



SPEED LIMIT
35

EPASS

EAST PORTLAND ARTERIAL
STREETS STRATEGY



FINAL REPORT APRIL 2021

PBOT
PORTLAND BUREAU OF TRANSPORTATION

Table of Contents

Introduction - Message from PBOT Director	3
2020 Impact	5
Project Overview	6
East Portland Progress	16
What We Heard	22
Corridor Summaries	28
NE/SE 102nd Avenue/103rd Avenue/Cherry Blossom Drive (Sandy Boulevard - 106th Avenue)	34
NE/SE 122nd Avenue (Airport Way - Glisan Street)	36
NE/SE 148th Avenue (Sacramento Street - Glisan Street)	38
SE 162nd Avenue (Stark Street - Powell Boulevard)	40
NE Airport Way (Holman Street - 181st Avenue)	44
NE Sandy Boulevard (82nd Avenue - Killingsworth Street)	46
NE Halsey Street / Weidler Street (82nd Avenue - 162nd Avenue)	48
NE Glisan Street (82nd Avenue - 162nd Avenue)	50
SE Stark Street / Washington Street (82nd Avenue - 162nd Avenue)	52
SE Division Street (82nd Avenue - 175th Place)	54
SE Foster Road / Woodstock Blvd (82nd Avenue - 122nd Avenue)	56
What's Next?	58
Your Thoughts	64
Appendix Table of Contents	65
Contributors & Acknowledgements	68

Message from PBOT Director

The area that we call East Portland, generally east of 82nd Avenue, is home to nearly a quarter of all Portlanders, including many of our most diverse and affordable communities. Sadly, East Portland also sees a disproportionate share of traffic crashes and fatalities – many of them on wide, busy arterial main streets like Division, Stark and 122nd. As a Vision Zero city with a goal of eliminating traffic deaths we must do better.

Doing better means making changes to our most dangerous streets to reduce crashes and to make people feel safe using them – whether they are walking, biking, crossing the street to catch a bus, or driving. That’s why PBOT has over 15 major capital projects underway on the 41 miles of multi-lane arterials in East Portland, providing critical safety features like signalized pedestrian crossings, sidewalks, protected bike lanes, and streetlights.

As we make changes to East Portland streets, sometimes we are asked if we’ve thought through the side effects of major changes like reducing the number of vehicle lanes or adding center medians. Every major change to our streets goes through rigorous engineering analysis, but with so many different street projects underway in East Portland, people have urged us to make sure we’re considering our streets as a system, not just making changes “in a vacuum” on each street. That’s where the East Portland Arterial Streets Strategy, or EPASS, comes in.

The East Portland Arterial Streets Strategy takes a detailed look at the safety problems facing each major street in East Portland; develops solutions based on the best practices in transportation safety (or passes along solutions already vetted); uses traffic modeling to make sure the street network is not unduly impacted with congestion or neighborhood cut-through traffic; and presents a concise list of the proposed projects that will transform East Portland arterials for the better.

With over \$200 million in safety capital projects in the process of being delivered east of 82nd Avenue, our streets are getting safer with every ribbon that we cut. We have much more work to do in East Portland. We hope that this report provides Portlanders east of 82nd Avenue a good idea of what we’re up to on their main streets, why we’re doing it, and a better understanding of how we can solve safety challenges while keeping people and goods moving through our city.

Be safe and be well.
Chris Warner

**Vision Zero Portland is committed to ending traffic violence in our communities. Through the Vision Zero Program, the City of Portland and our partners are working to eliminate deaths and serious injuries on our streets*



Photograph by Sergio Olmos, Portland Mercury, 2020

2020 Impact

EPASS project work largely took place before the world- and community-changing events of 2020. Although our analysis, observation and outreach predated the global pandemic, economic crisis and racial justice protests, those events have both clarified and confirmed many of our EPASS findings.

In March 2020, to combat the spread of the coronavirus, Governor Brown issued stay-at-home orders for all but essential workers. The accompanying closure of schools, businesses and services significantly impacted vehicle traffic, transit ridership and other travel modes. While we saw traffic reduction of up to 60% in the city core, East Portland traffic dropped only about 30%. Similarly, while transit ridership has dropped significantly across the city, some of the lines with the least reduction in ridership operate on East Portland streets. This speaks to the fact that many East Portlanders are essential workers, and East Portland arterials are “hardworking streets” that serve as a link to work centers and regional connections.

In the summer of 2020, the nation responded to the killing of George Floyd with grief, outrage and a renewed call for racial justice. Portlanders took to the streets to hold vigils, rallies, marches and protests. The killing of Ahmaud Arbery in February 2020 while he was jogging on a sidewalk had already reignited discussion about how our streets and public spaces are used to inflict violence on vulnerable populations and communities of color.

The EPASS project focuses on safety from traffic violence on East Portland arterials, but we must also confront the personal safety and vulnerability of these communities as they use these streets. The City of Portland’s climate, health and modal goals encourage a shift away from single-occupant vehicle trips to travel on foot, by bike or on transit. However, we must recognize that many do not feel personally safe by the exposure inherent in being outside of a vehicle, or in interacting with police officers or other government personnel.

As the City of Portland grapples with responding to the epidemic, the economic crisis and racial justice protests, we are committed to supporting East Portland with antiracist policies that address equity and improve the safety of East Portlanders. In the immediate term, we have implemented programs to expand sidewalk space and bus stop waiting areas to enable social distancing. We have worked with community partners to distribute business stabilization grants and to ensure access to school lunches, COVID tests and other programs to support families. To better inform our decisions, we are asking our partners in the community, “What will make you feel safer when you’re moving through your neighborhood?” Decades of systemic racism and economic dislocation will not be solved quickly or easily, but we remain committed to making East Portland a safe and vibrant place to live, work and play.

2020 Spring

East Portland
30% traffic reduction
Portland Central City
60% traffic reduction

Project Overview

What We Did, What We Learned

The East Portland community has called for a comprehensive transportation vision for its major street network that prioritizes safety, improves access for multiple modes of travel, and better matches current and future traffic levels.

However, the largest roadways in East Portland continue to be among the city’s most dangerous — leading in fatal crashes and serious injuries for pedestrians, bicyclists and vehicle drivers. The overarching vision for PBOT’s East Portland Arterial Streets Strategy (EPASS) is to design safer transportation corridors, with enhanced mobility and accessibility for all. To realize this vision, EPASS proposes implementation of modernization strategies for busy major streets that are designed both to increase safety and to keep people and goods moving.

Final Report

The purpose of this report is to help readers understand the EPASS project goals, our findings and how we made decisions. More detailed technical information is available in the report appendices.

Process: The path taken

The EPASS process took a systems approach to addressing the legacy safety, mobility and accessibility challenges within the East Portland arterial network. (In this report, we use the word “arterial” to refer to the larger, more heavily used streets of East Portland, most of which have or recently had five lanes for vehicles.) In other words, we looked at the arterial network — a group of interconnected major streets or corridors — as a complete system. We recognize that when we recommend changes to one corridor, we also impact other parts of the network.

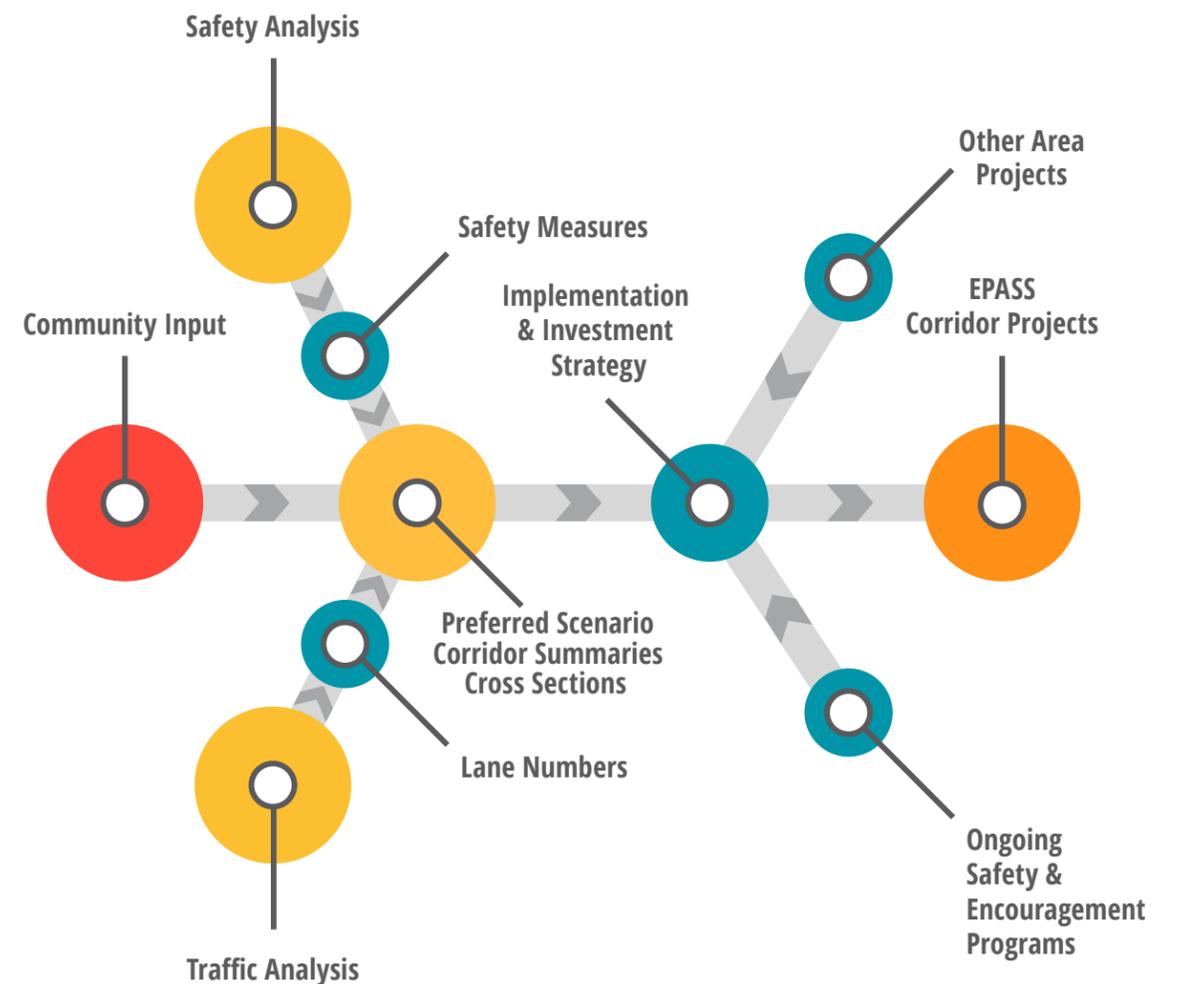
The EPASS Workflow Process comprised a series of steps (see Figure 1), starting with a safety analysis to understand where the most severe crashes occur, often involving “vulnerable road users” such as people walking or biking. In response to the safety analysis, the EPASS team identified safety measures, also known as countermeasures, to help mitigate the types of crashes that occur in the area.

We incorporated those safety measures and tools into draft roadway cross sections for each of the East Portland arterials. EPASS developed and considered numerous street design scenarios and drew ideas from community input and survey feedback. The EPASS team analyzed traffic to evaluate the impacts on the whole system from scenarios that featured different combinations of roadway cross sections. The cross-section work and system analysis are supplemented with ongoing safety and capital improvement programs, other preexisting projects, and an investment strategy for East Portland. Together, they represent the “Preferred Scenario,” a package of street redesigns for the 11 corridors in the EPASS network.

This package includes a combination of preexisting and new projects, each one in various stages of development. Some projects are funded and are currently undergoing project development, design or construction, and others are newly defined and await funding. Two main goals for EPASS are to coordinate and better understand the cumulative results and to more effectively communicate information about all projects that involve reorganization of roadway space on the East Portland arterial network. The EPASS network includes every multi-lane city street in East Portland east of 82nd Avenue that is within PBOT’s purview; this area consists of 11 corridors, with a total of 41.9 centerline miles of roadway. For a closer look at the EPASS process, see Figure 1.

EPASS Workflow Process

Figure 1



EPASS Corridor Projects - includes EPASS Capital Projects, see What's Next for project descriptions

Other Area Investment Projects - Safer Outer Stark, The 122nd Ave Plan, Rose Lanes, The 162nd Plan

Ongoing Safety & Improvement Programs - Vision Zero, Activation & Encouragement, Neighborhood Greenways, Transportation Demand Management, East Portland Action Plan

KEY FINDINGS

Safety Analysis

EPASS led with a safety analysis on each of the 11 corridors. This assessment of the EPASS network confirmed project goals and identified deficiencies and the contributing factors leading to crashes on each corridor. The EPASS safety analysis assessed the following: 10 years of crash data, vehicle speed and count studies, the presence of facilities for all transportation modes (vehicles, bicycles, rolling, pedestrians), and street lighting. The safety analysis focused on two categories: (1) crashes involving injuries to pedestrians and cyclists and (2) crashes resulting in severe and fatal injuries to vehicle occupants.

EPASS corridors have some of the highest posted speeds in the city, including segments with speed limits of up to 45 mph. The World Health Organization recommends that speed limits on urban roadways not exceed 30 mph. Despite the posted speeds that are already high relative to other places in the city, many vehicles still excessively speed. PBOT has been systematically reducing posted speeds on East Portland arterials in coordination with regulators at the Oregon Department of Transportation.

Most EPASS arterials were developed in the mid-20th century, under standards that no longer meet today's needs. Consequently, many arterials do not meet PBOT's current standards or guidelines, particularly for nonautomotive modes of travel. Fifteen projects that aim to improve these conditions are scheduled for construction over the next 5 years, with work having begun in 2019. Similarly, street lighting on most of the EPASS corridors is only on one side of the street, which is insufficient to illuminate the wide streets, making it particularly hard to see people walking at night. Installation of additional lighting began in the summer 2020 and continues to be a PBOT priority.

Disproportionate Death

East Portland contains about one-quarter of Portland's population but experiences roughly half of its traffic deaths. And of the top 30 intersections for serious and fatal crashes, all but two are in East Portland.

Our safety analysis concluded that the major roadways in the EPASS network pose barriers to safe travel, particularly for people walking. The posted speed limits are also too high. In addition to these shared challenges, some corridors have unique safety issues that we will need to address as Portland continues to grow.

The EPASS team drew on the issues and conclusions in the safety analysis to develop safety measures to be incorporated into the final corridor strategies. For more information about the safety analysis, see Appendix A — EPASS Network Safety Analysis.

Safety Analysis-Based Solutions

In response to the issues that the safety analysis identified, the team developed potential solutions based on proven safety countermeasures. In our context, a countermeasure is an intervention that is meant to address a contributing factor in roadway design or in personal behavior that has led to serious crashes in the past.

A safety countermeasure might take the form of new street features or a policy change (e.g., speed reduction), but the goal of each one is to reduce the frequency and severity of crashes. Researchers have been able to determine the effectiveness of each countermeasure based on before-after analysis, reported as crash reduction factors.

The most frequent and severe crash trends that we identified in the safety analysis included crashes involving pedestrians, bicyclists, speeding and/or low-lighting conditions.

Crash Types and Countermeasures

The safety countermeasures that the EPASS team considered were organized according to crash type, namely:

- Pedestrian and bicyclist crashes at intersections
- Speed-related and bicyclist-involved crashes along roadway segments
- Crashes in low-lighting conditions
- Crashes with fixed objects (e.g., hitting a pole or tree)

We recommended several safety measures to help reduce the number and severity of each crash type.

To reduce pedestrian and bicyclist crashes at intersections:

- Install leading pedestrian intervals to let pedestrians begin walking before vehicles get a green light
- Install more protected left turns at intersections that are controlled by traffic signals
- Provide high-visibility crosswalks at intersections

To reduce speed-related crashes and bicyclist crashes along roadway segments:

- Install automated speed enforcement
- Reduce the posted speed limit to 30 mph
- Reconfigure some five-lane sections to a three lane section to slow speeds and to add enhanced bicycle and pedestrian facilities
- Install a raised center median
- Reallocate on-street parking to create buffered or protected bike lanes

To reduce crashes in low-lighting conditions:

- Increase the lighting where roadway segments are too dark

Equitable, Safe Solutions

"Racial Bias in Drivers' Yielding Behavior at Crosswalks: Understanding the Effect,"¹ a study conducted by Portland State University, explored the hypothesis that "drivers will exhibit racial bias when making decisions about whether or not to stop for pedestrians waiting to cross the street at a crosswalk, which may reflect conscious or non-conscious biases."

And based on a Centers for Disease Control and Prevention study examining crash history,² racial minorities are disproportionately represented in pedestrian fatalities. Examining driver yielding behavior at marked crosswalks, the study found that black male pedestrians were passed by twice as many cars and waited 32 percent longer than white male pedestrians. Drivers were less likely to stop for black and male and black female pedestrians, and when they did stop, they were more likely to stop closer to black male and black female pedestrians than to white male and white female pedestrians, regardless of the drivers' race and gender. These negative experiences lead to increased stress and harm for black pedestrians.

The EPASS study area is a community of color. As a result of this observed data, this analysis makes two recommendations: (1) reduce overall harm by reducing travel speeds, and (2) provide more robust crossing treatments that do not rely on voluntary yielding, such as the installation of pedestrian hybrid beacons or signals, and provide more frequent illumination to achieve more equitable outcomes and to reduce racial disparities in pedestrian-involved crashes.

1. Kimberly Kahn, Principal Investigator, "Racial Bias in Drivers' Yielding Behavior at Crosswalks: Understanding the Effect," National Institute for Transportation and Communities, Portland State University research project, 2017, https://nrtc.trec.pdx.edu/research/project/869/Racial_Bias_in_Drivers%27_Yielding_Behavior_at_Crosswalks%3A_Understanding_the_Effect

2. Morbidity and Mortality Weekly Report, "Motor Vehicle Traffic-Related Pedestrian Deaths — United States, 2001–2010," Centers for Disease Control and Prevention, April 19, 2013 / 62(15);277-282, <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6215a1.htm>

To reduce crashes with fixed objects such as utility poles or trees:

- Increase separation between fixed objects and traffic
- Reduce the posted speed limit to 30 mph

The EPASS team used these safety measures to evaluate alternatives for the new roadway designs that we considered to modernize and to improve the corridors in the East Portland arterial network. For more information about EPASS safety measures, see Appendix A — EPASS Network Safety Analysis.

Traffic Analysis

To better understand the cumulative effects of reallocation of vehicular roadway space on multiple East Portland corridors simultaneously, the EPASS team used sophisticated software to model vehicular traffic and transit. By using Aimsun Next software, we built a travel model for East Portland that represented the most congested hours during weekday evenings (4 to 5 p.m.) for the year 2020. As input, we used traffic data from before COVID-19-related stay-at-home orders. By developing a model for the entire EPASS study area, we could understand the traffic implications across the network of the different scenarios based on different combinations of roadway lane configurations. To pinpoint any potential diversion onto nonarterial streets, the model included not just the EPASS arterial streets, but also smaller collector streets and neighborhood greenway routes.

The traffic analysis identified 22 separate roadway configurations, each representing a corridor project that has either been recently completed, is currently under construction, or is under development with funding and plans to construct within the next 3 years. These 22 roadway configurations — some of which reduce the number of vehicle lanes from five to three — were packaged initially into nine different scenarios. Each scenario represented a different package of potential roadway configurations that could be made into projects. We developed a 10th

scenario, called the “Preferred Scenario,” based on the traffic impact and other metrics (outlined below) from the previous nine scenarios.

Travel model “runs” helped us understand the potential implications of each scenario. The model was iterative and allowed simulated drivers to adapt their behavior over time to make more efficient route choices in response to the changes that the roadway projects created. The model also accounted for TriMet bus travel and traffic signal timing.

The team evaluated model results for the 11 EPASS corridors by using the following performance metrics:

- Traffic Volumes — Traffic volumes were reported for each roadway segment, for each direction of travel.
- Traffic Congestion — Traffic congestion was measured by a ratio of motor vehicle traffic volume (V) to roadway capacity (C). A V/C at or near 1.0 represents a roadway at capacity, with slow-moving vehicles due to congestion, and a V/C below 0.3 generally indicates free-flowing traffic. A V/C greater than 1.0 represents a condition in which traffic is spilling onto adjacent streets or is increasing the time span of peak traffic.
- Average Speeds (miles per hour) — Average speed was calculated for corridor segments called “subpaths,” which are each about 2 miles long. Speeds are affected by the number of vehicles on the roadway and trend downward as a road becomes congested.
- Travel Times— Travel times were calculated based on the average time that vehicles took to travel the entire length of each roadway subpath.

In addition to these performance metrics for the 11 EPASS corridors, we reviewed model outputs for potential traffic diversion to other EPASS corridors or local neighborhood streets. Scenarios that resulted in substantial traffic diversion, and particularly to neighborhood greenways, were

not further considered. Some scenarios that we evaluated but then dismissed included a substantial lane reorganization on the full length of NE/SE 122nd Avenue. This reorganization resulted in traffic diversion to other EPASS corridors, neighborhood collector streets and greenways; therefore, we deemed it to have too great an impact on the surrounding roadway network. Instead, the Preferred Scenario includes a limited reorganization of SE 122nd Avenue south of SE Holgate Boulevard, which showed a relatively steady level of volumes for other roadways in the EPASS area while introducing safety benefits. Similarly, the team determined that lane reallocations were not feasible on SE Stark Street east of SE 108th Avenue, but the Stark/Washington Couplet west of SE 108th Avenue has the capacity to drop a car lane in each direction.

