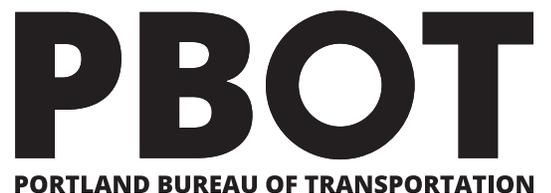


# NE 102nd Ave Safety Project

## Pilot Evaluation Report



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# NE 102ND AVE SAFETY PROJECT

# PBOT

PORTLAND BUREAU OF TRANSPORTATION



## NE 102nd Ave Safety Project Pilot Evaluation Report

January 2020

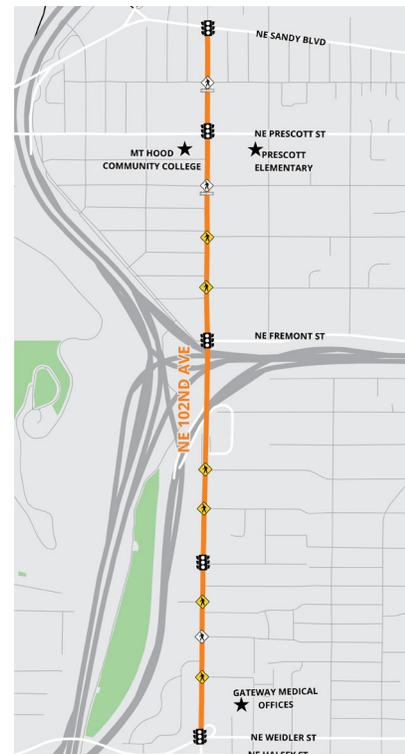
### WHAT IS THE NE 102ND AVE SAFETY PROJECT?

**NE 102nd Avenue** is a high crash corridor that is especially dangerous for pedestrians. Students of all ages cross the street to access Prescott Elementary School or Mt. Hood Community College as people are driving 40 mph.

**The NE 102nd Avenue Safety Project** improves safety for all pedestrians as well as people biking, taking transit, and driving on NE 102nd Avenue between Weidler Street and Sandy Boulevard.

The project design includes:

- Shorter crossing distances
- Six new enhanced crossings with pedestrian islands at six locations along the corridor\*
- Lowering the speed limit to 30 mph and designing the road for slower travel
- Buffered bike lanes
- Special attention to the Fremont, Prescott, Weidler, and Sandy intersections to address congestion bottlenecks



### New to the NE 102nd Ave Safety Project?

Learn more about the planning goals and objectives by visiting the project website. Find out what's happened so far and what final steps lie ahead.

<https://www.portlandoregon.gov/transportation/NE102nd>

\*The crossings at NE Thompson and Beech streets will be installed in summer 2020.

# NE 102ND AVE SAFETY PROJECT | Pilot Evaluation Report

## PILOT AND EVALUATION

The pilot phase of the NE 102nd Avenue Safety Project was implemented in July and August 2019. PBOT crews painted the new lane configuration and added four new crosswalks at NE Hancock, Knott, Morris, and Shaver streets. They also installed plastic bollards to mark the pedestrian crossing islands and to protect the two-way bike lanes between NE Bell and Tillamook streets and between NE Morris and Fremont streets.

Throughout October 2019, PBOT collected safety and traffic data on NE 102nd Avenue and nearby neighborhood streets in accordance with the pilot evaluation guide. The data included:

- Speed data on NE 102nd Avenue
- Transit travel time and reliability
- Vehicle travel time
- Speed and volume on nearby neighborhood streets

PBOT also collected public feedback and evaluated the street for compliance with guidelines for walking, biking, and access to transit, both before and after the project.

PBOT has monitored crash data from police reports since the project implementation. However, not all police reports are available to PBOT and police reports are not filed for all crashes.

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

## QUICK GUIDE

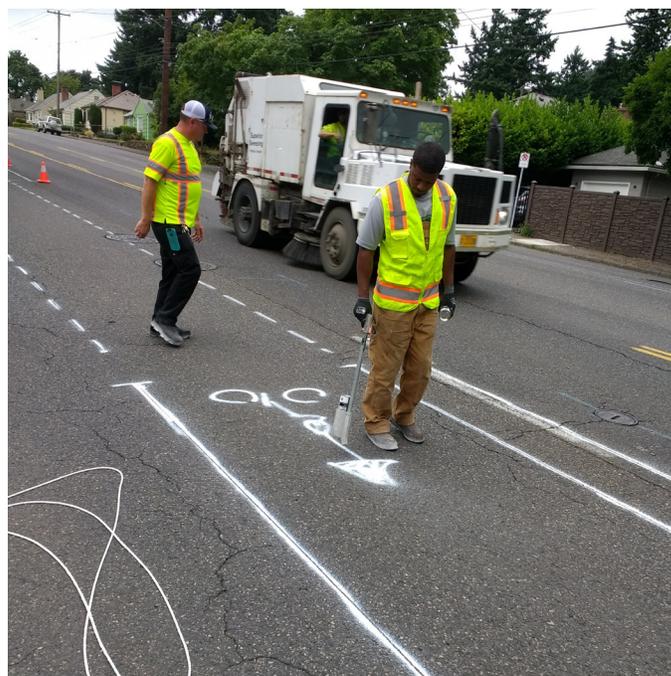
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## KEY FINDINGS

The data collected shows an overall improvement in safety measures. Vehicle speeds on NE 102nd Avenue are lower, and the street better meets guidelines for pedestrians and people biking.

The data does not show significant changes to travel times for TriMet buses or other vehicles, nor does it show significant changes to volumes or speeds on nearby neighborhood streets.

The survey responses included over a thousand comments and suggestions. The public input section offers responses and follow-ups for the most common comments.



*PBOT crews painting layout lines on NE 102nd Ave.*

# NE 102ND AVE SAFETY PROJECT | Pilot Evaluation Report

## SPEED ON NE 102ND AVENUE

**Key findings:** Top-end speeding decreased drastically on NE 102nd Avenue. Median and prevailing speeds also decreased, especially in the northern part of the corridor.

One of the primary goals of the NE 102nd Avenue Safety Project is to reduce vehicle speeds along the corridor.

PBOT measured speed at two locations on NE 102nd Avenue: south of NE Sacramento Street and north of NE Shaver Street. Pre-project counts were held in November 2017, and post-project counts in October 2019.

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.

Note: In November 2018, the speed limit was changed from 35 mph to 30 mph between NE Mason Street and Sandy Boulevard (see map to the right). PBOT has submitted an application to lower the speed limit to 30 mph along the entirety of NE 102nd Avenue



	Median Speed	Prevailing Speed	Top-End Speeders
NE Shaver Street	9.5% ↓	10.7% ↓	85.2% ↓
NE Sacramento Street	4.2% ↓	2.5% ↓	52.9% ↓

NO NECESSARY INTERVENTION

**ACCEPTABLE OUTCOME**

85th percentile speed decreases somewhat when compared with baseline data.

# NE 102ND AVE SAFETY PROJECT | Pilot Evaluation Report

## TRANSIT TRAVEL TIME AND RELIABILITY

**Key findings:** There was little to no change to transit travel time, delay, and reliability.

Variability was so small it is hard to tie it to the project.

Median travel times and delay at peak transit times decreased more substantially for the southbound Line 87, especially in Parkrose Heights.

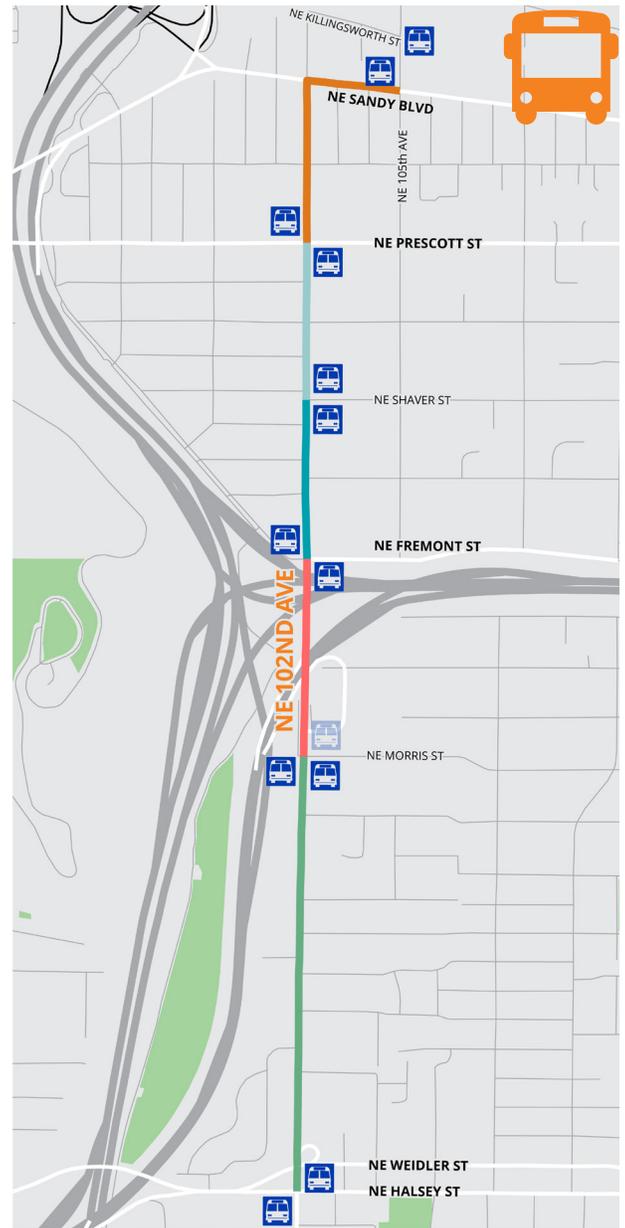
Many community members mentioned concerns over possible increases in congestion and travel time. PBOT used data from TriMet to evaluate congestion impacts because TriMet has a lot of high quality data. There was also particular concern over the possible impacts to bus service.

TriMet provided data for bus Lines 87 and 22. The data was collected for the entire month of October 2018 (before) and October 2019 (after). The data covers travel along the entire corridor and for smaller corridor segments (see map to the right 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 (see map) and include some travel on NE 102nd Avenue, Sandy Boulevard, and 105th Avenue outside the project area.

