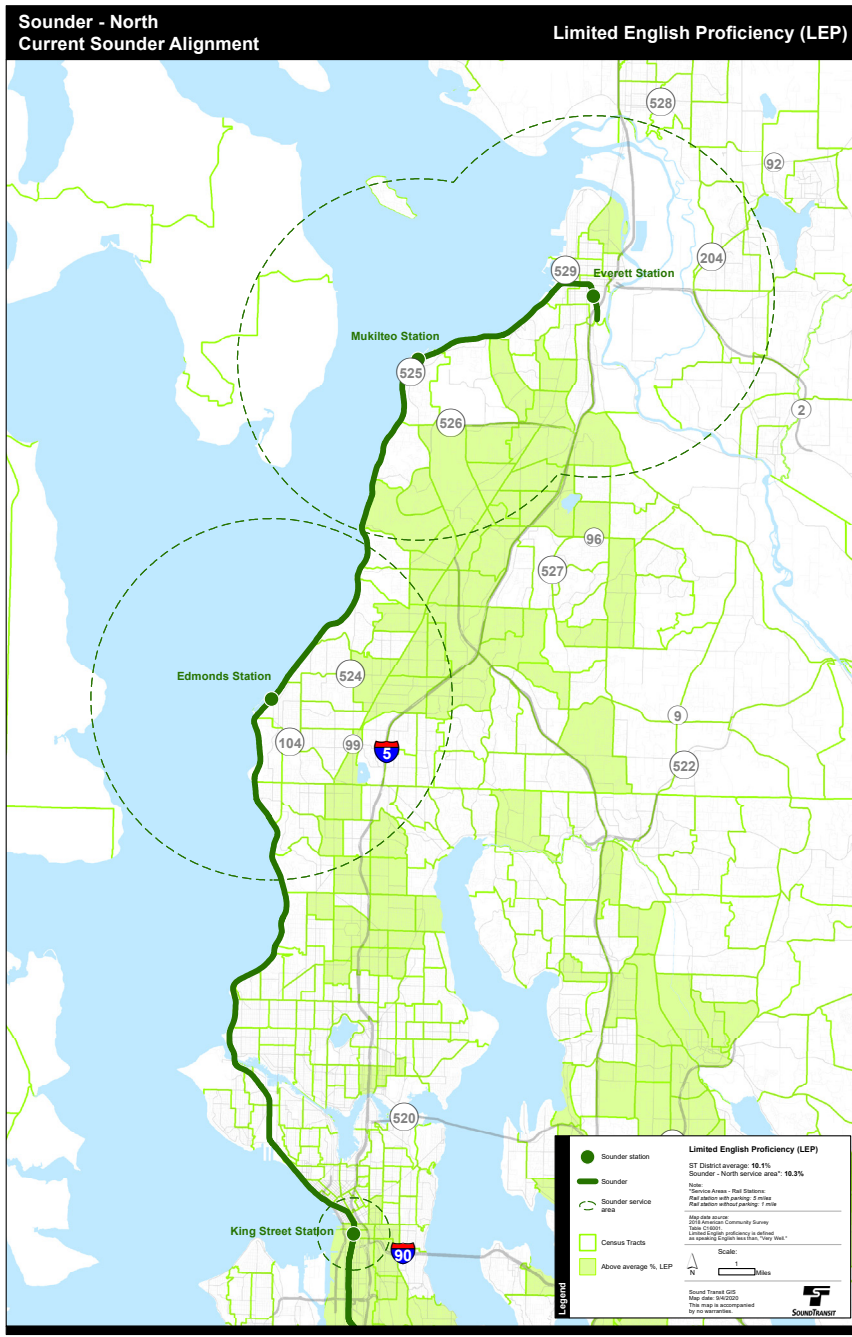
The low income population of the impacted area at 17.5% is greater than the Sound Transit district average of 16.4%. Therefore, there is a determination of disproportionate burdens. The minority population is lower (35.0%) than the district average of 39.7%, resulting in no disparate impact.

Conclusion

This service change has impacts to passengers who originally used those trips. Customers could choose to use ST Express or Community Transit commuter bus service which also serve similar travel markets between downtown Seattle and Snohomish County.

We will continue to analyze ridership patterns and propose service changes to respond to ridership changes.





Sounder South Service Reduction

Sounder South provides peak hour commuter rail service between Seattle and Lakewood/Tacoma during weekdays. 8 round trips on the Sounder South Line were suspended due to Covid-19 budget impacts. With Customershipridership increases less likely to occur due to the global health crisis, we are looking to carry over the suspension of t 2021. Operating at this level results in a reduction of 26.5% of weekly platform hours compared the March 2020 baseline, which exceeds the 25% major service change threshold.

Passenger Impacts

Sounder North has always had a significantly smaller operating schedule than its Sounder South counterpart. Customers can use several ST Express Routes to or from Seattle and Lakewood, Tacoma, and many other cities in Pierce and southern King Counties. These changes will save operating expenses and use resources more efficiently due to financial impacts of the COVID-19 pandemic.

Area	Minority	Low Income	LEP
Sounder South	46.0%	21.0%	12.1%
District Average	39.7%	16.4%	10.1%

Maps showing percentages of minority, low-income, and LEP populations in the Sounder South service area by census tract can be found after the text in this section.

Alternative Concept Considered

Cutting unproductive times while preserving span

- As Sounder service is operated by BNSF on mostly BNSF-Owned track, it is harder to implement service improvements. Any change in service, particularly around increasing trips would mean increasing crew. This would prove a significant cost to Sound Transit and re-negotiating contract with BNSF to ensure new crew is hired and trained to operate Sounder service.