EPASS did not impose hard criteria on what level of congestion or diversion is unacceptable. However, V/C ratios greater than 1.0, subpath travel time increases of more than 2 minutes, and volumes on neighborhood streets increasing more than 50% were all “red flags” that influenced whether we deemed certain road reorganizations feasible or infeasible. These soft thresholds represent a point beyond which the safety benefits of a road reorganization (slower speeds, shorter pedestrian crossings, better bike access) begin to erode because of secondary safety impacts. For example, increased traffic on neighborhood streets that do not have sidewalks, risky turns from side streets through a solid stream of cars, and aggressive or reckless driving can all be secondary safety impacts. Another consideration was that East Portland and the surrounding areas are expected to continue growing, translating to continued growth in trips taken by all modes, including the cars, delivery trucks and buses that use lane space.

The EPASS Preferred Scenario responds to the findings from both the traffic analysis and the safety analysis. It also includes a combination of roadway projects that adhere to PBOT’s adopted policies for safety and climate protection, while

Road Reorganization or Not?

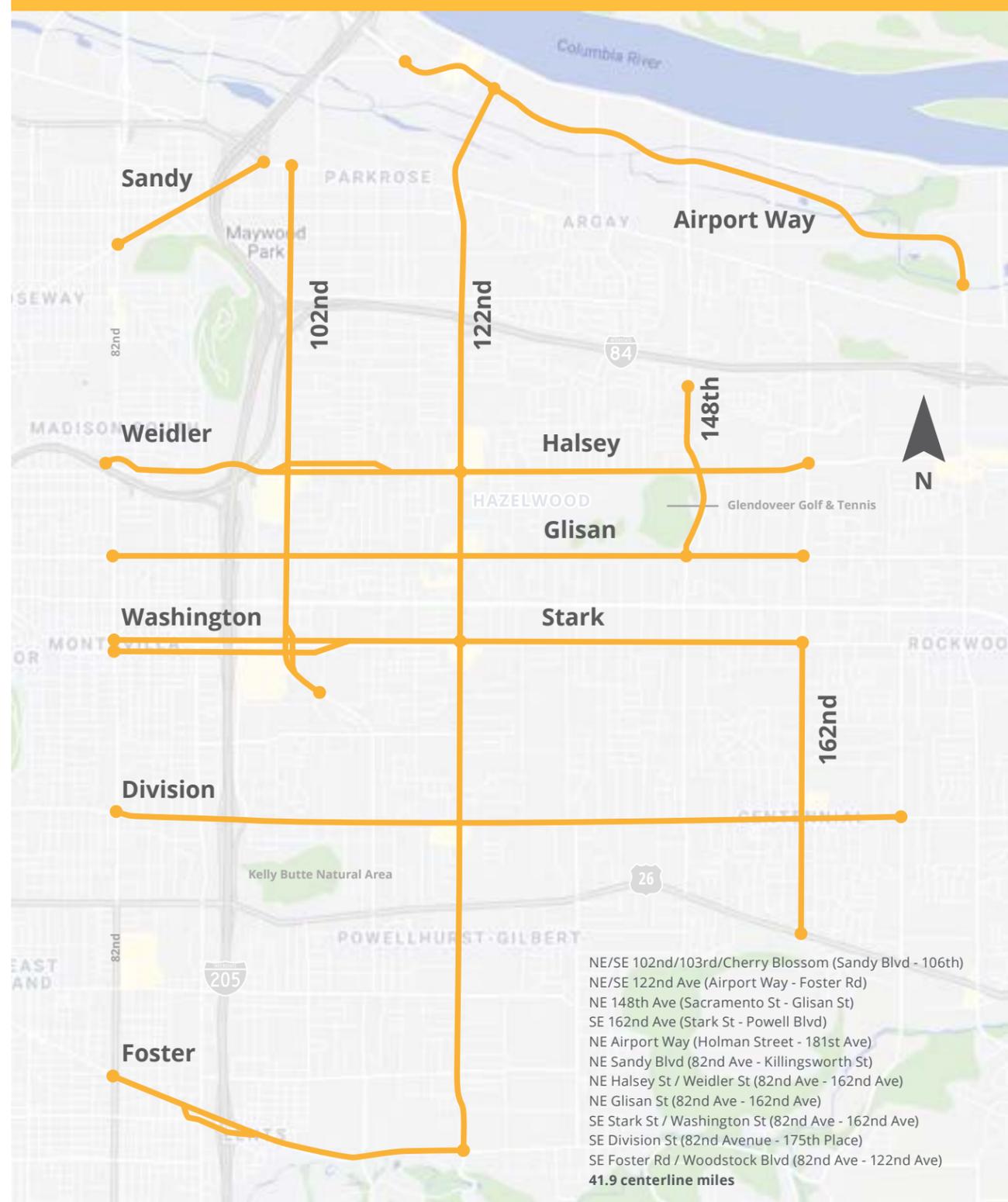
In the EPASS travel model, we found the following street segments can accommodate a reallocation of vehicle lanes for safer vehicle and multimodal travel without significant congestion or diversion impacts:

- NE 102nd Ave: Weidler St–Sandy Blvd
- NE Glisan St: 82nd Ave–I-205
- NE Glisan St: 102nd Ave–162nd Ave
- SE Stark/Washington Couplet: 92nd Ave–108th Ave
- SE Foster Rd: 52nd Ave–90th Ave
- SE 122nd Ave: Foster Rd–Holgate Blvd
- NE 148th Ave: Glisan St–I-84
- SE 162nd Ave: Powell Blvd–Stark St

We found that road reorganizations on the remaining street segments had unacceptable congestion and/or diversion impacts, such as increasing travel times by several minutes or increasing traffic on neighborhood streets that do not have sidewalks. (Note: Projects on Holgate, Foster, 102nd and the easternmost segment of Glisan were already complete at the time of this report.)

still keeping traffic moving reasonably and without cutting through neighborhoods. In addition to improving safety for vulnerable road users, all the projects improve safety for all road users. Some of the projects achieve this outcome by reallocating vehicle lane space, and other projects use medians, pedestrian signals and other safety interventions that do not reduce the number of vehicle through lanes. All told, the Preferred Scenario includes lane reallocation treatments on one-third of the EPASS arterials — 13.6 miles — and for the remaining two-thirds, the Preferred Scenario recommends other safety treatments. For more information about the EPASS traffic analysis, including the different scenarios that we tested, see Appendices G — Aimsun Next Model Development and District-level Travel Demand Analysis, H — Corridor-level Traffic Analysis and I — Final Preferred Scenario Analysis.

EPASS Network



The EPASS Network includes major streets maintained by PBOT east of 82nd Avenue.

Community Engagement

Building on PBOT’s and the community’s past relationship of working together, PBOT initiated new conversations with the East Portland community, requesting input through community forums. These forums included community open houses, public meetings, workshops and an online questionnaire. In most cases, we presented EPASS as a special topic at public forums for other related projects, including events for projects on NE/SE 122nd Avenue, SE Stark Street, NE Glisan Street and SE 162nd Avenue. We also presented the project at the East Portland Land Use & Transportation Committee, the Pedestrian Advisory Committee, the Bicycle Advisory Committee, and neighborhood associations, and in community conversations such as the transportation forum hosted by East County Rising. Community members also shared their concerns, ideas and feedback with project managers through letters and email. In-person work with the community continued until government stay-at-home orders were issued because of the global pandemic in 2020.

From the community, we learned about what works and what matters. We heard that the top concerns for the community are safety, congestion or a combination of both. Improved sidewalks, street lighting and intersection safety are top priorities that we have consistently heard from the community. There is less widespread agreement about roadway changes that reduce the number of vehicle lanes. To learn more about what the community shared with us, see the “What We Heard” section in this report. Appendix B — Previous East Portland Public Input and Appendix C — Questionnaire Findings also have more information about community input.

Corridor Summaries

The EPASS team undertook a systems approach to address the safety, mobility and accessibility conditions of East Portland’s major streets, but we also considered each corridor individually. With

this approach, we could consider the uniqueness of each corridor and the net effect that a change in one corridor could have throughout the network. With this understanding, we created an individualized corridor summary that contains findings about the existing conditions and proposed recommendations for each roadway. Each summary also includes corridor vehicle performance, corridor conditions, corridor solutions, TriMet service, Transportation System Plan (TSP) Street Classifications, existing and proposed typical cross sections, and congestion diversion findings. Where necessary, the summaries include proposed countermeasure safety elements, new cross sections and proposed roadway reorganizations.

The EPASS corridors include the following:

1. NE/SE 102nd Avenue/103rd Avenue /Cherry Blossom Drive (Sandy Boulevard to 106th Avenue)
2. NE/SE 122nd Avenue (Airport Way to Foster Road)
3. NE/SE 148th Avenue (Sacramento Street to Glisan Street)
4. SE 162nd Ave (Stark Street to Powell Boulevard)
5. NE Airport Way (Holman Street to 181st Ave)
6. NE Sandy Boulevard (82nd Avenue to Killingsworth Street)
7. NE Halsey Street / Weidler Street (82nd Avenue to 162nd Avenue)
8. NE Glisan Street (82nd Avenue to 162nd Avenue)
9. SE Stark St / Washington Street (82nd Avenue to 162nd Avenue)
10. SE Division Street (82nd Avenue to 175th Place)
11. SE Foster Road / Woodstock Boulevard (82nd Avenue to 122nd Avenue)

For more information, see the “Corridor Summaries” section in this report.

Implementation

This EPASS Final Report concludes with an implementation and investment strategy based on the design recommendations for the East Portland arterial network. Several of these recommendations have been integrated into existing funded or unfunded capital projects to support improvements to this transportation network as it evolves. For a summary of these projects, see the “What’s Next?” section of this report.

The time frame for major capital projects from conception to completion can be as long as 5 years, but some lower-cost fixes can take less time. At the time of this report, several of those projects are about to begin construction, while safety planning and monitoring efforts are ongoing. For more information about EPASS projects, see Appendix J — Implementation and Investment Strategy.

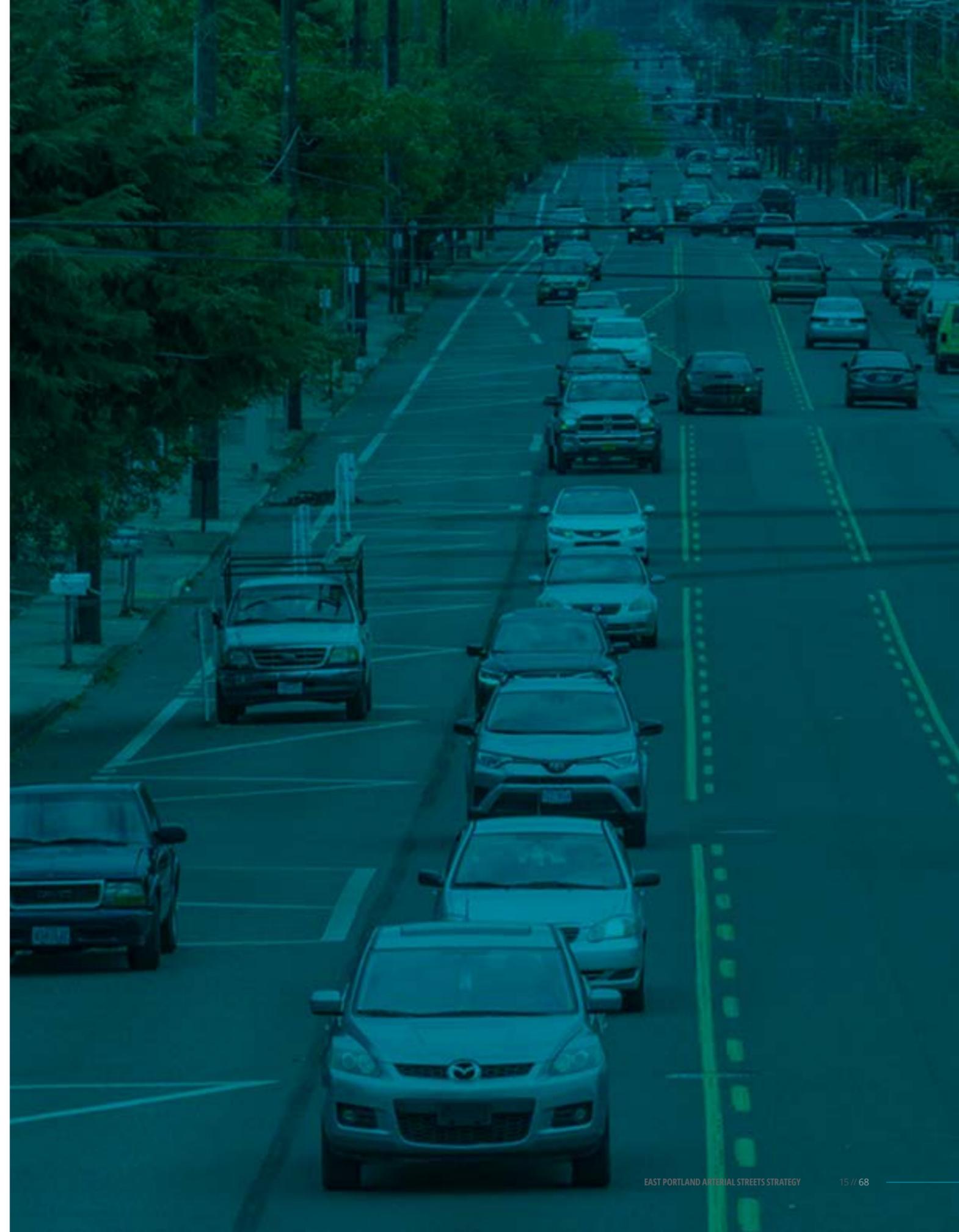
Related Efforts

Implementation of the EPASS network strategy involves the delivery of capital projects on the EPASS network as well as related efforts. Those related efforts include planning and non-capital-safety improvements that come under the umbrella of several existing programs. These programs include Vision Zero, neighborhood greenway improvements, activation and encouragement work. Vision Zero work includes implementing safe speed limits, analyzing crash data to identify high-crash corridors and to inform mitigation measures, installing speed-safety cameras, and implementing left-turn calming where necessary. Neighborhood greenway improvements support safer multimodal road sharing and traffic calming on key neighborhood routes for biking and walking. The activation and encouragement work includes educating neighbors about alternate routes for bicycling, walking, and rolling and helping people become more comfortable with these options.

PBOT is also playing a supportive role in community-led planning efforts that are administered through the Transportation and Growth Management (TGM) grant program. TGM is a joint program of the Department of Land Conservation and Development and the Oregon Department of Transportation. The Parkrose Neighborhood Action Plan is an example of a community-led initiative that PBOT supports with the Bureau of Planning and Sustainability to create a safer and more livable Sandy Boulevard where it serves as the Parkrose community’s main street.

Appendix – The complete composition of work

The appendices to the EPASS Final Report are collected in a separate and supporting document that includes the comprehensive research, analyses, modeling and reporting that the team used to develop the EPASS conclusions. The appendices include modeling with all the considered scenarios, safety and traffic analyses, policy review, past and recent public input, cross-section development (modeled sections of streets that the EPASS team evaluated for corridor redesign), and Appendix J — Implementation and Investment Strategy. For more information, see the EPASS Final Report Appendices.



East Portland Progress

Transportation has a long history in shaping East Portland's character, and work continues to meet community expectations for a safe urban street network.

Most of East Portland was not part of the City of Portland until the 1980s and 1990s. Since that time, the city has been working slowly but surely to bring East Portland infrastructure up to standard, delivering on promises for basic urban features like sidewalks, streetlights and pedestrian crossings. During that same time frame, tens of thousands of people have been drawn to East Portland for its affordability and opportunity. Some people are escaping rent increases in inner Portland while others are seeking safety from international conflict. Longtime and new residents mix together using various modes of travel on streets that historically have been automobile-oriented. Here is a chronological look at the efforts made since East Portland's annexation. PBOT has made major transportation investments, paired with community planning and public involvement, to build a safer, more mobile and more accessible community for all.

1983

The final segment of I-205 is completed, from SE Division Street to the Columbia River. It divides neighborhoods but moves some regional traffic off of city streets and leaves space for a paved pedestrian/ bicycle path and future transitway.

1986

The Portland region's first modern light rail line opens with Banfield Light Rail (later renamed the MAX Blue Line), connecting Portland and Gresham with stations on E Burnside Street and the I-84 Banfield Freeway.

1994

- The last major annexation of East Portland brings large areas of Powellhurst-Gilbert, Centennial, and other neighborhoods into the City of Portland, including major streets such as SE 162nd Avenue that were previously maintained by Multnomah County.
- The Portland Development Commission completes NE Airport Way from I-205 to NE 181st Avenue, transforming farmland into one of the region's largest industrial employment areas.

2001

Airport MAX light rail opens, funded by a public-private partnership, connecting Gateway, Parkrose, Sumner, and Portland International Airport, and supporting the Cascade Station retail development.

2008

PBOT, in partnership with ODOT, completes the 82nd Avenue of Roses High Crash Corridor Safety Plan. It is the city's first safety action plan for a High Crash Corridor, a framing concept that PBOT still uses today as part of the High Crash Network.

2009

- City Council adopts the East Portland Action Plan. This plan sets forth a strategy for community investment and instates a committee that continues to meet monthly to advocate for livability and equity in East Portland, including a rolling grant fund.
- MAX Green Line light rail opens for service along I-205, connecting the activity centers of Gateway, Lents and Clackamas.

2010

- PBOT invests U.S. federal American Recovery and Reinvestment Act funds in quick-build sidewalk infill projects along the major streets of East Portland.
- City Council adopts the Portland Bicycle Plan for 2030, calling for a dense network of bikeways on major and minor streets that can attract a broader range of cyclists.
- East Portland's first "road reorganization" transforms SE Holgate Boulevard from I-205 to SE 122nd Avenue, adding buffered bike lanes, lowering speeds and reducing vehicle lanes from five to three.

2012

City Council adopts East Portland in Motion, PBOT's first district-level implementation strategy for active transportation and safety projects, including recommendations for sidewalks, crossings, neighborhood greenways and protected bike lane pilot projects.

2014

- PBOT completes the NE 102nd Avenue Streetscape Project (Burnside to Halsey), unique for its decision to purchase rights-of-way to widen sidewalks to city standard, and its addition of streetscape amenities such as ornamental lighting and banners.
- City Council unanimously adopts the second Foster Road Transportation and Streetscape Plan (the first one is from 2003), notable for its four-to-three-lane road diet proposal that is ultimately constructed in 2019.

2016

- City Council adopts the Vision Zero Action Plan, joining a growing group of cities worldwide that frame road safety as a deliberate effort to eliminate traffic deaths. This plan also highlights the disproportionate incidence of serious and fatal crashes in East Portland.
- Portland voters approve the “Fixing Our Streets” 10-cent city gas tax, leading to major investments in safety and maintenance on East Portland streets, such as NE 102nd Avenue, SE 112th Avenue, SE 136th Avenue, NE 148th Avenue and SE Division Street.
- City Council declares an unprecedented “safety emergency” on outer SE Division Street after a spate of deadly crashes, initiating a series of capital and operational investments on the street.

2017

“Walking While Black” focus groups help inform an update to Portland’s Citywide Pedestrian Plan, Ped PDX, highlighting the personal safety challenges and outright racism that many People of Color face while walking on city streets including in East Portland.

2018

- PBOT begins work on EPASS, prompted by the need to communicate and coordinate an unprecedented number of upcoming projects on the major streets of East Portland.
- City Council adopts a major update to the Transportation System Plan (TSP), including updates to the functional classifications of streets.
- PBOT completes the Enhanced Transit Corridors Plan, calling for faster and more frequent buses on key routes and leading to Commissioner Chloe Eudaly’s Rose Lane initiative.

2019

- ODOT begins construction on the highly anticipated Outer Powell Transportation Safety Project, the first phase of a complete street upgrade to SE Powell Boulevard from I-205 to SE 174th Avenue.
- City Council unanimously adopts Ped PDX, the update to Portland’s Pedestrian Master Plan, calling for a number of new design practices and guidelines that support walking.
- PBOT completes transformative projects that involve road reorganizations on NE 102nd Avenue and NE Glisan Street in the same summer, vastly improving active transportation options but eliciting concerned responses from some residents.
- PBOT completes the NE Halsey-Weidler Streetscape Project through a partnership with Prosper Portland, bringing high-quality street lighting, pedestrian crossings, transit islands and protected bike lanes to the Gateway district.
- PBOT holds community meetings that help define and communicate the scope of several upcoming projects, including the SE 162nd Avenue Safety and Access to Transit Project, Safer Outer Stark, and several projects on NE/SE 122nd Avenue.

2020

- The U.S. Federal Transit Administration awards an \$87 million grant to TriMet for the Division Transit Project, which begins construction later in the year and includes funding from PBOT.
- The COVID-19 pandemic hits Portland, and reduction in travel is not found to be as pronounced in East Portland as in other areas of Portland.
- Voters renew the Fixing Our Streets gas tax, this time with greater support from East Portland and citywide.
- Racial justice protests expand to East Portland, with a major night of conflict on SE Stark Street, where sidewalks are too narrow to accommodate the crowds.
- PBOT completes design of the 4.6-mile Outer Division Multimodal Safety Project and advances to construction procurement.

