

East Glisan Street Update

Phase 1 Evaluation Report



PBOT
PORTLAND BUREAU OF TRANSPORTATION

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EAST GLISAN STREET UPDATE



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East Glisan Street Update Phase 1 Evaluation Report December 2020



What is the East Glisan Street Update?

The aim of the East Glisan Street Update is to achieve goals articulated by the community and City Council to improve street safety, provide multimodal options, and improve access to opportunity (access to jobs, parks, libraries, transit, etc).

The East Glisan Street Update covers NE Glisan Street from NE 102nd to 162nd avenues. This project includes updating how space is allocated on NE Glisan (street reconfiguration), new crossings, and sidewalk and curb ramp improvements in some locations.

Phase 1 (2019):

- Street reconfiguration between NE 122nd to 162nd avenues with a center turn lane, a vehicle lane in each direction, parking protected bike lanes, and two vehicle lanes in each direction at signals.

- Marked crosswalk with rapid flashing beacon at NE 128th Avenue in front of Menlo Park Elementary School.

Phase 2 (2020-2021):

- Street reconfiguration between NE 102nd and 122nd avenues with two vehicle lanes and a buffered bike lane eastbound, a center turn lane, and one vehicle lane with parking protected bike lanes westbound.
- Pedestrian hybrid beacons at NE 108th, 155th, and 113th avenues for safer crossings.

New to the East Glisan Street Update?

Learn more about the planning goals and objectives and about what's coming next by visiting the project website.

<https://www.portland.gov/transportation/East-Glisan>

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PHASE 1 EVALUATION

Phase 1 of the East Glisan Street Update new lane configuration was implemented by PBOT crews in August and September 2019. The new crossing near NE 128th Avenue in front of Menlo Park Elementary School was built out by contractors August 2019 to January 2020.

Throughout February 2020, PBOT collected safety and traffic data on NE Glisan Street and nearby neighborhood streets in accordance with the evaluation guide. The data included:

- Speed data on NE Glisan Street
- Transit travel time and reliability
- Vehicle travel time
- Speed and volume on nearby neighborhood streets

The following report offers a preview of the data collected, analysis, and conclusions. For more complete datasets, please see the appendix.

A NOTE ON CORONAVIRUS

The coronavirus pandemic was first detected in Oregon in late February of 2020. Since that time it has impacted the health and well-being of many of our community members in Portland and beyond. To combat the virus, many restrictions have been imposed since March 2020 that have had significant impacts on travel patterns throughout the city. All speed, volume, and travel time data reported in this evaluation was collected before March 2020 and before any restrictions that impact daily travel.

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KEY FINDINGS

The data collected shows an overall improvement in safety measures. Vehicle speeds on NE Glisan Street are lower, with the most drastic reduction noted among the most dangerous behavior of top-end speeding. The street better meets guidelines for pedestrians, people biking, and people taking transit.

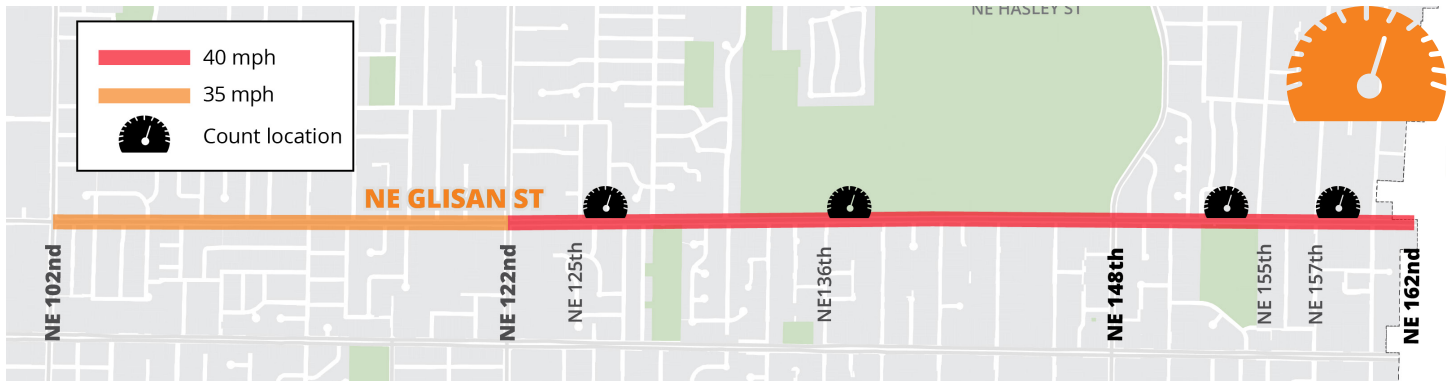
The data does not show significant changes to travel times for TriMet buses, only a slight increase in the westbound direction and a somewhat larger transit peak delay in the eastbound direction during the evening peak period. Travel time for all vehicles also remained roughly the same, with the exception of increases up to 30 seconds during the evening peak period, and some increases for the slowest traveling vehicles. These increases are smaller than what was predicted by models run by PBOT before the project.

The data does not show any significant changes to volumes or speeds on nearby neighborhood streets.



Crossing in front of Menlo Park Elementary School under construction.

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SPEED ON NE GLISAN STREET

Key findings: Top-end speeding decreased drastically on NE Glisan Street. Median and prevailing speeds also decreased, especially near NE 125th Avenue.

One of the primary goals of the East Glisan Street Update is to reduce vehicle speeds along the corridor.

PBOT measured speed at four locations on NE Glisan Street: east of NE 125th Avenue, east of NE 136th Avenue, west of NE 155th Avenue, and east of NE 157th Avenue. Pre-project counts were held at various times in 2018, and post-project counts in February 2020.

Three speed measures were evaluated:

- **Median speed (50th percentile):** Half of drivers travel faster than this speed, and half travel slower.
- **Prevailing speed (85th percentile):** 85% of drivers travel at or below this speed. It is a standard engineering measure.
- **Top-end speeders:** Percent of drivers traveling 10 mph or more over the speed limit.