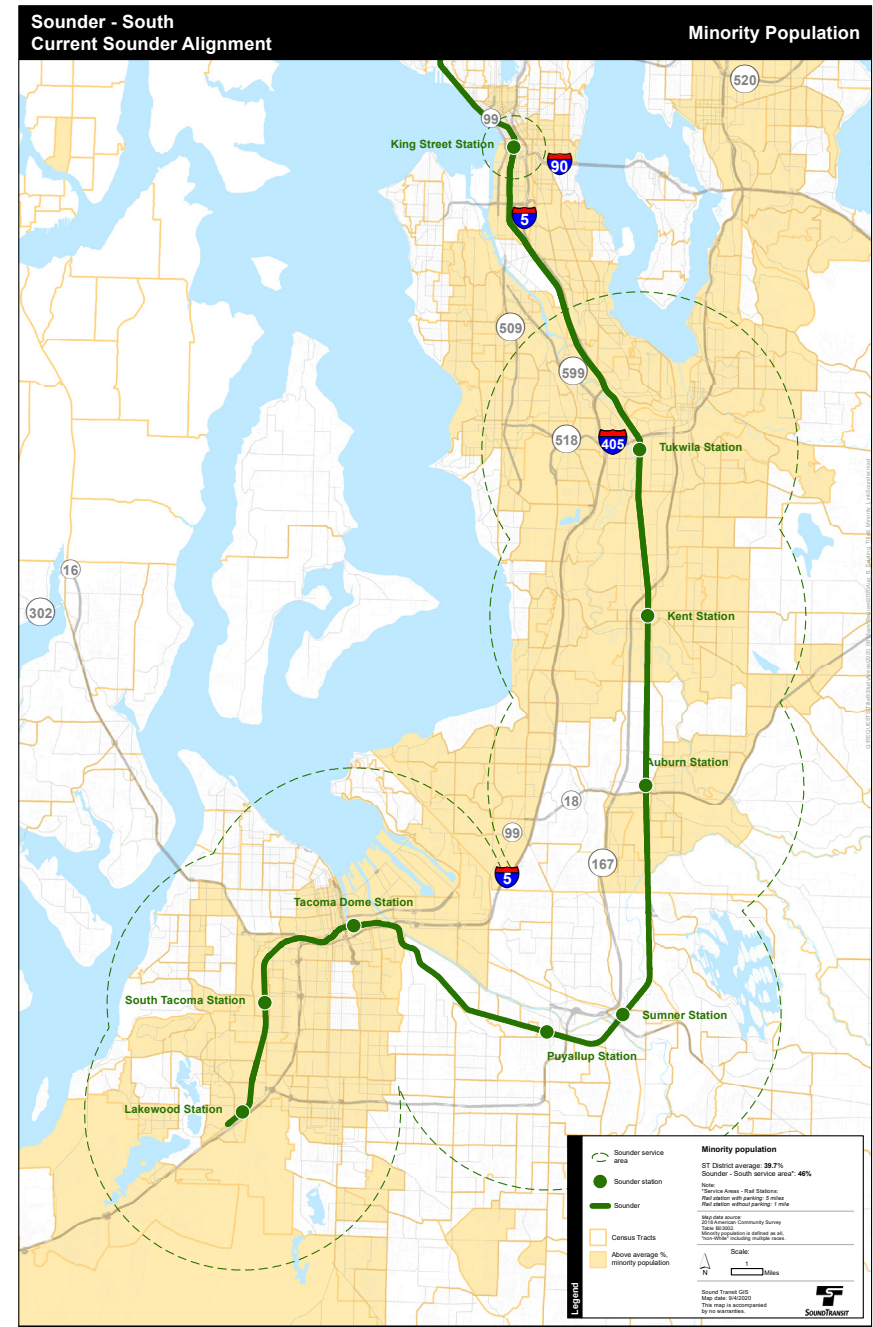
Findings

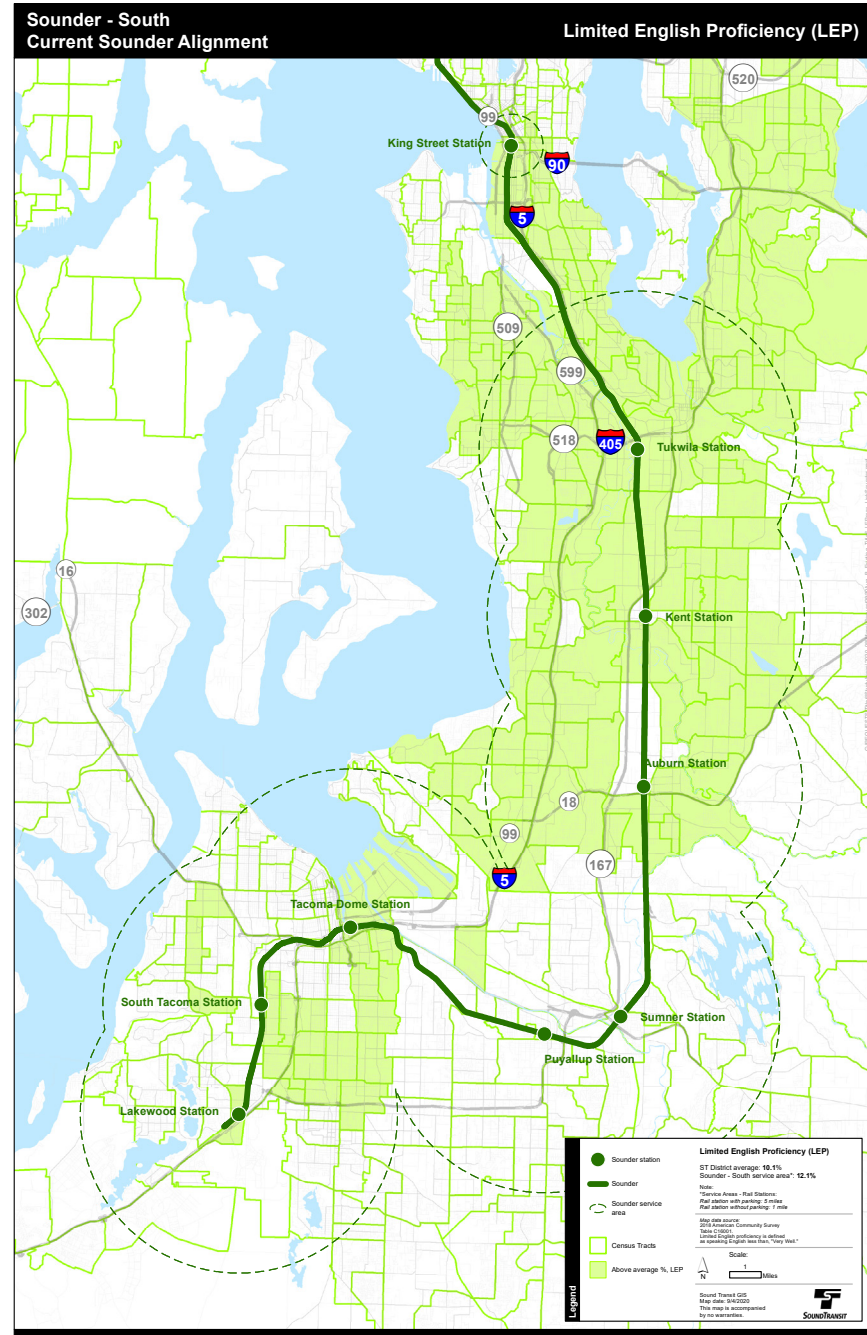
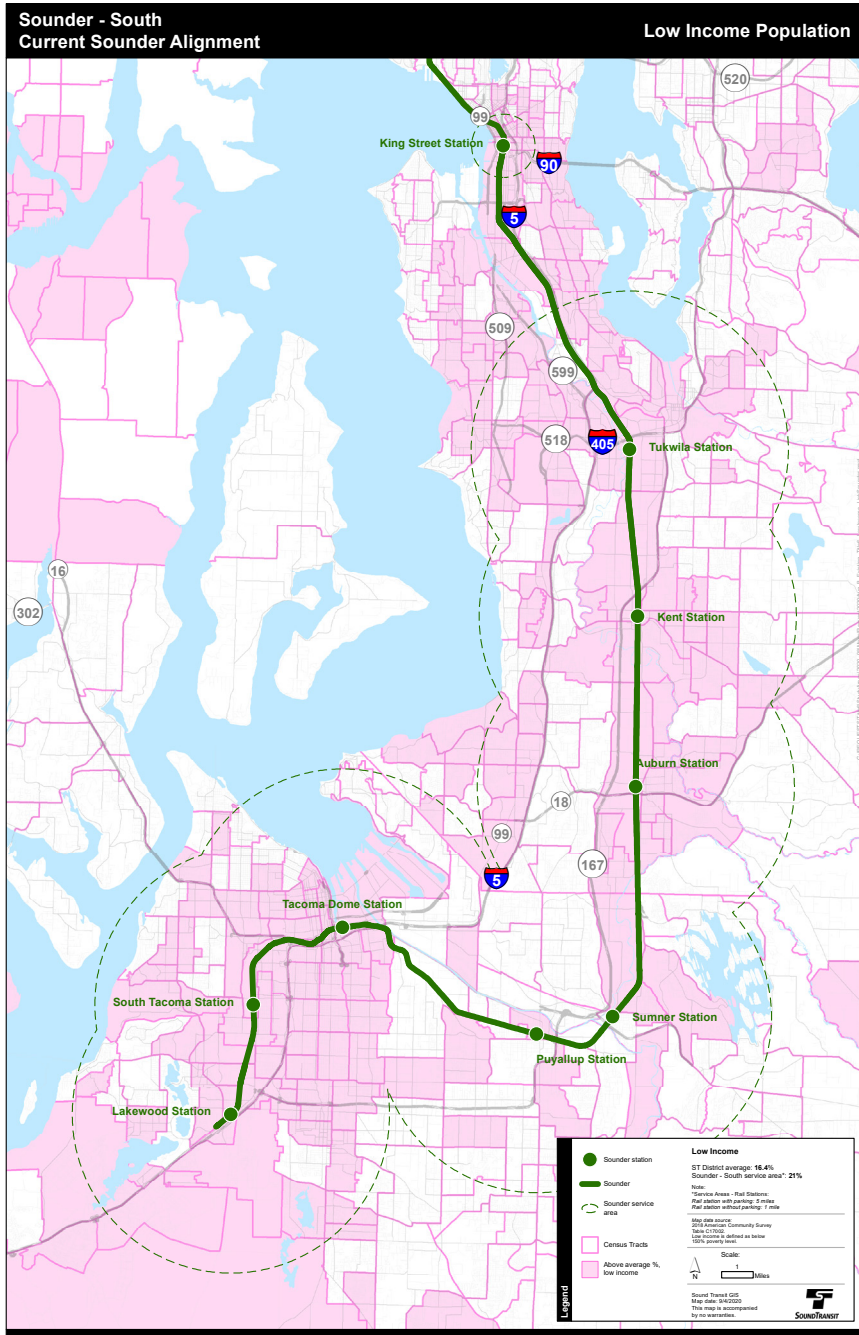
The low income population of the impacted area at 17.5% is greater than the Sound Transit district average of 16.4%. Therefore, there is a determination of disproportionate burdens. The minority population is also higher (46.0%) than the district average of 39.7%, resulting in a disparate impact.

Conclusion

This service change has impacts to passengers who originally used those trips. Customers could choose to use ST Express or Community Transit commuter bus service which also serve similar travel markets between downtown Seattle and Snohomish County.

We will continue to analyze ridership patterns and propose service changes to respond to ridership changes.





Link Northgate Extension, Service Reduction

Link Light Rail provides all day, bi-directional rail service between Seattle's U-District and Angle Lake 7 days a week. Link will be extending by three station to now terminate at what will be known as Northgate Station (currently Northgate Transit Center). However, due to COVID-19 budget impacts, Link service will continue to operate below the March 2020 baseline. Trains will run every 8 minutes during peak periods, every 15 minutes during midday and every 30 min during late nights.

With significant ridership increases less likely to occur we originally proposed to carry over this frequency through 2021. Because this was both a reduction of the route's platform hours by more than 25% and the addition of three new stations, this a major service change that needs further analysis.