Sources:

Powellhurst-Gilbert Neighborhood Plan, City of Portland Bureau of Planning and Sustainability, 1996.
 Airport Way Urban Renewal Area, website archive, Prosper Portland (previously Portland Development Commission).
 Making History – 50 Years of TriMet and Transit in the Portland Region, TriMet, 2019.
 Annexations by Decade, map, City of Portland Bureau of Planning and Sustainability, 2020.
 82nd Avenue of Roses High Crash Corridor Safety Plan, Portland Bureau of Transportation, 2008.
 PBOT project websites

ORIENTAL GROCERY LIVE MEAT VEGETABLE MEATS
湯水油類 新鮮肉類 新鮮瓜果 參茸藥材

祥發超市
ChangFa Supermarket

ORIENTAL GROCERY LIVE MEAT VEGETABLE MEATS
ORIENTAL GROCERY LIVE MEAT VEGETABLE MEATS
東方雜貨 湯水海鮮

ORIENTAL GROCERY LIVE MEAT VEGETABLE MEATS
ORIENTAL GROCERY LIVE MEAT VEGETABLE MEATS
鮮肉類 新鮮瓜果

祥發超市
503-788-8882



What We Heard

Connecting With the Community

At the heart of our work is the East Portland community. The East Portland Arterial Streets Strategy (EPASS) is an investment in infrastructure and, perhaps more so, an investment in balancing people’s need for safety, mobility and quality of life.

Achieving this complex balance is crucial. Dangerous crashes and other transportation challenges disproportionately affect East Portland, so the goal of EPASS is to design safer transportation corridors for everyone.

For this reason, we invited you to tell us about your transportation priorities. What would safer streets look like in your neighborhood? We looked back at what you had told us during recent East Portland planning processes and set out to talk to East Portlanders in person. We made presentations to and had conversations with the East Portland Land Use & Transportation Committee and various neighborhood associations. We participated in community open houses for the Safer Outer Stark and 122nd Avenue planning projects, as well as open houses for capital projects on NE Glisan Street, SE Division Street and SE 162nd Avenue. We attended the 2019 Community Transportation Forum sponsored by The Rosewood Initiative and continued to attend other community meetings until stay-at-home orders were issued because of the global pandemic. We also heard from more than 1,000 people through an online questionnaire that was posted on the EPASS project website and distributed by community partners.

From these conversations and the questionnaire feedback, we learned that improvements in sidewalks, street lighting and pedestrian crossings are widely popular requests among community members. We heard

that people are tired of seeing, hearing or experiencing the terrible crashes that disproportionately affect East Portland. We heard people say that destinations are spread out, and the distance between them makes it hard for people to walk or to bike to the places that they would like to visit. People also want better enforcement of laws against excessive and unsafe speeds and driving under the influence of intoxicants, but without racial profiling. Some community members talked about a lack of pride in neighborhoods; they would like to feel good “coming home.” We talked to people about the opportunity for public art, cleanliness in public spaces and more intentional placemaking on the streets.

Many people shared concern about projects that reduce the number of vehicle lanes on major streets. They asked how it could possibly work when people continue to move to Portland and new buildings are sprouting along the corridors of East Portland. This sentiment is one reason why we used software to simulate the combined effects on traffic for all such projects. It helped us arrive at a solution that supports a handful of additional “road reorgs,” while keeping four travel lanes and investing in other safety fixes on exceptionally busy streets like Stark and Division. We initially heard from many concerned people as we installed planned lane changes on 102nd and Glisan in 2019, but fewer people called later as traffic patterns adjusted and people became accustomed to the new designs. Thankfully, any changes to traffic were very close to what we had expected and had communicated to stakeholders during the design of the projects.

These valuable community conversations have increased our awareness of your needs, experiences and desires. For example, the Walking While Black focus groups, initiated through the PedPDX process, led to greater

understanding about concerns for personal safety, particularly for People of Color. This served as a reminder that creating safer streets includes a clear understanding of what makes you feel safe, something that we plan to continue building on. In another example, getting safety advocates and skeptical neighbors in the same room at The Rosewood Initiative headquarters to talk about a safety project on SE 162nd Avenue helped both sides hear and understand each other, even though we fell short of unanimous consensus.

After more than 20 years of listening to you and working together on improving East Portland’s streets, we understand that the community’s most pressing concerns are safety, mobility or a combination of both.

In a summer 2019 questionnaire, over 1,000 respondents told us their top priorities for transportation investment in East Portland. As a whole, respondents told us that PBOT’s top five investments should be to:

1. Complete missing sidewalks (62 percent)
2. Increase street lighting (53 percent)
3. Reduce vehicle congestion and bottlenecks (52 percent)
4. Improve (signalize) pedestrian crossings (42 percent)
5. Reduce cut-through traffic on residential side streets (28 percent)

Reducing the number of vehicle lanes and adding bike lanes were among the less popular fixes that respondents requested. Although the demographics of

the respondents were less diverse than East Portland as a whole, the representation by mode of travel matched the population more closely and actually exceeded representation of transit riders.

The good news is that today we continue to make progress on the issues that you care about most. Miles of new sidewalk are under construction, including on SE Division Street, SE Market Street, NE Halsey Street, SE 136th Avenue and NE 148th Avenue. Streetlights are being installed on SE Division Street, SE Stark Street, NE Glisan Street and NE/SE 122nd Avenue. And more than a dozen new traffic signals will make it easier and safer to cross SE Division Street and NE Glisan Street by 2022.

In East Portland, we also continue to invest in Vision Zero–focused projects, including creating safe speed limits, using crash data to identify and remediate high-crash corridors, installing speed-safety cameras, and implementing left-turn traffic calming where necessary.

PBOT will continue to work together with community organizations and individuals to align city transportation programs and projects in East Portland with what the community values, prioritizes and needs, and we appreciate your continued input.

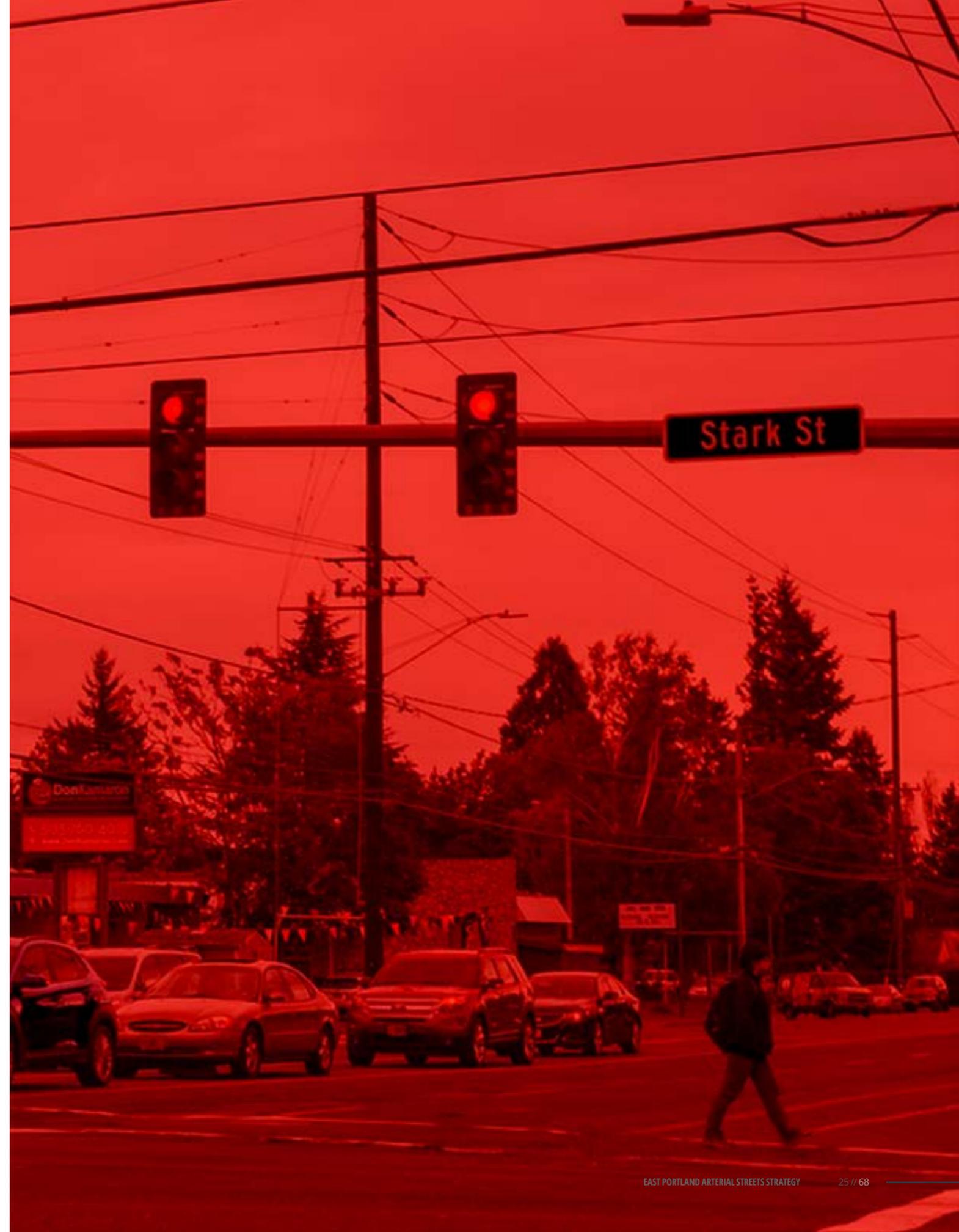
We are deeply grateful for the wealth of understanding that we have gained from the community’s participation in past and recent conversations about PBOT projects in East Portland. Thank you. For more information about past public input, see the Appendix B — Previous East Portland Public Input (PBOT) and Appendix C — Questionnaire Findings.

East Portland Arterial Streets Strategy Opinion Questionnaire Results

One particular question in the summer 2019 EPASS online questionnaire asked people to choose the top five investments PBOT should make on East Portland arterial streets, out of a list of 18 investments. The ranked results are shown below.

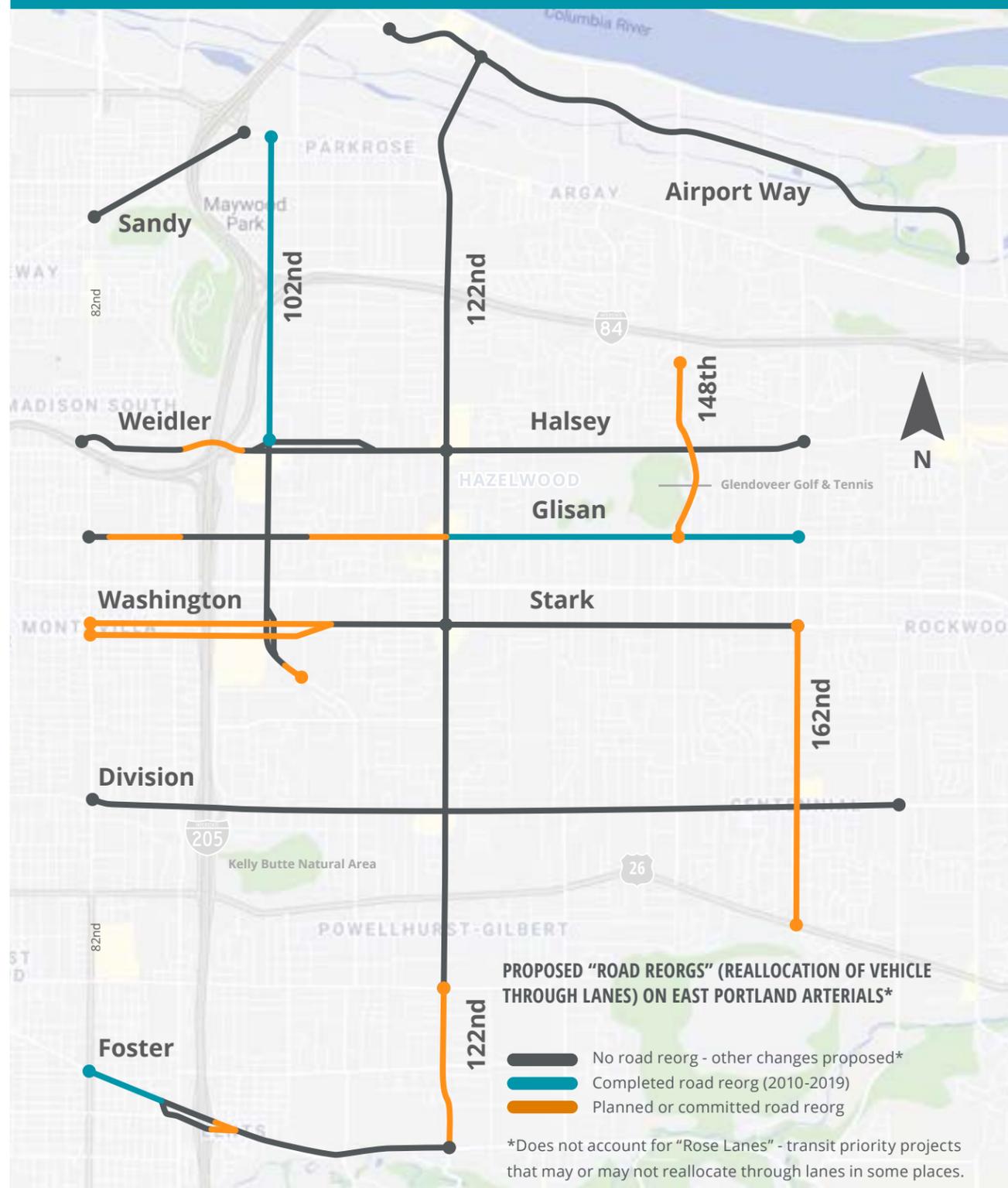
61.94% Complete missing sidewalks	24.07% Traffic calming (street trees, on-street parking)
52.73% Street lighting	21.76% Creating separation between bicycles and vehicle travel lanes ("protected bike lanes")
51.97% Reducing vehicle congestion and bottlenecks	19.08% More frequent pedestrian crossings
41.90% Improve (signalize) pedestrian crossings	15.92% Center median islands to reduce left turn crashes
27.90% Reducing cut-through traffic on residential side streets	14.19% Transit-only lanes
27.61% Speed cameras	13.04% Making narrow sidewalks wider and less obstructed by poles
27.33% Timing walk signals separately from turning vehicles	11.41% Adding bicycle lanes
26.94% More traffic patrols by police	10.55% Lowering speed limits
25.02% Safety education campaigns	8.72% Roadway reconfigurations (vehicle lanes repurposed for other uses)

TOTAL RESPONSES 1,043





Preferred Scenario



Corridor Summaries

Findings for 11 Major Streets in East Portland

The Corridor Summaries section provides a useful synopsis of the existing conditions on each major street, along with a summary of the proposed interventions and improvements that will make each street safer. Specifically, the summaries include safety and traffic analysis findings, existing and proposed cross sections, Transportation System Plan designations, available TriMet service, community character, a description of the proposed improvements, and notes about any anticipated impacts.

Corridor Summaries Introduction

EPASS is a systems approach to addressing safety, mobility and accessibility deficiencies in the East Portland arterial network. The arterial network is a group of interconnected major streets that serve as transportation corridors. Our systems approach included an understanding that a change to one corridor would impact the way that the rest of the network of corridors operated.

The team used safety and traffic analyses to understand the existing conditions on the EPASS network; to evaluate potential packages of corridor solutions; and, finally, to select a Preferred Scenario package of network solutions. The analyses summarized impacts across the roadway network, as defined by congestion, travel time, and diversions on both the arterials and the surrounding local streets.

The Preferred Scenario, shown in the map at left, balances the necessary safety improvements with the need to preserve mobility for people and goods moving through East Portland. The recommendation is the result of traffic analysis of nine district-level roadway configuration scenarios that reported on impacts to traffic flow, congestion and traffic diversion onto local streets. The Preferred Scenario includes a mix of roadway reconfigurations and corridor safety improvements to create safer, calmer arterials without unintended spillover to adjacent neighborhoods.

Although the Preferred Scenario is a system spread throughout East Portland, ultimately the proposed changes are at the corridor level. The following corridor summaries provide additional information about each of the arterial roadways that make up the Preferred Scenario. Corridor summaries include existing conditions, key findings from the traffic modeling and analysis, and any proposed roadway changes and improvements.

Corridor Summaries Guide

The EPASS project area includes 11 major city streets, with a total of 41.9 centerline miles of roadway. The following corridor summaries present the findings from the EPASS analyses. The summaries include information about the functionality of the East Portland network, the lane

configurations of major streets in 2018, and traffic volumes before the COVID-19 stay-at-home orders (existing conditions). The summaries also present information about the proposed changes for the Preferred Scenario.

FUNDED PROJECTS

This is a list of funded capital projects along the corridor, anticipated for implementation over the next 5 years. More details about these projects are in the “What’s Next?” section of the report and in Appendix J — Implementation and Investment Strategy. Additional recommended projects that do not have secured funding are also listed in “What’s Next?” and in Appendix J — Implementation and Investment Strategy.

Corridor Conditions

This section describes the existing corridor’s condition, needs, and deficiencies, including crash statistics, missing street elements, and other key information to spotlight and to prioritize next steps. General context is provided, such as land uses and major destinations. Locations on the city’s Vision Zero High Crash Corridors and 30 High Crash Intersections are noted (these are the top locations for serious and fatal crashes in Portland), along with more specific crash trends. Missing or substandard sidewalks and bike lanes are noted, along with segments that do not meet PBOT’s recently updated pedestrian crossing spacing guidelines. (The updated guidelines indicate crossing spacing of generally every 800 feet outside of Pedestrian Districts, every 530 feet within Pedestrian Districts and within 100 feet of every transit stop.)

Corridor Solutions

This section describes the proposed changes, improvements and related rationale, based on the Preferred Scenario. It also identifies other related planned and funded projects.

Congestion and Diversion Findings

This section discusses any expected changes in traffic congestion or potential diversion of traffic onto other streets, based on the EPASS travel model of different roadway scenarios. These findings incorporate changes to the corridor summarized on each page and the network-wide changes proposed in the Preferred Scenario. For example, findings from the proposed lane reorganization at the south end of SE 122nd Avenue already incorporate the proposed reorganization on SE 162nd Avenue.

Corridor Vehicle Performance

The Corridor Vehicle Performance is a snapshot of vehicle mobility within the corridor under the existing and proposed conditions. The measured performance is based on a typical weekday peak hour between 4 p.m. and 5 p.m. The graphic

includes key performance measures and a corridor map, together with identifying landmarks and intersections. Both the existing conditions and the proposed Preferred Scenario compare the following four performance measures:

VOLUMES

Volumes are reported for the 1-hour afternoon peak travel times and are an average of the traffic volumes along the entire corridor segment shown.

AVERAGE SPEEDS, MILES PER HOUR

Average speed is calculated for the whole corridor segment shown. Speeds are affected by the number of vehicles on the roadway and trend downward as a road becomes congested.

CONGESTION

Congestion is measured by a ratio of the volume of traffic to roadway capacity. A measure near 1.0 is a road at capacity, with slow-moving vehicles due to congestion, and a measure near 0.3 indicates free-flowing traffic.

TRAVEL TIMES, MINUTES

Travel times are calculated based on the average time that vehicles take to travel the entire segment.

Typical Cross Section: Existing and Proposed

These illustrations present a cross section of the roadway as it existed in 2018 and how PBOT intends to modify it under the Preferred Scenario. The cross section describes the number of vehicle lanes; turn lanes; and the presence of bicycle lanes, sidewalks, and other facilities within the right-of-way. The proposed cross section in each corridor summary describes the recommended future roadway layout, including any changes to existing auto, bicycle or pedestrian facilities. Additional sidewalk widening would occur through redevelopment of adjacent properties. Some corridors have two or more proposed cross sections. For these streets, we chose the two most representative proposed cross sections and labeled where they are on the map.

TriMet Service

This section describes TriMet transit service for each corridor, including bus routes served, bus frequency during the weekday morning and evening peak periods, and average weekday boardings before COVID-19 restrictions.