Line 22 had a schedule change and now offers more trips per day. A bus stop in the northbound direction moved 250 feet south from NE Morris Court to NE Morris Street.

NO NECESSARY INTERVENTION

**ACCEPTABLE OUTCOME**

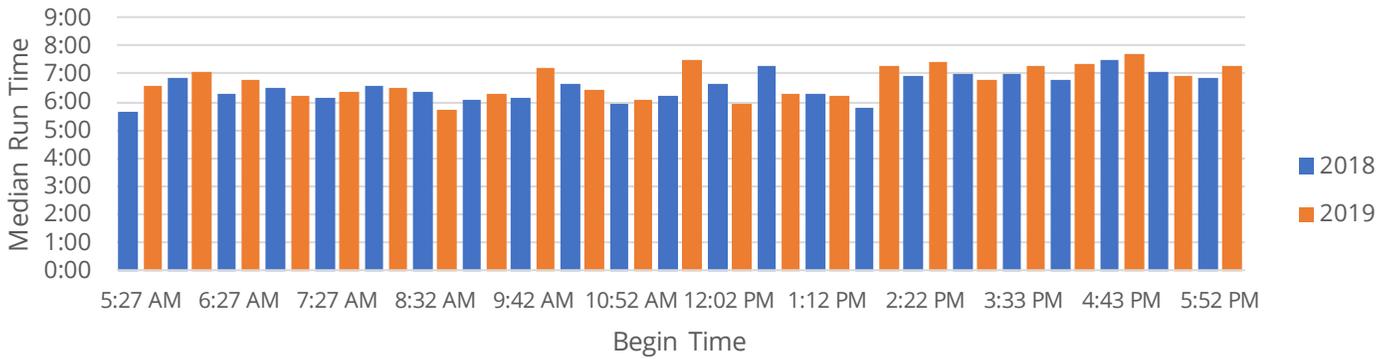
Transit delay does not change, or new incidents of delay are offset by reduced delay in other areas.

# NE 102ND AVE SAFETY PROJECT | Pilot Evaluation Report

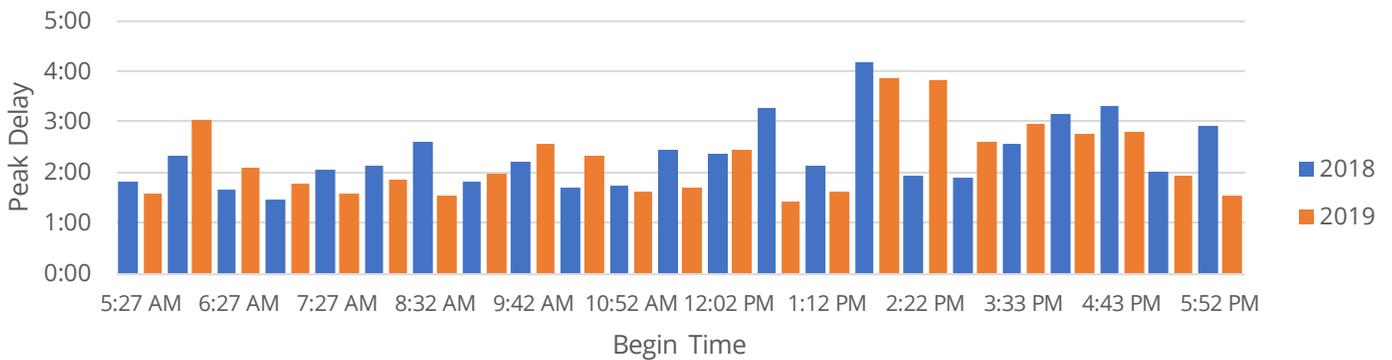
## LINE 87 NORTHBOUND

Line 87 experienced very little change in median run time, transit peak delay, and variability in the northbound direction. Most changes were very small, and increases were offset by decreases. Peak delay and variability appear to be consistently somewhat lower in the evening peak period.

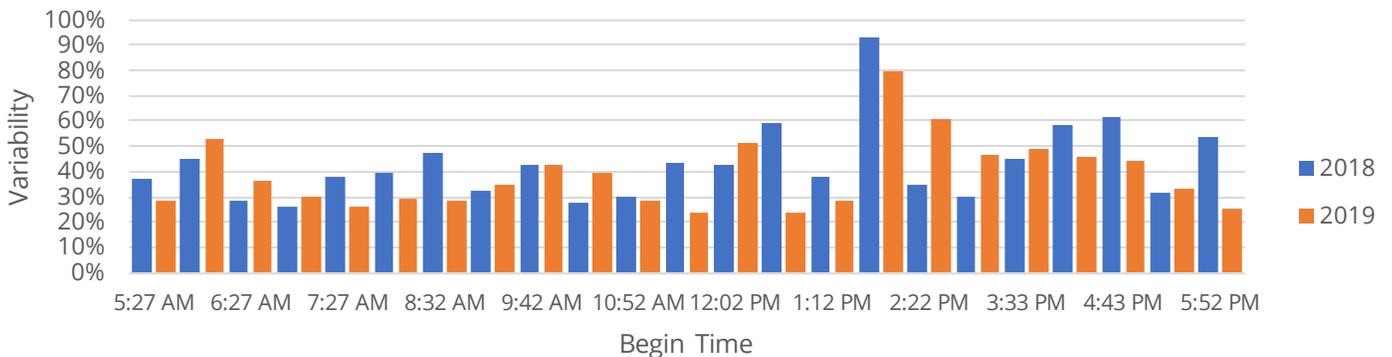
### Median Run Time



### Transit Peak Delay



### Variability

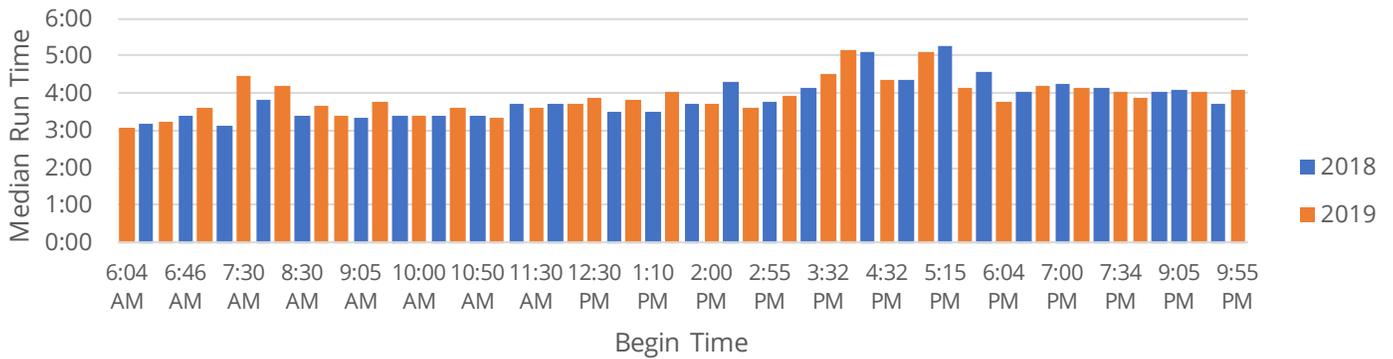


# NE 102ND AVE SAFETY PROJECT | Pilot Evaluation Report

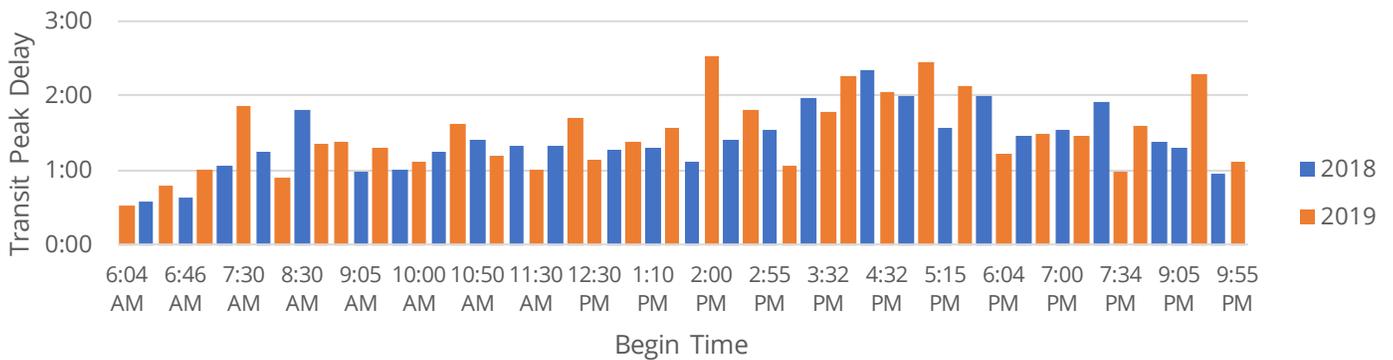
## LINE 22 NORTHBOUND

Line 22 experienced very little change in median run time, transit peak delay, and variability in the northbound direction. Most changes were very small, and increases were offset by decreases. A couple of runs experienced much higher peak delay and variability, but these data points are outliers and do not indicate a pattern.

