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Steve Novick Commissioner Leah Treat Director

July 15, 2016

Oregon Department of Transportation,

Thank you for the opportunity to further deliberate on the City of Portland's request to use an alternative methodology for speed zones. At our last meeting, you requested several follow up materials.

There are seven items in this packet:

- **Summary document:** explains the need for an alternative methodology for setting non-statutory speed limits and describes key features of the alternative methodology
- **Proposed request form:** a draft of how to apply for setting non-statutory speed limits using the alternative methodology
- **Instruction manual:** explains how to use the alternative methodology request form
- **Two examples of completed proposed request forms:** help show how the proposed form would work in practice
- **Simplified speed limit matrix:** reference guidelines based on OAR 734
- **City of Portland map:** illustrates roadways that would be affected by the proposed alternative methodology

Thank you for your continued cooperation in helping the City of Portland move forward quickly and efficiently in making our streets safe for all users.

Sincerely,

Margi Bradway, Division Manager
Active Transportation & Safety
Portland Bureau of Transportation



The Portland Bureau of Transportation fully complies with Title VI of the Civil Rights Act of 1964, the ADA Title II, and related statutes and regulations in all programs and activities. For accommodations, complaints and information, call (503) 823-5185, City TTY (503) 823-6868, or use Oregon Relay Service: 711.

City of Portland's Proposed Speed Zone Review Methodology

Speed is a key factor in road safety, especially for people traveling outside of motor vehicles who are not buffered from the impact of crashes.

As part of its Vision Zero program, the Portland Bureau of Transportation is working to ensure that speed limits support the city's goal of eliminating traffic deaths and serious injuries. The proposed alternative methodology will help the City of Portland achieve its Vision Zero goal by streamlining the request process for setting speed limits on lower classification streets.

Need for an alternative process: Efficiency, mixed use streets and safety

Efficiency: While the Oregon Department of Transportation has been a reliable partner in granting requests for speed limit changes, the existing process consumes considerable staff time. The process is also lengthy; PBOT currently has requests pending for nine speed zone changes, dating to as early as December of 2014. A streamlined process for lower classification streets would allow ODOT and PBOT to focus efforts on changes to higher classification roads.

Mixed use streets: In addition to efficiency gains, the alternative methodology better suits the needs of Portland's multimodal transportation system. PBOT frequently reconfigures roads to accommodate people walking and biking, and speed limit changes are a key part of these reconfigurations.

Safety: The overriding purpose of the alternative methodology is to help PBOT move quickly to respond to the safety needs of road users. People die while walking in Portland at a rate that is three times the national average. Speed is the most important factor in crashes involving people walking. Figure 1 shows the relationship between motor vehicle speed and the likelihood of death for people hit while walking.



Figure 1. When a person driving crashes into a person walking, the likelihood of death or serious injury for the person walking increases from 10 to 80 percent as vehicle speeds rise from 20 to 40 miles per hour.

Key features of the proposed alternative methodology

The proposed alternative methodology for setting speed limits would apply only to non-arterial streets with posted speeds greater than 25 miles per hour (see Figure 2). The included map highlights City of Portland streets that meet these criteria.

Under the proposed alternative methodology, speed limits would be set—for eligible roadways that are not arterials, not designated freight routes and not statutory (see map)—based on the degree of separation provided between people driving, biking and walking.

PBOT's focus on physical separation stems from our Vision Zero program, which emphasizes the need to protect vulnerable road users from collisions involving motor vehicles. Our Vision Zero program supports the following **general** guidelines, contingent on contextual factors:

- **40 mph maximum** unless streets have a center median barrier and clear zone, and people walking and biking are physically protected.
- **30 mph maximum** on streets with busy intersections experiencing high crashes, on streets with sidewalks or shoulders next to travel lanes, and on streets with bike lanes next to motor vehicle lanes.
- **20 mph maximum** on shared space roads (driving, biking and walking) that do not meet school, business or neighborhood greenways statute for 20 mph.

