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To: PedPDX Technical Advisory Committee
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From: Jean Crowther and Mike Sellinger, Alta Planning and Design

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Re: PedPDX Prioritization Framework Memo (**INTERNAL DRAFT** Deliverable 4A)

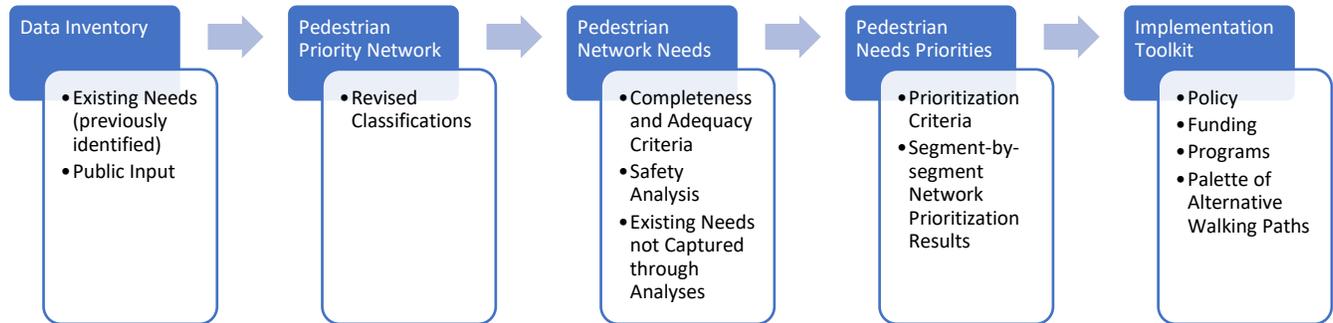
This memo summarizes the proposed approach to prioritize pedestrian needs in Portland.

Prioritization Framework

PedPDX's overarching framework considers priority locations for pedestrian investment as distinct from a specific pedestrian need or the potential improvement to address that need. As a first step, the City identified a Pedestrian Priority Network comprised of the critical streets and corridors for pedestrians citywide. The Pedestrian Priority Network is based on pedestrian street classifications (which includes considerations for school routes, neighborhood greenways, and similar designations). Based on that Network, the process includes two concurrent analyses: identifying where needs exist and identifying priority investment areas within the Pedestrian Priority Network.

- Needs Analysis: applying the PedPDX Completeness and Adequacy Criteria to the Pedestrian Priority Network to translate needs consistently across the City; this identifies crossing gaps, crossing deficiencies, and sidewalk gaps
- Prioritization: applying scores to the Pedestrian Priority Network to provide a segment by segment metric for priority investment locations

The flow chart below illustrates how these steps fit within the larger PedPDX process. Beyond these two concurrent analyses, the next step is to identify the needs that fall within the highest priority locations – these are considered the “Pedestrian Needs Priorities.” In some cases, high priority locations may not have a pedestrian need. Some high priority areas may have needs that require resource-intensive, capital improvements while others may have needs that require less investment. The Implementation Toolkit, shown as the final step in the process, is developed with the identified needs and priority locations in mind. It offers resources for addressing priority needs, as well as comprehensive strategies for advancing walking equity citywide.



Prioritization Approach

The prioritization approach is the methodology used to assign a numerical value to street segments based on characteristics that relate to the PedPDX mission and goals. A prioritization score is calculated for each segment on the Pedestrian Priority Network using the following three criteria:

- Equity
- Pedestrian Demand
- Safety

The segments are scored on each criterion from 1 (low) to 10 (high). The criteria are weighted equally, resulting in overall Network Scores of 3 to 30. The following sections describe the methodology for calculating the scores for each criterion.

Equity

PedPDX will use PBOT’s Equity Matrix Scores as the basis for quantifying equity implications of pedestrian needs. Incorporating an equity score into the prioritization process is one of many strategies to develop PedPDX through an equity lens and to align with Citywide Racial Equity Goals and Strategies and PBOT’s 2017 5-Year Racial Equity Plan. The Equity Matrix was developed jointly with over eight City Bureaus including the Office of Equity and Human Rights. The process also included input from the Government Alliance on Race and Equity, Metro, PolicyLink and others. Refer to the PBOT Equity Matrix White Paper for a detailed look at how and why the methodology was chosen.

The PBOT Equity Matrix provides a location-based equity score using the following demographic variables:

- Race
- Income

By using race and income data, the Equity Matrix accounts for the intersectionality of other important considerations, including persons with disabilities, affordable housing, and persons with limited English proficiency.