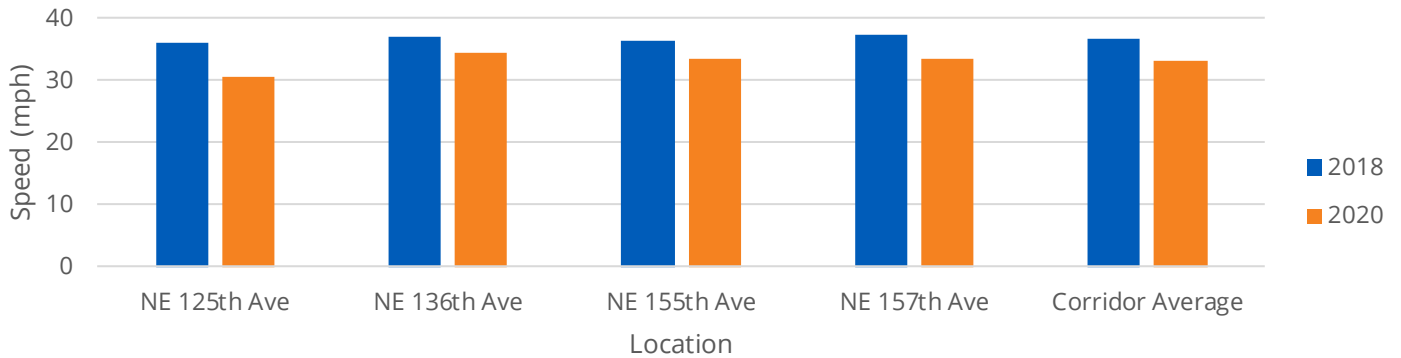
	Median Speed	Prevailing Speed	Top-End Speeders
NE 125th Avenue	15.3% ↓	12.7% ↓	87.9% ↓
NE 136th Avenue	6.8% ↓	8.2% ↓	87.0% ↓
NE 155th Avenue	8.2% ↓	4.8% ↓	33.3% ↓
NE 157th Avenue	10.7% ↓	7.1% ↓	60.0% ↓

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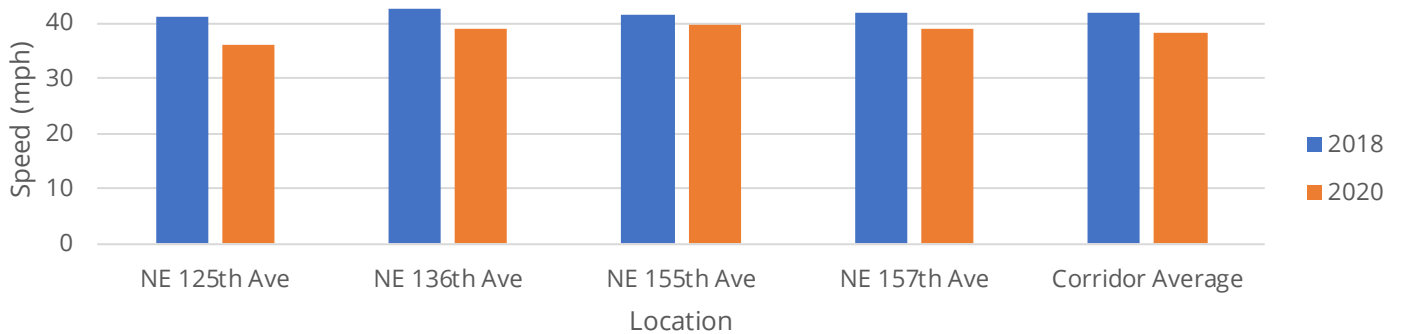
CHANGE IN SPEED ON NE GLISAN STREET

Median speed, prevailing speed, and top-end speeding all decreased throughout the NE Glisan Street Update project area. The greatest decreases occurred near NE 125th Avenue. Top-end speeding decreased drastically throughout the project area.