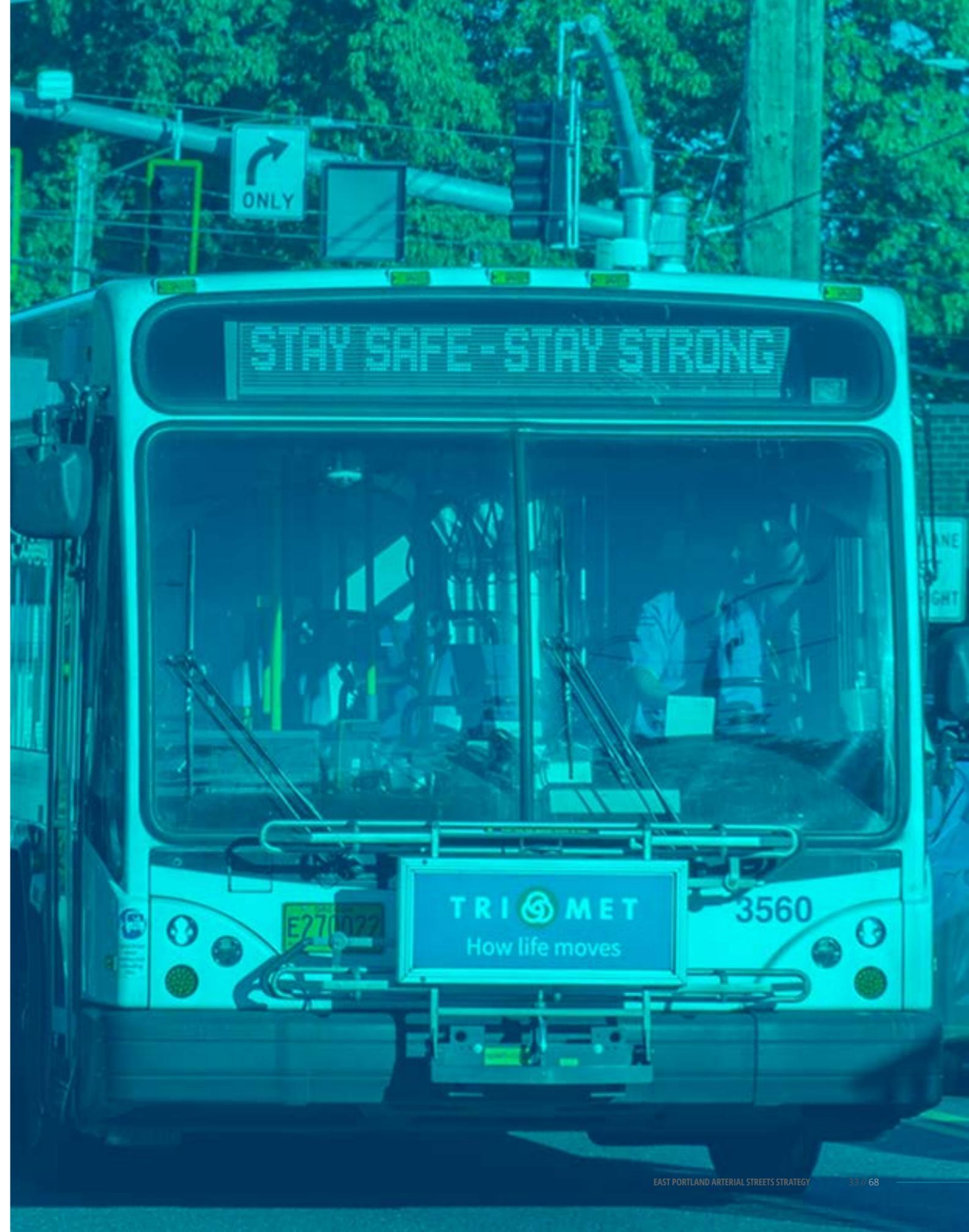
TSP Street Classifications

Portland's 2035 Transportation System Plan (TSP) is a 20-year roadmap for transportation policy and investment, helping PBOT meet the challenges of a growing city. The TSP outlines how we balance safety, equity and the demands of our economy. One way that the TSP presents this information is through street classifications that apply to all streets within the city. Street classifications define a hierarchy of how each transportation mode is prioritized on a particular street. They include seven different categories, each with three or four designations, as shown below. The higher-order designations for each mode are at the top. Design classifications refer to how the street is intended to interact with adjacent land uses into the future.

Pedestrian	Transit	Traffic	Emergency Response
<ul style="list-style-type: none"> Central City Transit/Pedestrian Street City Walkway Off-Street Path Local Service Walkway 	<ul style="list-style-type: none"> Major Transit Priority Street Transit Access Street Community Transit Street Local Service Transit Street 	<ul style="list-style-type: none"> Major City Traffic Street District Collector Street Neighborhood Collector Street Local Service Traffic Street 	<ul style="list-style-type: none"> Major Emergency Response Secondary Emergency Response Minor Emergency Response
Bicycle	Design	Freight	
<ul style="list-style-type: none"> Major City Bikeway City Bikeway Off-Street Path Local Service Bikeway 	<ul style="list-style-type: none"> Civic Main Street Neighborhood Main Street Community Corridor Industrial Road 	<ul style="list-style-type: none"> Priority Truck Street Major Truck Street Truck Access Street Local Service Truck Street 	

A Note on Sidewalks

Nearly every EPASS corridor has substandard sidewalks that are about 6 feet wide and tight to the curb, with no trees or planter strips and with frequent driveway ramps. Many of the corridor summaries do not show a proposed widening of the sidewalk. However, when adjacent properties are redeveloped, the sidewalks will be widened to between 12 and 15 feet, including planters with trees. In addition, the physically protected bike lanes that are proposed along many of the corridors will provide between 8 and 21 feet of separation from moving cars.

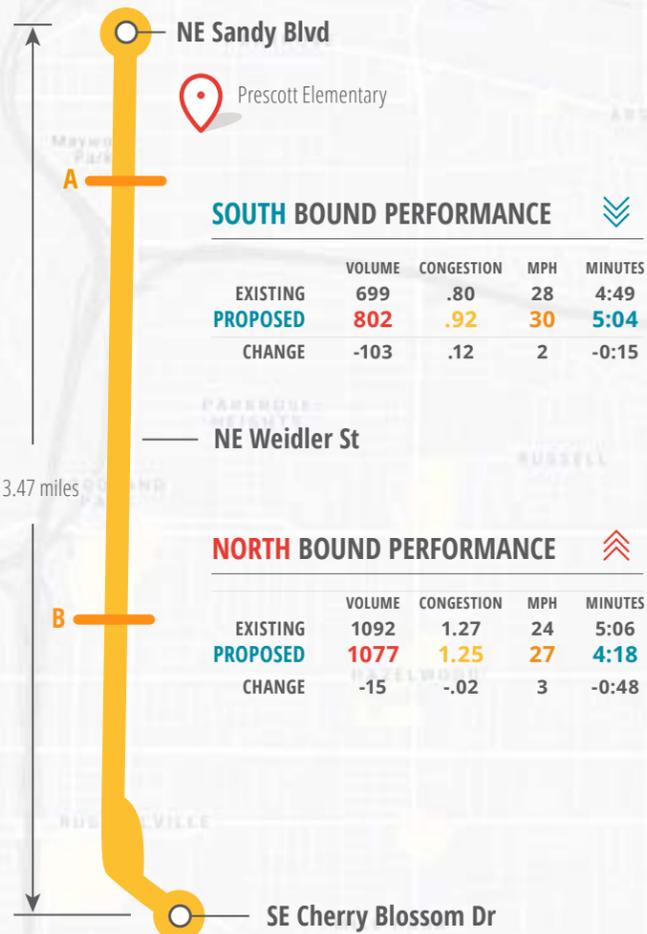


NE/SE 102nd Avenue/103rd Avenue/ Cherry Blossom Drive

EXISTING AND PROPOSED CONDITIONS

FUNDED PROJECTS: NE 102ND AVENUE CORRIDOR SAFETY PROJECT — WEIDLER STREET TO SANDY BOULEVARD

Corridor Vehicle Performance¹



¹Corridor Performance Measures are based on a typical weekday peak hour: 4pm - 5pm

Congestion and Diversion Findings

The 2020 baseline scenario already included the road reorganization on NE 102nd Avenue between Weidler Street and Sandy Boulevard, which showed evening peak congestion in the northbound direction. The Preferred Scenario predicts a slight reduction in northbound congestion but still above capacity in that direction, while southbound stays close to but still under capacity. Some diversion to streets to the east of NE 102nd Avenue in Parkrose and Parkrose Heights is observed in the peak hour. PBOT sees these minor impacts as acceptable trade-offs to improve safety on NE 102nd Avenue itself, and speed bumps have been installed to mitigate cut-through on some neighborhood streets.

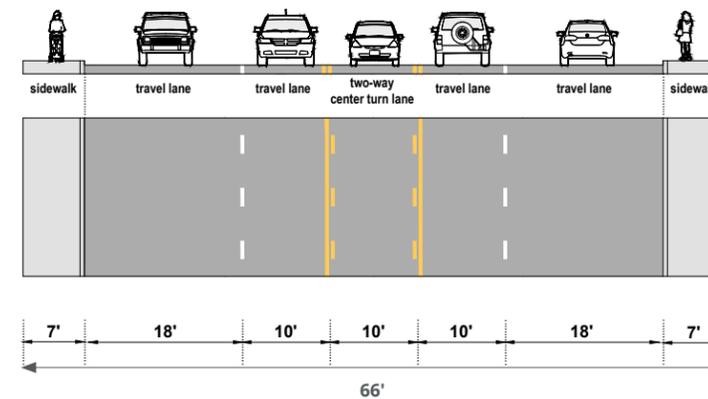
Corridor Conditions

- From NE Sandy Boulevard to NE Weidler Street, which includes the eastern edge of the City of Maywood Park, this corridor is mostly residential with some institutional uses. South of the Halsey-Weidler Couplet, 102nd Avenue becomes the primary north-south street of the Gateway Regional Center and provides access to major shopping centers, medical centers and senior living.
- This corridor had 54 serious, fatal or vulnerable-user crashes in the analyzed 10-year period, including 1 pedestrian death and 1 vehicular death.
- Crash contributors include turning movements, unsafe crossings and high posted speeds and speeding.
- The segment north of E Burnside Street is part of the High Crash Network, and High Crash Intersections are at the NE Halsey-Weidler Couplet and at NE Glisan Street.

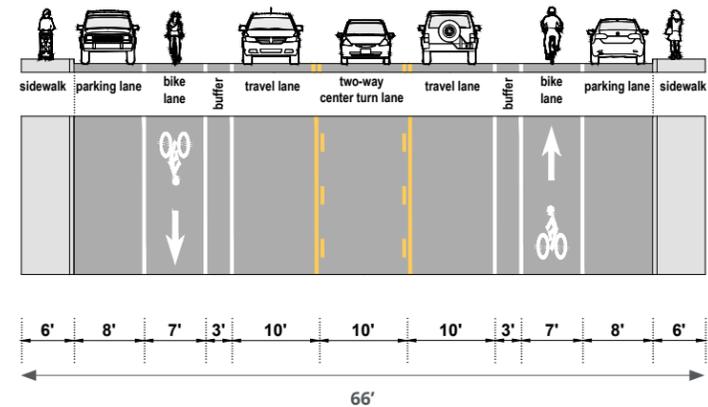
Corridor Solutions

- From NE Weidler Street north to NE Sandy Boulevard, PBOT added buffered or protected bike lanes and pedestrian crossings with median refuge islands.
- The project included a 5-to-3-lane road reorganization to gain the space for pedestrian and bike features and to reduce vehicle speeds.
- Turn lanes were provided at major intersections.
- Five vehicle lanes will remain south of NE Halsey Street, where an earlier streetscape project provided median islands, pedestrian-scale lighting and wider sidewalks.
- A more recent paving project added buffers to the bike lanes south of NE Halsey Street.

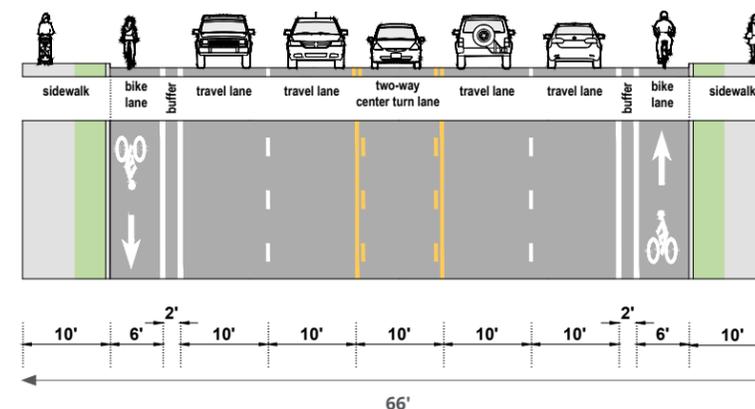
EXISTING Typical Cross Section²



PROPOSED Typical Cross Section (A)

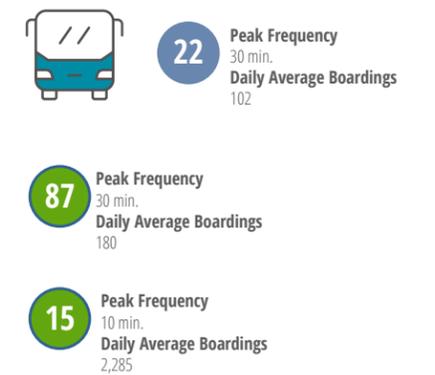


PROPOSED Typical Cross Section (B)



²Travel lanes, bike lanes, and sidewalk dimensions vary along the alignment depending on right-of-way width. For more details on existing cross section see Appendix F, Cross Section Development.

TriMet Service³



³TriMet Service is based on a typical weekday peak hour: 5pm - 6pm. Rider-ship data is from fall 2018.

TSP Street Classifications

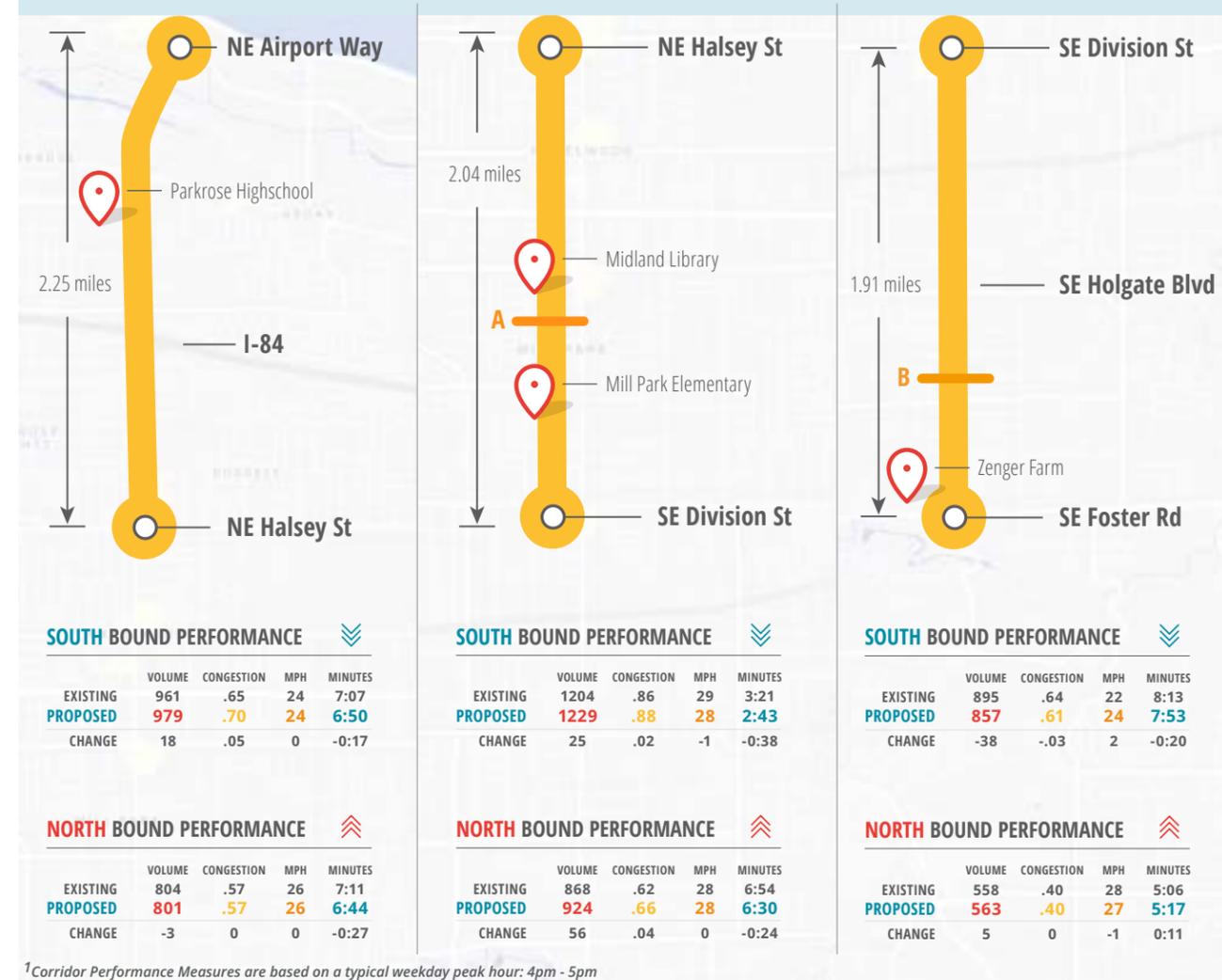
City Walkway	Pedestrian
City Bikeway	Bicycle
Major Transit Priority Street	Transit
Neighborhood Main Street	Design
Major Emergency Response Street	Emergency Response
Truck Access Street	Freight
District Collector Street	Traffic

NE/SE 122nd Avenue

EXISTING AND PROPOSED CONDITIONS

FUNDED PROJECTS: NE/SE 122ND AVENUE FIXING OUR STREETS I SAFETY PROJECT; SE 122ND AVENUE FOSTER-HOLGATE PAVING AND SAFETY PROJECT; NE 122ND AVENUE MULTIMODAL SAFETY AND ACCESS IMPROVEMENT PROJECT

Corridor Vehicle Performance¹



¹Corridor Performance Measures are based on a typical weekday peak hour: 4pm - 5pm

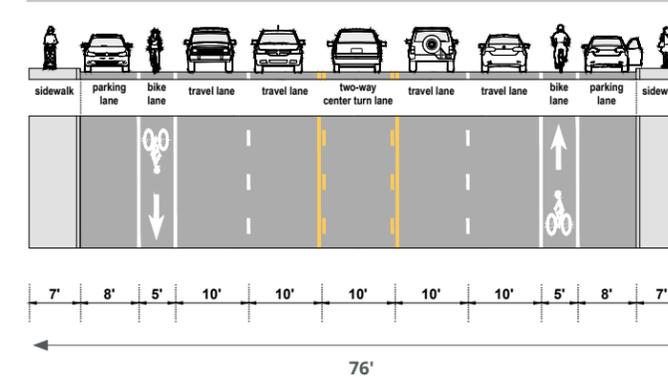
Congestion and Diversion Findings

For the Preferred Scenario, congestion levels are modeled to be below the capacity of the roadway, except for two brief stretches southbound approaching the signals at SE Division Street and NE Holladay Street in the evening. The proposed 5-to-3-lane reorganization between SE Holgate Boulevard and SE Foster is expected to increase peak travel times on southbound SE 122nd Avenue between SE Division Street and SE Foster by only 11 seconds. Some southbound evening traffic is forecast to divert to SE 104th, SE 111th and SE 128th Avenues south of SE Holgate Boulevard as a result of the reorganization. These streets, which do not have sidewalks and include two neighborhood greenways (the 100s and 130s), should be monitored for traffic increases. Additional road reorganizations on SE 122nd Avenue north of SE Holgate Boulevard were ruled out due to greater congestion and diversion impacts.

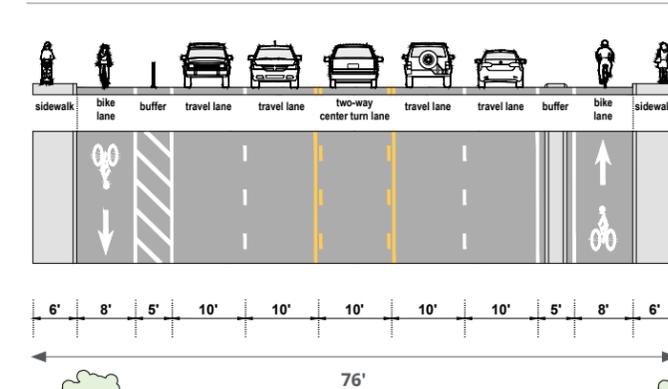
TSP Street Classifications

City Walkway	Pedestrian	Major Emergency Response	Emergency Response
Major City Bikeway	Bicycle	Major Truck Street	Freight
Major Transit Priority Street	Transit	Major City Traffic Street	Traffic
Civic Main Street	Design		

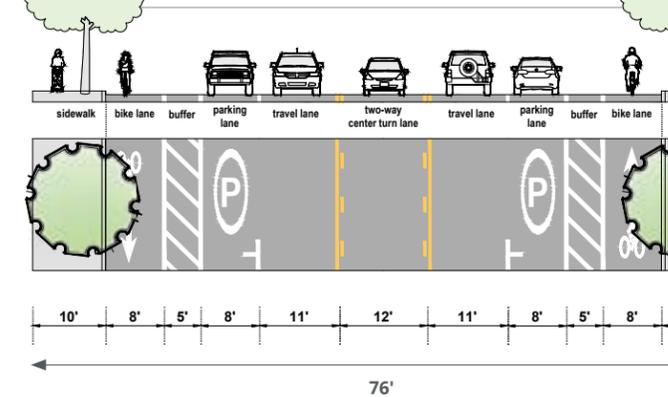
EXISTING Typical Cross Section²



PROPOSED Typical Cross Section (A)



PROPOSED Typical Cross Section (B)



TriMet Service³



³TriMet Service is based on a typical weekday peak hour: 5pm - 6pm. Ridership data is from fall 2018.

²Travel lanes, bike lanes, and sidewalk dimensions vary along the alignment depending on right-of-way width. For more details on existing cross section see Appendix F, Cross Section Development.

Corridor Conditions

- At 6.2 miles, this is the longest continuous EPASS corridor and the most significant north-south Portland street east of I-205.
- Almost any land use can be found in this corridor, with industrial uses near the Columbia River; single-family and multifamily residential south of I-84; and suburban-format retail centers at major intersections, including Halsey Street, Division Street and Powell Boulevard. Unique uses include Rossi Farms at NE Shaver Street — which may redevelop to accommodate 745 new homes and 86,000 square feet of new retail — and one of Portland's largest clusters of car dealerships between SE Main Street and NE Halsey Street.
- The entire corridor is a High Crash Corridor and includes six High Crash Intersections, the most of any EPASS corridor.
- This corridor had 154 serious, fatal or vulnerable-user crashes in the analyzed 10-year period, including 1 pedestrian death, 1 cyclist death and 3 vehicular deaths. This is the second-highest crash total on the EPASS network, behind only SE Division Street.
- Crash contributors include unprotected crossings, high rates of speed and a lack of street lighting.
- This corridor has had the highest concentration of bicycle crashes in the EPASS network and the second-highest concentration of pedestrian collisions.
- The sidewalks are narrow and curb-tight, with the exception of redeveloped frontages on a segment near Springwater Corridor.
- Bike lanes are paint-only, are approximately 5 feet wide and blend with car lanes at intersections.
- Most of this corridor does not meet PBOT pedestrian crossing guidelines, though new enhanced crossings have been added incrementally since 2010.