Moving forward with an alternative speed zone methodology

PBOT looks forward to working with ODOT to adopt an alternative speed zone methodology that is efficient, suitable for mixed use streets, and improves safety for roadway users. For questions, please contact any of the following PBOT staff:

- Carl Snyder, PE, Traffic Operations, carl.snyder@portlandoregon.gov, 503.823.5220
- Scott Batson, PE, Traffic Engineer, scott.batson@portlandoregon.gov, 503.823.5422
- Margi Bradway, Active Transp. & Safety, margi.bradway@portlandoregon.gov, 503.823.5667

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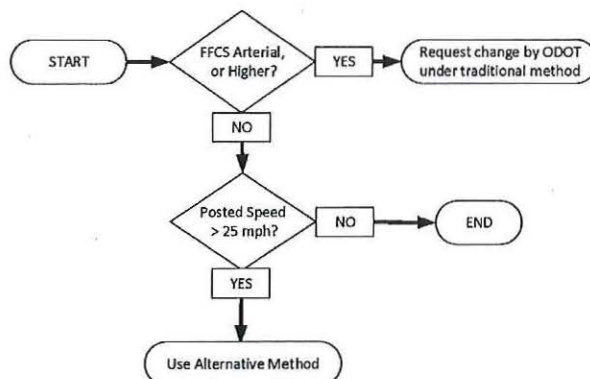


Figure 2. Eligibility for the alternative speed zone methodology.





Speed Zone Request

To request a Speed Zone Investigation by ODOT personnel, City or County Engineering Department staff should complete this form and email it - with a map of the roadway - to:

ODOTSpeedZoning@odot.state.or.us

OAR 734-020-0015 (3) Alternative Investigation Method

Date MM/DD/YYYY	Contact XXXXX	Phone 503-823-XXXX
Agency City of Portland	E-mail X@portlandoregon.gov	Fax 503-823-7576

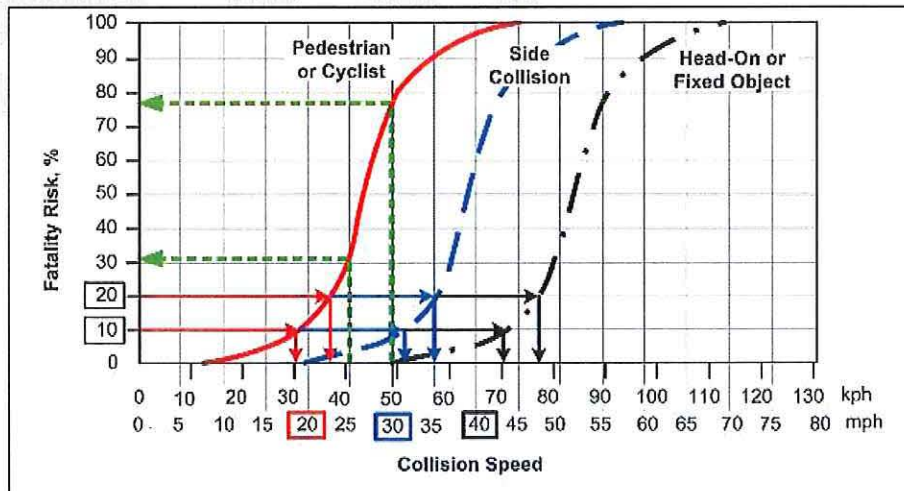
Typical Photos (Label each)

Name of Roadway X	From X	To X
Federal Functional Classification X	Portland Traffic Classification X	Land Use X
		Roadway Character X

Typical Roadway Cross Section

NSEW Curb; X foot Parking Lane; X Foot Bike Lane; X foot Travel Lane; X Foot Travel Lane; X foot Center Turn lane Median; X foot Travel Lane; X Foot Travel Lane; X Foot Bike Lane; X foot Parking Lane; SNWE Curb