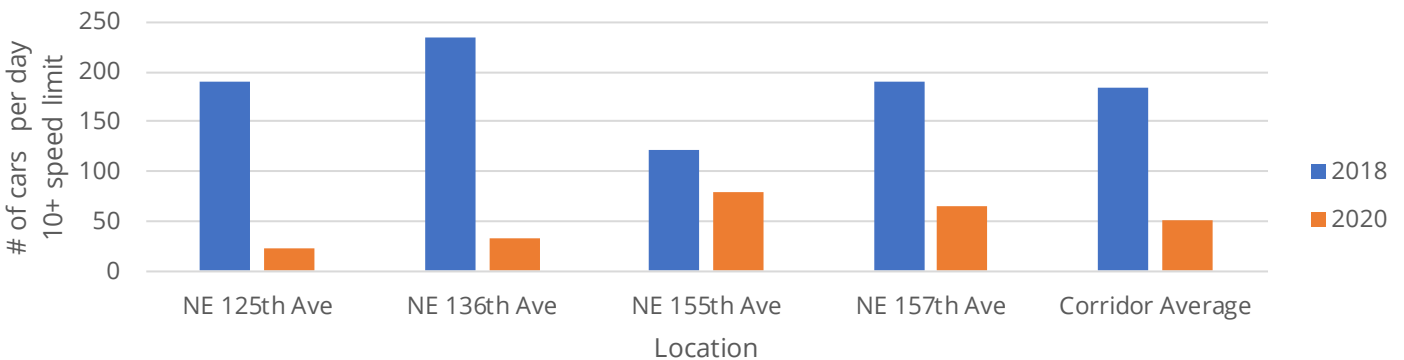
Median Speed

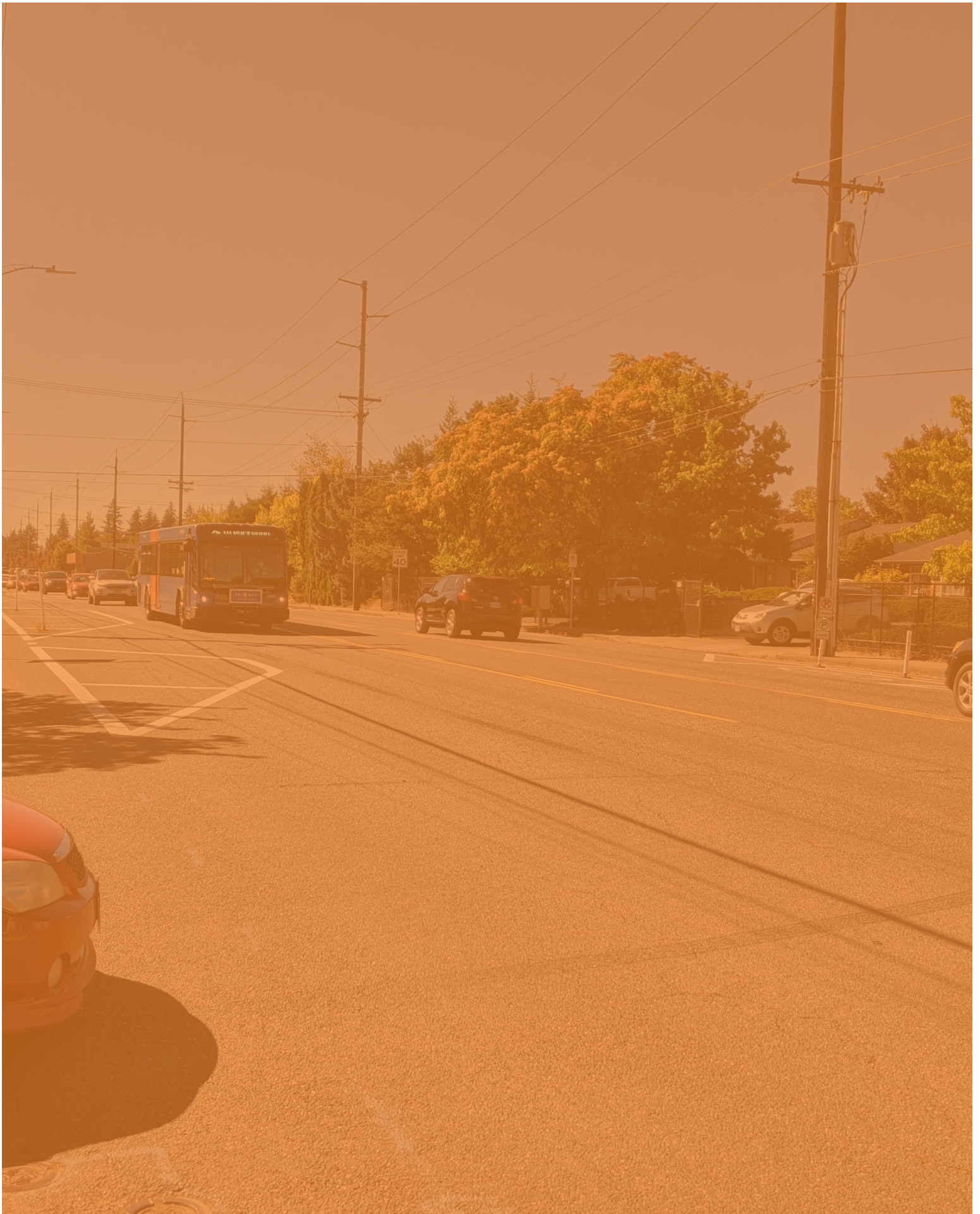


Prevailing Speed



Top-End Speeders





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TRANSIT TRAVEL TIME AND RELIABILITY

Key findings: There was little to no change to transit travel time, delay, and variability for most of the day on NE Glisan Street.

Median run time remained roughly the same. The median run time did increase somewhat in the westbound direction, especially in the morning peak period.

Peak delay increased somewhat more substantially. This is most notable in the evening peak period, especially for buses traveling eastbound, which had an average peak delay of up to one minute.

Variability mostly decreased in the westbound direction but increased in the eastbound direction, especially in the evening peak period.

PBOT used data from TriMet to evaluate congestion impacts because TriMet has a lot of high quality data. There was also particular concern over the possible impacts to bus service.

TriMet provided data for bus Line 25. The data was collected for January and February in 2019 (before) and 2020 (after). The data covers travel along the entire corridor and for smaller corridor segments (see map above or appendix for more segment information).

Three measures were evaluated:

- **Median Run Time:** Half of trips were faster than this speed, and half were slower.
- **Peak Delay:** The difference between the 90th percentile run time and the 10th percentile run time.
- **Variability:** Peak delay divided by the 10th percentile run time.

Median run time indicates about how long it takes to travel along the corridor. Peak delay and variability are key indicators TriMet is using to evaluate performance on many other lines. Note: TriMet data is useful but has limitations. The corridor end points are at the nearest bus stops. For example, the data captures travel through to NE 165th Avenue on the east end of the corridor.

TriMet data is also limited to when the bus runs along the corridor. Line 25 has 13 to 14 runs per day, and only operates from about 6 am to 6 pm, which limits the data collections window.

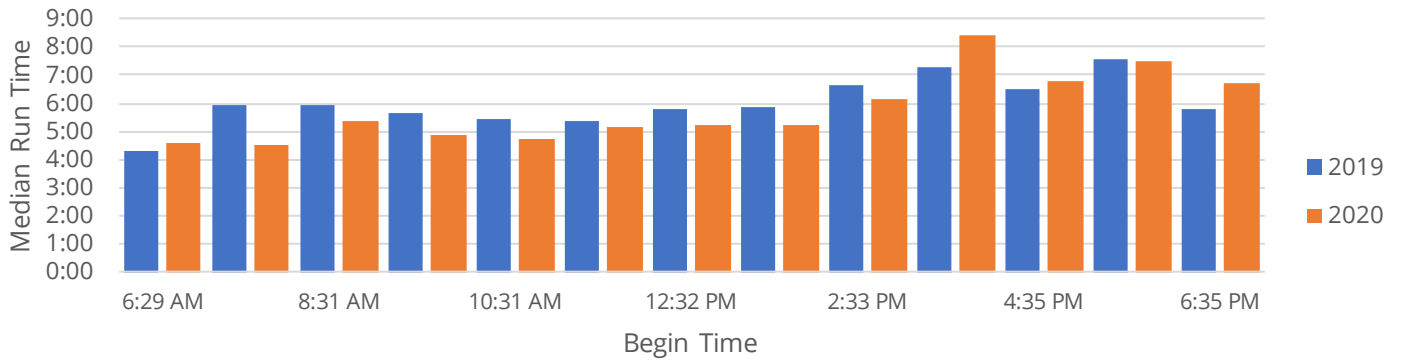
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LINE 25 EASTBOUND