Adverse Effects

Customers will have a quicker commute to northern King County and through neighborhoods north of University of Washington. With the opening of the new stations comes the truncation of several ST Express routes, including 511, 512, 513 and 522. This effectively eliminates a one seat ride for those coming south from Snohomish County. These changes will save operating expenses and use resources more efficiently due to financial impacts of the COVID-19 pandemic.

Passenger Impacts

Link is classified as a Minority Route because the fraction of the current route's service area population exceeds the district average of 39.7% as shown in the table on the right. Link is classified as Low Income Route because the fraction of the current route's service area population exceeds the district average of 16.4%. This major service change is considered a

disparate impact and a disproportionate burden. With the opening of new stations in less diverse neighborhoods, further analysis is warranted to ensure

Area	Minority	Low Income	LEP
Existing Link	54.8%	23.0%	16.1%
Link with Northgate Extension	42.6%	19.2%	11.7%
District Average	39.7%	16.4%	10.1%

Maps showing percentages of minority, low-income, and LEP populations in the Link service area by census tract with associated route and stop additions can be found after the text in this section.

Alternative Concepts Considered

No reduction; full service levels restored from April 2020

- This could present sense of normalcy and much more frequent travel times, both cornerstones of a positive passenger experience. However, this could create several operation imbalances.
- The hours that would be used would likely come from ST Express bus service; if buses are running less frequently to connect to a high frequency line, there would not be much usability in ST Express services.

Operate 10 min all day service

This concept does not require any additional vehicles beyond the existing service proposal, but does require additional operators and would increase costs from additional vehicle maintenance and power consumption.

Operate 12 min all day service

This concept would be cost neutral with what was originally proposed, but could result in overcrowding during peak periods.

Delay opening of Northgate Extension

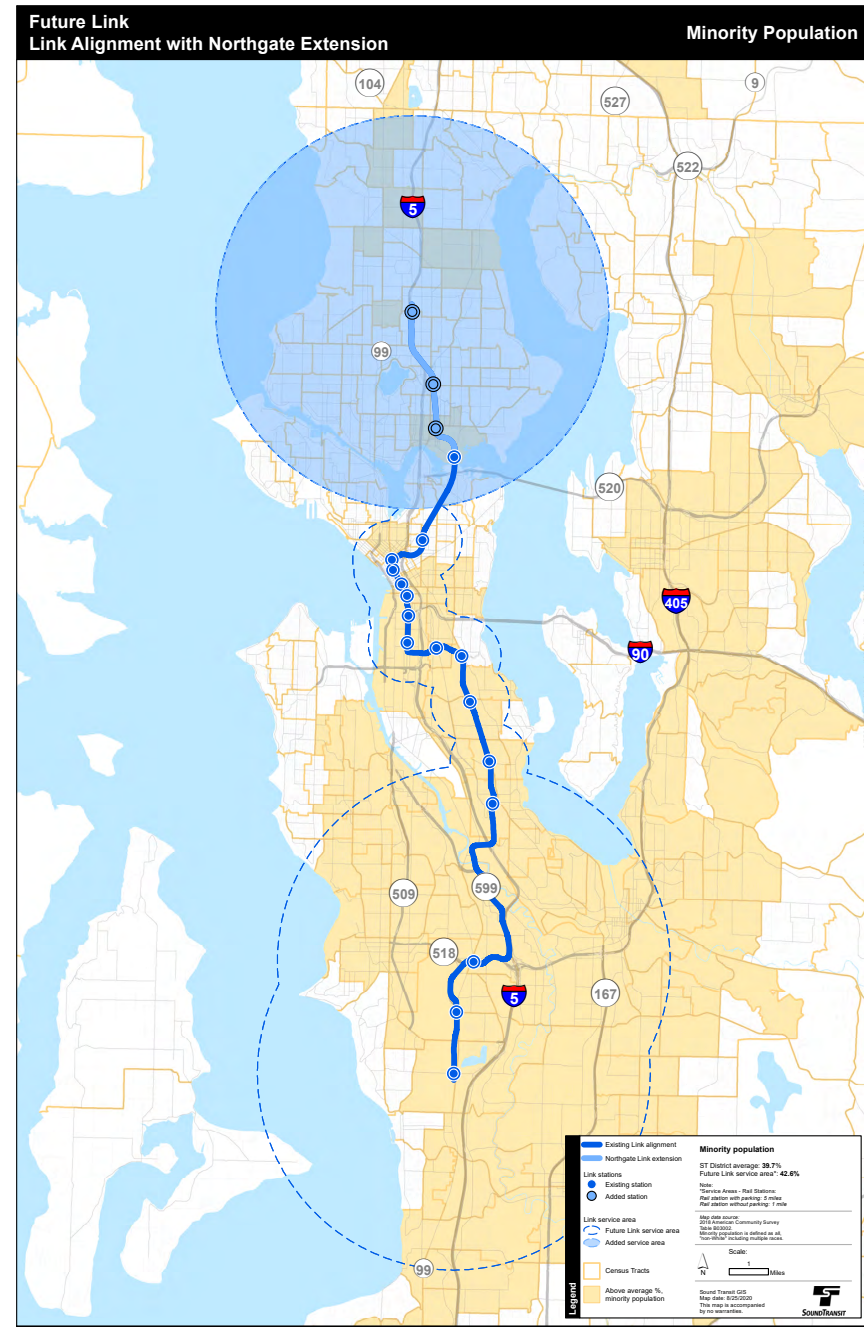
This would return service originally set to truncate at Northgate to run full length to downtown Seattle (Routes 510 through 513 and Route 522). This would create a larger financial issue in addition to recovering from the fiscal impacts of Covid-19. Passengers would experience similar travel times comparable to those pre-Covid for service from Snohomish and north King County to Downtown Seattle, which would be counter-productive to the purpose of extending Link north.