Corridor Solutions

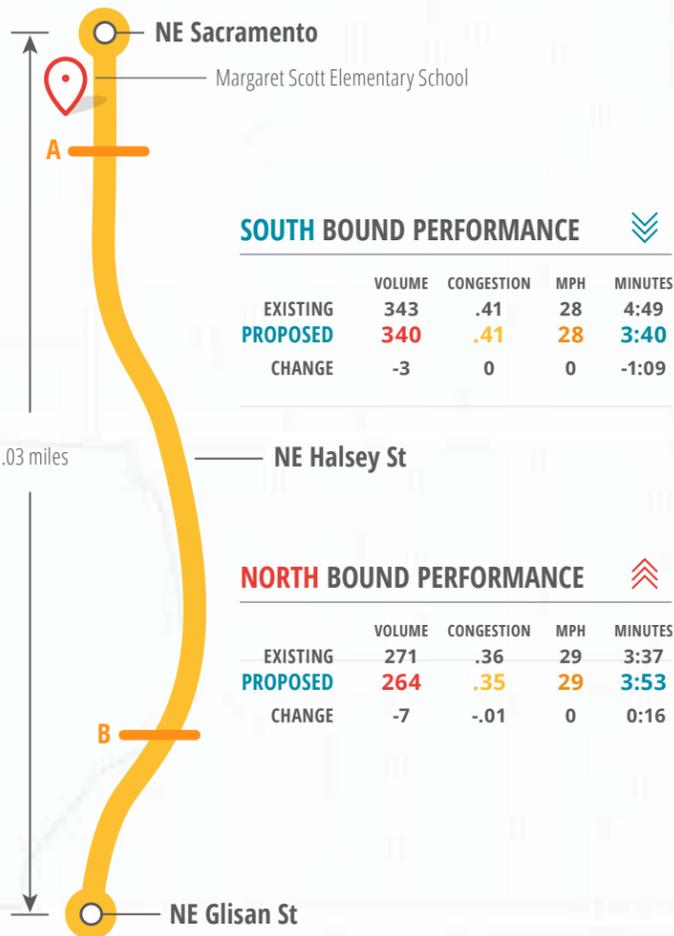
- From SE Foster Road to SE Holgate Boulevard, EPASS recommends a 5-to-3-lane road reorganization.
- Parking will be retained on both sides of the street, and bike lanes will be upgraded to parking-protected or buffered.
- North of SE Holgate Boulevard, 5 vehicle lanes will remain, and on-street parking will be replaced with protected bike lanes in each direction.
- Throughout the corridor, as part of the "Rose Lanes" initiative, TriMet buses will receive transit priority treatments, with queue jumps, signal priority, and a bus-and-turn (BAT) lane approaching the NE Halsey Street intersection.
- Other pedestrian safety projects are recommended in the 122nd Avenue Plan, including added street lighting, enhanced crossings, and traffic- and speed-calming measures.

NE 148th Avenue

EXISTING AND PROPOSED CONDITIONS

FUNDED PROJECTS: NE 148TH AVENUE — NE 146TH DRIVE TO NE HALSEY SAFETY PROJECT

Corridor Vehicle Performance¹



¹Corridor Performance Measures are based on a typical weekday peak hour: 4pm - 5pm

Congestion and Diversion Findings

The 2-lane undercrossing of I-84 largely controls the capacity of NE 148th Avenue, so the proposed 3-lane cross section south of I-84 does not make a noticeable difference in traffic conditions. The Preferred Scenario shows some evening congestion at the I-84 undercrossing regardless of the lane configuration to the south, and traffic volumes remain stable on NE 148th Avenue and intersecting local streets in the Preferred Scenario.

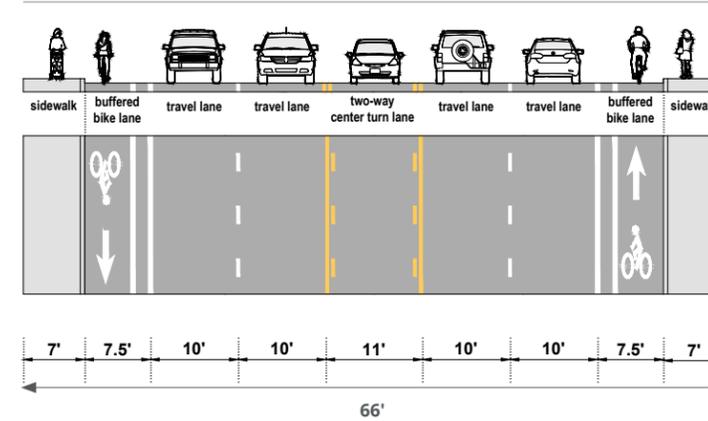
Corridor Conditions

- EPASS addresses only the 1-mile segment between NE Glisan Street and I-84 that has 4 to 5 lanes.
- Land use is primarily residential, including the Summerplace retirement community north and east of NE 148th Avenue and Halsey Street. The Glendoveer Golf Course and Fitness Trail define the west side of 148th Avenue between Glisan Street and Halsey Street.
- The analyzed 10-year period had 3 car crashes — 1 fatal — and no reported pedestrian or bicycle crashes. This is the lowest incidence of crashes on the entire EPASS network. Accordingly, the corridor is not on the city's High Crash Network.
- A lack of street lighting was a factor in the few crashes that occurred.
- NE 148th Avenue does not have complete sidewalks along the segment, and pedestrian crossings are not spaced to meet PBOT guidelines.
- Buffered bike lanes south of NE Halsey Street transition to narrower painted bike lanes north of NE Halsey Street.

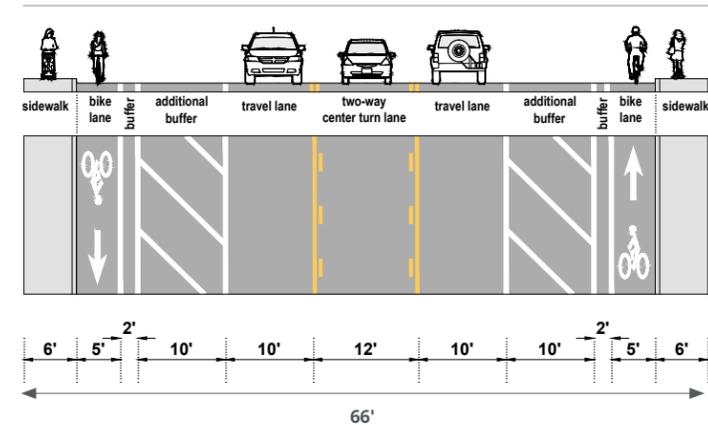
Corridor Solutions

- Between NE Halsey Street and the 2-lane I-84 underpass, a 5-to-3-lane road reorganization will modify this overbuilt segment to create a safer school crossing at NE Sacramento Street and to provide room for protected bike lanes
- Between NE Glisan Street and Halsey Street, in a yet-to-be-funded project, the second southbound lane will be removed to make room for a walking/ biking space next to Glendoveer Golf Course.
- Separately, project development is taking place for the existing two-3-lane segments north and south of this corridor.

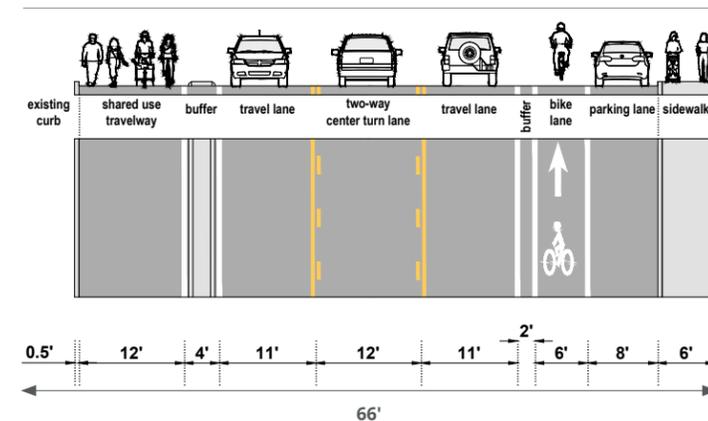
EXISTING Typical Cross Section²



PROPOSED Typical Cross Section (A)



PROPOSED Typical Cross Section (B)



²Travel lanes, bike lanes, and sidewalk dimensions vary along the alignment depending on right-of-way width. For more details on existing cross section see Appendix F, Cross Section Development.

TriMet Service³



³TriMet Service is based on a typical weekday peak hour: 5pm - 6pm. Ridership data is from fall 2018.

TSP Street Classifications

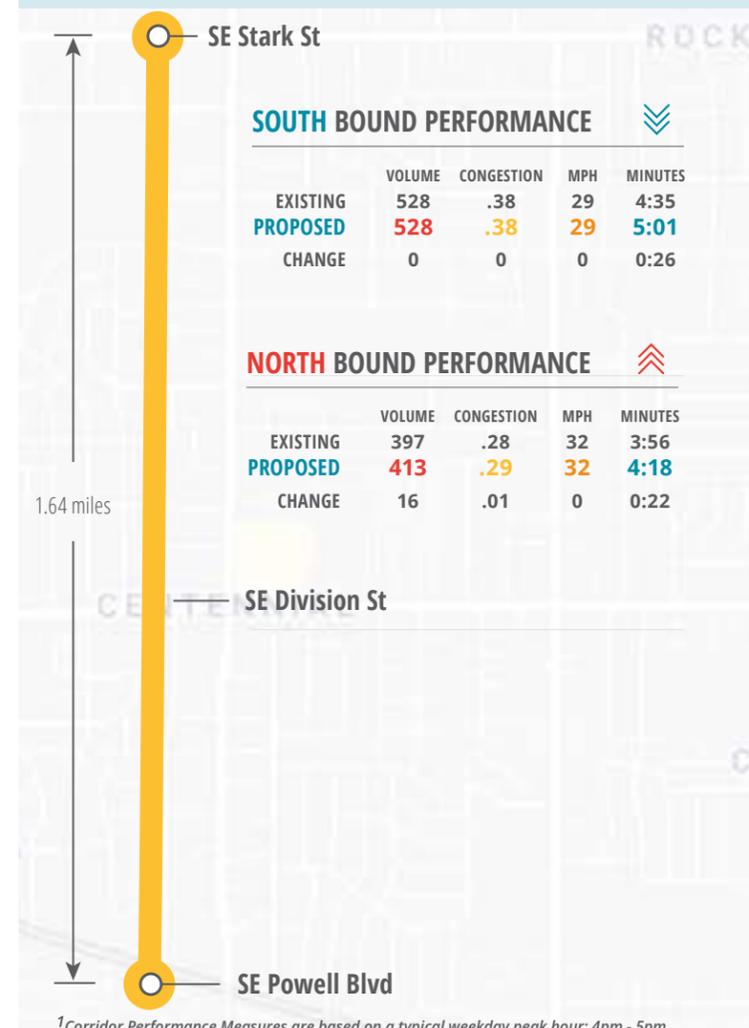
City Walkway	Pedestrian
City Bikeway	Bicycle
Major Transit Priority Street	Transit
Neighborhood Main Street	Design
Major Emergency Response	Emergency Response
Local Service Truck Street	Freight
District Collector Street	Traffic

SE 162nd Avenue

EXISTING AND PROPOSED CONDITIONS

FUNDED PROJECTS: SE 162ND AVENUE SAFETY AND ACCESS TO TRANSIT PROJECT

Corridor Vehicle Performance¹



Congestion and Diversion Findings

For the Preferred Scenario, congestion levels are modeled to be significantly below the capacity of the roadway. No traffic has been modeled to divert to neighborhood streets in the area. The SE 162nd Avenue 5-to-3-lane road reorganization was included in both the baseline scenario and the Preferred Scenario, resulting in very few changes. Before EPASS, PBOT forecast a 68-second increase in southbound travel times during the evening peak on SE 162nd Avenue between Stark Street and Powell Boulevard as a result of the road reorganization, with uncongested conditions the rest of the day.

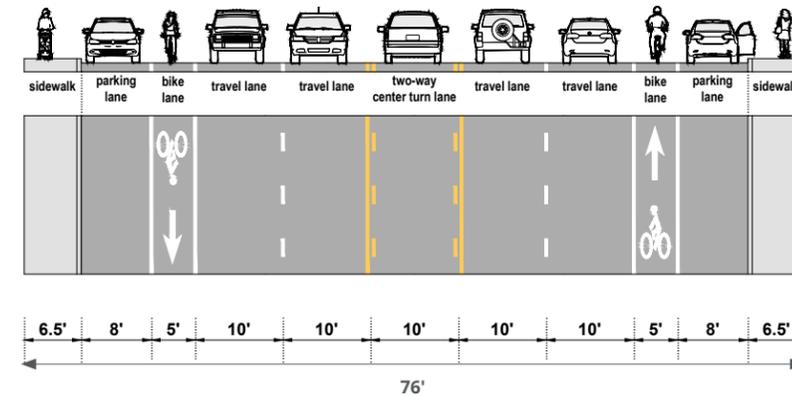
Corridor Conditions

- EPASS addresses only the portion of SE 162nd Avenue that is south of SE Stark Street, which is the easternmost 5-lane north-south street in Portland.
- Land uses include commercial nodes at Stark and Division Streets, multifamily residential between Stark Street and Division Street, and mostly single-family residential between Division Street and Powell Boulevard.
- This corridor had 16 serious, fatal or vulnerable-user crashes in the analyzed 10-year period, including 1 vehicular death.
- Crash contributors include high speeds and turning movements.
- SE 162nd Avenue is not in the High Crash Network, but it does have two High Crash Intersections — one at SE Division Street and the other at SE Powell Boulevard.
- The entire length of the corridor does not meet PBOT crossing spacing guidelines. Narrow, curb-tight sidewalks are on both sides of the street, with a single block exception between SE Main Street and SE Market Street.

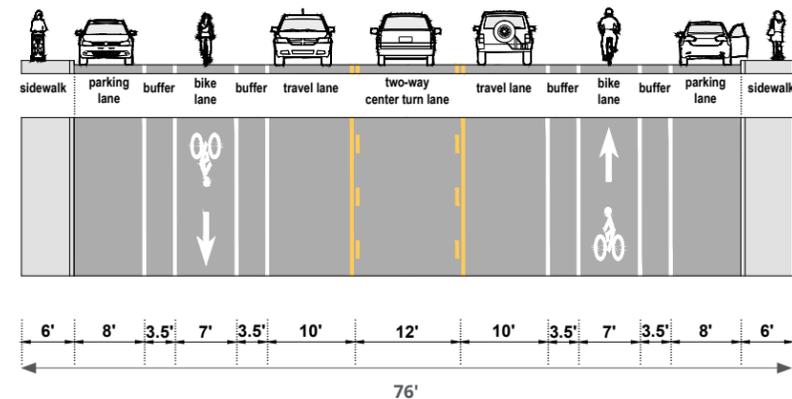
Corridor Solutions

- Between SE Powell Boulevard and SE Stark Street, a 5-to-3-lane road reorganization will create a safer environment for all modes of travel. Included are the addition of pedestrian crossings with median islands at bus stops and bike lane upgrades that add painted buffers on both sides of each lane.
- Turn lanes will be provided at major intersections, and the road will transition back to 5 lanes as it approaches City of Gresham jurisdiction at SE Stark Street.
- Separately, project development is underway for modernizing the rural, 2-lane segment of NE 162nd Avenue north of I-84.

EXISTING Typical Cross Section²



PROPOSED Typical Cross Section



TriMet Service³



³TriMet Service is based on a typical weekday peak hour: 5pm - 6pm. Ridership data is from fall 2018.

TSP Street Classifications

City Walkway	Pedestrian
City Bikeway	Bicycle
Major Transit Priority Street	Transit
Community Corridor	Design
Major Emergency Response	Emergency Response
Truck Access Street	Freight
District Collector Street	Traffic

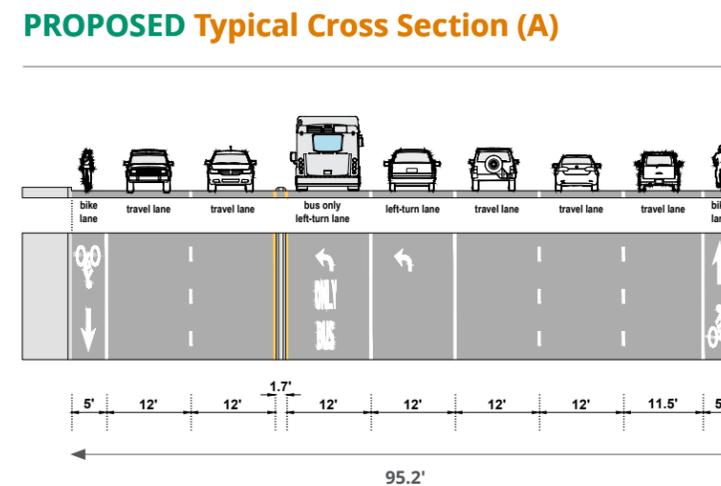
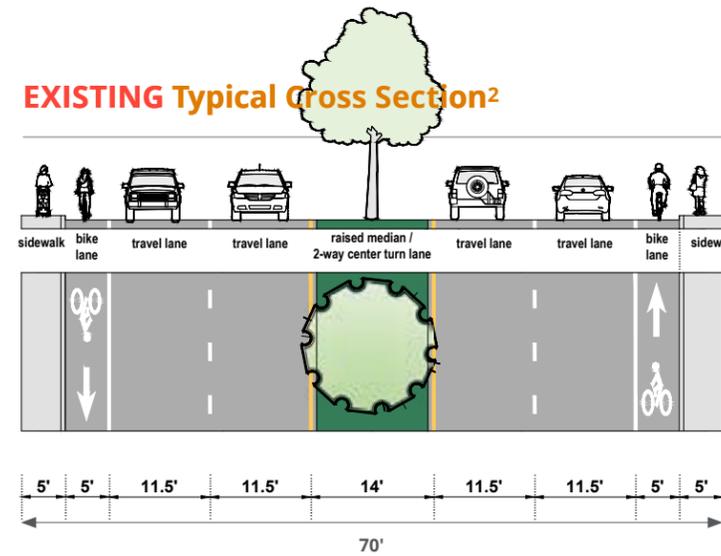
²Travel lanes, bike lanes, and sidewalk dimensions vary along the alignment depending on right-of-way width. For more details on existing cross section see Appendix F, Cross Section Development.



NE Airport Way

EXISTING AND PROPOSED CONDITIONS

FUNDED PROJECTS: NONE AT THIS TIME



TriMet Service³



³TriMet Service is based on a typical weekday peak hour: 5pm - 6pm. Rider-ship data is from fall 2018.

TSP Street Classifications

City Walkway	Pedestrian
City Bikeway	Bicycle
Major Transit Priority Street	Transit
Industrial Road	Design
Major Emergency Response	Emergency Response
Priority Truck Street	Freight
District Collector Street	Traffic

Corridor Conditions

- NE Airport Way is one of the newest arterial corridors in East Portland, extended eastward in 1994 to accommodate commercial and industrial development in the Columbia Corridor.
- Land uses are almost exclusively commercial and industrial, with manufacturing dominating the east end and airport-oriented hotels and restaurants dominating the west end.
- This corridor had 22 serious, fatal or vulnerable-user crashes in the analyzed 10-year period, including 4 vehicular deaths.
- Crash contributors include a high rate of speeding, a high rate of nighttime crashes and roadway departure.
- Substandard, curb-tight sidewalks are on both sides of the roadway, and most of the corridor does not meet PBOT crossing spacing guidelines.
- Bike lanes are on both sides of the roadway, but they are less than 6 feet wide.
- NE Airport Way is the only corridor in the EPASS network that has consistent street lighting on both sides of the whole corridor.

Corridor Solutions

- Recommended changes to NE Airport Way focus primarily on the intersections, including:
- A “protected intersection” design with mountable truck aprons at NE 138th Avenue to promote safer turning movements,
 - A westbound center-running bus-only lane for about 1,000 feet approaching NE Holman Street to allow left-turning buses to bypass afternoon peak congestion, and
 - Extra signalized pedestrian/bicycle crossings to more safely connect bus stops to employment sites.
- No capacity reductions are recommended on this key freight route. At this time, no funding has been identified for improvements to NE Airport Way.

Congestion and Diversion Findings

The Preferred Scenario does not propose any capacity changes to NE Airport Way, and its distance from other EPASS corridors with lane changes results in few noticeable effects. Evening peak congestion near I-205 is expected to persist into the future. The proposed bus lane helps transit bypass this congestion in the westbound direction.

²Travel lanes, bike lanes, and sidewalk dimensions vary along the alignment depending on right-of-way width. For more details on existing cross section see Appendix F, Cross Section Development.