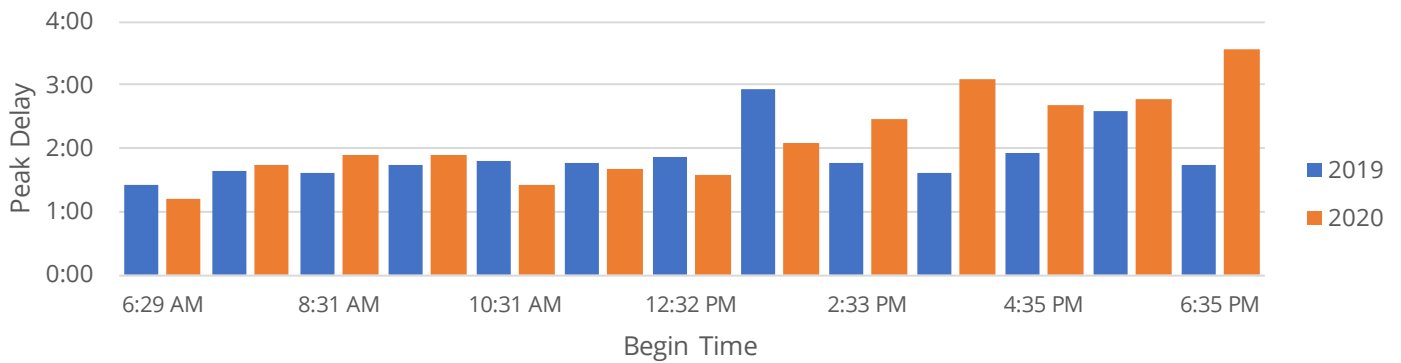
Line 25 experienced very little change in median run time in the eastbound direction. Most changes were very small, and increases were offset by decreases.

Peak delay and variability are somewhat higher in the evening peak period, starting as early as 2:33 PM.

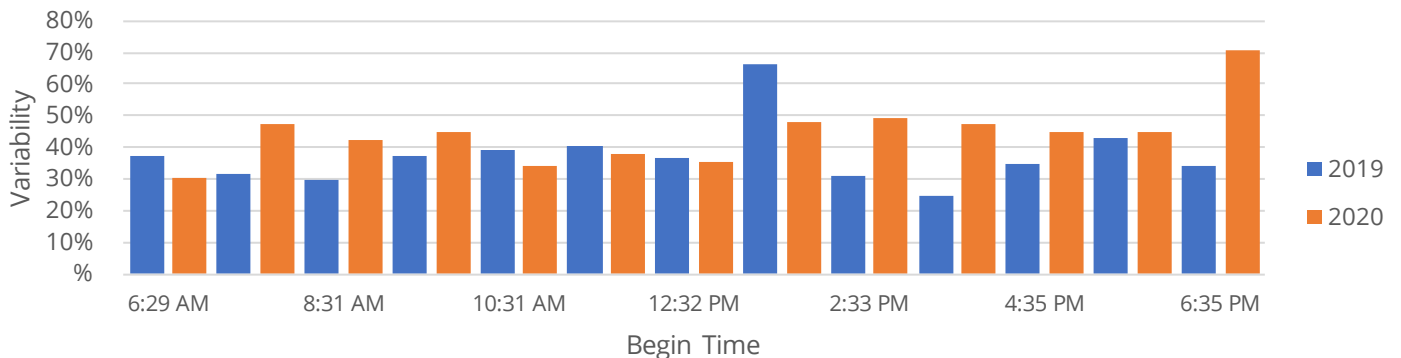
Median Run Time



Transit Peak Delay



Variability

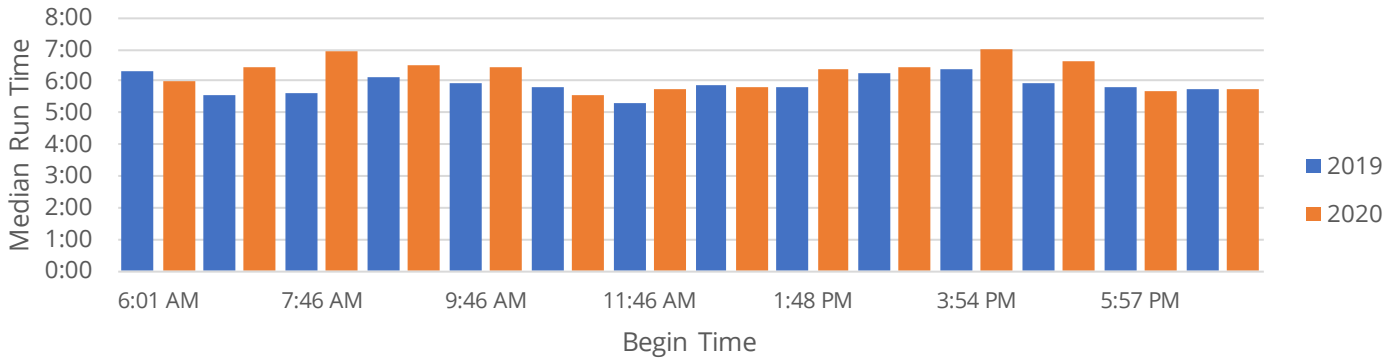


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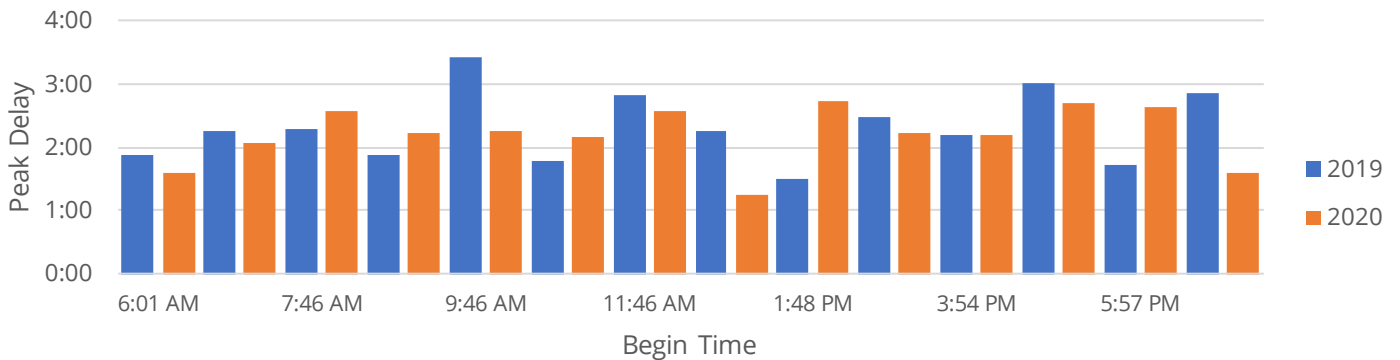
LINE 25 WESTBOUND