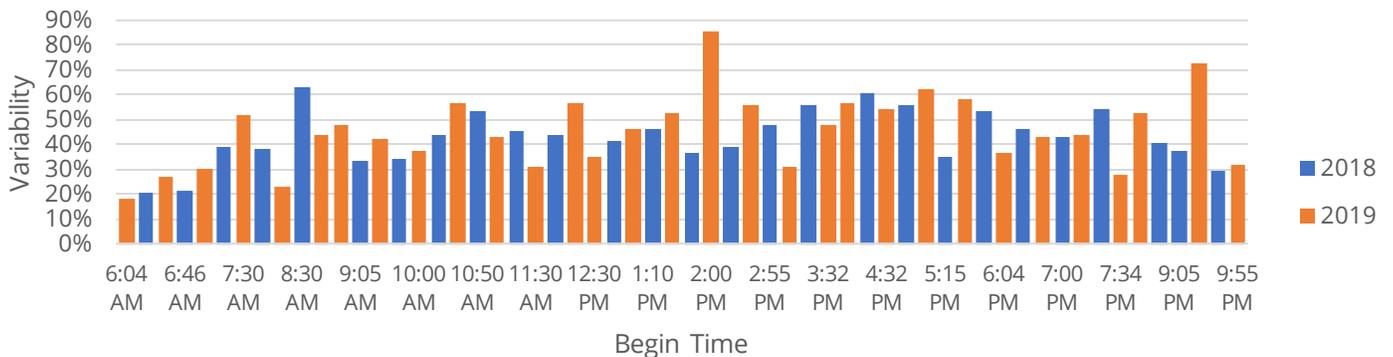
### Median Run Time



### Transit Peak Delay



### Variability

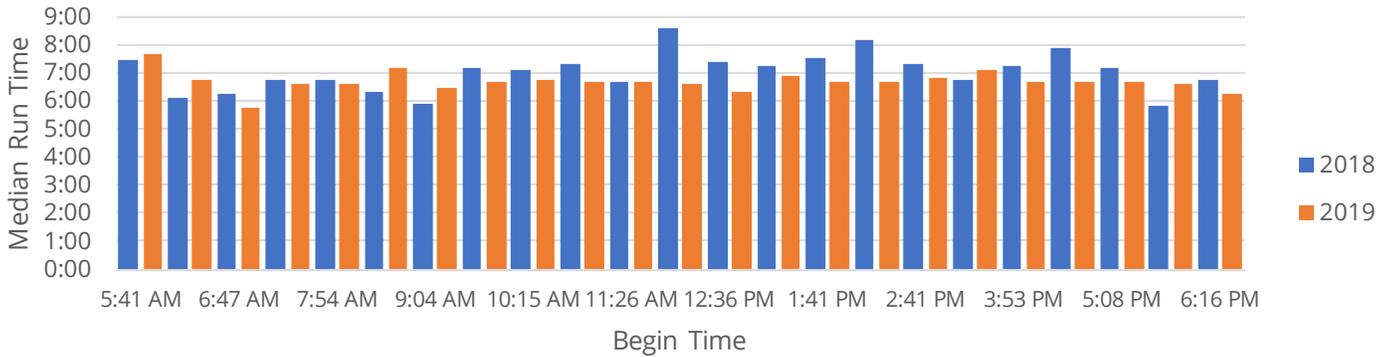


# NE 102ND AVE SAFETY PROJECT | Pilot Evaluation Report

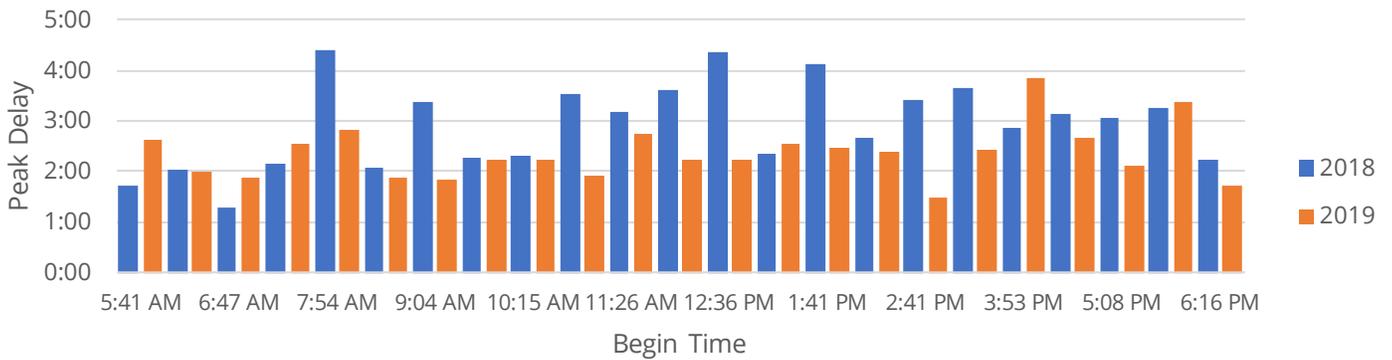
## LINE 87 SOUTHBOUND

Line 87 experienced consistent decreases in median run time, transit peak delay, and variability in the southbound direction. The decreases were not very large, especially for median run time. The greatest decreases for all three metrics happened during the off peak period.

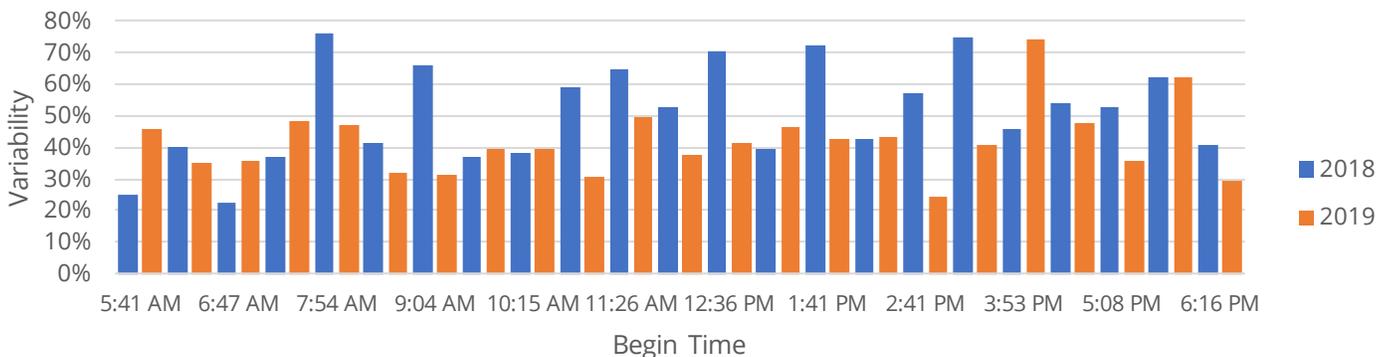
### Median Run Time



### Transit Peak Delay



### Variability

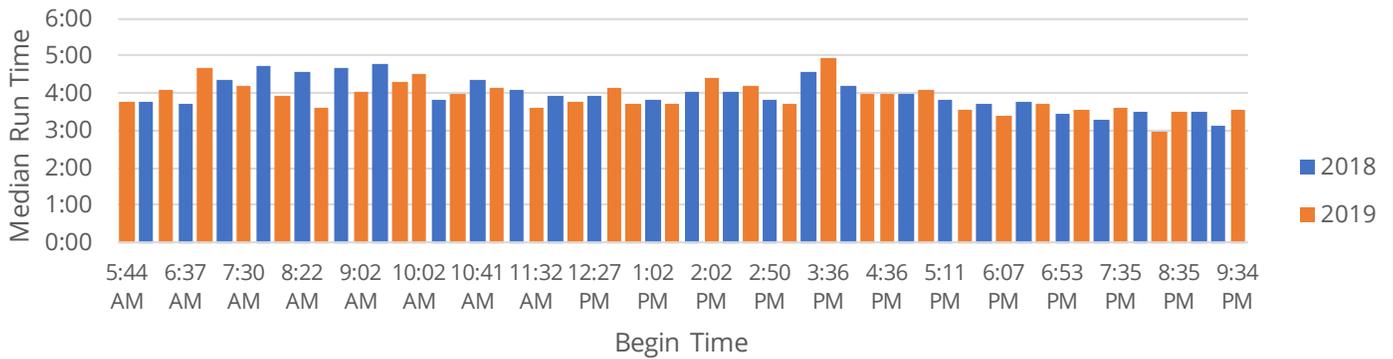


# NE 102ND AVE SAFETY PROJECT | Pilot Evaluation Report

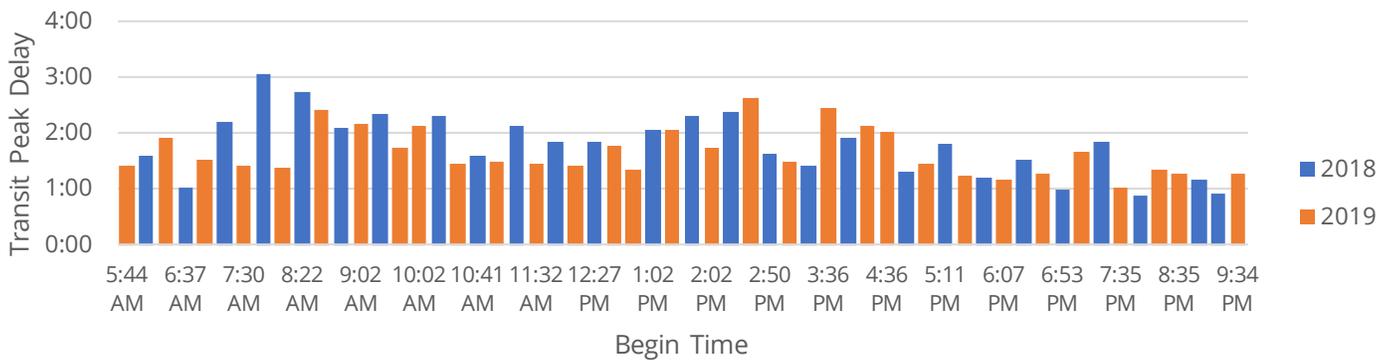
## LINE 22 SOUTHBOUND

Line 22 experienced very little change in median run time, transit peak delay, and variability in the southbound direction. Most changes were very small, and increases were offset by decreases. Peak delay and variability were consistently lower during the morning peak period.

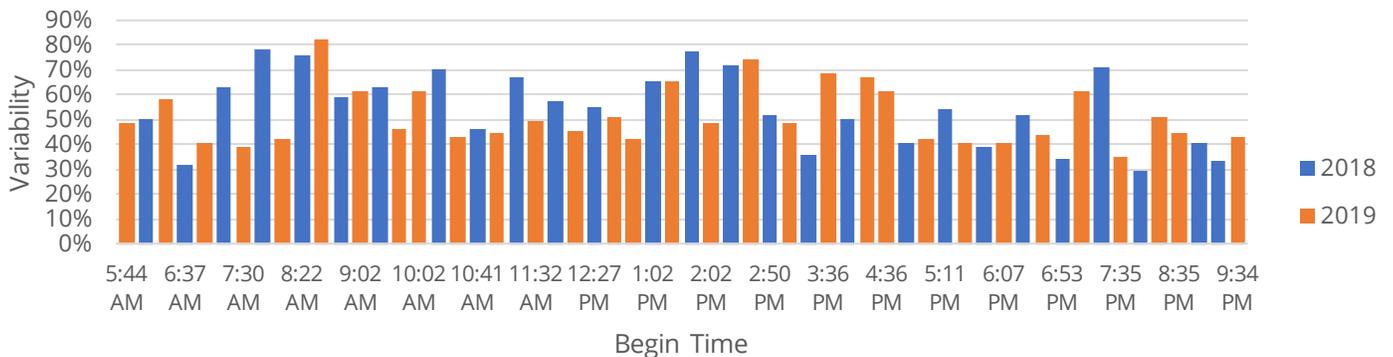
### Median Run Time



### Transit Peak Delay



### Variability



# NE 102ND AVE SAFETY PROJECT | Pilot Evaluation Report

## VEHICLE TRAVEL TIME

**Key findings:** There was little to no change to vehicle travel time in the southbound direction.

In the northbound direction, median travel time generally decreased and 90th percentile travel time generally increased in the evening peak but decreased otherwise.