Street Width, ft. X Feet	Data Date MM/DD/YY	Volume, vpd X	85 th Percentile, mph X mph	Free Flow 85 th , mph X mph
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Safety for People Walking Percent Sidewalk <u> X </u> % Separation from Auto Lane <u> X </u> Feet		Safety for People Biking Percent Bike Lane <u> X </u> % Bike Lane Width <u> X </u> Feet Separation from Auto Lane <u> X </u> Feet		Safety for People Driving Lane Width (ft.) <u> X </u> Feet Opposing Lane Separation <u> X </u> Feet	
Safe Speed For Pedestrians, mph X mph		Safe Speed for Cyclists, mph X mph		Safe Speed for Motorists, mph X mph	
Existing Speed, mph X mph Existing Speed Order XXXXX		Requested Speed, mph X mph		Abutting Roadway Speed Limits, mph Entering at X mph Exiting at X mph y z	
Notes					

Manual for Alternative Speed Zone Methodology

Portland is proposing this alternative speed zone methodology in accordance with guidelines per OAR 734-020-0015 (3). The primary reason for setting speed limits is safety. When balancing the mobility desires of the traveling public with the safety needs, minimizing risk should always take precedence.

The principle factors to determine risk are the speed of adjacent motor vehicles and the proximity of those vehicles to the more vulnerable road users, namely pedestrians and cyclists. When determining what speed to propose for a street corridor, the engineer should default to the lowest safe speed for the most vulnerable road user until such time as greater protection for that most vulnerable user can be provided.

The following is a summary of the data collected in order to arrive at a proposed speed limit for submission to ODOT.

1. Enter date of request in MM/DD/YYYY format.
2. Enter the name of the contact person for this request, usually yourself.
3. Enter the phone number of the contact person.
4. Agency is the road authority requesting the change, typically City of Portland.
5. Enter the contact person's e-mail address.
6. Verify FAX number is current.
7. Typical Photos: Insert photos from along the corridor of the subject request. Photos should be representative of the corridor and any change of conditions that are significantly different in physical layout (such as fully improved vs. curb only, vs. center strip paving only, etc.), or vary by adjacent land use (commercial, vs. residential, vs. rural). Photos need only be representative and only one or two samples for each differentiation listed above.
8. Enter the name of the roadway.
9. Enter the west or north limit cross-street of the request.
10. Enter the east or south limit cross-street of the request.
11. Enter the Federal Functional Classification, found at:
<https://www.oregon.gov/ODOT/TD/TDATA/gis/docs/COUNTYMAPS/Mult1.pdf> ; or by searching for Federal Functional Classification at www.oregon.gov .
12. Enter the Portland Traffic Street Classification from GIS.
13. Enter the general description of the adjacent land use: Residential; Business; Mixed Residential/Business.
14. Enter the roadway character: Urban; Rural; Mixed Urban/Rural.
15. List the typical roadway cross-section, beginning from one side of the road and moving across perpendicular to the curb.
16. Enter the street width, or a range, if needed.
17. Enter the date of the most recent data collection.
18. Enter the average traffic volume (with note), or a range.
19. Enter the average 85th percentile speed (with note), or range.
20. Enter the average free flow 85th percentile speed (with note), or range. Free flow speed is determined from off-peak operation hours.
21. The Wramborg graph is provided to assist with risk assessment.

22. Safety for People Walking: Using GIS, measure how much sidewalk is present in total along the corridor and divide by twice the total corridor length to determine how much of the corridor has sidewalk 100% on both sides. Determine the typical, average, or range of, separation of the front edge of the sidewalk from the closest edge of a motor vehicle travel lane (with note typ.; avg.).
23. Safety for People Biking: Using GIS, measure how much bike lane is present in total along the corridor and divide by twice the total corridor length to determine how much of the corridor has bike lane 100% on both sides. Determine the typical, average, or range of, bike lane width along the corridor (with note typ.; avg.). Determine the typical, average, or range of, separation of the left edge of the bike lane from the closest edge of a motor vehicle travel lane (with note typ.; avg.).
24. Using GIS, determine the typical, average, or range of, width of the motor vehicle travel lanes (with note typ.; avg.) as well as separation from the opposing lane of travel, if any, or NA if a one-way street.
25. Enter the Safe Speed for Pedestrians as determined from Portland's Simplified Speed Limit Matrix. This is the speed intended to achieve near 10% risk of fatality balanced against mobility goals.
26. Enter the Safe Speed for Cyclists as determined from Portland's Simplified Speed Limit Matrix. This is the speed intended to achieve near 10% risk of fatality balanced against mobility goals.
27. Enter the Safe Speed for Motorists as determined from Portland's Simplified Speed Limit Matrix. This is the speed intended to achieve near 10% risk of fatality balanced against mobility goals.
28. Add explanatory notes as needed. The proposed methodology does not focus on historical crash patterns, but instead on future risk of fatalities, so this is a good location to summarize such subjects. Additional information could include items such concerns such as adjacent schools, school zones, parks and commercial activity.