Line 25 experienced very small median run time increases in the westbound direction, which are slightly more pronounced in the morning peak period. Peak delay and variability went down somewhat in the westbound direction. These changes do not appear to follow a specific peak period trend.

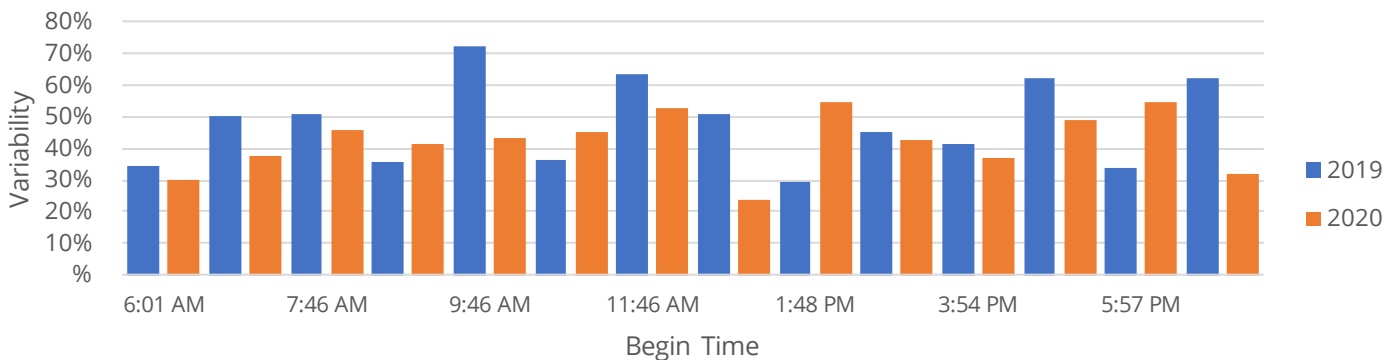
Median Run Time



Transit Peak Delay



Variability



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VEHICLE TRAVEL TIME

Key findings: Median travel time did not change significantly on this portion of NE Glisan Street, aside from slight increases up to 20-35 seconds in the evening peak. The increases match PBOT's model prediction in the westbound direction, and are nearly 30 seconds smaller in the eastbound direction.

The 95th percentile travel times increased somewhat on this segment of NE Glisan Street in both directions. Most notably the westbound direction during the evening peak increased by about a minute.

Roadway reorganization projects like the East Glisan Street Update often raise concerns over congestion and travel time. PBOT used an INRIX data set to measure travel time in the segment. PBOT analyzed data for February 2019 (before) and February 2020 (after), in part to avoid potential COVID-19 traffic impacts.

The data include corridor travel times for the corridor segment from NE 122nd to 162nd avenues, as well as for three subsegments (see map above).

Two measures were evaluated:

- **Median Travel Time:** Half of the data were faster than this speed, and half were slower.
- **95th Percentile Travel Time:** Only 5% of data were slower than this travel time.

Median travel indicates about how long it takes to travel along the corridor or segment. Ninety-fifth percentile travel time indicates about how long the slowest trips take along the corridor or segment.

The graphs on the next page discuss median and 95th percentile delay along the Phase 1 corridor. The segment analysis shows that travel time increases were more prominent at the corridor start points. In the eastbound direction, travel times increased more from NE 122nd to 148th avenues. In the westbound direction, travel time increases were larger from NE 162nd to 148th avenues.

As a control, travel time from NE 102nd to 122nd avenues, where the roadway was not changed, was also analyzed. There were no significant travel time changes on this segment.

Data limitations: INRIX pulls data from connected devices only, and does not report the number of data points informing a data set. Some outlier results are likely because of limited data points. INRIX provides 95th percentile travel times, which is likely to present more extreme results than 90th percentile travel times, which is the measure used by TriMet and by PBOT in other reports.

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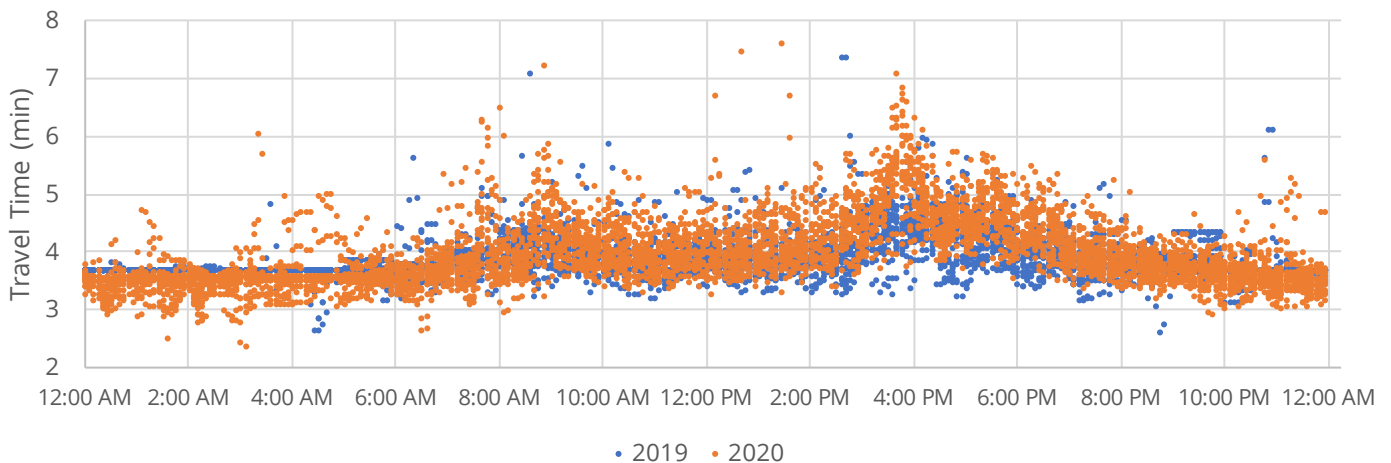
NE GLISAN STREET PHASE 1 CORRIDOR TRAVEL TIME

The graphs below show travel time along the corridor. The orange dots represent travel time after the project (February 2020) and are overlaid on the blue dots, which represent travel time before the project (February 2019). The graphs display travel time data on weekdays only.