Almost all increases and decreases were minor (10-25 seconds), and varied by corridor segment.

Many community members were concerned that the NE 102nd Avenue Safety Project would increase congestion and travel time. PBOT used Google traffic data to estimate travel time for two to three weeks in January 2018 (before) and October 2019 (after).

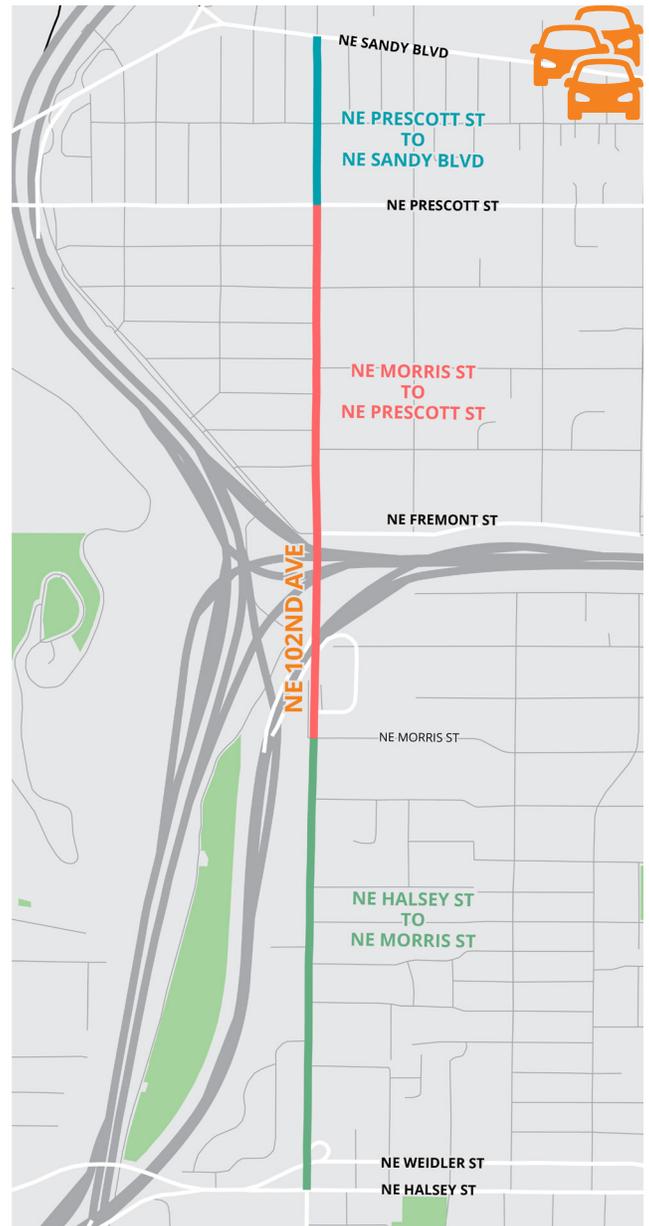
The data include corridor travel times for the entire corridor and for three corridor segments (see map to the right).

Two measures were evaluated:

- **Median Travel Time:** Half of queries were faster than this speed, and half were slower.
- **90th Percentile Travel Time:** Only 10% of queries were slower than this travel time.

Traffic peak delay and variability were also evaluated but are less useful measures for this dataset, and generally aligned with 90th percentile travel time.

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



NO NECESSARY INTERVENTION

**DESIRED OUTCOME**

No new travel time peaks. The PM peak north of Fremont and/or Prescott stays about the same or shrinks.

# NE 102ND AVE SAFETY PROJECT | Pilot Evaluation Report

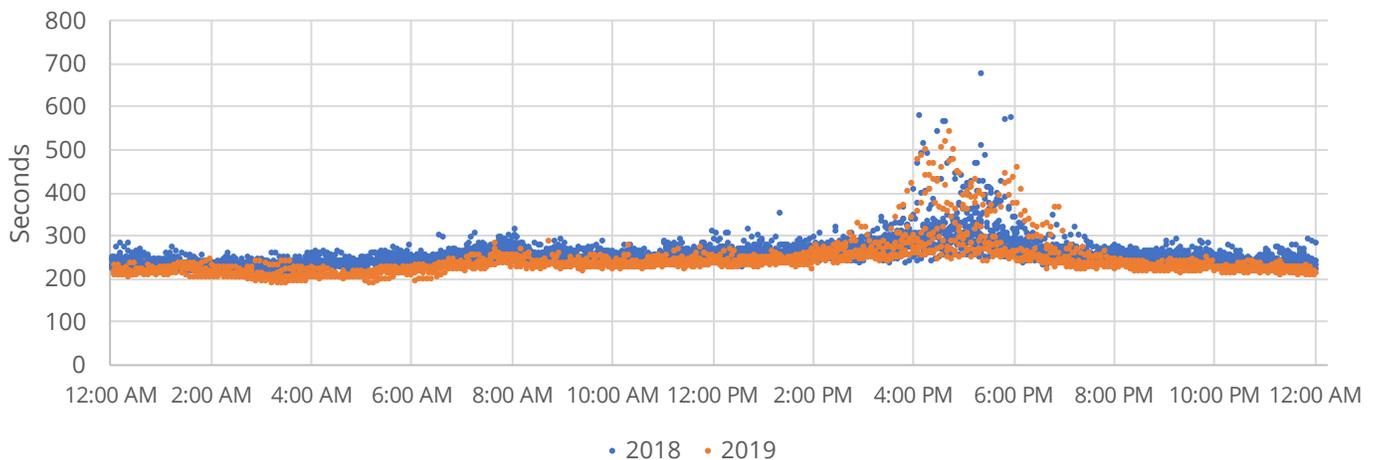
## NE 102ND AVENUE CORRIDOR TRAVEL TIME

The graphs below show travel time along the corridor. The orange dots represent travel time after the project (October 2019) and are overlaid on the blue dots, which represent travel time before the project (October 2018). The graphs display travel time data on weekdays.

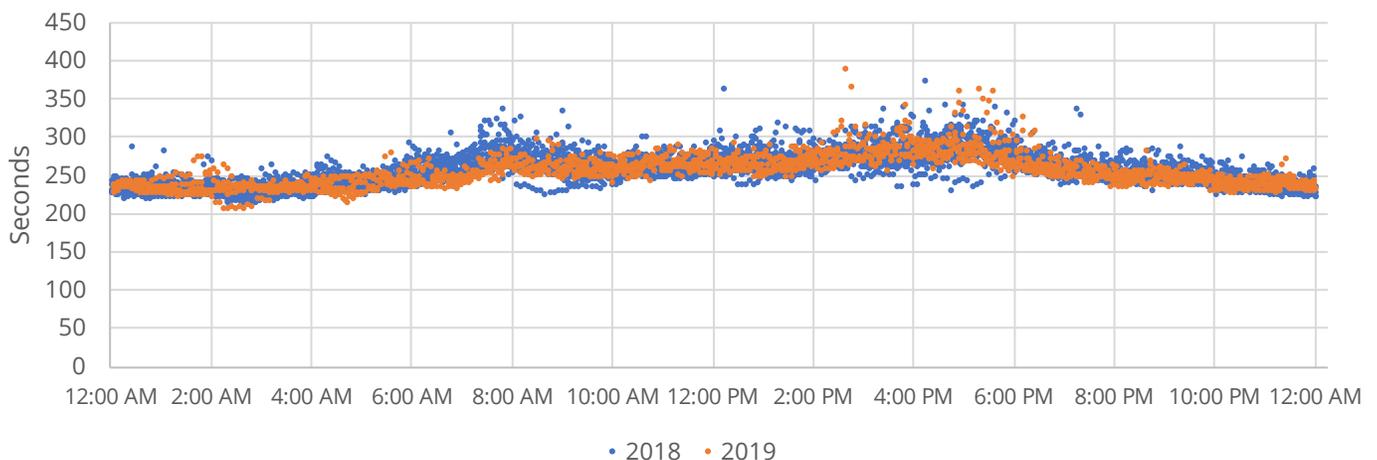
In the northbound direction, the blue line is consistently slightly above the orange line, representing the small decreases in median and 90th percentile travel time. During the evening peak the highest travel times were recorded before the project, but the denser cluster of orange dots in the 400-600 second range represent the small increase in 90th percentile travel time.

In the southbound direction the blue line appears above and below the orange line, representing no substantial changes to travel time.