To calculate the Equity Matrix Scores, Census Tracts in Portland were given scores for race and income from 1 to 5. The scores correspond to the citywide quintiles for each demographic variable, with '5' equaling the top quintile, '3' the citywide average, and '1' the bottom quintile. The data source for the Equity Matrix Score is the 2012-2016 American Community Survey.

Proposed Prioritization Approach:

Apply the PBOT Equity Matrix Score to each segment of the Pedestrian Priority Network. If a network segment spans multiple Census Tracts, the highest score is applied.

Factor	Equity Score
Race	1 to 5
Income	1 to 5
<i>Overall Equity Score</i>	<i>Sum (2 to 10)</i>

Pedestrian Demand

Pedestrian demand serves as the basis for the pedestrian classifications developed through the PedPDX planning process. These classifications factor in land use, transit, and the results of the *Walking Priorities* survey. There are four street classifications and two district overlay classifications.

Street Classifications

The street classifications from highest demand to lowest demand are:

- **Major City Walkways:** These walkways are comprised of the Civic and Neighborhood Corridors and Main Streets, as defined by Portland’s 2035 Comprehensive Plan, all streets along the planned and existing Frequent Transit Network, core downtown streets, and off-street trails in high demand corridors.¹
- **City Walkways:** These walkways are comprised of all arterial streets, collector streets, streets with transit service that are not designated as Major City Walkways, and off-street trails in moderate demand corridors.
- **Neighborhood Walkways:** These walkways are comprised of all local streets within pedestrian districts, within a half-mile of a light rail station, on a designated Safe Routes to School travel route, and on an existing or funded neighborhood greenway. Neighborhood walkways also include designated paths with the street right-of-way and neighborhood trails.
- **Local Streets:** Local streets are included on the network if they are located in one of the district overlay classifications.

District Overlay Classifications

In addition to the street classifications, there are two types of district overlays that indicate additional demand:

- **Pedestrian Districts:** These districts are comprised of the Centers, as defined by Portland’s 2035 Comprehensive Plan.
- **Light Rail Station Areas:** These districts are comprised of the areas within a quarter-mile walk of a fixed rail stop.

Proposed Prioritization Approach:

Major City Walkways, City Walkways, Neighborhood Walkways, and Local Streets are assigned the scores shown in the table below. Segments located in the district overlays have additional points added to their respective demand scores.

¹ Core downtown streets are all streets south of W Burnside St, east and north of I-405, and west of the Willamette River.

Network Classification	Demand Score in Pedestrian Districts	Demand Score in Light Rail Station Areas	Demand Score outside of Districts
Major City Walkway	10	8	6
City Walkway	8	6	4
Neighborhood Walkway	4	2	1
Local Streets	2	1	N/A
<i>Note: Demand Score is a single score based on classification (not a sum)</i>			

Safety

The safety criteria for PedPDX are drawn from the results of the Pedestrian Safety Existing Conditions memo. They safety criteria are intended to account for both crash history and crash risk factors. Using both factors is a way to include not only locations that are currently dangerous and are used by people walking (crash history), but also locations that are dangerous but may not be used by people walking because of the danger (risk factors). The prioritization approach uses the following considerations to measure crash history and risk factors:

Crash History:

- Pedestrian High Crash Network (HCN) streets. The Pedestrian HCN includes the 20 most dangerous streets for pedestrians throughout Portland (Source: Portland’s Vision Zero Action Plan).
- Street segments with KSI pedestrian collisions (Source: ODOT crash data). This criterion identifies the most dangerous street segments for pedestrians at a finer scale than the corridors along the Pedestrian HCN.

Risk Factors:

- Streets with three or more travel lanes. Crashes are concentrated on larger roads and 52% of pedestrian crashes occur on the 7% of roadway miles with three or more travel lanes (Source: ODOT crash data).
- Locations with posted or prevailing operating speeds (where available) of 30 mph or higher.² People walking are eight times more likely to die when struck by someone driving 40 mph than someone driving 20 mph (Source: Portland’s Vision Zero Action Plan).

These considerations are not reflected in trail segments because those segments are off-street and separated from motor vehicle traffic. To account for the reduction in risk trails offer as alternative pedestrian routes, a third factor that offers baseline points for off-street facilities is included.

² Posted speeds are used as a proxy for prevailing operating speeds when data are not available.