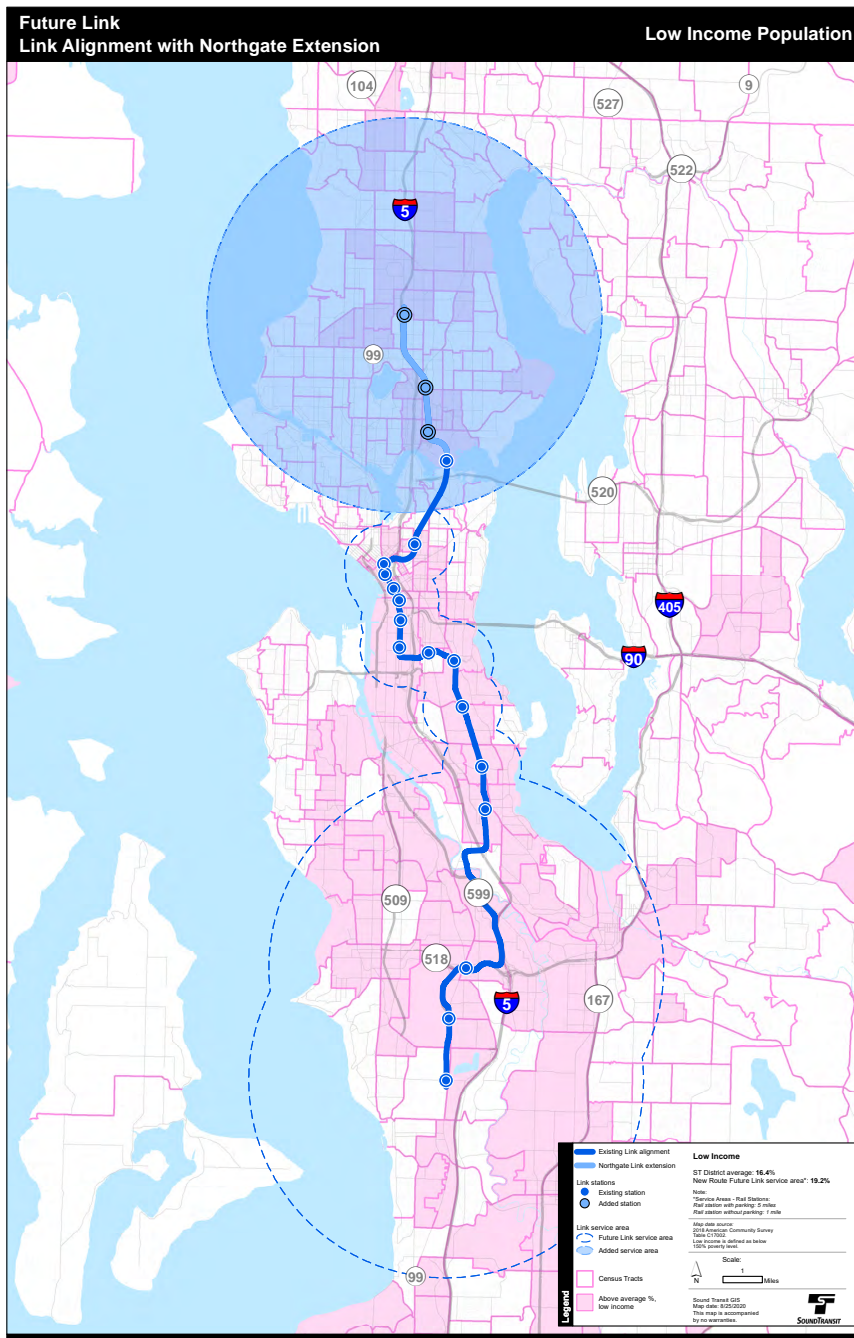
Survey Feedback

Survey respondents strongly advocated for improved service frequency during late evenings where connections between infrequent services would be hard to overcome. Additionally, survey responses criticized the lack of the former 10-minute service levels during the midday and on weekends with the opening of the Northgate Link extension.