### NE 102nd Ave - Halsey to Sandy (Northbound)



### NE 102nd Ave - Sandy to Halsey (Southbound)

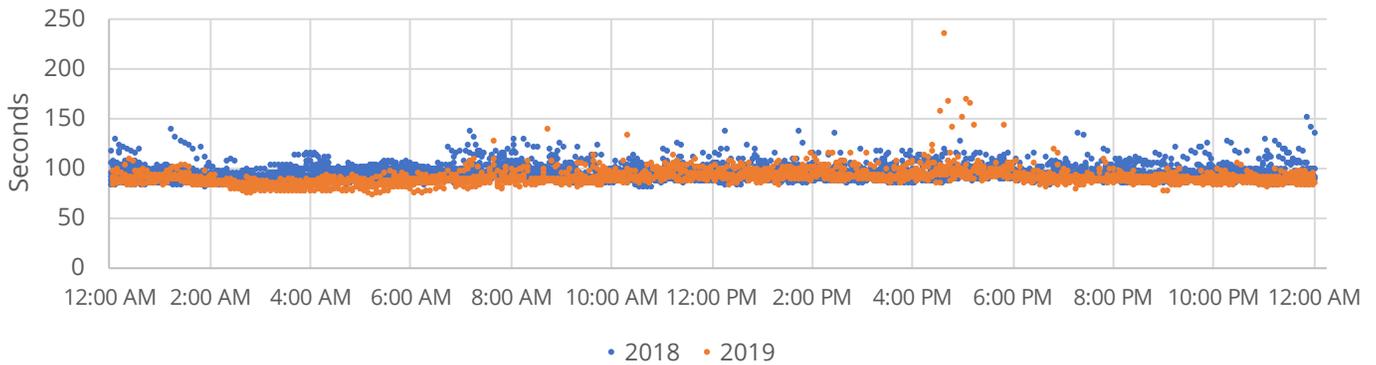


# NE 102ND AVE SAFETY PROJECT | Pilot Evaluation Report

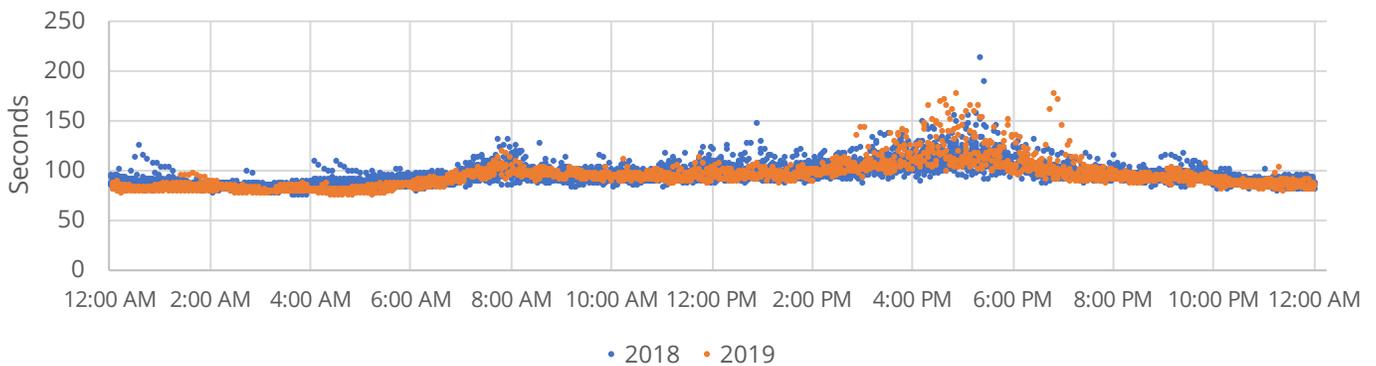
## NE 102ND AVENUE SEGMENT TRAVEL TIME - NORTHBOUND

The graphs below show before and after travel time in the northbound direction during weekdays along specific corridor segments. The graphs show little change or minor decreases outside the evening peak. In the evening peak, there are a few outliers from Halsey to Morris, a small increase in the highest observations from Morris to Prescott, and a decrease in the highest observations from Prescott to Sandy.

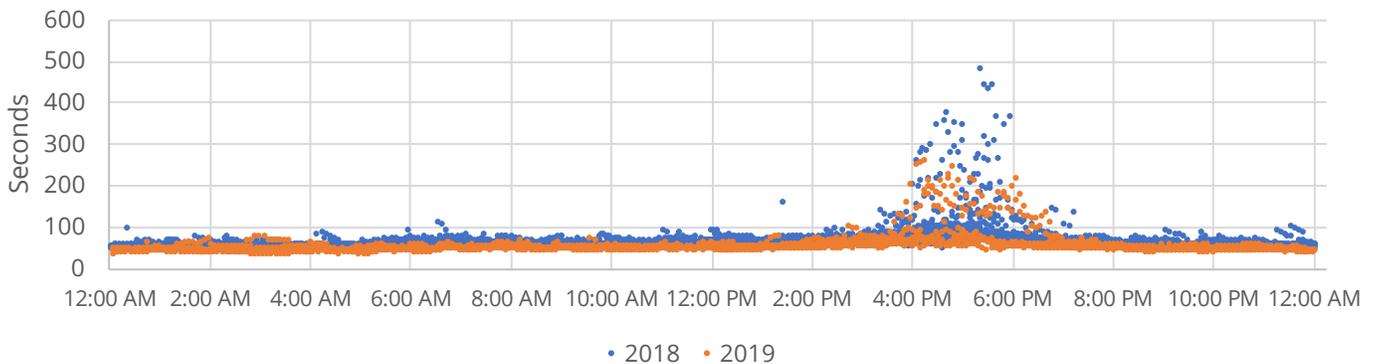
### NE 102nd Ave - Halsey to Morris



### NE 102nd Ave - Morris to Prescott



### NE 102nd Ave - Prescott to Sandy

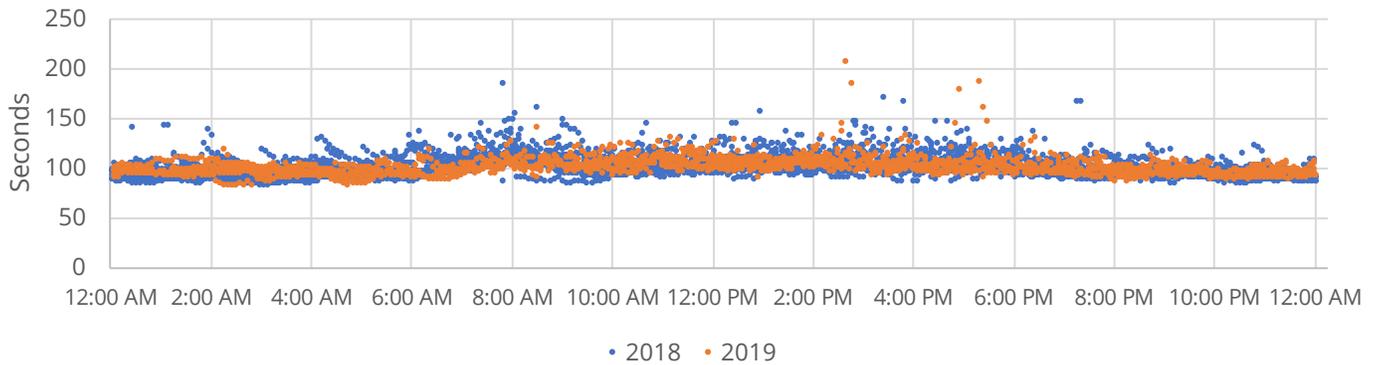


# NE 102ND AVE SAFETY PROJECT | Pilot Evaluation Report

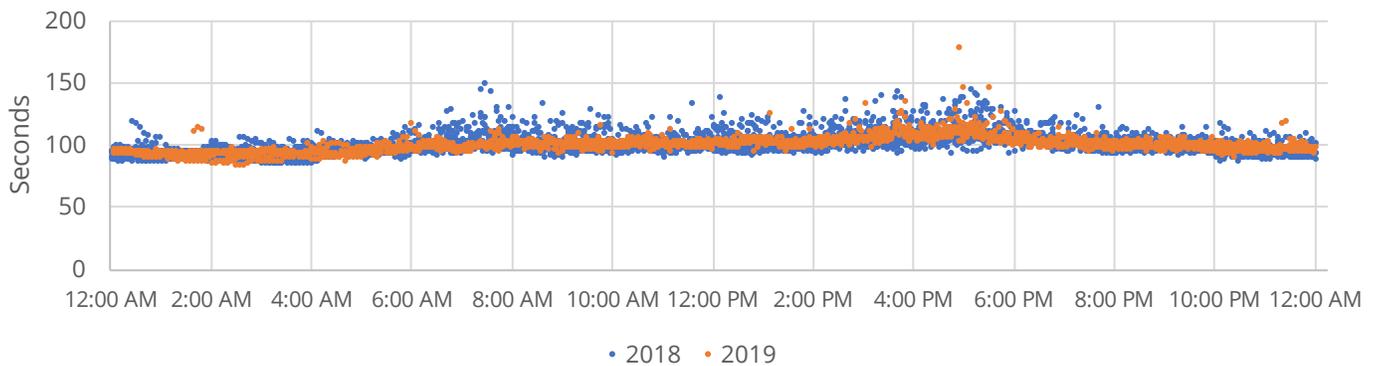
## NE 102ND AVENUE SEGMENT TRAVEL TIME - SOUTHBOUND

The graphs below show before and after travel time in the southbound direction during weekdays along specific corridor segments. The graphs show little to no change to travel time for all of the segments, and a slight reduction in the highest travel times for all segments in the morning peak.

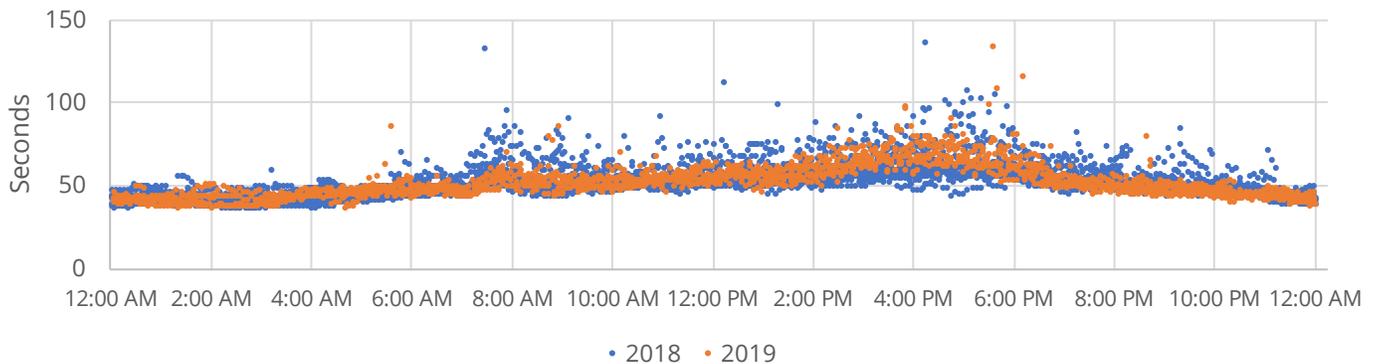
### NE 102nd Ave - Morris to Halsey



### NE 102nd Ave - Prescott to Morris



### NE 102nd Ave - Sandy to Prescott



## CRASHES

One of the key goals of the NE 102nd Avenue Safety Project 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 including pedestrians or a person biking.