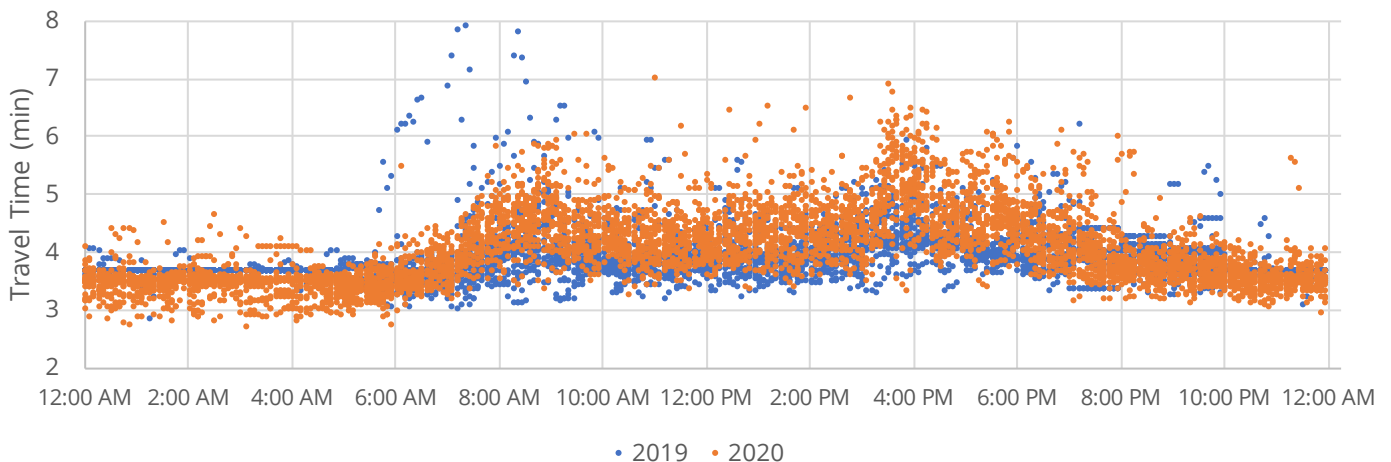
In the eastbound direction, the orange and blue dots roughly overlay during most times of the day. At 4 pm there is a noticeable increase, especially for the orange dots, representing the increase evening peak travel time.

In the westbound direction the upper edge of the orange dots is slightly above the blue dots from 8 AM to 6 PM. During most of the day this only represents an increase for the 95th percentile travel times, but from 4 PM to 6 PM, there is a larger cluster representing an increase in median travel times.

Glisan 122nd-162nd Eastbound



Glisan 122nd-162nd Westbound



CRASHES

One of the key goals of the East Glisan Street Update is reducing crashes, especially those crashes that are the principal focus of our Vision Zero goals. These include all crashes resulting in a fatality or serious injury, and any injury crash involving pedestrians or a person biking.

Crash data must be validated and processed, resulting in a significant lag. This makes it challenging to evaluate crashes shortly after project completion. At the time of analysis, complete crash data is only available through the end of 2017.

Crash numbers and crash rates may fluctuate slightly for a variety of reasons. PBOT generally relies on five years of crash data for analysis. PBOT will monitoring crashes as new data is made available, but will wait for five years of after project data for full crash evaluation.

Before the Oregon Department of Transportation (ODOT) releases crash data, PBOT tracks crashes through police reports. Not all crashes have a police report, and PBOT does not have access to all police reports, offering an incomplete picture. PBOT also tracks crashes by looking at Portland Fire & Rescue crash call outs, which similarly do not include all crashes. PBOT has not received any police crash reports since late March because of COVID-19. Fire & Rescue data was pulled from completion of the project in late September 2019 to mid August 2020.

During this time, PBOT was able to track **thirteen crashes**. Of these, one crash resulted in a fatality, one crash resulted in a serious injury, and one crash injured a pedestrian.



Crashes in the last 5 years (2013-2017)



339 Total crashes



7 Pedestrians hit



3 People biking hit



18 Serious injuries



1 Fatality

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SPEED AND VOLUME ON NEIGHBORHOOD STREETS

Key findings: There were no significant increases to speed or volume on neighborhood streets near NE Glisan Street.

Volume stayed about the same on NE Glisan Street, with some decreases near NE 157th Avenue.

Volume and speed increased slightly on NE Halsey Street near 153rd Avenue.

PBOT also collected before and after speed and volume data on NE Halsey Street. Speed and volume were both slightly higher on NE Halsey Street after the project. Volumes on NE Glisan Street around NE 155th and 157th avenues were up to 15% lower. This may suggest some people chose to drive on NE Halsey Street instead of Glisan Street, but only on the far eastern edge of the project area, since traffic volumes remained steady elsewhere along NE Glisan Street.

Some community members expressed concerns over traffic diversion onto neighborhood streets. In response, PBOT collected before and after speed and volume counts on the following streets:

- NE 128th Avenue south of NE Glisan Street
- NE 128th Avenue south of NE Holladay Street
- NE 131st Place north of NE Pacific Street
- NE 155th Avenue south of NE Holladay Street
- NE 157th Avenue north of NE Glisan Street

There were very small volume increases on NE 155th Avenue, otherwise volumes decreased on all neighborhood streets where data was collected. Speeds went down or stayed the same on all neighborhood streets where data was collected.

The volume on NE Glisan Street also stayed consistent throughout most of the corridor. Any changes were within normal daily fluctuations.