Proposed Prioritization Approach:

The safety prioritization criteria are scored as follows:

Condition	Safety Score
<i>Collision-based Factors</i>	
Pedestrian High Crash Network	3
Street segments with one KSI pedestrian collision	1
Street segments with multiple KSI pedestrian collision	3
<i>Risk Factors</i>	
Streets with three or more travel lanes	2
Locations with posted speeds of 30 mph or higher	2
<i>Off-Street Factor</i>	
Trail segments separated from motor vehicles	2
<i>Overall Safety Score</i>	<i>Sum (0 to 10)</i>

Overall Prioritization Score

The overall prioritization score is equal to the sum of the demand, equity, and safety scores. Prioritization scores are calculated for each segment on the Pedestrian Priority Network and can range from 3 to 30. The output table is formatted to be consistent with outputs from the Active Trans Priority Tool – a prioritization methodology used in other PBOT programs. Priority Tiers are identified based on a sextile scoring classification. Tier 1 represents a score of 25 to 30 meaning that these projects scored at least an 8 in all three categories. The two lowest scoring classifications are combined as Tier 5 and represent scores from 3 to 10. These categories are combined as the lowest tier given that these segments did not score at the highest level in any of the three categories and scored at the very lowest level of at least one category.

Appendix: Criteria from Selected Plans

The ODOT **Region 1 Active Transportation Needs Inventory** used the following evaluation criteria:

- Crash history
- Crash risk
- Access to transit
- Access to essential destinations
- Transportation disadvantaged populations
- System completeness
- Needs in local plan
- Existing pedestrian and bicycle facility conditions

Metro's **Regional Transportation Plan** investment priorities are to achieve the following outcomes:

- Vibrant Communities
- Economic Prosperity
- Safe and Reliable Transportation
- Leadership on climate change
- Clean air and water
- Equity

Metro's **Regional Active Transportation Plan** used the following criteria for evaluation of the regional pedestrian network:

- Access to destinations
- Equity
- Safety
- Increases Activity

The City of Portland **Transportation System Plan** is guided by these seven outcomes:

- Reduce/eliminate transportation fatalities and injuries
- Improve access to daily needs
- Improve health by increasing walking and bicycling
- Increase economic benefits
- Ensure disadvantaged communities benefit
- Reduce global warming pollution from transportation
- Prioritize the most cost-effective projects

The criteria for selecting corridors in the **Enhanced Transit Corridors Plan** were:

- Transit reliability
- Ridership passenger loads
- Transit speeds
- Forecasted future growth

The **Division-Midway Neighborhood Street Plan** used the following criteria to prioritize projects:

- Connection to transit stop
- Connection to school, grocery store, service, park, or open space
- Direct connection to key anchor/destination on SE Division
- Project is along a neighborhood greenway, or planned or existing Safe Route to School
- High connectivity benefit
- Project is along a low speed and/or low volume roadway
- Serves a targeted underserved population or serves an area with high active transportation demand score
- Has neighborhood and/or other stakeholder support
- Utilizes existing ROW that is partially or completely unimproved
- Has a high benefit relative to negative impact
- Has a high benefit relative to cost

TriMet's Pedestrian Network Analysis used a GIS Network Analysis to select 10 focus areas for pedestrian enhancements, based on a composite score developed for every TriMet stop of Transportation Analysis Zone (TAZ) with the following scoring:

Transit Environment	
Combined residential and employment density by TAZ (TAZs with the greatest density = high score)	2
Residential/employment ratio (TAZs with the a ratio closest to 50/50 = high score)	1
Average intersection density (TAZ with the greatest number of intersections = high score)	1
Transit Stops	
boardings and alightings (stops with the greatest boardings and alightings = high score)	2
Distance to nearest high school (stops closest to a high school = high score)	1
Distance to nearest grocery stores (stops closest to a grocery store = high score)	1
Distance to nearest pre-school, middle, or elementary school (stops closest to a school = high score)	1
Distance to nearest major attraction e.g. university, hospital, stadium, major employer (stops closest to a major attractor = high score)	1
Distance to nearest multi-modal facility (stops closest to a multi-modal facility = high score)	1
Distance to nearest park (stops closest to a park = high score)	1
# of connecting transit lines (stops near the greatest number of connections = high score)	2
Distance to nearest social service site (stops closest to a social service site = high score)	1
Distance to nearest senior housing/services site	1