Crash data must be validated and processed, resulting in a significant lag before data is available. This makes it challenging to evaluate crashes during the pilot period. At the time of writing, 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 continue updating the crash measure as new data is made available. However, the analysis will not be considered reliable until five years of data are available.

Before the Oregon Department of Transportation (ODOT) releases crash data, PBOT tracks crashes by looking through police reports. Police reports offer an incomplete picture because not all crashes have a police report, and PBOT does not have access to all police reports.

At the time of writing, the police reports made available to PBOT after completion of the pilot project documented **two vehicle crashes**.



## Crashes in the last 5 years (2013-2017)



**271** Total crashes



**8** Pedestrian crashes



**4** Bicycle crashes



**2** Fatalities

*Note: A fatal crash from 2019 is not reflected in the numbers above.*

# NE 102ND AVE SAFETY PROJECT | Pilot Evaluation Report

## SPEED AND VOLUME ON NEIGHBORHOOD STREETS

**Key findings:** There were no significant increases to speed or volume on neighborhood streets related to the project.

There were some significant speed decreases on streets where PBOT added speed bumps or speed cushions.

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

### **In Parkrose:**

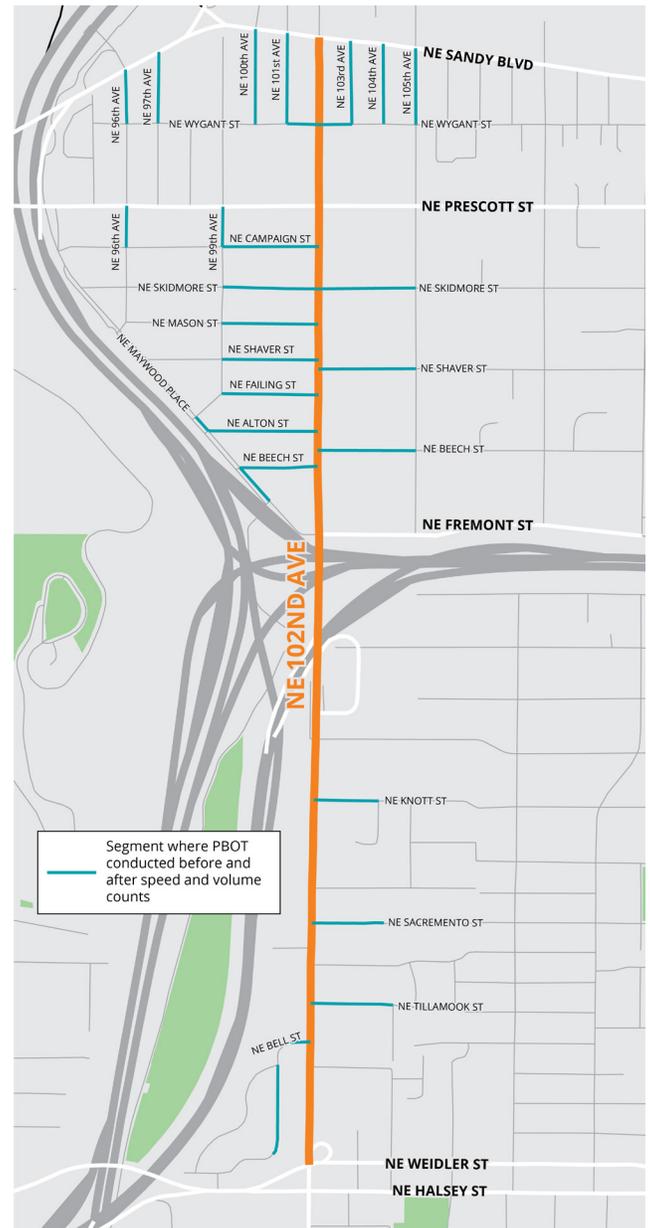
- NE 96th Avenue
- NE 97th Avenue
- NE 100th Avenue
- NE 101st Avenue
- NE 103rd Avenue
- NE 104th Avenue
- NE 105th Avenue
- NE Wygant Street
- NE Skidmore Street
- NE Shaver Street
- NE Beech Street

### **In Maywood Park**

- NE 96th Avenue
- NE 99th Avenue
- NE Campaign Street
- NE Skidmore Street
- NE Mason Street
- NE Shaver Street
- NE Failing Street
- NE Alton Street
- NE Beech Street
- NE Maywood Place

### **In Parkrose Heights and Woodland Park**

- NE Knott Street
- NE Sacramento Street
- NE Tillamook Street
- NE Bell Drive



Speeds on NE Tillamook and Sacramento streets have substantially decreased, which is likely a result of installing speed bumps and speed cushions. There were no other notable speed changes.

NE 105th Avenue, as well as Wygant, Knott, and Skidmore streets saw somewhat larger volume increases or decreases. However, none met PBOT thresholds for mitigation. See the appendix for more details on speeds and volumes on these streets.

# NE 102ND AVE SAFETY PROJECT | Pilot Evaluation Report

## ACTIVE TRANSPORTATION IMPROVEMENTS

NE 102nd Avenue Safety Project goals include improving pedestrian crossings, access to transit, and providing a safe space for people to bike. PBOT uses city adopted guidelines and national measures to gauge active transportation improvements.

The measures are evaluated at three stages: before the project, current pilot conditions, and after Phase 2 (when the crossings at NE Beech and Thompson streets will be installed).

### Crossing Spacing

PedPDX, Portland's pedestrian master plan, recommends a pedestrian crossing every 800 feet on streets like NE 102nd Avenue.

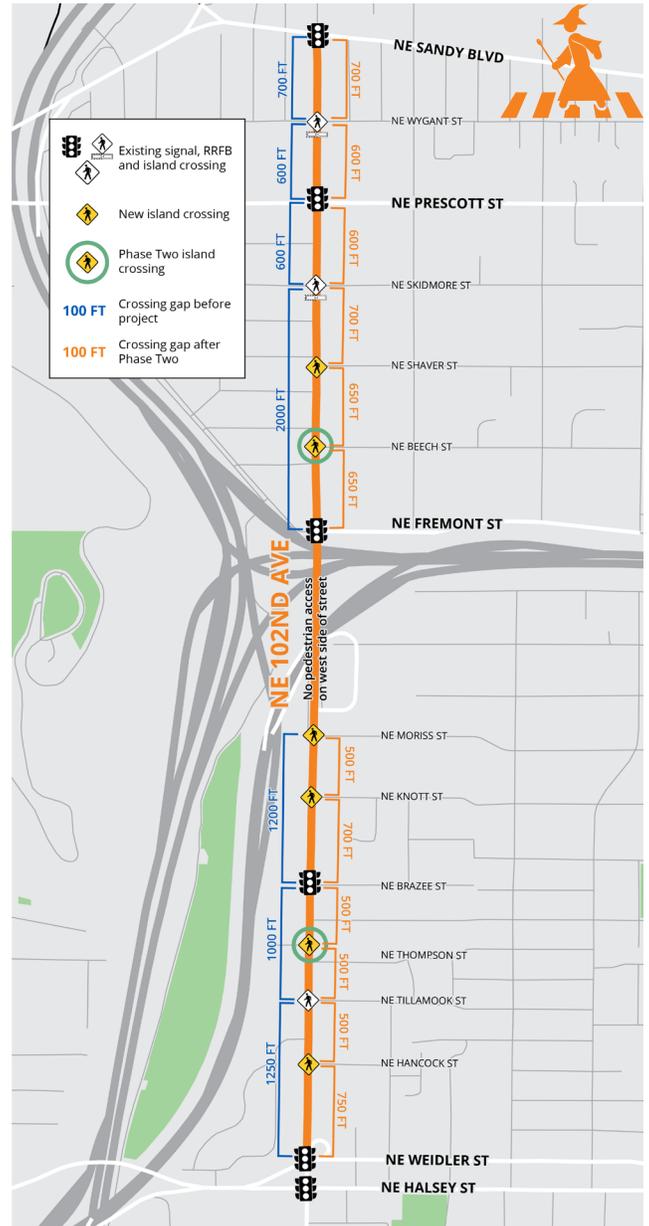
### Percent of project meeting spacing guidelines

Before	Current	Phase 2
27%	69%	100%

Before the project, only the segment between NE Skidmore Street and Sandy Boulevard met the crossing spacing guidelines. Under the current pilot, most of the corridor meets the guidelines, with the exception of two gaps that will be filled with the crossings at NE Beech and Thompson streets crossings during Phase 2.

### 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 NE 102nd Avenue Safety Project will add six new crossings meeting these guidelines by the end of Phase 2. It also helps the crossing at NE Tillamook Street meet the guidelines by eliminating the double threat.

# NE 102ND AVE SAFETY PROJECT | Pilot Evaluation Report

## Transit Access Guidelines

PedPDX recommends that all transit stop should have a crossing within 100 feet. By adding the new crossings, the NE 102nd Avenue Safety project greatly increases the number of stops that meet or nearly meet this guideline.

### Bus stops with crossing withing 100 feet

Before	Current	Phase 2
6 of 15	9 of 15	9 of 15

### Bus stops with crossing withing 200 feet

Before	Current	Phase 2
8 of 15	13 of 15	15 of 15

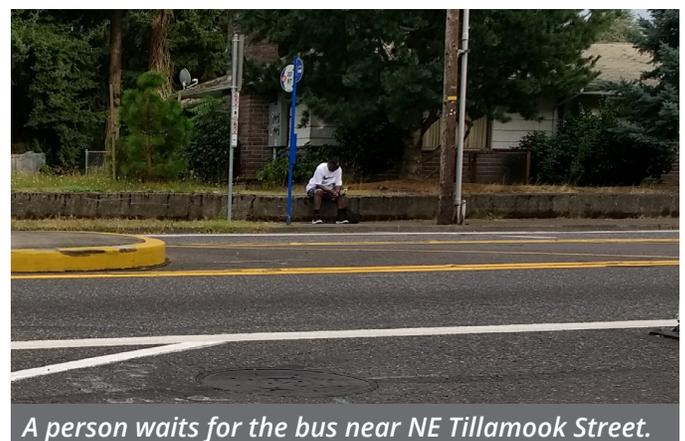
Because of the offset intersections along NE 102nd Avenue, northbound and southbound stops are often spaced far apart from each other, making it impossible for one crossing to be within 100 feet of both stops. To account for this condition, the project evaluated the number of stops that meet the guideline at 100 feet, and the number of stops that nearly meet the guideline at a distance less than 200 feet.