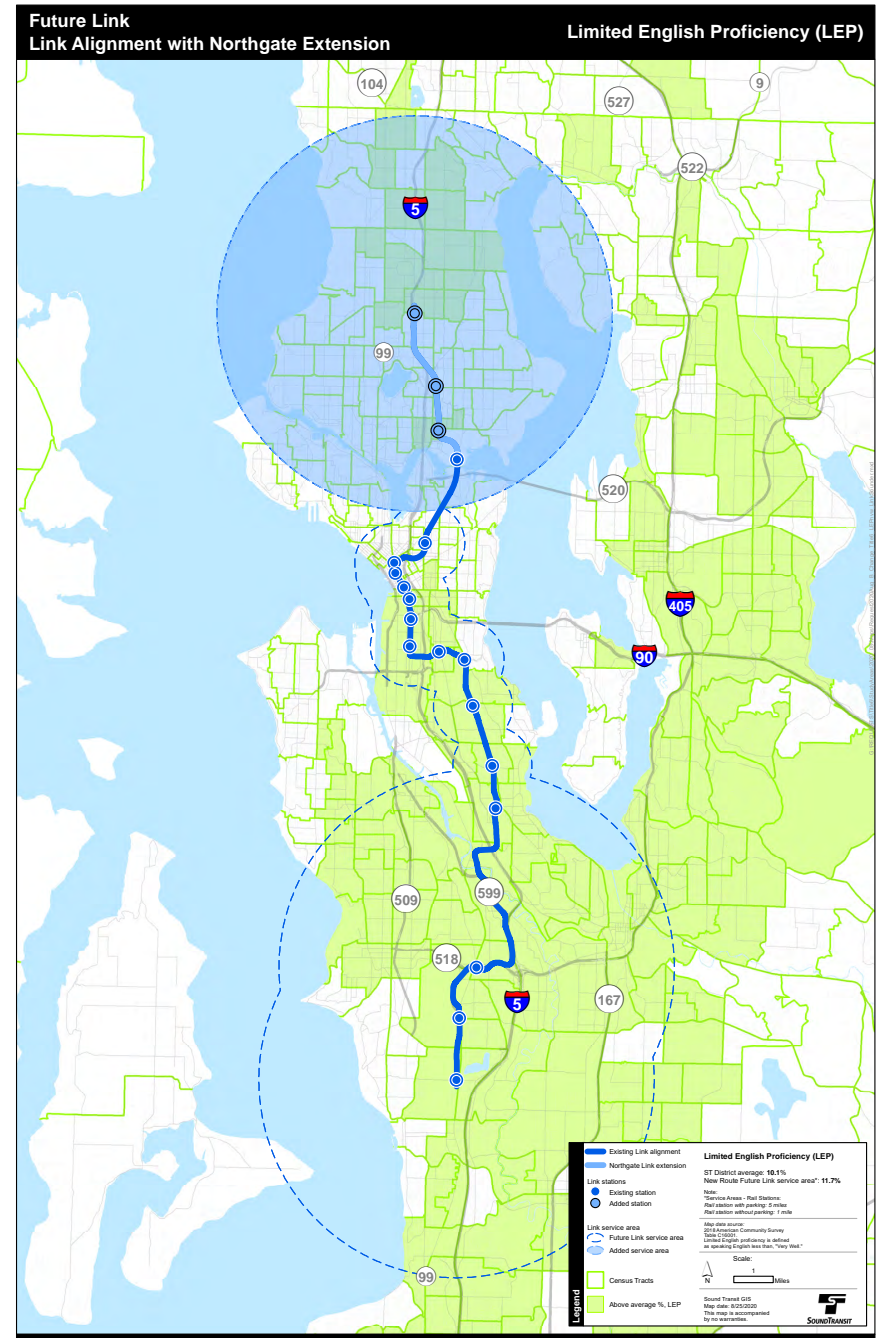
Conclusion

Service will remain at every 8 minutes during peak periods which is a reasonable balance between cost reductions and providing sufficient capacity during peak periods. The survey responses provided along with the impacts to minority and low income neighborhoods resulted in an adjustment of the service proposal to operate every 10 minutes during the midday and on weekends, and to improve late evening service to every 15 minutes.





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Draft fare equity analysis of ST Express service changes with opening of Northgate Link Extension

Description of fare changes

Regular adult fares on Link light rail are established by a distance-based policy last updated in November 2014. (Sound Transit Board of Directors Resolution R2014-28)

Although the existing fare structure will apply to riders using the three new stations, the new light rail segment and associated proposed changes in bus service will alter some passengers' rides and how they pay their fares. Sound Transit proposes truncating service on Routes 511, 512 and 513 at the new Link light rail station at Northgate, and service on Route 522 at the new Roosevelt Link station, to better coordinate services. This will require those passengers who previously made their trips solely by ST Express service on these routes to transfer between ST Express bus service and Link light rail. For certain passengers, the transfer introduced by these service changes and the light rail extension will create a change in the fare they pay.

Link fare policy and rates

All central Puget Sound transit services utilize One Regional Card for All (ORCA). Payment for transit fare through ORCA can be made using "E-Purse" (debit) or a pass product. Pass products are associated with a one-way fare value. For the purposes of this analysis, seven fare types are considered: Adult cash/ticket, adult ORCA, adult low-income ORCA ("ORCA LIFT"), Regional Reduced Fare Permit (RRFP) cash/ticket and ORCA, and youth cash/ticket and ORCA. RRFP ORCA permits are available to seniors (65+ years old) and persons with qualifying disabilities. RRFP cardholders may use their RRFP cards in the same way as an ORCA card, or may present the card to validate a cash/ticket payment at the RRFP fare rate. Riders aged 6-18 are eligible for youth fare, which can be paid through ORCA or cash/tickets with ID.

Per Sound Transit Board Resolution R2014-28 in November 2014, rates were adjusted so that the adult one-way base fare for Link light rail was set at \$2.25, with a flat, \$1.50 fare for low-income adults paying with an ORCA LIFT card. For full-fare adult one-way trips, a per-mile charge of \$0.05, rounded up or down to the nearest \$0.25, is added to the base fare to determine the fare for any given pair of stations. ORCA LIFT, youth and RRFP fares are flat rates (not distance-based). The current and future one-way Link light rail fares for pre- and post-extension are shown in Tables 1 and 2.

Table A-5 shows regular adult one-way fares. The yellow-shaded cells show the fares for trips originating or ending in the new stations. As shown in Table A-5, the fares for the existing alignment range from \$2.25 to \$3.25. The base one-way full adult fare for the new stations is \$2.25, the same cost as the base one-way adult fare for the existing stations. A trip for the entire length of the line will be \$3.50. This is \$0.25 higher than the current maximum fare because of the 4.3-mile extension from UW to Northgate. Table A-6 shows current and future one-way fares for reduced-fare passengers (ORCA LIFT, youth, RRFP-senior/disabled), which are not distance-based and will not change after the opening of the light rail extensions. Table A-7 shows ST Express bus fares for all passenger categories.