Speed Zone Request

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ODOTSpeedZoning@odot.state.or.us

OAR 734-020-0015 (3) Alternative Investigation Method

Date 6/16/2015	Contact Scott Batson	Phone 503-823-5422
Agency City of Portland	E-mail Scott.batson@portlandoregon.gov	Fax 503-823-7576
Typical Photos <div style="display: flex; justify-content: space-around;">   </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> W/87th W/92nd </div>		
Name of Roadway SE Flavel Street	From SE 52 nd Avenue	To SE 92 nd Avenue
Federal Functional Classification Urban Collector	Portland Traffic Classification Neighborhood Collector	Land Use Residential
Roadway Character Urban		
Typical Roadway Cross Section S Curb; 7.5 foot Parking Lane; 4.5 Foot Bike Lane; 10 foot Travel Lane; 10 foot Travel Lane; 4.5 Foot Bike Lane; 7.5 foot Parking Lane; N Curb		
Street Width, ft. 44 Feet	Data Date 9/10/14	Volume, vpd 7,926
85 th Percentile, mph 40 mph		Free Flow 85 th , mph 41 mph
Safety for People Walking Percent Sidewalk <u>95 %</u> Separation from Auto Lane <u>12 Feet</u>	Safety for People Biking Percent Bike Lane <u>100 %</u> Bike Lane Width <u>4 Feet</u> Separation from Auto Lane <u>0 Feet</u>	Safety for People Driving Lane Width (ft.) <u>10 Feet</u> Opposing Lane Separation <u>0 Feet</u>
Safe Speed For Pedestrians, mph 30 mph	Safe Speed for Cyclists, mph 30 mph	Safe Speed for Motorists, mph 35 mph
Existing Speed, mph 35 mph	Requested Speed, mph 30 mph	Abutting Roadway Speed Limits, mph Entering at 52 nd (T) 30 mph Exiting at 92 nd 35 mph
Notes A 4.5 foot bike lane is substandard.		



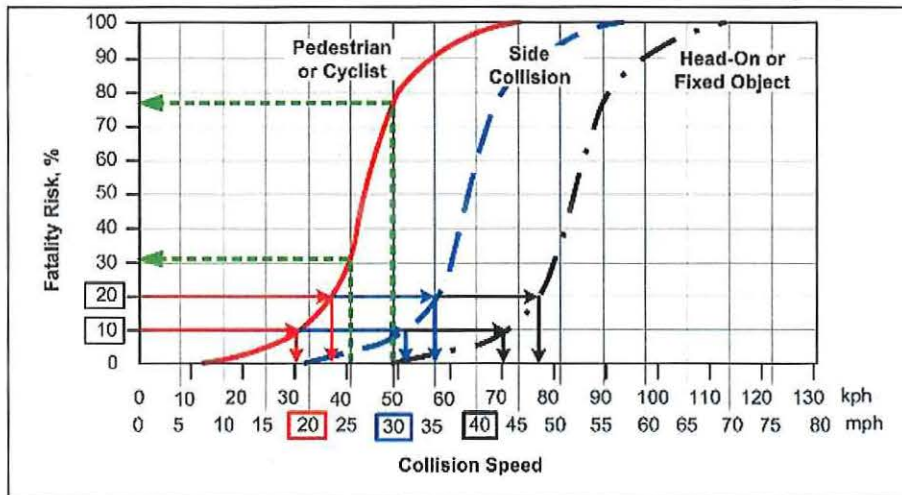
Speed Zone Request

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ODOTSpeedZoning@odot.state.or.us