The crossing at NE Beech Street that will be added as part of Phase 2 will bring the bus stops at NE Alton and Beech streets within 200 feet of a crossing.

## Bicycle Infrastructure

The Transportation System Plan and the 2030 Bike Plan call for bicycle infrastructure on NE 102nd Avenue. 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 102nd Avenue was rated LTS 4. After the project, the bike infrastructure is at LTS 3. If the speed limit is lowered to 30 mph, the LTS rating will be upgraded to LTS 2.



A person waits for the bus near NE Tillamook Street.

# NE 102ND AVE SAFETY PROJECT | Pilot Evaluation Report

## PUBLIC SURVEY

In October 2019, PBOT conducted an open survey to solicit feedback from community members regarding the NE 102nd Avenue Safety Project.

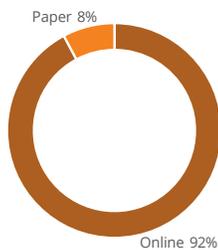
The survey was available online in English, Spanish, Russian, and Mandarin. Paper surveys were also available upon request. Over 90% of respondents answered the survey online. The remaining responses were collected via paper surveys at an outreach event at Parkrose High School.

This survey was not completed by a representative sample of respondents. PBOT is aware that in such cases there is high potential for response bias, and that the outcomes are not statistically representative. The survey offers useful ideas and suggestions for project improvements, and a sense for how *respondents* feel about the project. The survey cannot be relied on as a reflection of how *the community as a whole* feels about the project.

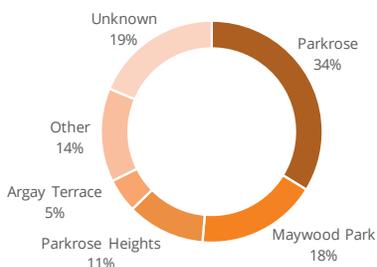
### Survey Respondents

Total respondents: 563

Survey Response Method



Respondent Neighborhood



## Level of Concern

**Key findings:** Survey respondents are less concerned about traffic safety on NE 102nd Avenue after the project.

PBOT asked the same three questions about safety concerns on surveys before and after the NE 102nd Avenue Safety Project was constructed.

### How concerned are you about:

#### Cars traveling at fast speeds?



#### Crossing NE 102nd Avenue?



#### Biking along NE 102nd Avenue?



Note: The people who responded to the survey before the project and after the project are not the same people.

# NE 102ND AVE SAFETY PROJECT | Pilot Evaluation Report

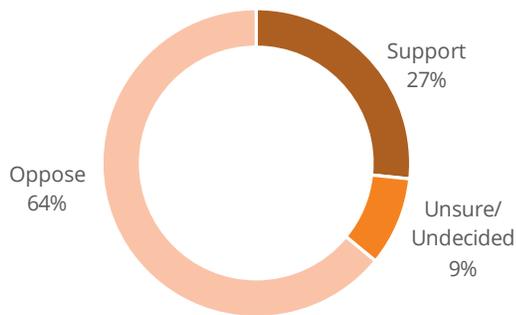
## Opinion of the Pilot

**Key findings:** Most survey respondents oppose the pilot project. A large number of respondents support the pilot project. There are a variety of reasons for opposition.

Survey respondents were asked to rank their support for the NE 102nd Avenue Safety Project on a 1-5 scale. A little less than two thirds of respondents expressed opposition to the project. The comments show that opposition was rooted in many reasons, including:

- Concerns about congestion and side-street traffic
- Concerns that the bike lanes are not well protected
- Wanting more crossings
- Wanting more lighting at crossings

Opinion of the Project



## Unfunded Project Elements

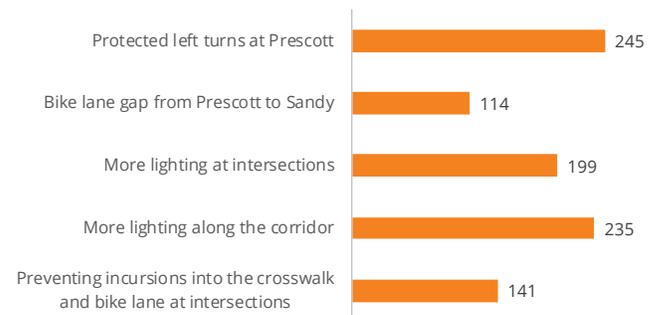
**Key findings:** Survey respondents want PBOT to complete unfunded project elements, especially adding street lighting and a protected left turn at NE Prescott Street.

During project development and design, PBOT heard from community members regarding their wishes and concerns. These elements included a protected left turn at NE Prescott Street, more lighting along the corridor, better protection for pedestrians and people biking at intersections, and addressing the remaining bike lane gap between NE Prescott Street and Sandy Boulevard. The project team considered these elements, but did not have enough funding in this project to include them.

In the survey, we asked respondents which of these projects elements we should prioritize. Respondents were able to select as many of the project elements as they wished.

Each project element received support from at least 20% of survey respondents. The most requested project elements were to add a protected left on NE Prescott Street and to add more lighting on NE 102nd Avenue.

Unfunded Project Elements



# NE 102ND AVE SAFETY PROJECT | Pilot Evaluation Report

## Survey Comments

PBOT asked survey respondents three open-ended questions:

- What part of the pilot project do you find works best?
- What part of the pilot project could be improved?
- Any specific concerns or suggestions?

In response, PBOT received over a thousand comments. The following includes a discussion and summary of the most common comments.

### **Biking**

The most common category for comments was about biking and bike lanes. Several dozen people mentioned that they like the new bike lanes and that biking has gotten better and safer. Some don't like them. Many people mentioned that there are not many people riding in the bike lanes, while some said that they have seen more people biking. There were also comments requesting better protection for the bike lanes, and some stating that people biking continue to use the sidewalks.

The NE 102nd Avenue Safety Project was focused on adding new safe crossings to the street. Doing so required having only one vehicle lane in each direction. Adding bike lanes was a fortunate opportunity that became a part of the project and brings NE 102nd Avenue in line with the Transportation System Plan and the 2030 Bike Plan. However it was not the motivation or priority for this project.

PBOT conducted bike counts on NE 102nd Avenue through the summer bike count program. These counts showed an increase in the number of people biking on NE 102nd Avenue, but more data is needed over a longer time span to determine a trend.

At this time PBOT will not be adding more physical protection to the bike lanes along the corridor because of budget and design constraints. However, PBOT is currently looking at some solutions to offer people biking better protection at intersections.

*"It is good to have this [as] an option for biking. Before I would go out to the I-205 path, past my destination, back to 102nd, and then backtrack to where I needed to be to minimize time on this road. Now I can just use it."*

### **Lane Reassignment**

Many survey respondents mentioned the lane reassignment in their comments, mostly to state that they would like a return to two vehicle lanes in each direction. A handful of respondents specifically mentioned the lane reassignment as a positive change.

Roadway reorganization is a powerful design tool. It allows PBOT to add six new pedestrian crossings on NE 102nd Avenue. While analyzing the comments we focused on specific concerns or opportunities.

*"Only having one lane in each direction is amazing. Traffic moves just as well as before (if not better), and it feels much, much safer walking or biking on 102nd."*



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## Driving on NE 102nd Avenue

Many respondents mentioned that congestion on NE 102nd Avenue had gotten worse. However, several respondents mentioned that driving has generally gotten better or easier, including some saying that congestion has decreased.

PBOT collected travel time data from TriMet and from Google. Both sources show no noticeable changes to travel time after the project.

A roadway reorganization with fewer vehicle lanes makes the road more crowded, which can sometimes make it feel more congested even when travel time along the street remains about the same. Furthermore, many people reported that NE 102nd Avenue had severe congestion before the project. The project was not attempting to fix that existing issue and therefore did not make any significant change to the previously existing level of congestion.

*“As a driver, I also feel that in general traffic conditions are safer - slower speeds and generally less traffic all together.”*



New crossing at NE Shaver Street

## Crossings

Many respondents expressed that they like having more crossings and that they feel safer walking. Some people mentioned that they would like the crossings to have rapid flashing beacons, similar to the ones at NE Skidmore or Wygant streets, and a small number of people expressed frustration with the crossing island location.

We are encouraged that crossings, which are at the core of this project, were well received. It is important to remember that these new crossings are only possible with the roadway reorganization that has one vehicle lane in each direction.

With the current street configuration, a crossing design without rapid flashing beacons or a signal meets PBOT’s design guidelines. Adding beacons or signals would make the project, which began with a limited budget, several times more expensive.

Crossing islands can make turns on and off of the street a little more challenging, which is a trade-off for ensuring a safe crossing space for pedestrians. People driving who are having a difficult time turning where there is a crossing island can always go to a nearby street to complete their turn.

*“I’m happy about the new pedestrian crosswalks, I can cross 102nd much easier and safer.”*



New crossing at NE Knott Street

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## Turning

Some survey respondents mentioned some new challenges to turning on or off of NE 102nd Avenue. There are fewer gaps in traffic during busy times. Crossing islands can make it more difficult to make a left turn off of some neighborhood streets. And some people find it difficult to turn right from the driving lane.

One of the trade-offs with a roadway reorganization is that it can lead to a reduction in gaps in traffic, especially during busy times. This is weighed against far safer conditions for pedestrians as well as people biking and accessing transit. Without closer signal spacing, there is not much PBOT can do to address this issue. When possible, people driving can choose to turn from other streets during busy times to address this challenge.

*“Not sure how this would be solved, but it’s difficult to pull out onto 102nd from our side streets.”*



A person turning past the new crossing island at NE Morris Street

## Speed

Some survey respondents commented on speeds on NE 102nd Avenue. The majority said they were happy with how the project caused speeds to go down. Some mentioned that speeds did not seem to be lower and requested additional traffic calming such as fixed speed safety cameras, speed bumps on NE 102nd Avenue, and a lower speed limit.