NE Sandy Boulevard

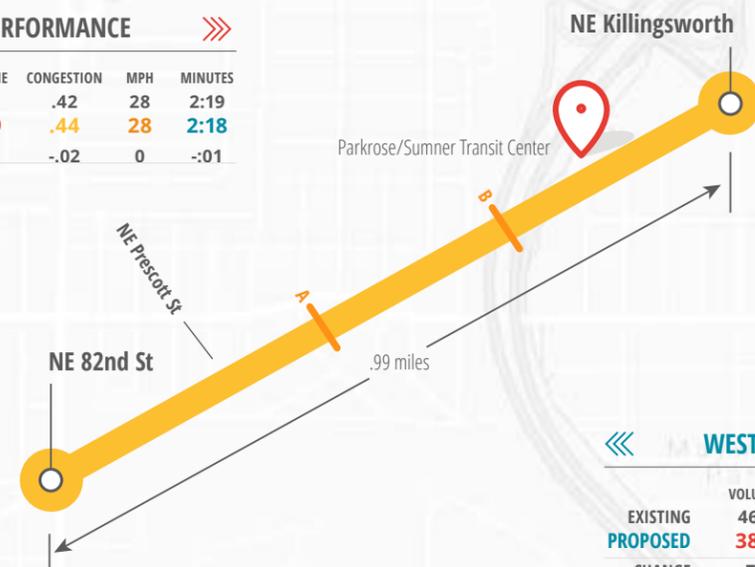
EXISTING AND PROPOSED CONDITIONS

FUNDED PROJECTS: RAPID FLASHING BEACON AT NE 85TH AVENUE

Corridor Vehicle Performance¹

EAST BOUND PERFORMANCE

	VOLUME	CONGESTION	MPH	MINUTES
EXISTING	626	.42	28	2:19
PROPOSED	649	.44	28	2:18
CHANGE	23	-.02	0	-.01



WEST BOUND PERFORMANCE

	VOLUME	CONGESTION	MPH	MINUTES
EXISTING	462	.33	27	2:30
PROPOSED	387	.28	27	2:32
CHANGE	-75	-.05	0	:02

¹Corridor Performance Measures are based on a typical weekday peak hour: 4pm - 5pm

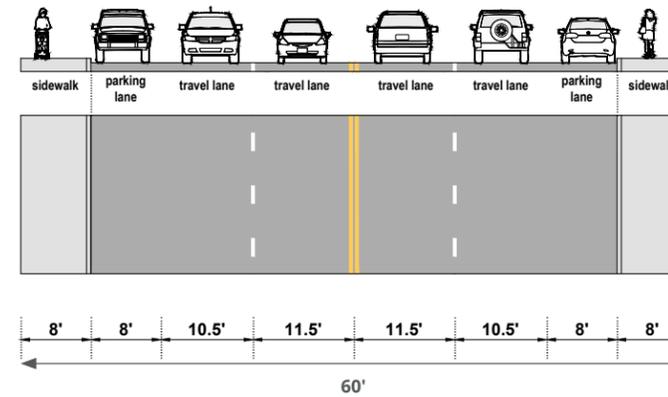
Corridor Conditions

- The PBOT-maintained segment of NE Sandy Boulevard within the EPASS study area is limited to between NE 82nd Avenue and NE 99th Avenue and includes the overcrossing of I-205.
- Land uses are dominated by small commercial establishments, including restaurants, taverns, motels and automotive businesses.
- This corridor had 27 serious, fatal or vulnerable-user crashes in the analyzed 10-year period, including 2 pedestrian deaths. This is the second-highest number of crashes per mile in the EPASS network.
- Crash contributors include a high rate of nighttime crashes and a high rate of speeding.
- There is a high concentration of pedestrian crashes, especially at night.
- Infrastructure for nonmotorized users is substandard, including a lack of bike lanes, narrow sidewalks and crossing spacing that does not meet PBOT guidelines.
- Street lighting is not consistent along the whole corridor.

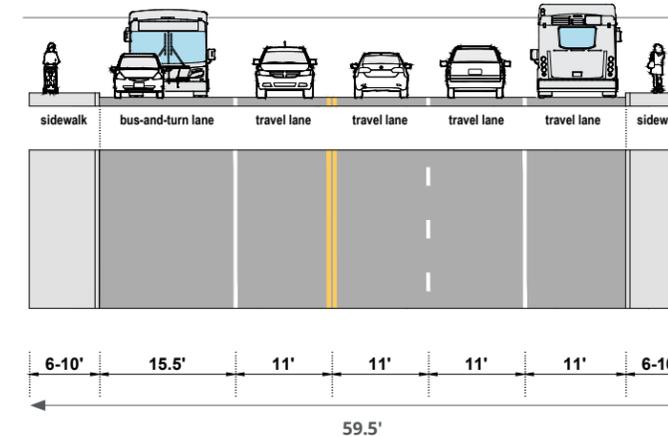
Corridor Solutions

- Only partially funded at this time, improvements on this part of NE Sandy Boulevard will focus on faster bus operations, including a westbound queue jump lane approaching NE Prescott Street. The eastbound center-running bus lane over the I-205 structure will be maintained.
- On the same structure, a 2-way bikeway is proposed on a portion of the north side, connecting the future Alberta Neighborhood Greenway with Parkrose/Sumner Transit Center.
- Pedestrian safety improvements are also needed where the northbound I-205 off-ramp meets NE Sandy Boulevard.
- A 2018 restripe of NE Sandy Boulevard approaching NE Killingsworth Street provided 3 eastbound lanes to address afternoon congestion spillback from I-205. A Rapid Flashing Beacon pedestrian crossing has been installed at NE 85th Avenue.

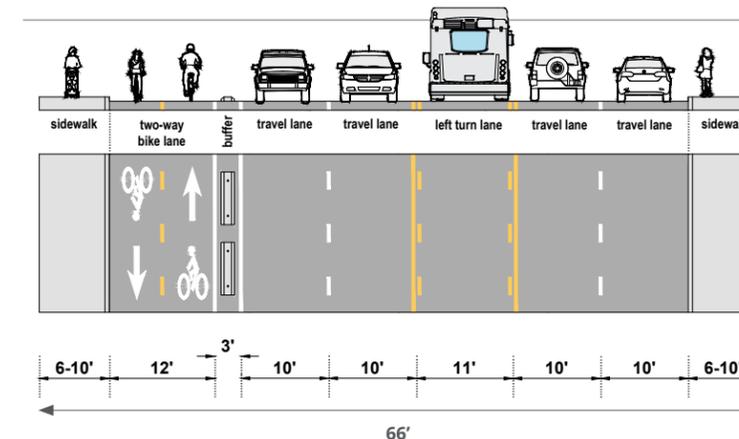
EXISTING Typical Cross Section²



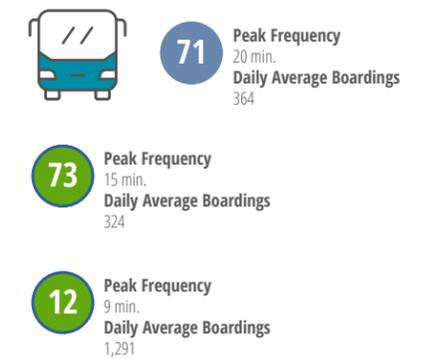
PROPOSED Typical Cross Section (A)



PROPOSED Typical Cross Section (B)



TriMet Service³



³TriMet Service is based on a typical weekday peak hour: 5pm - 6pm. Rider-ship data is from fall 2018.

TSP Street Classifications

City Walkway	Pedestrian
City Bikeway	Bicycle
Major Transit Priority Street	Transit
Civic Main Street	Design
Major Emergency Response	Emergency Response
Major Truck Street	Freight
Major City Traffic Street	Traffic

Congestion and Diversion Findings

For the Preferred Scenario, congestion levels are modeled to be below the capacity of the roadway, with some additional eastbound traffic attributable to the proposed lane reallocation on NE Halsey Street over I-205. No traffic has been modeled to divert to neighborhood streets in the area.

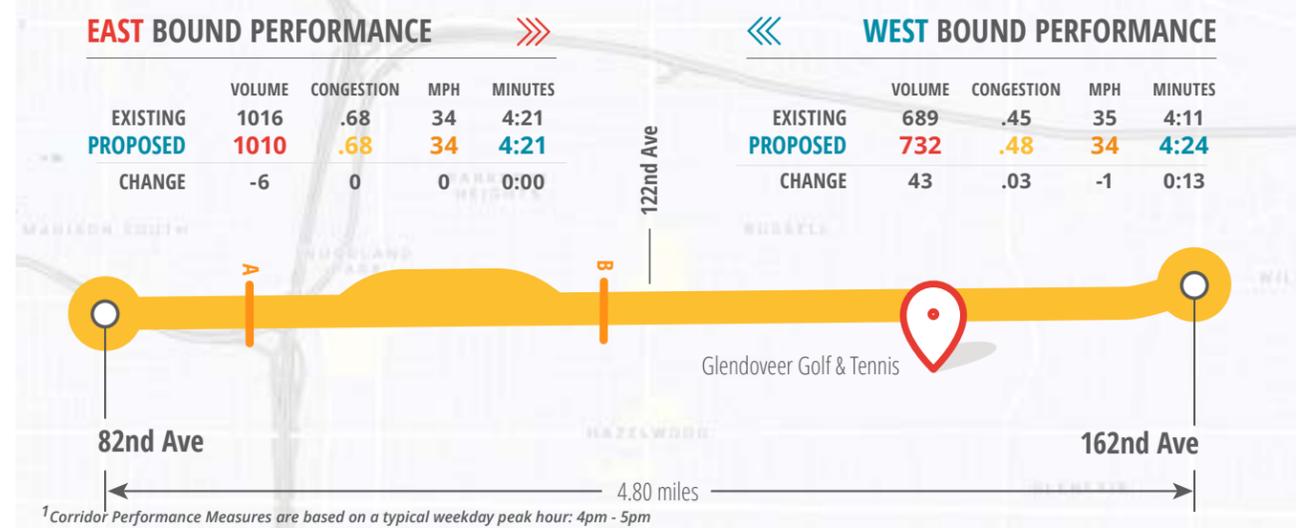
²Travel lanes, bike lanes, and sidewalk dimensions vary along the alignment depending on right-of-way width. For more details on existing cross section see Appendix F, Cross Section Development.

NE Halsey Street/Weidler Street

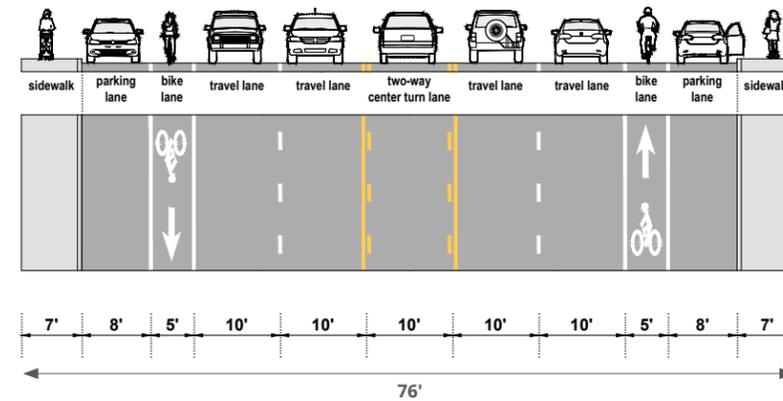
EXISTING AND PROPOSED CONDITIONS

FUNDED PROJECTS: NONE AT THIS TIME

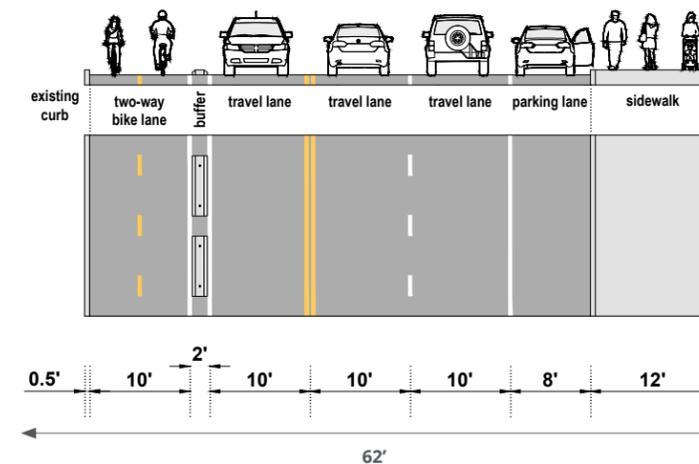
Corridor Vehicle Performance¹



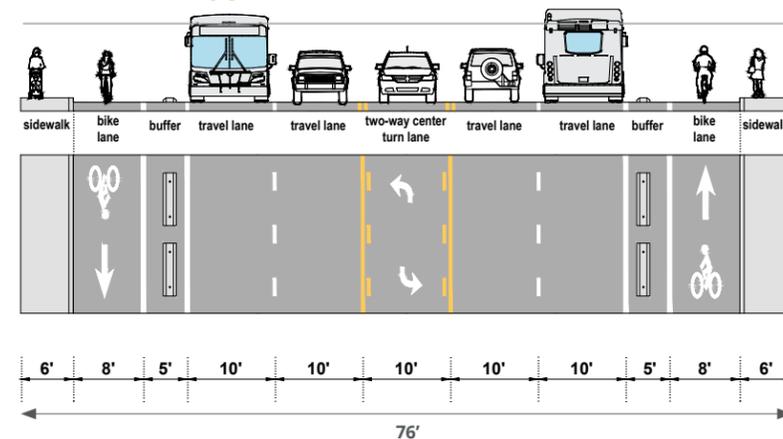
EXISTING Typical Cross Section²



PROPOSED Typical Cross Section (A)



PROPOSED Typical Cross Section (B)



² Travel lanes, bike lanes, and sidewalk dimensions vary along the alignment depending on right-of-way width. For more details on existing cross section see Appendix F, Cross Section Development.

TriMet Service³



³ TriMet Service is based on a typical weekday peak hour: 5pm - 6pm. Rider-ship data is from fall 2018.

TSP Street Classifications

City Walkway	Pedestrian
Major City Bikeway	Bicycle
Transit Access Street	Transit
Neighborhood Main Street	Design
Major Emergency Response	Emergency Response
Truck Access Street	Freight
Major City Traffic Street	Traffic

Corridor Conditions

- This 4-mile corridor changes character many times, including viaducts over NE 82nd Avenue and I-205, a commercial couplet with NE Weidler Street between NE 102nd Avenue and NE 112th Avenue, and a golf course-adjacent segment between NE 137th Avenue and NE 148th Avenue.
- Land uses include retail commercial, single-family and multifamily residential, and open space.
- This corridor had 77 serious, fatal or vulnerable-user crashes in the analyzed 10-year period, including 2 vehicular deaths and 1 bicyclist death. For crashes per mile, NE Halsey Street is in the lower half of EPASS corridors.
- Although most crashes happen during the day, this corridor has one of the highest frequencies of nighttime pedestrian crashes, likely influenced by substandard lighting in some locations.
- Driving was the mode with the highest crash occurrence and the highest number of injuries, with turning movements involved in most vehicle crashes.
- Prevailing speeds are high, particularly east of NE 122nd Avenue, where 85th percentile speeds were as high as 47 mph (with a 45-mph posted speed that has since been reduced).
- Sidewalks are mostly absent west of I-205 and east of NE 122nd Avenue. Crossing spacing does not meet PBOT guidelines, except in parts of the Halsey-Weidler business district.
- Outside of the Halsey-Weidler business district where protected bike lanes were installed in 2019, bike lanes are either missing or narrow and unprotected.

Corridor Solutions

- East of NE 82nd Avenue, NE Halsey Street has three new capital projects in design, plus the recently completed Halsey-Weidler Streetscape in the Gateway area.
- From NE 85th Avenue to NE 100th Avenue, two different projects will deliver a 2-way cycle track on the south side of the street, sidewalk infill on the north side of the street, 2 westbound vehicle lanes, and 1 eastbound vehicle lane.
- From NE 114th Avenue eastward to NE 134th Place, 5 lanes will be maintained, with protected bike lanes added by removing underused parking on both sides of the street.
- East of NE 134th Place, 5 lanes will be narrowed slightly to make room for buffered or protected bike lanes, and sidewalk infill will be completed on the north side.
- Because of its greater principal mobility role in the region compared with NE Glisan Street, NE Halsey Street is recommended to retain 4 vehicle travel lanes east of NE 122nd Avenue. **Note:** A proposed roundabout at Fairview Parkway is within and led by the City of Fairview.

Congestion and Diversion Findings

For the Preferred Scenario, congestion levels are modeled to be below the capacity of the roadway, except eastbound between NE 102nd Avenue and NE 122nd Avenue, where congestion exists today. No traffic has been modeled to divert to neighborhood streets in the area. The proposed eastbound road reorganization on the Halsey Street/I-205 viaduct may divert some eastbound traffic to NE Sandy Boulevard and NE Glisan Street, which are both arterials that can handle additional traffic. Eastbound traffic on NE Halsey Street west of NE 122nd Avenue has increased slightly since the completion of the road reorganization on NE Glisan Street.

NE Glisan Street

EXISTING AND PROPOSED CONDITIONS

FUNDED PROJECTS: EAST GLISAN STREET UPDATE (A COLLECTION OF FIVE CAPITAL PROJECTS)

Corridor Vehicle Performance¹

EAST BOUND PERFORMANCE

	VOLUME	CONGESTION	MPH	MINUTES
EXISTING	635	.37	27	1:56
PROPOSED	674	.39	28	1:39
CHANGE	39	.02	1	-0:17

EAST BOUND PERFORMANCE

	VOLUME	CONGESTION	MPH	MINUTES
EXISTING	785	.39	31	4:30
PROPOSED	761	.38	31	4:26
CHANGE	-24	-.01	0	-0:04

WEST BOUND PERFORMANCE

	VOLUME	CONGESTION	MPH	MINUTES
EXISTING	798	.45	26	1:45
PROPOSED	831	.47	27	2:11
CHANGE	33	.02	1	0:26

WEST BOUND PERFORMANCE

	VOLUME	CONGESTION	MPH	MINUTES
EXISTING	493	.25	30	4:05
PROPOSED	465	.23	29	4:12
CHANGE	-28	.02	-1	0:7



¹Corridor Performance Measures are based on a typical weekday peak hour: 4pm - 5pm

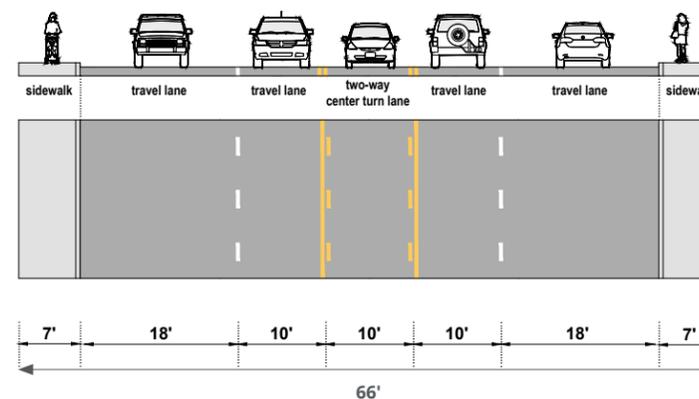
Corridor Conditions

- Another 4-mile east-west corridor, NE Glisan Street has a different character west of I-205 than the remainder east of I-205 does.
- Land uses include a mix of commercial, residential and open space, with the most intense development near I-205 and at NE 122nd Avenue.
- This corridor had 100 serious, fatal or vulnerable-user crashes in the analyzed 10-year period, including 4 pedestrian deaths and 3 vehicular deaths. NE Glisan Street has been identified as the fourth most deadly street in the City of Portland.
- Pedestrian-related crashes prevail on this corridor. It has one of the highest numbers of fatal pedestrian crashes in the network, suggesting a higher risk of pedestrians being struck while crossing the corridor. Most of the pedestrian crashes involve straight-moving vehicles that fail to yield at unsignalized locations.
- East of NE 102nd Avenue, sidewalks are narrow and curb-tight, with some sidewalk missing along the Glendoveer Golf Course frontage. Crossing spacing does not meet PBOT guidelines.
- Bike lanes were completely absent on NE Glisan Street in the EPASS study area until 2019, when two safety projects were completed between NE 122nd Avenue and NE 162nd Avenue.

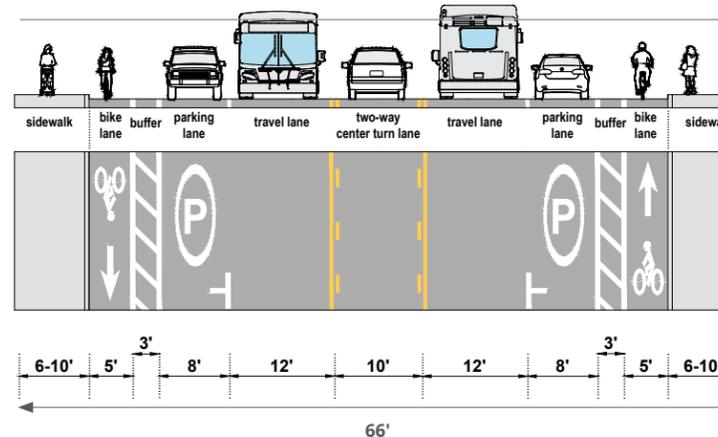
Corridor Solutions

- East of NE 122nd Avenue, a 5-to-3-lane road reorganization with bike lanes was completed in 2019.
- Between NE 102nd Avenue and NE 122nd Avenue, a similar road reorganization will take place in 2021, but with 2 eastbound vehicle lanes retained.
- New signalized crossings will be added at NE 108th, 113th and 155th Avenues.
- A newly proposed (and unfunded) project would take space that is now used as part-time parking and provide bike lanes from NE 87th Avenue (the "80s Neighborhood Greenway") eastward to NE 102nd Avenue.
- Streetlights are being added throughout the corridor.

