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To: PedPDX Technical Advisory Committee

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From: Jean Crowther and Mike Sellinger, Alta Planning and Design

Date: April 25, 2018

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

Prioritization Framework

This memo summarizes the proposed approach to prioritize pedestrian needs in Portland. A prioritization score is calculated for each segment on the Pedestrian Priority Network using the following three criteria:

- Pedestrian Demand
- Equity
- 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.

Pedestrian Demand

Network Classifications[1]
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. The classifications from highest demand to lowest demand are:

- **Pedestrian Districts:** These districts are comprised of the Centers, as defined by Portland's 2035 Comprehensive Plan.
- **Major City Walkways:** These walkways are comprised of the Civic and Neighborhood Corridors and Main Streets, as defined by Portland's 2035 Comprehensive Plan, and all streets along the Frequent Transit Network.
- **City Walkways:** These walkways are comprised of all arterial streets, collector streets, and core downtown streets that are not designated as Major City Walkways
- **Neighborhood Walkways:** These walkways are comprised of all local streets within a half-mile of a light rail station, on a designated Safe Routes to School travel route, and on an existing neighborhood greenway.

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[1] Off-street trails are also included on the Pedestrian Priority Network. At this point, they are not included in the prioritization framework, as they are not part of the pedestrian needs analyses.

Proposed Prioritization Approach:

Major City Walkways, City Walkways, and Neighborhood Walkways are assigned the scores shown in the table below. Segments located in a Pedestrian District have three points are added to their respective demand scores.

Network Classification	Demand Score in Pedestrian Districts	Demand Score outside of Pedestrian Districts
Major City Walkway	10	7
City Walkway	7	4
Neighborhood Walkway	4	1

Equity

PedPDX uses PBOT's Equity Matrix Scores to evaluate the equity implications of pedestrian needs. The PBOT Equity Matrix is based on national best practices, and uses the following demographic variables:

- Race
- Income

PBOT's Equity Matrix also considers limited English proficiency, but it was not included in the Equity Matrix Score due to its relatively high margin of error. 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 pedestrian need. If a pedestrian need spans multiple Census Tracts, the highest score will be applied.

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. The following factors were identified as safety criteria for prioritization:

- 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 a high density of 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.
- 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).

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[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
Pedestrian High Crash Network	4
Street segments with a high density of KSI pedestrian collisions	2
Streets with three or more travel lanes	2
Locations with posted speeds of 30 mph or higher	2

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 consistent with outputs from the Active Trans Priority Tool.

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 story, 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

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

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/offs 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: 3 points 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) 2 points if it fills a network gap but there are other available routes (no major barriers) 1 point 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