DRAFT Prioritization Framework Memo

(stops closest to a senior housing/service site = high score)	
Deficiencies	
Distance to a street without a sidewalk (stops closest to a street without a sidewalk = high score)	2
Located on a road with high traffic volumes (stops located on roads with the highest traffic volumes = high score)	1
Located on a road with high posted speeds (stops located on roads with the highest speeds = high score)	2
Located near a pedestrian crash site (stops located closest to pedestrian crash sites = high score)	2
Opportunities	
Located near an address with high paratransit (LIFT) activity (stops nearest addresses with highest number of LIFT requests = high score)	2
Stops with a high number of vehicle ramp deployment (stops with highest number of ramp deployments = high score)	1

Growing Transit Communities used a GIS Network Analysis tool in combination with the NCHRP Active Trans Priority Tool. The following table identifies the factors considered within the Active Trans Priority Tool:

	Criteria	Active Trans Category	Types of Measures	Data Source	What Counts	Analysis Buffers
1	Transportation Safety	Safety	Crash history	State crash data points	# of Ped and Bike fatalities (double weight), Serious Injuries (double weight), All Injuries	# within 250 ft radius buffer
			High Crash Network	Vision Zero analysis layer	On a High Crash Corridor	Y/N: 100 ft radius buffer
			High Crash Intersection	Vision Zero analysis layer	Near High Crash intersection	250 ft radius buffer
			Crash risk factors	Vision Zero analysis layer	Crash Factor Average Score	250 ft radius buffer
2	Improves Access to Transit	Access to Transit	Proximity of project to bus stop or MAX line and ability to improve access to the stop.	TriMet transit stop layer	# of bus and MAX stops	250 ft radius buffer
			Average Daily MAX and Bus Ridership (Weekly average ons/offers at nearby bus stop)	TriMet 2015 Passenger Census	# of ons and offs	250 ft radius buffer
			Monthly Average Bus Ramp Deployment	TriMet 2015 Passenger Census	# of ramp deployments	250 ft radius buffer
3	Proximity to Essential Destinations	Demand	Number of nearby essential destinations. Community Centers (GIS Enterprise Layers), Grocery Stores (GIS Enterprise Layers), Clinics (see email from Neil), and Hospitals (GIS Enterprise Layers), Parks (GIS Enterprise Layers), and Schools (GIS Enterprise Layers)	GIS Enterprise Layers	# of destinations	500 ft buffer

4	Equity. Serves Transportation Disadvantaged People and Vulnerable Roadway Users	Equity	1. Minority population 2. Low-income population 3. Limited English Proficiency (LEP) population 4. Senior population 5. Youth population 6. People with disabilities 7. Limited vehicle access households 8. Low and medium wage jobs 9. Affordable housing units 10. Key retail/human/social services	TriMet's Transit Equity Index/ Communities of Concern	Average Score for Intersecting Census Tracts	
5	Identified in a Plan or Prioritized Previously	Stakeholder Input	In the Portland Transportation System Plan (TSP), Bicycle Plan 2030, Pedestrian Master Plan, East Portland In Motion (EPIM), Eastside Station Areas Plan, etc.		Number of plans	
6	Network Connectivity Benefit/ Convenience	Connectivity	Increases convenience, connectivity and access. Reduces out of direction travel along streets and reduces delay waiting to cross streets.	Pedestrian Network Analysis	Increase in access from all addresses to all addresses through reduced impedance.	½ mile buffer
			Scoring bikeway projects: Increase connectivity for cycling.	Methodology: <u>3 points</u> if it fills a major network gap, particularly if it crosses a major barrier (like a freeway) or completes a couplet (SE Washington is the main example) <u>2 points</u> if it fills a network gap but there are other available routes (no major barriers) <u>1 point</u> if it is addressing a deficiency in existing facilities		
7	Improves Transit Service and Operations	Transit Ops	Reduces delay to buses.		# of recognized delays	
8	Public Support	Stakeholder Input	Based on public comment during the planning process.		# of public comments about need or support	
9	Serve the most people nearby	Demand	Forecasted Housing Density in 2035		# of Units	1000 ft radius buffer
			Forecasted Job Density in 2035		# of Jobs	1000 ft radius buffer
	Personal Security	Discontinued – Not scored in this analysis	Crime report history from Portland Police Bureau	Crime data points	Number of crime reports near bus stop	100 ft radius buffer
			Reports of locations with unsafe activity, reported to TriMet, Police or PBOT (if data is available)	Ask TriMet for data		

Tyron-Stephens Headwaters Street Plan: No prioritization, only project identification

Connected Cully: No prioritization criteria

Southwest in Motion: Project prioritization coming in Spring 2018

Central City in Motion: Criteria under development