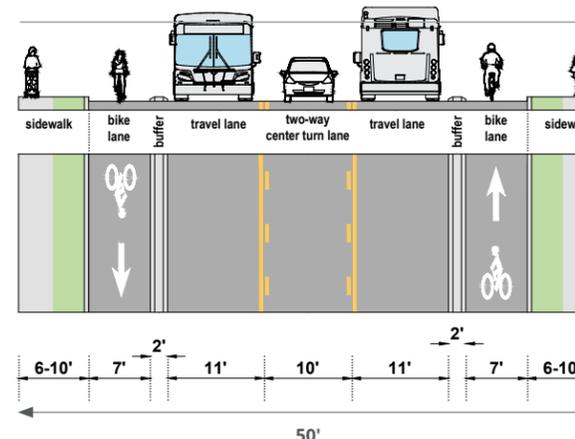
EXISTING Typical Cross Section²



PROPOSED Typical Cross Section (A)

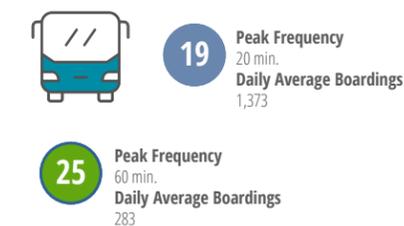


PROPOSED Typical Cross Section (B)



²Travel lanes, bike lanes, and sidewalk dimensions vary along the alignment depending on right-of-way width. For more details on existing cross section see Appendix F, Cross Section Development.

TriMet Service³



³TriMet Service is based on a typical weekday peak hour: 5pm - 6pm. Rider-ship data is from fall 2018.

TSP Street Classifications

City Walkway	Pedestrian
City Bikeway	Bicycle
Transit Access Street	Transit
Neighborhood Main Street	Design
Major Emergency Response	Emergency Response
Truck Access Street	Freight
District Collector Street	Traffic

Congestion and Diversion Findings

The 2019 5-to-3-lane road reorganization east of NE 122nd Avenue increased evening peak hour travel time by approximately 75 seconds, which is very close to what was modeled (outside of EPASS). Actual traffic counts revealed no noticeable volume increases on nearby neighborhood streets, just a modest increase in traffic on NE Halsey Street, which is a 5-lane arterial that has available capacity. The second phase of the 5-to-3-lane road reorganization, under construction in 2021, retains 2 eastbound lanes to avoid evening congestion and diversion. In the westbound direction, to avoid any increase in the morning peak, the proposed single lane widens back to 2 lanes a quarter mile before the NE 102nd Avenue signal.

SE Stark Street/Washington Street

EXISTING AND PROPOSED CONDITIONS

FUNDED PROJECTS: SAFER OUTER STARK, JADE AND MONTAVILLA CONNECTED CENTERS, STARK/WASHINGTON CORRIDOR SAFETY IMPROVEMENT PROJECT

Corridor Vehicle Performance¹

EAST BOUND PERFORMANCE

	VOLUME	CONGESTION	MPH	MINUTES
EXISTING	1623	1.14	24	6:17
PROPOSED	1623	.95	21	7:31
CHANGE	0	-.19	-3	1:14

EAST BOUND PERFORMANCE

	VOLUME	CONGESTION	MPH	MINUTES
EXISTING	1441	1.23	28	5:23
PROPOSED	1401	1.19	29	4:49
CHANGE	-40	-.04	1	-0:34

WEST BOUND PERFORMANCE

	VOLUME	CONGESTION	MPH	MINUTES
EXISTING	1548	1.14	22	7:44
PROPOSED	1485	1.11	22	6:42
CHANGE	-63	-.03	0	-1:02

WEST BOUND PERFORMANCE

	VOLUME	CONGESTION	MPH	MINUTES
EXISTING	854	.83	31	4:41
PROPOSED	856	.83	31	4:34
CHANGE	2	0	0	:-07



¹Corridor Performance Measures are based on a typical weekday peak hour: 4pm - 5pm

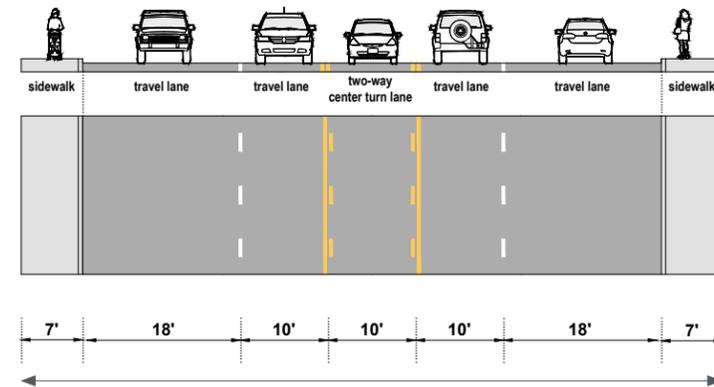
Corridor Conditions

- SE Stark Street is one of the busiest east-west corridors in East Portland and includes the Stark-Washington Couplet east of SE 109th Avenue. The westernmost segment features the older street grid of the Montavilla neighborhood, and the eastern segments are more suburban.
- Land uses are dominated by retail commercial and multifamily residential. The highest-intensity uses are in the Gateway Regional Center near I-205.
- This corridor had 141 serious, fatal or vulnerable-user crashes in the analyzed 10-year period, including 4 pedestrian deaths and 2 vehicular deaths.
- Vehicle turning movements were the most common circumstance of both pedestrian and bicycle collisions.
- This corridor has the highest average percentage of vehicles top-end speeding in the network; however, speed is not cited as a frequent crash factor in the crash data.
- Sidewalks are complete, but east of I-205, they are mostly narrow and curb-tight.
- Crossing spacing in most locations does not meet PBOT guidelines, which contributes to risky pedestrian crossings and collisions.
- Bike lanes are only between SE 82nd Avenue and SE 108th Avenue and are unprotected.

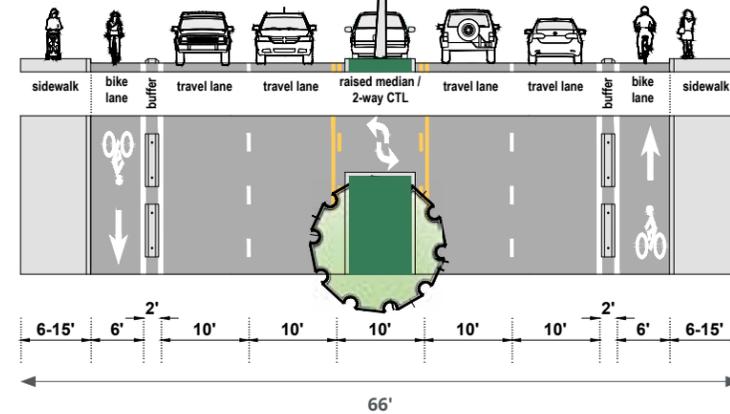
Corridor Solutions

- The Safer Outer Stark project, east of SE 108th Avenue, will reconstruct the city's most crash-prone intersection at Stark Street and SE 122nd Avenue, upgrade existing traffic signals and flashing beacons, and replace on-street parking with protected bike lanes.
- Between SE 92nd Avenue and SE 108th Avenue, the Stark/Washington Regional Flexible Funds project will add new pedestrian crossings, protected bike lanes and bus priority lanes.
- Streetlights are being added throughout the corridor.

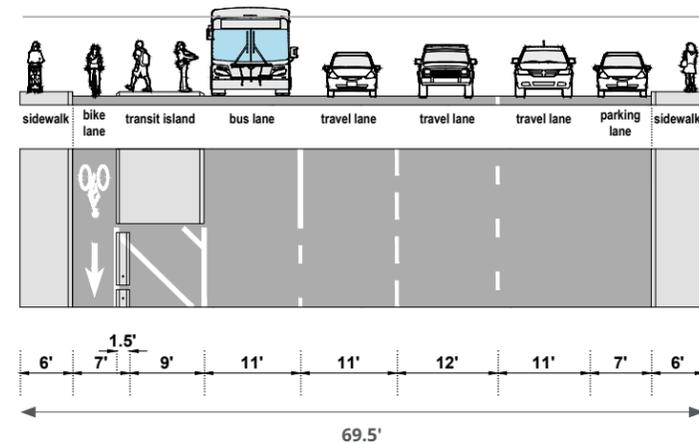
EXISTING Typical Cross Section²



PROPOSED Typical Cross Section (A)

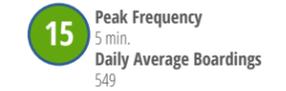


PROPOSED Typical Cross Section (B)



²Travel lanes, bike lanes, and sidewalk dimensions vary along the alignment depending on right-of-way width. For more details on existing cross section see Appendix F, Cross Section Development.

TriMet Service³



³TriMet Service is based on a typical weekday peak hour: 5pm - 6pm. Rider-ship data is from fall 2018.

TSP Street Classifications

City Walkway	Pedestrian
City Bikeway	Bicycle
Major Transit Priority Street	Transit
Civic Main Street	Design
Major Emergency Response	Emergency Response
Priority Truck Street	Freight
Major City Traffic Street	Traffic

Congestion and Diversion Findings

Stark Street currently has traffic volumes that exceed its capacity between SE 102nd Avenue and SE 138th Avenue. For the Preferred Scenario, the model forecasts a modest decrease in traffic volumes on Stark Street; however, the roadway would remain above capacity in some places. Because the Stark-Washington Couplet's four lanes in each direction are overbuilt with respect to driving demand, the proposed reallocation of a vehicle lane in each direction on the couplet in Gateway is not expected to create congestion. However, some diversion to SE Market Street between SE 92nd Avenue and SE 112th Avenue is expected. This is a neighborhood greenway and is currently being upgraded to include sidewalks and bike lanes. On SE Stark Street east of SE 108th Avenue, no lane reallocation is proposed because of existing congestion and potential diversion to local streets and neighborhood greenways.

SE Division Street

EXISTING AND PROPOSED CONDITIONS

FUNDED PROJECTS: OUTER DIVISION MULTIMODAL SAFETY PROJECT, DIVISION TRANSIT PROJECT

Corridor Vehicle Performance¹

EAST BOUND PERFORMANCE

	VOLUME	CONGESTION	MPH	MINUTES
EXISTING	1196	1.13	22	8:22
PROPOSED	1326	1.25	21	8:23
CHANGE	130	.12	-1	:01

EAST BOUND PERFORMANCE

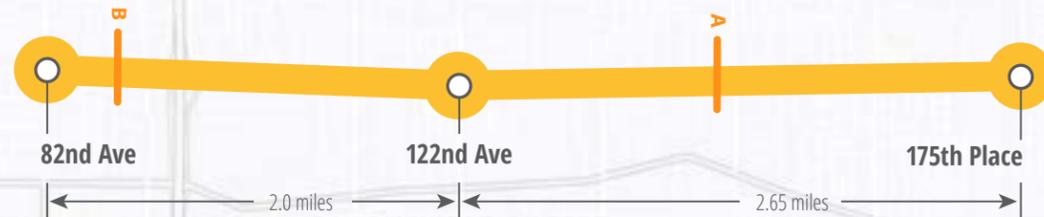
	VOLUME	CONGESTION	MPH	MINUTES
EXISTING	1486	1.17	31	5:07
PROPOSED	1372	1.09	31	5:16
CHANGE	-114	-.08	1	0:09

WEST BOUND PERFORMANCE

	VOLUME	CONGESTION	MPH	MINUTES
EXISTING	1292	.93	17	11:38
PROPOSED	1233	.89	16	12:40
CHANGE	-59	-.04	-1	1:02

WEST BOUND PERFORMANCE

	VOLUME	CONGESTION	MPH	MINUTES
EXISTING	1031	.67	32	5:32
PROPOSED	1064	.69	32	5:28
CHANGE	33	.02	0	:-04



¹Corridor Performance Measures are based on a typical weekday peak hour: 4pm - 5pm

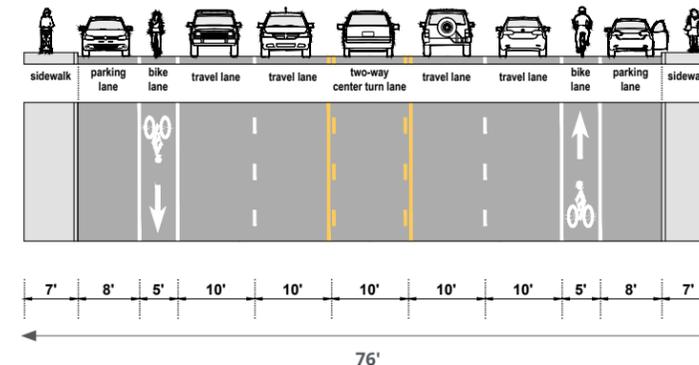
Corridor Conditions

- The 4.65 miles of SE Division Street within the study area constitute the most heavily traveled corridor on the EPASS network, with volumes exceeding 30,000 vehicles per day near I-205. This heavy volume adds to crash risk factors.
- Land uses are mostly retail commercial and multifamily residential.
- This corridor had 220 serious, fatal or vulnerable-user crashes in the analyzed 10-year period, including 13 pedestrian deaths, 1 bicyclist death and 2 vehicular deaths.
- SE Division Street is unequivocally the most dangerous corridor in the EPASS network. SE Division Street leads in total crashes, crashes per mile, crash frequencies, injury frequencies, pedestrian injuries and pedestrian fatalities.
- Common crash types include straight-moving vehicles that do not yield to crossing pedestrians, rear-end collisions, and turning movements.
- Most sidewalks are narrow and curb-tight, and crossing spacing does not meet PBOT guidelines in most locations.
- Bike lanes are narrow and unprotected, and are between the driving lane and the parking lane.
- The Division Transit Project is underway in the corridor.

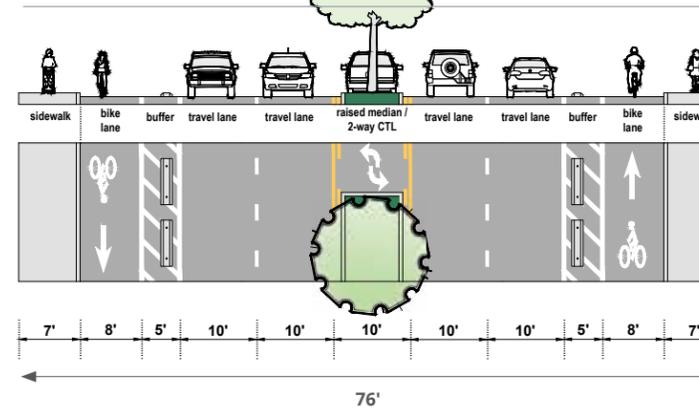
Corridor Solutions

- TriMet's Division Transit Project will provide high-capacity bus service with enhanced bus stops and periodic bus-only lanes.
- PBOT's Outer Division Multimodal Safety Project will add center medians, protected bike lanes and 10 new pedestrian signals.
- A recently completed federal grant project filled nearly all remaining sidewalk gaps on both sides of the street.
- Additional streetlights are also being added to the corridor.

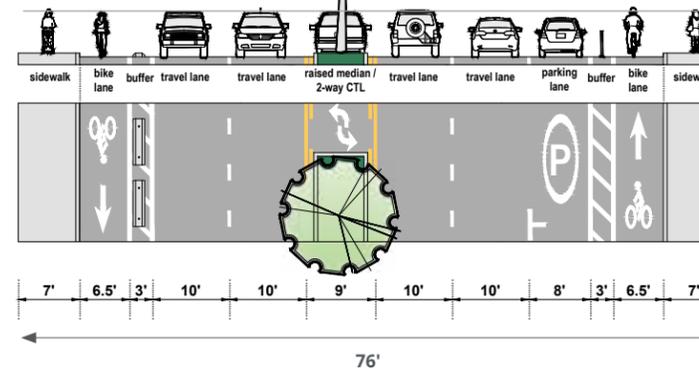
EXISTING Typical Cross Section²



PROPOSED Typical Cross Section (A)



PROPOSED Typical Cross Section (B)



TriMet Service³



³TriMet Service is based on a typical weekday peak hour: 5pm - 6pm. Rider-ship data is from fall 2018.

TSP Street Classifications

City Walkway	Pedestrian
City Bikeway	Bicycle
Major Transit Priority Street	Transit
Civic Main Street	Design
Major Emergency Response	Emergency Response
Truck Access Street	Freight
District Collector Street	Traffic

Congestion and Diversion Findings

For the Preferred Scenario, SE Division Street is modeled to have volumes that exceed the capacity of the roadway in the eastbound direction during the most congested hours of the evening, primarily between I-205 and SE 139th Avenue. This congestion exists today; therefore, very similar travel times are expected to remain. The Preferred Scenario does not include any reallocation of through vehicle lanes on SE Division Street. Some traffic diversion to SE Market Street, SE Powell Boulevard and SE Holgate Boulevard is in the Preferred Scenario, which likely reflects a rebalancing of east-west traffic across I-205.

²Travel lanes, bike lanes, and sidewalk dimensions vary along the alignment depending on right-of-way width. For more details on existing cross section see Appendix F, Cross Section Development.

SE Foster Road/Woodstock Boulevard

EXISTING AND PROPOSED CONDITIONS

FUNDED PROJECTS: FOSTER-WOODSTOCK STREETScape PROJECT

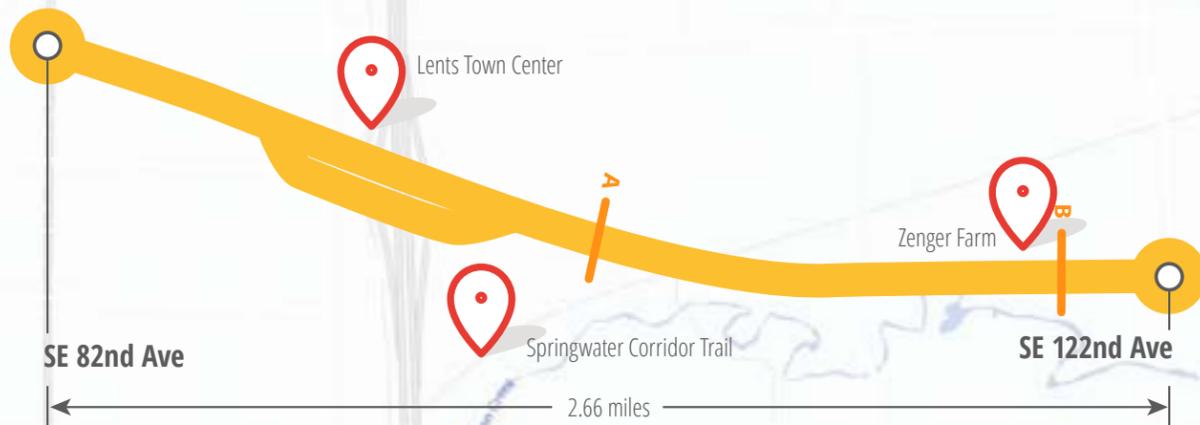
Corridor Vehicle Performance¹

EAST BOUND PERFORMANCE

	VOLUME	CONGESTION	MPH	MINUTES
EXISTING	1751	1.08	28	3:16
PROPOSED	1436	.89	29	2:55
CHANGE	-315	-.19	1	-0:21

WEST BOUND PERFORMANCE

	VOLUME	CONGESTION	MPH	MINUTES
EXISTING	1318	.83	35	3:06
PROPOSED	1075	.67	34	2:38
CHANGE	-243	-.16	-1	-0:28



¹Corridor Performance Measures are based on a typical weekday peak hour: 4pm - 5pm

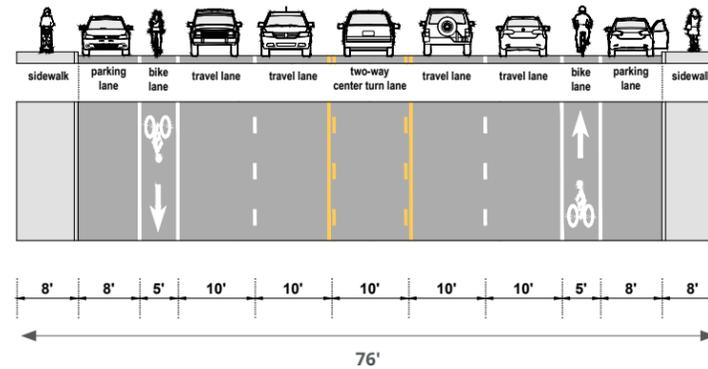
Corridor Conditions

- The portion of SE Foster Road that EPASS studied is the 2.66 miles between SE 82nd Avenue and SE 122nd Avenue, along with the portion of SE Woodstock Boulevard that forms a couplet with Foster Road in the Lents Town Center near I-205. This is the southernmost EPASS corridor.
- Land uses include commercial, industrial, residential and open space. The Lents Town Center at SE 92nd Avenue features new multistory mixed-use buildings with affordable housing. East of I-205 is an industrial area along Johnson Creek, followed by residences as the corridor approaches SE 122nd Avenue.
- This corridor had 67 serious, fatal or vulnerable-user crashes in the analyzed 10-year period, including 1 bicyclist death and 1 vehicular death.
- Nighttime vehicle crashes and bicycle crashes are more common in this corridor than in the EPASS network as a whole.
- Speeding is particularly problematic east of the Foster-Woodstock Couplet, where land uses become less dense and the roadway widens to 76 feet from curb to curb.
- East of I-205, street lighting is limited mostly to one side of the street.
- Sidewalks are on both sides of the roadway, but east of I-205, they are narrow and curb-tight and do not meet PBOT standards. Crossing spacing guidelines are met only within the Lents Town Center between SE 89th Avenue and I-205.