OAR 734-020-0015 (3) Alternative Investigation Method

Date 6/16/2015	Contact Scott Batson	Phone 503-823-5422		
Agency City of Portland	E-mail Scott.batson@portlandoregon.gov	Fax 503-823-7576		
Typical Photos	Willamette Ln.	W/Fiske	W/Harvard	Wabash
Name of Roadway N Willamette Blvd	From N Richmond Avenue	To N Rosa Parks Boulevard		
Federal Functional Classification Urban Collector	Portland Traffic Classification Neighborhood Collector	Land Use Residential	Roadway Character Urban	
Typical Roadway Cross Section Richmond to Carey: S Curb; 8 foot Parking Lane; 10 Foot Travel Lane; 10 Foot Travel Lane; 8 foot Parking Lane; N Curb Carey to Macrum: S Curb; 8 foot Parking Lane; 5 Foot Bike Lane; 11 foot Travel Lane; 11 Foot Travel Lane; 5 Foot Bike Lane; N Curb Macrum to Rosa Parks: S Curb; 5-6 Foot Bike Lane; 10-13 foot Travel Lane; 10-13 Foot Travel Lane; 5-6 Foot Bike Lane; 0-8 foot Parking Lane; N Curb				
Street Width, ft. 36-40 Feet	Data Date 08/24/2010	Volume, vpd 17.528	85 th Percentile, mph 41 mph	Free Flow 85 th , mph 42 mph



Safety for People Walking

Percent Sidewalk 75 %
 Separation from
 Auto Lane 4-26 Feet

Safety for People Biking

Percent Bike Lane 100 %
 Bike Lane Width 5-6 Feet
 Separation from
 Auto Lane 0-2 Feet

Safety for People Driving

Lane Width (ft.) 10-13 Feet
 Opposing Lane
 Separation 0-1 Feet

Safe Speed For Pedestrians, mph
 30 mph

Safe Speed for Cyclists, mph
 30 mph

Safe Speed for Motorists, mph
 35 mph

Existing Speed, mph 35 mph
 Existing Speed Order 588

Requested Speed, mph
 30mph

Abutting Roadway Speed Limits, mph
 Entering at Richmond 25 mph
 Exiting at Rosa Parks 35 mph

Notes

N Willamette west of Alma is currently without bike lanes (3,000 LF).

Simplified speed limit matrix for fatal crash reduction by mode per OAR 734, Portland, Oregon

- Higher speed limits than indicated require mitigation measures from lower speed limits
- The lowest speed by mode controls; add mitigations for higher auto mobility
- Separation includes only space not regularly used for travel.

Street and limits:		Street																	
Advisory		Statutory																	
Speed	10 mph	≤15		≤20		≤25		≤30		≤35			≤40		≤45		≤50		
PED	Shared roadway						5' sidewalk 100% one side		Sidewalk both sides; curb or swale; 8' separation		>8' separation both sides NCHRP 562 crossings: 20/Hr.			>12' separation both sides		Impermeable separation barrier			
BIKE	Shared roadway						≤ 5' bike lane		6' – 7' bike lane		Minimum 2' separation from autos			Permeable barrier		Impermeable separation barrier			
AUTO	Gravel roadway		≤ 9' travel lanes		10' travel lanes, greenway		10' travel lanes				≤ 11' travel lanes; Angle crash mitigations			Permeable center barrier; Roadside object setback or shielding				Impermeable center barrier	