PBOT can put out a limited number of fixed speed safety cameras. This is because of restrictions written into state law, limited staffing at the Portland Police Bureau, budget restrictions, and equity considerations and analysis. The fixed speed safety camera program is nevertheless expanding slowly, and NE 102nd Avenue is a candidate for the new cameras. It will be weighed against other High Crash Network streets.

NE 102nd Avenue is an arterial street and a Major Emergency Response Route, therefore PBOT cannot add speed bumps onto the street.

The Oregon Department of Transportation (ODOT) controls speed limits on Portland’s streets. PBOT submitted an application to ODOT to lower the speed limit in the project area to 30 mph, which was turned down. PBOT is currently appealing this decision.

*“I drive this way a lot, and I drive slower now that this project is there; I think other drivers automatically slow down too.”*

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## Dangerous Behaviors

Some respondents mentioned seeing other people who are driving engage in dangerous behaviors. These include driving in the bike lane and parking lane, passing at high speed on the right when the road widens to two lanes, and general road rage.

Driving in the bike lane, especially before turning off of a main street, is a problem on many of the streets around Portland. PBOT has begun installing some barriers to prevent this movement on other projects. We are currently exploring designs and looking at funding options to install something similar during Phase 2 of the NE 102nd Avenue Safety Project.

Road rage and driving in reckless or dangerous ways creates safety hazards for everyone. Unfortunately there is little PBOT can do to directly combat road rage. Projects like this help to lower speed and create designated spaces for the most vulnerable road users, which lowers the risk that dangerous behavior will lead to a serious injury or fatality.

People passing at high speeds on the right in areas where there are two vehicle lanes in one direction is another example of dangerous behavior. It may also indicate confusion about how to use these portions of the road. The most efficient use of the road would be a zipper merge, meaning people would be driving in both lanes. This would prevent these types of dangerous maneuvers. PBOT is working on educational materials to distribute about new infrastructure in projects like this.

*“The bike lane looks extremely unsafe because cars are driving in it anyways. If there was a cone barrier, it would be much safer.”*

## Side Streets

Some respondents commented that more people are driving on side streets. A few people mentioned that side street traffic did not increase or has even gone down.

PBOT measured speed and volume on 25 residential streets near NE 102nd Avenue and found no significant changes to volume that could be attributed to the project.

Community members told PBOT about issues with side street traffic before the project implementation, especially on days where crashes occur on I-205. This project did not implement any strategies to address this specific issue.

*“Cut-through traffic on neighborhood side streets has been reduced as traffic flow on 102nd has improved.”*



A person drives illegally in the bike lane before turning right onto NE Morris Street.

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## Bridge Design

Some respondents commented about the lane configuration and two-way protected bike lane along the bridge over the freeway, including movement through the Fremont intersection. Comments were mixed. Some do not like the two-way bike lane while others explicitly thanked PBOT for putting in the two-way bike lane in response to community requests. A number of people like the double left from NE Fremont Street onto NE 102nd Avenue, while others did not like that change. Most people commented that they were confused about how to maneuver through this area, especially on bike.

PBOT engineers are currently drafting markings for the ramp that connects the sidewalk and the two-way bike lane, as well as markings to instruct people biking to ride on the sidewalk between the ramp and NE Fremont Street. This change will be implemented as schedules and weather allow.

PBOT will be adding many more improvements to the Fremont intersection during Phase 2 of the project, including transit curb extensions and new corner ramps. During this time there will be a number of fixes that will make navigating through this space much clearer.

*“The pedestrian access along the I-84 overpass feels infinitely more safe than it did before, providing a much better connection between Gateway and Parkrose.”*



Biking on the two-way bike lane on the bridge

## Street Lighting

Some respondents asked for more streetlighting along NE 102nd Avenue.

PBOT is currently working to secure funding for more lighting on the High Crash Network, including on NE 102nd Avenue.

*“Adding street lighting to East Portland streets continues to be top priority in my opinion.”*

## Enforcement

Some respondents asked for more enforcement of speed and other traffic violations on NE 102nd Avenue.

PBOT does not control how much enforcement happens or where it happens. Enforcement is managed by the Portland Police Bureau. Police have had many vacancies in the recent past which have limited their ability to enforce traffic violations across Portland.

*“I think there should be many more speeding tickets handed out on 102nd for speeding and reckless driving. Also, no one seems to obey the 20 mph sign at Prescott Elementary when it is flashing.”*



Two-way bike lane design near the sidewalk ramp

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## Confusion and Education

Some survey respondents commented that they were confused about how the new street configuration works, and have seen other people who seem confused. Several asked for more education to accompany the changes.

PBOT implemented the NE 102nd Avenue Safety Project as a pilot. As a result, some of the project elements are not as clear in their temporary state as they will be once the permanent design is put in place.

PBOT is currently developing educational materials about standard infrastructure that can be distributed to community members when new projects are built.

As with any change, PBOT expects an adjustment period to accompany a project while people get used to the changes. People are usually less confused about projects several months after they have been implemented.

*“Some of the new traffic patterns can be better marked. The 2 way bike lane is confusing to people.”*

## Houselessness

Several respondents mentioned concerns about people suffering from houselessness. Concerns included camping on the I-205 path, which makes it more difficult to use it for transportation purposes, and people walking in the bike lanes.

PBOT does not have the resources or the expertise to support people suffering from houselessness with most of the needs in that community. The Joint Office of Homeless Services at Multnomah County manages most of these services.

Vision Zero is particularly concerned about people suffering from houselessness because they are much more likely to be walking or biking in more dangerous road conditions such as on or near the freeway or on fast arterial streets at night. Projects like the NE 102nd Avenue Safety Project help protect vulnerable road users by lowering vehicle speeds and creating more safe places for people to cross the street.

Vision Zero has also been coordinating some direct outreach to people living unhoused, including offering retro reflective stickers that can be added to clothing and other items.

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## NEXT STEPS

Based on the data PBOT collected for the NE 102nd Avenue Safety Project evaluation, there is no intervention or mitigation necessary at this time. The project team identified a number of improvements to be made in the coming months.

### Winter - Spring 2020

The NE 102nd Avenue Safety Project team reviewed project improvements that could be completed before Phase 2. These improvements need to be small and simple enough to they can be added to the existing maintenance schedule. They will be added as soon as weather and maintenance schedules allow:

- Mark the ramp from the sidewalk to the two-way bike lane on the bridge to improve visibility
- Mark the sidewalk between the ramp and the Fremont intersection to clarify how people biking should navigate this section

### Phase 2 (Summer 2020)

There are various project elements that are a part of the NE 102nd Avenue Safety project but were not implemented last summer, including all work involving new concrete. These were not added because they require additional design work and to make the pilot phase more malleable. Phase 2 will include these elements as well as other improvements that the project team identified in the evaluation process:

- Add crossings at NE Beech and Thompson streets
- Convert all temporary crossing islands to permanent concrete islands
- Build curb extensions with new ADA-compliant ramps for all new crossings
- Build transit curb extensions at NE Fremont Street
- Adjust the crossing at NE Tillamook Street to support people biking west to east
- Add more bike symbols to the bike lanes

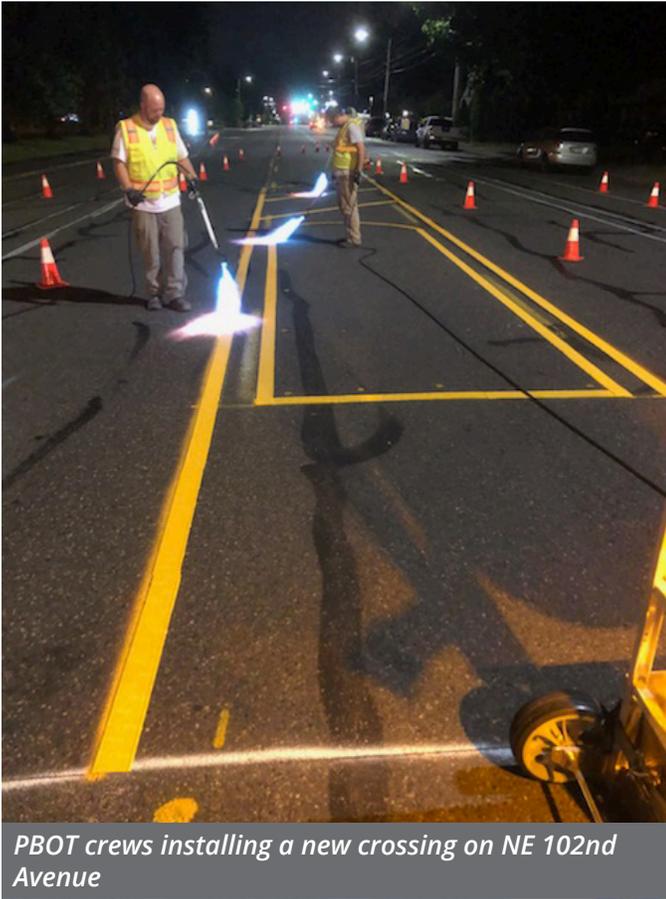
- Make several improvements and clarification in the area with the ramp that connects the sidewalk and the two-way bike lane
- Create a small bus only lane southbound near NE Prescott Street to clarify turning movements
- Add wayfinding signs highlighting options like the I-205 path
- Raise inlets in the bike lanes to be level with the road surface

### Other Efforts

There are a number of other efforts that would offer more support to the NE 102nd Avenue Safety Project. These efforts are being carried out by other teams in PBOT, but none currently have dedicated funding or a construction date:

- Adding barriers near crossings to deter people from driving in or turning from the bike lane
- Replace street name signs
- Adding a protected left turn phase for people turning from NE Prescott Street to 102nd Avenue
- Working with ODOT to lower the speed limit to 30 mph
- Adding street lighting on NE 102nd Avenue.
- Placing fixed speed safety cameras on NE 102nd Avenue
- Completing the bike lane from NE Prescott Street to Sandy Boulevard
- Creating education materials about new infrastructure changes

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PBOT crews installing a new crossing on NE 102nd Avenue

Winter -  
Fall 2018

**Crash + Traffic  
Data Collection  
+ Analysis**

Spring -  
Winter 2018/19

**Community  
Discussion and  
Design  
Development**

July 2019

**Phase 1:  
Pilot  
Implementation**

Fall -  
Winter 2019/20

**Pilot Evaluation  
+ Final Design**

Summer 2020

**Phase 2:  
Concrete  
Elements**

## Questions?

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