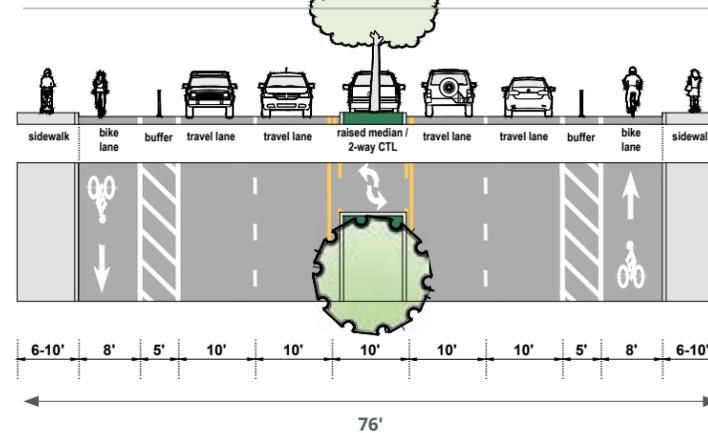
Corridor Solutions

- The Foster Transportation and Streetscape Project was completed in 2019, providing bike lanes, wider sidewalks, and a center left-turn lane to SE Foster Road between SE 82nd Avenue and SE 90th Avenue.
- A project in design for the Foster-Woodstock Couplet will add protected bike lanes and a new pedestrian crossing at or near SE 97th Avenue and repair paving.
- Solutions on SE Foster Road east of the Foster-Woodstock Couplet (which are not funded at this time) would focus on calming vehicle speeds through the installation of center medians and protected bike lanes.
- On-street parking would also be removed from the couplet to Zenger Farm, where parking would be maintained on one side of the street eastward to SE 122nd Avenue.

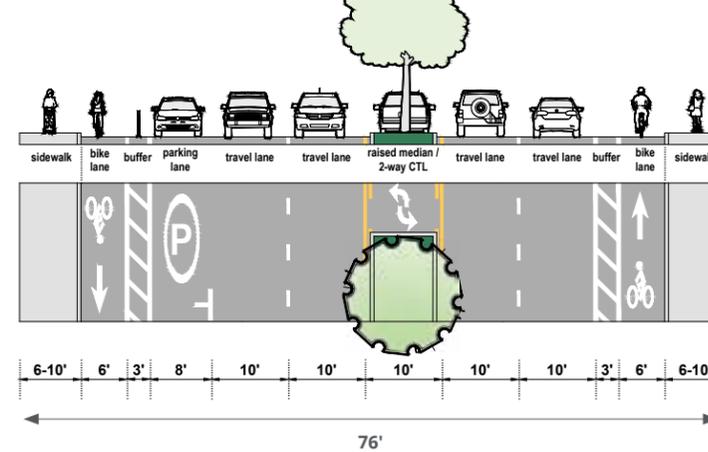
EXISTING Typical Cross Section²



PROPOSED Typical Cross Section (A)



PROPOSED Typical Cross Section (B)

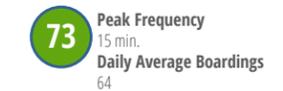


²Travel lanes, bike lanes, and sidewalk dimensions vary along the alignment depending on right-of-way width. For more details on existing cross section see Appendix F, Cross Section Development.

Congestion and Diversion Findings

The Preferred Scenario includes a short reallocation of the third vehicle lane in each direction on the Foster-Woodstock Couplet for one block east of I-205. However, congestion levels are modeled to be below the capacity of the roadway in most locations, with volumes actually dropping in the Preferred Scenario. This decrease may be due to the proposed road reorganization on SE 122nd Avenue between Foster Road and Holgate Boulevard, which encourages some traffic to use SE Holgate Boulevard instead of Foster Road. However, hourly volumes are still above 1,000 in each direction on SE Foster Road east of SE 101st Avenue, and the four vehicle through lanes are maintained to serve regional and local traffic. Minor congestion is expected to persist near traffic signals in the Preferred Scenario, including at SE 82nd Avenue, SE 101st Avenue and the Springwater Corridor.

TriMet Service³



³TriMet Service is based on a typical weekday peak hour: 5pm - 6pm. Rider-ship data is from fall 2018.

TSP Street Classifications

City Walkway	Pedestrian
City Bikeway	Bicycle
Major Transit Priority Street	Transit
Neighborhood Main Street	Design
Major Emergency Response	Emergency Response
Truck Access Street	Freight
Major City Traffic Street	Traffic

What's Next

How the work will be used

As EPASS concludes, East Portlanders might wonder how the planning that we have all done together will be used. The work of implementing projects and strengthening ongoing programs and initiatives that bring greater safety, accessibility, mobility and connectivity to East Portland has already begun. We will continue to work with community partners to further our common goals. Together we will stay the course of addressing East Portland's safety issues and backlog of infrastructure needs.

EPASS is an example of planning that has worked to improve the safety and performance of transportation corridors in East Portland. As such, EPASS contributed to the implementation of 15 capital projects that are already funded and in the process of design or construction. These investments will build on the success of recent transformative projects including the Foster Road Streetscape Project, Halsey/Weidler Streetscape Project, East Glisan Street Update Phase I, and the NE 102nd Avenue Safety Project.

EPASS work also directly supports Vision Zero programs for East Portland. For example, the city is using analytical data generated for EPASS to support ongoing Vision Zero studies that continuously track



Proposed road reorg and new pedestrian hybrid signal at NE Glisan Street and 113th Avenue looking east. For more information visit: www.portland.gov/.

Up next in 2021:

- **Outer Division Multimodal Safety Project**
will break ground as TriMet's **Division Transit Project** continues
- **East Glisan Street Update Phase II**
will restripe and add crossings between NE 102nd and 122nd Avenues
- **SE 162nd Avenue Safety and Access to Transit project**
will move to construction
- **Safety street lighting**
on East Portland arterials including Glisan, Stark and 122nd will be installed

crash trends and other safety problems. Vision Zero is the city's plan that is working to eliminate traffic deaths and serious injuries.

It is important to note that although major city streets were the primary focus for EPASS, the work is not limited to these corridors. PBOT has projects on other streets in East Portland, including neighborhood greenways and other nonmajor and local streets. In addition, other agencies such as ODOT and TriMet have major projects in the works in East Portland. Some of these other projects include:

- Neighborhood Greenways (low-traffic streets for biking and walking): the 100s, 150s, and "4M" routes
- SE 136th Avenue Paving and Sidewalks
- SE 174th Avenue Safe Route to School
- Division-Midway Neighborhood Street Improvement Project
- Phase II of ODOT's Outer Powell Transportation Safety Project

Ultimately, EPASS work has led to the development of an implementation and investment strategy for 24 capital projects, including 15 projects that will be complete within the next five years, and nine projects to consider for new funding opportunities over the next ten years. Capital projects that will soon be in construction in East Portland are shown in the EPASS Capital Projects table.

This report is intended to serve both as a public-facing communication of PBOT's intent on 42 miles of city streets, as well as decision documentation for PBOT staff as we move forward with implementation of projects and programs.

EPASS Capital Projects

The following tables highlight current and future capital projects on the EPASS Network, including projects with secured funding and projects that were developed by EPASS that are not funded at this time. The projects are listed from north to south, then west to east. You can find more details on these projects in Appendix J — Implementation and Investment Strategy.

EPASS CAPITAL PROJECTS	BASIC DESCRIPTION OF SCOPE ON EPASS NETWORK	ANTICIPATED CONSTRUCTION YEAR
1. Halsey Street Safety and Access to Transit (RFFA¹ 2018-21)	Two-way bikeway on south side, sidewalk on north side of NE Halsey St: 85th – 92nd Aves, intersection improvement at NE Halsey/92nd signal	2023
2. Tillamook-Holladay-Oregon-Pacific (THOP) / I-205 Project	Two-way bikeway on south side of NE Halsey St Viaduct over I-205, connections to east-west neighborhood greenways on either side of I-205	2023
3. Outer Halsey Safety Project Phase I	Sidewalk infill, two RRFB ² crossings, NE Halsey St: 114th-162nd Aves	2021
4. East Glisan Street Update Phase II	Protected bike lanes, two PHB ³ crossings, streetlights, reallocation of one westbound vehicle lane, NE Glisan St: 102nd-122nd Aves.	2021
5. Jade and Montavilla Multimodal Improvements Project (RFFA 2018-21)	Pedestrian crossings, bike lane on SE Washington St: 72nd Ave – I-205	2022
6. Stark/Washington Corridor Safety Improvement Project (RFFA 2022-24)	Pedestrian crossings, protected bike lanes, transit islands and signal upgrades, SE Stark and Washington Sts: I-205 – 106th Ave	2025
7. Safer Outer Stark Project (Build Portland)	Intersection redesign at SE Stark/122nd Ave, two new signals, protected bike lanes, streetlights, paving, SE Stark St: 108th – 162nd Aves	2022
8. Outer Division Multi-Modal Safety Project	Ten new signalized pedestrian crossings, protected bike lanes, center medians, SE Division St: 80th – 174th Aves	2021-2022
9. Division Transit Project (TriMet)	High-capacity, high-frequency bus service with enhanced stops, SE Division St from downtown Portland to downtown Gresham	2020-2022
10. Foster/Woodstock Couplet East Streetscape Project (Build Portland)	New signalized pedestrian crossing, protected bike lanes, paving, SE Foster Rd and Woodstock Blvd: I-205 – 101st Ave	2022
11. 122nd Avenue Fixing Our Streets I Project	Protected bike lanes, street lighting, transit priority treatments, two signalized pedestrian crossings, NE/SE 122nd Ave: SE Powell Blvd – NE Halsey St	2022
12. SE 122nd Avenue: Foster to Holgate Fixing Our Streets II Project	Repave SE 122nd Ave: Foster Rd – Steele St; five-to-three-lane road reorg with protected bike lanes from Foster Rd to Holgate Blvd	2024
13. NE 122nd Avenue Multimodal Safety and Access Improvement Project (RFFA 2022-24)	Up to four signalized pedestrian crossings on NE 122nd Ave between Halsey St and Sandy Blvd	2025

14. NE 148th Avenue / Sacramento Safe Route to School Crossing	Marked pedestrian/bicycle crossing at NE 148th Ave and Sacramento St, including five-to-three road reorg and protected bike lanes from NE San Rafael St to I-84	2021
15. SE 162nd Avenue Safety and Access to Transit Project	Three pedestrian crossings with median islands and lighting improvements at bus stops, buffered bike lanes, five-to-three road reorg, SE 162nd Ave: Powell Blvd – Stark St	2021

UNFUNDED PROJECTS

E-1. NE Airport Way Center-Running Bus Lane at Holman	Westbound center-running transit-only lane on NE Airport Way for approx. 1,000 feet approaching NE Holman St to bypass PM peak auto congestion	2025+
E-2. NE Airport Way Protected Intersections	Intersection redesign with shorter crosswalks, protected bike lanes, tighter turn radii, and truck aprons for larger truck turns. Potential pilot locations at 138th, 148th, 158th Aves	2025+
E-3. NE Airport Way Crossing Improvements	Marked pedestrian crossings at bus stops with potential signalization as appropriate, NE Airport Way: Holman St – 181st Ave	2025+
E-4. NE Sandy Blvd Queue Jump at Prescott	Westbound bus queue jump and right turn lane on NE Sandy Blvd at Prescott St	2025+
E-5. NE Sandy Blvd / I-205 Pedestrian/Bicycle Safety Improvements	Two-way bikeway on north side of NE Sandy Blvd: 92nd Ave – Parkrose/Sumner Transit Center; pedestrian safety improvement at northbound I-205 offramp to eastbound NE Sandy Blvd	2025+
E-6. Outer Halsey Safety Project Phase II	Protected bike lanes on NE Halsey St: 112th – 134th by removing parking; 134th-162nd by narrowing vehicle lane widths	2025+
E-7. NE Glisan St: 82nd-102nd Multi-Modal Safety Project	Bike lanes on NE Glisan St: 87th – 102nd Aves, ADA ramp upgrades, permanent three-lane cross section instead of pro-time parking.	2025+
E-8. Outer Foster Safety Project	Speed and crash reduction through center median boulevard design, protected bike lanes, enhanced pedestrian crossings, SE Foster Rd: 101st – 122nd Aves	2025+
E-9. NE 148th Ave: Glisan-Halsey Pedestrian/Bicycle Improvements	Protected walkway/bikeway on west side of NE 148th Ave: Glisan – Halsey St by reallocating one southbound vehicle lane	2025+

¹ Regional Flexible Funds Allocation, federal transportation funds allocated by Metro Regional Government

² Rectangular Rapid Flashing Beacon, which increases visibility of pedestrians crossing a street

³ Pedestrian Hybrid Beacon, also known as a HAWK signal, a four-stage signal that allows people to cross the street while drivers have a red signal

Recently completed capital projects on the EPASS Network include:

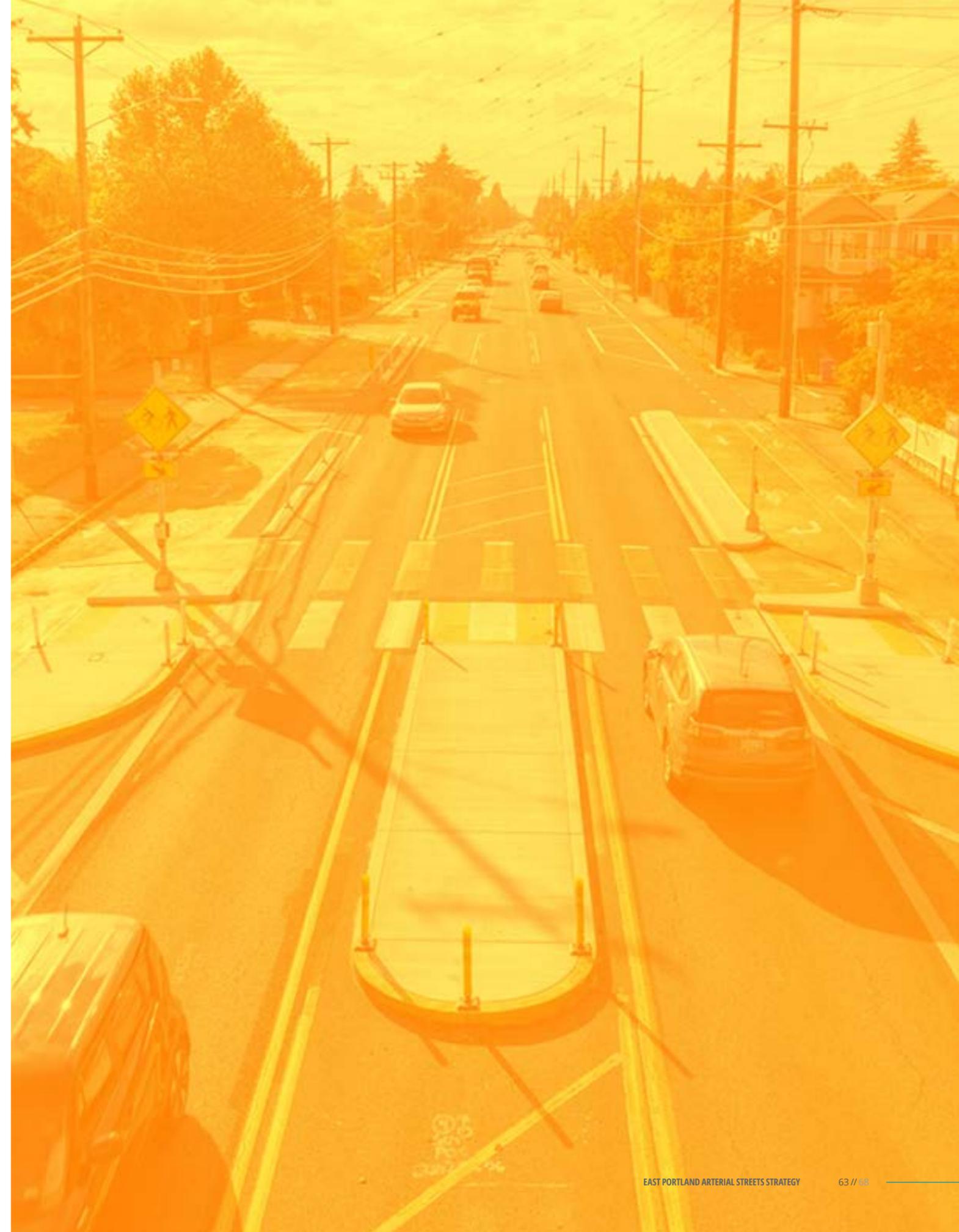
- Halsey/Weidler Streetscape Project: Pedestrian crossings, ornamental streetlights, protected bike lanes, and public plazas on NE Halsey Street and NE Weider Street from NE 102nd to 112th Avenues, completed in 2019.
- East Glisan Street Update Phase I: Protected bike lanes, new signalized crossing at NE 128th Avenue, and five-to-three-lane road reorg on NE Glisan Street from NE 122nd to 162nd Avenues, completed in 2019 (additional signal at NE 155th Avenue to be completed in 2021).
- NE 102nd Avenue Corridor Safety Project: Pedestrian crossings with median islands and curb extensions, buffered bike lanes, and five-to-three-lane road reorg on NE 102nd Avenue from NE Weider Street to NE Sandy Boulevard, piloted with low-cost materials in 2019, then hardened with concrete islands in 2020 after a successful evaluation period.
- Intersection safety improvements at SE Division Street and 148th Avenue, SE Stark Street and 155th Avenue, and other locations.

Other Capital Projects in East Portland

Capital investments in East Portland are not limited to the EPASS Network, nor are they the exclusive purview of PBOT. As detailed in Appendix J – Implementation and Investment Strategy, projects are in planning, design or construction on two-lane arterials and collectors such as SE 136th Avenue, as well as on neighborhood greenways and local streets. Major partner agency investments in addition to TriMet’s Division Transit Project include ODOT’s complete reconstruction of SE Powell Boulevard from I-205 to Gresham city limits to provide sidewalks, bike lanes and turn lanes, and Port of Portland’s proposed grade separation of NE Airport Way and 82nd Avenue at Portland International Airport.

Related Efforts

As mentioned in the Project Overview, capital investments will continue to be bolstered by supportive programming, including reducing speed limits, analyzing crash trends, making low-cost spot safety improvements, installing more speed safety cameras, and encouraging and educating the public on the use of new transportation facilities. These ongoing programs help maximize the return on our infrastructure investments.



Your Thoughts

Email Us

Email us your comments, questions and ideas. Send us an email at safe@portlandoregon.gov and include the word "EPASS" in the subject line

Website

Read about EPASS news and projects here
www.portland.gov/transportation/epass

Stay in Touch

Sign up for PBOT emails about projects in East Portland or just your neighborhood:
www.portland.gov/transportation/pbot-projects/construction

PBOT Videos

Watch videos to find out more about EPASS
Safe 4-Lane Boulevards in East Portland: <https://youtu.be/NQKc67luweU>
Designing A Smarter Street for Portland: <https://youtu.be/03Lpn67A6oo>

Find Out More About PBOT's Work

youtube.com/c/PBOTinfo/

Engage with PBOT on Social Media

Follow us: @pbot on Facebook or @PBOTinfo on Twitter

Appendix

Table of Contents

Appendix A

EPASS Network Safety Analysis (PBOT)

A1

EPASS Network Safety Analysis Appendix

Appendix B

Previous East Portland Public Input (PBOT)

Appendix C

Questionnaire Findings (PBOT's questions for East Portland community)

Appendix D

Arterial Policy and Project Review (PBOT)

Appendix E

Street Design Menu (HDR)

Appendix F

Cross Section Development for New Corridors (Toole Design)

Appendix G

Aimsun Next Model Development and District-level Travel Demand Analysis (HDR)

Appendix H

Corridor-level Traffic Analysis (HDR)

Appendix H1

Model Tables and Plots

Appendix I

District-level and Traffic-level/operational Corridor Reorganization Assessment (HDR)

Appendix I1

Model Tables and Plots

Appendix J

Implementation & Investment Strategy (PBOT)



Contributors and Acknowledgments

Portland Bureau of Transportation

Steve Szigethy
Kate Drennan
Corrine Montana
Anamaria Perez
Mimi Phillips
Gwen Shaw

Technical Advisory Committee

Jay Higgins - City of Gresham
Katherine Kelly - City of Gresham
Jessica Berry - Multnomah County
Andrew Campbell - Multnomah County
Brendon Haggerty - Multnomah County
Andrea Hamberg - Multnomah County
Maria Sipin - Oregon Department of Transportation
Dana Dickman - PBOT Active Transportation & Safety
Anamaria Perez - PBOT Active Transportation & Safety
Kim Roske - PBOT Civil Engineering & Drafting
Hannah Schafer - PBOT Communications
Matt Berkow - PBOT Development Permitting & Transit
Oliver Smith - PBOT Signals & Street Lighting
Wendy Cawley - PBOT Traffic Design Section
Michelle Dellinger - PBOT Traffic Design Section
Jamie Jeffery - PBOT Traffic Design Section
Denver Igarta - PBOT Transportation Planning
Bob Kellett - PBOT Transportation Planning
Ning Zhou - PBOT Transportation Planning
Dave Nunamaker - Portland Bureau of Environmental Services
Leslie Lum - Portland Bureau of Planning & Sustainability
Cherri Warnke - Portland Water Bureau
Damian Crowder - Prosper Portland
Thea Munchel - Prosper Portland
Grant O'Connell - TriMet

Consultants

HDR
Toole Design
JLA Public Involvement
Stanton Global Communications

Photography

Andie Petkus