Table A-5: Current and future one-way adult fares for Link light rail

	Northgate	Roosevelt	U District	University of Washington	Capitol Hill	Westlake	University St.	Pioneer Square	International District	Stadium	SODO	Beacon Hill	Mt. Baker	Columbia City	Othello	Rainier Beach	Tukwila Int'l. Blvd.	SeaTac / Airport	Angle Lake
Northgate		\$2.25	\$2.50	\$2.50	\$2.50	\$2.75	\$2.75	\$2.75	\$2.75	\$2.75	\$2.75	\$2.75	\$2.75	\$3.00	\$3.00	\$3.00	\$3.25	\$3.50	\$3.50
Roosevelt	\$2.25		\$2.25	\$2.25	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.75	\$2.75	\$2.75	\$2.75	\$3.00	\$3.00	\$3.25	\$3.25	\$3.25
U District	\$2.50	\$2.25		\$2.25	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.75	\$2.75	\$2.75	\$2.75	\$3.00	\$3.25	\$3.25	\$3.25
University of Washington	\$2.50	\$2.25	\$2.25		\$2.25	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.75	\$2.75	\$2.75	\$3.00	\$3.25	\$3.25
Capitol Hill	\$2.50	\$2.50	\$2.50	\$2.25		\$2.25	\$2.25	\$2.25	\$2.25	\$2.25	\$2.25	\$2.50	\$2.50	\$2.50	\$2.50	\$2.75	\$3.00	\$3.00	\$3.00
Westlake	\$2.75	\$2.50	\$2.50	\$2.50	\$2.25		\$2.25	\$2.25	\$2.25	\$2.25	\$2.25	\$2.25	\$2.50	\$2.50	\$2.50	\$2.50	\$3.00	\$3.00	\$3.00
University St.	\$2.75	\$2.50	\$2.50	\$2.50	\$2.25	\$2.25		\$2.25	\$2.25	\$2.25	\$2.25	\$2.25	\$2.50	\$2.50	\$2.50	\$2.50	\$3.00	\$3.00	\$3.00
Pioneer Square	\$2.75	\$2.50	\$2.50	\$2.50	\$2.25	\$2.25	\$2.25		\$2.25	\$2.25	\$2.25	\$2.25	\$2.50	\$2.50	\$2.50	\$2.50	\$3.00	\$3.00	\$3.00
International District	\$2.75	\$2.50	\$2.50	\$2.50	\$2.25	\$2.25	\$2.25	\$2.25		\$2.25	\$2.25	\$2.25	\$2.50	\$2.50	\$2.50	\$2.50	\$3.00	\$3.00	\$3.00
Stadium	\$2.75	\$2.50	\$2.50	\$2.50	\$2.25	\$2.25	\$2.25	\$2.25	\$2.25		\$2.25	\$2.25	\$2.25	\$2.25	\$2.50	\$2.50	\$2.75	\$3.00	\$3.00
SODO	\$2.75	\$2.75	\$2.50	\$2.50	\$2.25	\$2.25	\$2.25	\$2.25	\$2.25	\$2.25		\$2.25	\$2.25	\$2.25	\$2.50	\$2.50	\$2.75	\$2.75	\$3.00
Beacon Hill	\$2.75	\$2.75	\$2.75	\$2.50	\$2.50	\$2.25	\$2.25	\$2.25	\$2.25	\$2.25	\$2.25		\$2.25	\$2.25	\$2.50	\$2.50	\$2.75	\$2.75	\$3.00
Mt. Baker	\$2.75	\$2.75	\$2.75	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.25	\$2.25	\$2.25		\$2.25	\$2.25	\$2.50	\$2.75	\$2.75	\$3.00
Columbia City	\$3.00	\$2.75	\$2.75	\$2.75	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.25	\$2.25	\$2.25	\$2.25		\$2.25	\$2.25	\$2.50	\$2.75	\$2.75
Othello	\$3.00	\$3.00	\$2.75	\$2.75	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.25	\$2.25		\$2.50	\$2.50	\$2.75	\$2.75
Rainier Beach	\$3.00	\$3.00	\$3.00	\$2.75	\$2.75	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.25	\$2.25		\$2.50	\$2.50	\$2.75
Tukwila Int'l. Blvd.	\$3.25	\$3.25	\$3.25	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$2.75	\$2.75	\$2.75	\$2.75	\$2.50	\$2.50	\$2.50		\$2.25	\$2.50
SeaTac / Airport	\$3.50	\$3.25	\$3.25	\$3.25	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$2.75	\$2.75	\$2.75	\$2.75	\$2.75	\$2.50	\$2.25		\$2.25
Angle Lake	\$3.50	\$3.25	\$3.25	\$3.25	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$2.75	\$2.75	\$2.75	\$2.50	\$2.25	

Table A-6: Current and future fares for reduced-fare passengers for Link light rail

Customer Fare Category	Current Fare (before Northgate Opens)	Future Fare (after Northgate opens)
Low-income adult (ORCA LIFT)	\$1.50	\$1.50
Youth (6-18 years old)	\$1.50	\$1.50
Senior/Disabled with Regional Reduced Fare Permit	\$1.00	\$1.00

Table A-7: ST Express Fares

Customer Fare Category	Fare
Adult Fare	\$3.25
Low-income adult (ORCA LIFT)	\$1.50
Youth (6-18 years old)	\$1.50
Senior/Disabled with Regional Reduced Fare Permit	\$1.00

Current Sound Transit fare policy grants a two-hour transfer credit among different Sound Transit modes (light rail, express bus, and commuter rail) and between Sound Transit and ORCA partner transit agency services for passengers using ORCA. Those paying with cash or mobile tickets do not receive transfer credits.

Data set description and technique used to collect data

The data used in this analysis are from an origin-destination (O-D) survey conducted onboard ST Express bus routes which are planned to terminate at the Northgate or Roosevelt Link stations with the opening of the Northgate Link extension – routes 511, 512, 513 and 522. These surveys were conducted in the first quarter of 2019, during weekdays for all time periods, using paper surveys offered to every rider for sampled trips. Survey workers remained onboard during the entire trip or portion of the trip surveyed. Passengers could return surveys to the survey workers or by postage-paid return mail.

Overall, the survey included responses from about 9,500 ST Express riders (representing 19% of average weekday boardings, with a 43% response rate), including about 1,900 ST Express riders surveyed on routes that will terminate at light rail stations (19% of average weekday boardings, 41% response rate). Data were weighted to represent average weekday boardings at the route level.

For this analysis, low income is defined as at or below 200% of the Federal poverty level, the same threshold used to qualify passengers for the ORCA LIFT (low-income fare) program. Table A-8 below describes the household size and income thresholds used to classify respondents as low income for this analysis.

Table A-8: Household size and income to qualify for ORCA LIFT

Household size	Annual household income
1	\$24,972
2	\$33,816
3	\$42,660
4	\$51,492
5+	\$60,300

As described earlier, Sound Transit policy calls for a comparison of the impacts of a fare change on minority and low-income populations to the population of Sound Transit's service area. The service area numbers used in this report are derived from the American Community Survey, 2018.