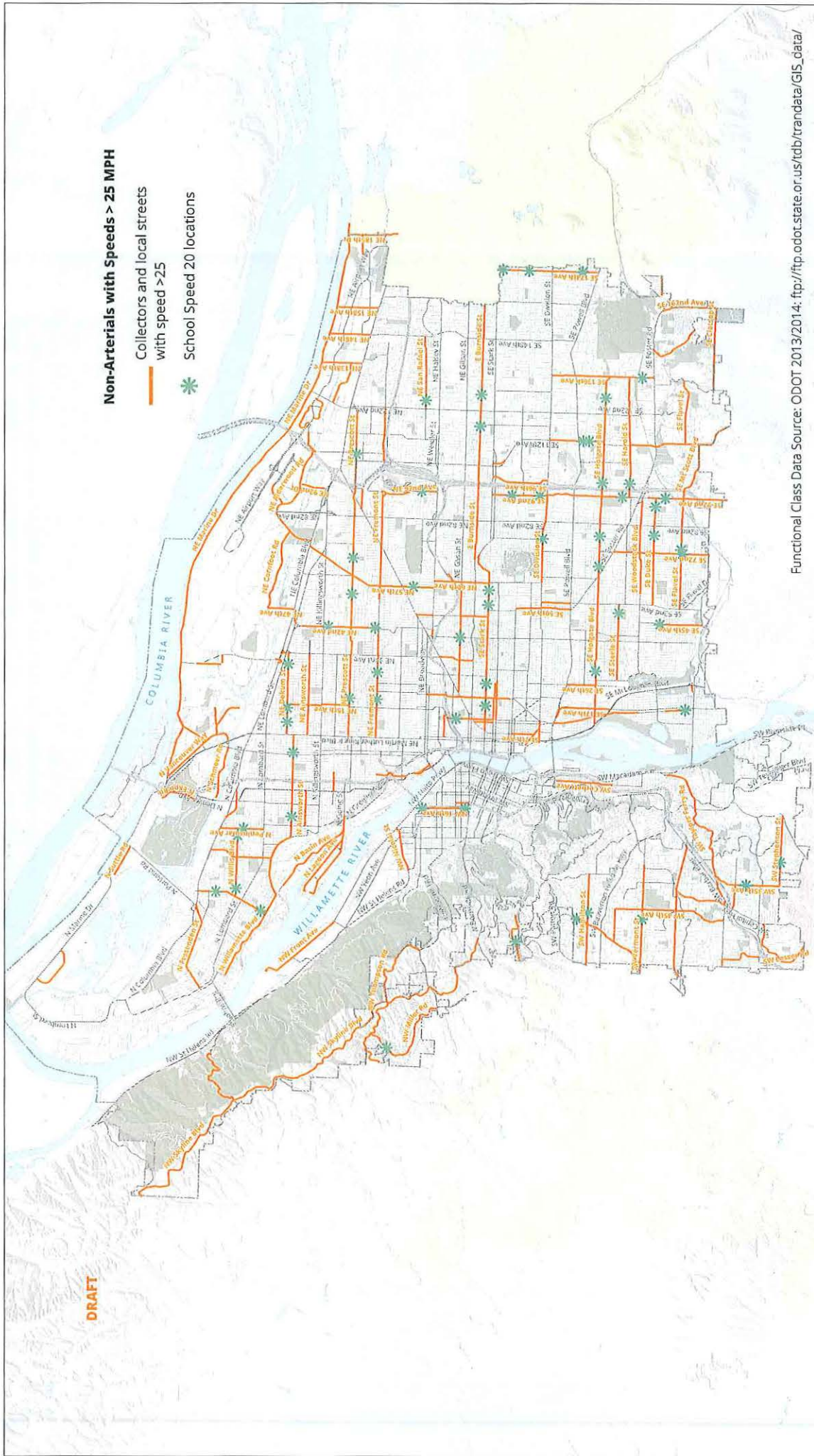
Notes: None

DRAFT

Non-Arterials with Speeds > 25 MPH

Collectors and local streets
with speed >25

* School Speed 20 locations



Portland Bureau of Transportation (PBOT) Alternative Investigation Method Evaluation Plan

Since increased safety is the ultimate goal, reduced numbers of injury and fatal crashes will be the primary measurements of success.

Once a final selection of streets to use the Alternative Investigation Method has been determined, and the speed limits for those streets have been changed, PBOT will evaluate annually the change in crash history along each corridor for the following metrics:

- Total, fatal and injury crashes along each corridor;
- Crashes per mile;
- Fatal and injury crashes per mile;
- Crash rate – crashes per million vehicles per mile; and
- Average 85th percentile speeds.

These metrics will be compared to the same metrics along each corridor for the 10-years before the speed limit was changed.

PBOT will provide the annual reports summarizing overall performance and the reported crashes for each corridor within 3 months after crash data from ODOT has been processed and incorporated into PBOT's Geographic Information System (GIS).