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ACTIVE TRANSPORTATION IMPROVEMENTS

The East Glisan Street Update goals include increasing ease and safety of neighbors crossing the street and getting to their bus stop, improving comfort and safety for neighbors bicycling, and making the separation of walking, biking and driving clearer for all users. PBOT uses city adopted guidelines and national measures to gauge active transportation improvements.

The evaluation looks at conditions before the project and compares them with the exiting Phase 1 improvements and the upcoming Phase 2 improvements.

Crossing Design Guidelines

PBOT relies upon the guidance and methodologies published in the National Cooperative Highway Research Program Report 562 and the Federal Highway Administration Report HRT-04-100 to determine the minimum level of enhancement necessary for adequate pedestrian crossing improvements at site-specific intersections. PBOT has a further best practice of requiring active enhancement such as flashing beacons or signals on high-speed, multi-lane roadways to avoid what is known as a “double-threat” — when one vehicle yields to a pedestrian and the one next to it does not.

The East Glisan Street Update brings **three existing crossings into compliance with safety guidelines**. The crossings at NE 130th Place near Providence ElderPlace Glendoveer, the crossing at NE 134th Place, and the crossing at NE 141st Avenue no longer met PBOT’s crossing design guidelines for safety. With the new street configuration, these crossings now meet the guidelines.

Furthermore, Phase 1 of the project included a new crossing with a rapid flashing beacon at NE 128th Avenue, which connects to Menlo Park Elementary School and connects the 130s Neighborhood Greenway. Phase 2 of the project will include **three new crossings with pedestrian hybrid beacons** at NE 155th, 113th, and 108th avenues.



New crossing at Menlo Park Elementary

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Transit Access Guidelines

PedPDX, Portland’s Citywide Pedestrian Plan, recommends that all transit stop should have a crossing within 100 feet. By adding the new crossings and making existing crossings safer, the East Glisan Street Update greatly increases the number of stops that meet or nearly meet this guideline.

The new crossing at NE 128th Avenue provides access to two bus stops. Thanks to the street reconfiguration, the existing crossing at NE 141st Avenue offers a safe crossing for people accessing two bus stops. The crosswalk at NE 134th Place now offers a safe crossing opportunity for people using two bus stops next to it, even though they are a little further than the 100 feet guideline. The three crossings that will be added as part of Phase 2 will each provide safe crossing options for people accessing two bus stops.

Overall, Phase 1 and 2 of the East Glisan Street Update will provide a **safe crossing location for 12 bus stops along the corridor.**

Bicycle Infrastructure

The Transportation System Plan and the 2030 Bike Plan designate NE Glisan Street to have safe accommodation for people to bike on. A common standard for measuring the quality of bicycle infrastructure is called the Level of Traffic Stress (LTS). LTS is measured on a 1-4 scale with 1 being lowest stress and 4 being highest stress.

Before the project, the entirety of NE Glisan Street was rated LTS 4, the highest stress and least inviting rating. Because the project added physically protected bike lanes, it is now considered to be LTS 1, the lowest stress rating. The portions of the bike lanes near intersections, that are only buffered bike lanes, are currently LTS 3. Soon the speed limit on this portion of NE Glisan Street will go down to 30 mph, which will bring the LTS rating down to 2.



Line 25 bus near the Menlo Park Elementary crossing.

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CONCLUSIONS AND NEXT STEPS

The findings in this report are encouraging and point to a safer and more accessible NE Glisan Street. Vehicle speeds, especially top-end speeding, have significantly decreased, and access for pedestrians, people biking, and people taking transit have significantly increased. At the same time there was no noticeable difference in travel time for buses and travel time increases for people driving were very small and concentrated over very short periods of time during the day.

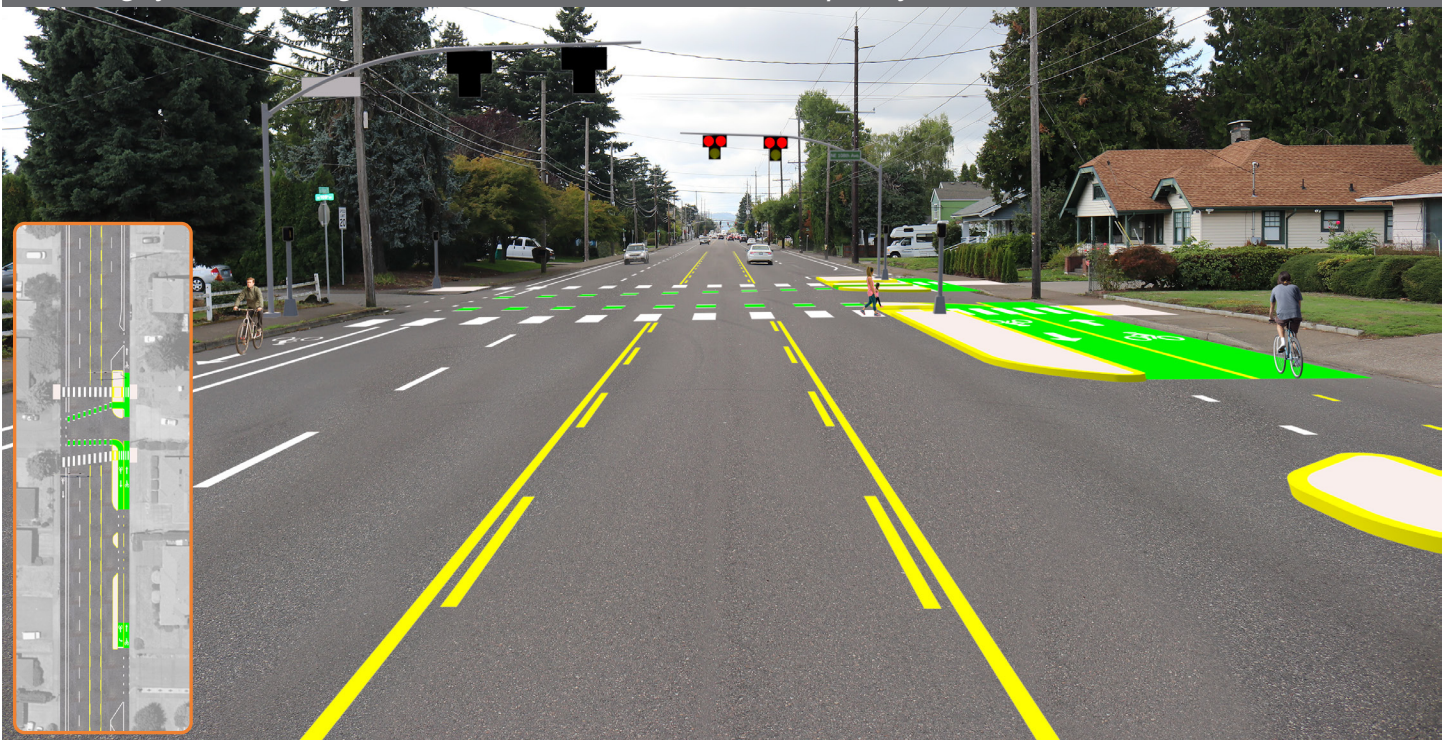
Phase 2 (2020-2021)