Fare media analysis

Table A-9 on the next page shows the number and percent of minority and low-income riders in each passenger category paying cash or using ORCA from the O-D survey effort described above. As also noted above, the counts are representative of data weighted to average weekday ridership for the routes of focus here.

The survey data indicate there are greater percentages of minority riders on the routes to be terminated than in the ST service area for the following passenger categories: 1) full-fare adult riders using ORCA fare payment, 2) ORCA LIFT riders, 3) RRFP riders using ORCA, and youth riders using ORCA. The survey data also indicate there is a greater percentage of youth riders using ORCA on these routes who are low-income than the percentage of all low-income riders in the service area as a whole, though the total sample of youth riders is quite small.

The survey data on fare payment type by passenger type shows no minority and low-income riders surveyed who currently pay cash on impacted routes. The large majority of adult riders use ORCA. Survey results also show the vast majority of riders are full-fare adult, with few ORCA LIFT, RRFP and youth riders. The survey also yielded no RRFP and youth riders paying cash.

Table A-9. Current fare type usage by minority and low-income passengers on ST Express routes to be terminated at light rail stations

Fare Type	Percent				Count			
	Minority	Non-minority	Low income	Non- low income	Minority	Non-minority	Low income	Non- low income
Adult cash/ticket	0%	100%	0%	100%	-	15	-	15
Adult ORCA	32%	68%	16%	84%	1,619	3,384	800	4,203
ORCA LIFT	50%	50%	81%	19%	111	110	180	42
RRFP cash	NA	NA	NA	NA	-	-	-	-
RRFP ORCA	25%	75%	31%	69%	95	284	117	262
Youth cash	NA	NA	NA	NA	-	-	-	-
Youth ORCA	63%	37%	73%	27%	33	19	38	14
Total	32%	68%	20%	80%	1,858	3,812	1,135	4,536
ST service area	23%	77%	40%	60%				

Disparate impact/disproportionate burden

As noted above, Sound Transit provides a discounted flat fare for low-income adult passengers via the ORCA LIFT fare. Sound Transit's flat-rate discounted fares for youth, seniors and disabled riders also provide a discounted fare for low-income riders in these passenger categories. These discounted fares are the same on ST Express and Link. Since ORCA provides transfer credits, riders in these fare categories paying with ORCA cards will see no fare change when transferring between ST Express service and Link.

Table A-10. New fares for current ST Express bus passengers terminating at Northgate Link

Fare type	Fare			Change			
	Existing	Proposed (low)	Proposed (high)	\$ change (low)	\$ change (high)	% change (low)	% change (high)
Adult cash/ticket	\$3.25	\$5.75	\$6.00	\$2.50	\$2.75	77%	85%
Adult ORCA	\$3.25	\$3.25	\$3.25	-	-	0%	0%
ORCA LIFT	\$1.50	\$1.50	\$1.50	-	-	0%	0%
RRFP cash	\$1.00	\$2.00	\$2.00	\$1.00	\$1.00	100%	100%
RRFP ORCA	\$1.00	\$1.00	\$1.00	-	-	0%	0%
Youth cash	\$1.50	\$3.00	\$3.00	\$1.50	\$1.50	100%	100%
Youth ORCA	\$1.50	\$1.50	\$1.50	-	-	0%	0%

As Table A-10 shows, route termination at light rail stations will only affect fares for cash riders in each category. ORCA riders will see no impact. Since the survey yielded no cash minority or low-income cash riders on these routes, this analysis shows no disparate impacts on minority passengers and no disproportionate impacts on low-income passengers.

The results of this analysis are summarized in Table A-11.

- If the percentage of minority or low-income riders in a passenger category is less than the ST service area average, there is no disparate impact or disproportionate burden.
- The percentage of minority riders on these routes was higher than the average for the ST service area for full-fare adult ORCA, ORCA LIFT, RRFP ORCA and youth ORCA riders.
- The percentage of low-income riders on these routes was higher than the ST service area average for ORCA LIFT riders.
- With none of these fare categories experiencing a fare change from the termination of these routes and transferring to Link at Northgate, there is no disparate impact/disproportionate burden.

Table A-11: Summary – Disparate impact / disproportionate burden

Fare type	% Greater than ST Service Area Average		Fare Change?		Disproportionate Impact / Disparate Burden	
	Minority	Low-income	Minority	Low-income	Minority	Low-income
Adult cash/ticket	No	No			No	No
Adult ORCA	Yes	No	No		No	No
ORCA LIFT	Yes	Yes	No	No	No	No
RRFP cash	No	No			No	No
RRFP ORCA	Yes	No	No		No	No
Youth cash	No	No			No	No
Youth ORCA	Yes	No	No		No	No

Fare impact mitigation

The onboard surveys identified very few adult cash riders and no youth or RRFP riders on the ST Express routes planned to terminate at Northgate. The Title VI analysis identified no disparate impact or disproportionate burden. However, there will be impacts on current cash riders whose current one-seat bus ride will be replaced by a two-seat (and two-fare) ride involving a transfer between bus and light rail. To mitigate these impacts, Sound Transit will be working to make it easy for cash riders to convert to using ORCA cards for fare payment. With ORCA, riders will receive full transfer value between modes and won't pay increased fares.

Sound Transit will work to provide ORCA cards to cash-paying riders transferring between bus and light rail during the first few weeks of Link service. To assist cash riders in converting to ORCA, Sound Transit will provide cards pre-loaded with E-purse value or passes. The agency will also continue its ongoing marketing campaign to promote the ORCA LIFT program for low-income riders. Sound Transit will continue loading E-purse incentives on ORCA LIFT cards for those who qualify for this program.

Finally, Sound Transit will work with King County Metro and Public Health

staff who will also be onsite at the new stations actively enrolling riders for reduced fare, youth and ORCA LIFT discounted fare programs. We'll also provide passengers who are new to ORCA with information on how to use the card and how and where to load value, including online, at retailers and at ticket machines at Link stations.

We'll also promote an extensive public outreach campaign to highlight ORCA's benefits and ensure passengers are aware that paying by cash will require two separate fares for any transfer trips following the service change.