The East Portland Access to Employment and Education project includes Phase 2 of the East Glisan Street update. Phase 2 includes:

- Street reconfiguration between NE 102nd and 122nd avenues with two vehicle lanes and a buffered bike lane eastbound, a center turn lane, and one vehicle lane with parking protected bike lanes westbound.
- Pedestrian hybrid beacons at NE 108th, 155th, and 113th avenues for safer crossings.

The decision to do an offset cross section, meaning two driving lanes in one direction and one driving lane in the other, is in response to feedback from the community and volume data that suggests going down to one driving lane in the eastbound direction would create too much traffic delay. Adjusting the street to have one driving lane in the westbound direction still offers many of the safety benefits and provides space for bike lanes.

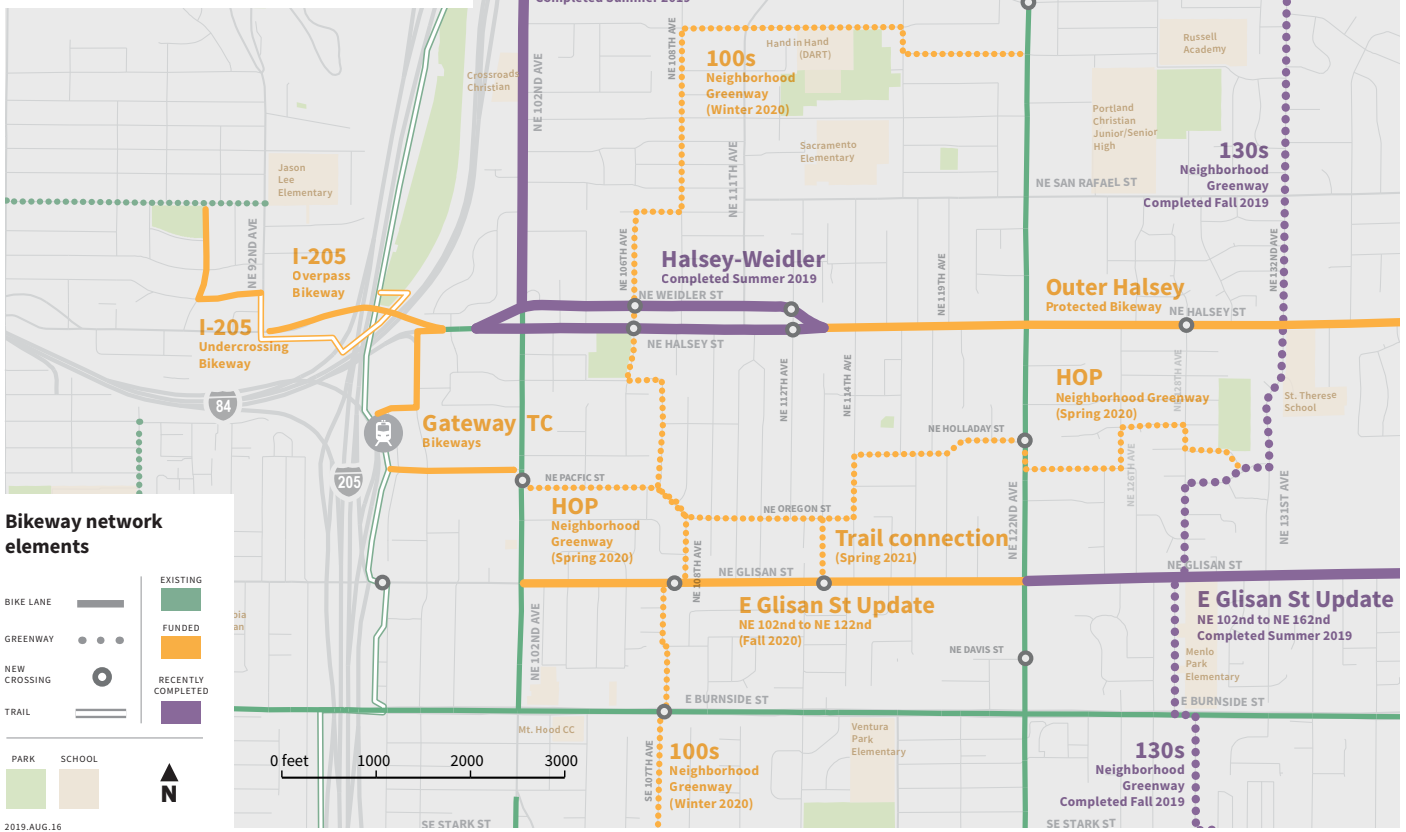
Rendering of a new crossing at NE 108th Avenue and Glisan Street, part of Phase 2.



NE GLISAN STREET APPROACHING 108TH AVENUE
Looking west

GATEWAY TO OPPORTUNITY

Outer Northeast Portland's emerging bikeway network



Other Efforts

Having a safe and accessible network for pedestrians, people biking, and people taking transit, cannot be accomplished through a single project on a single street. People traveling need to feel safe and comfortable where they start, where they're going, and along the way.

PBOT has been involved with many projects in East Portland, and many more are coming to create a complete and connected network of streets that serve a diversity of users and transportation modes. The map above shows some of the recently completed projects and some of those coming soon in the Gateway area.

Questions?

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