

Blazing new paths with multimodal level of service



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Learning Objectives

- | **01** **Discuss** the menu of MMLOS Options
- | **02** **Review** Ped and Bike LTS Methodologies
- | **03** **Identify** ways to use MMLOS when building your long-range project list

Key Terms

Long Range Planning

Approach to achieve balance between land use and transportation during development of a comprehensive plan.

Level of Service (LOS) Standards

The promise of how a transportation system will perform. Level of service standard required for transportation facilities by 1990 GMA. Subsequent GMA updates have required more and more specificity for modes other than vehicles.

Concurrency

Making sure that promise is kept within a six-year window.
Development first needs to pass the concurrency review.

MMLOS: The Menu is Large

AUTO



- V/C ratio
- Intersection delay
- Corridor travel time

PEDESTRIAN



- LTS
- RDI
- Sidewalks
- Connectivity
- Block length

BICYCLE



- LTS
- RDI
- Network completeness
- Connectivity

TRANSIT



- Service present
- Service quality
- Corridor amenities

GLOBAL

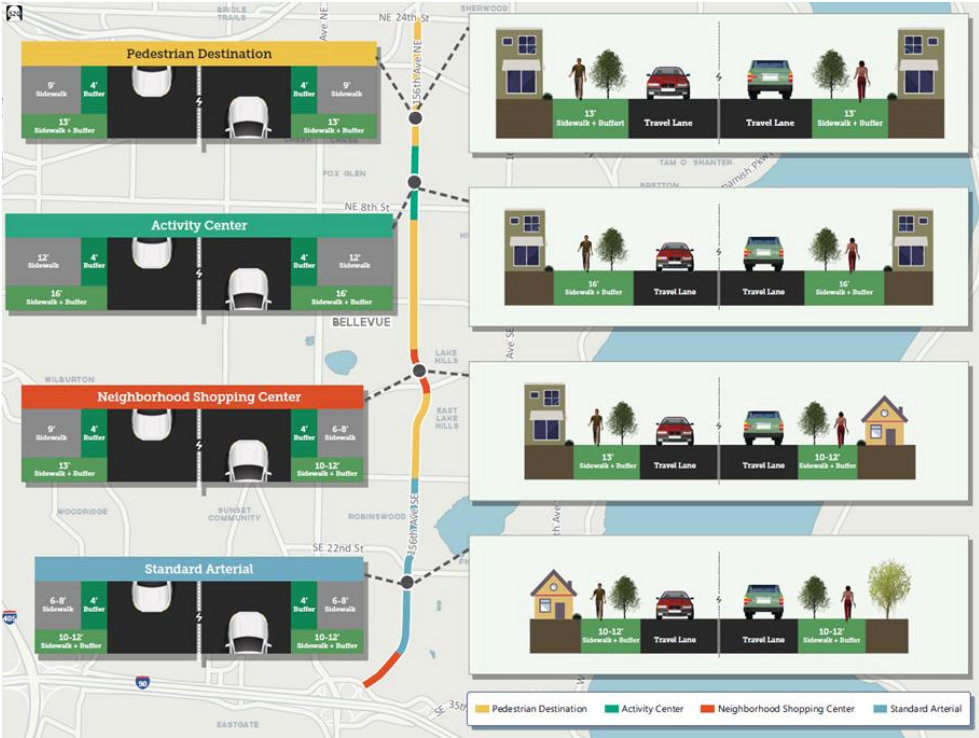


- Mode split
- VMT
- Person trips
- Person delay
- Mobility units

Bellevue LOS

Mode	LOS Metric	LOS Standard	LOS Guideline
Vehicle	Volume/capacity at intersections	LOS C-E+. Varies by land use context	N/A
	Typical urban travel speed on arterials	N/A	Percent of posted speed limit, LOS varies by neighborhood context
Pedestrian	Sidewalk plus landscape buffer	12-20 feet for sidewalk + landscape, varies by land use context	N/A
	Pedestrian comfort, access, and safety at intersections	N/A	Crosswalk and back-of-curb design varies by land use context
Bicycle	Level of Traffic Stress (LTS) on corridors	N/A	Design to achieve LTS/ LOS varies by roadway traffic speed and volume
	Level of Traffic Stress at intersections	N/A	Maintain corridor LTS/LOS at intersections. Design components vary by context
Transit	Passenger comfort, access, and safety	N/A	Varies by transit stop/station typology
	Transit travel speed on corridors	N/A	14 mph on Frequent Transit Network corridors between activity centers

Pedestrian LOS Cross-Section Examples - Bellevue



Route Directness Analysis (RDI)

● 1

Created a Route Directness Index (RDI)

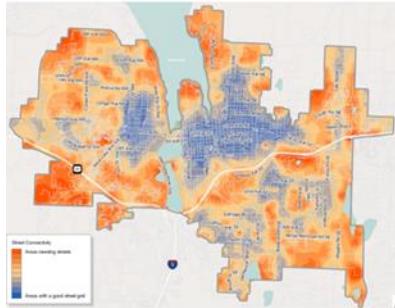
● 2

RDI score for each intersection visualized as a raster

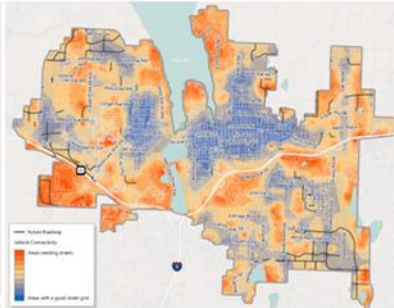
● 3

Helped Olympia prioritize projects for pathways, crosswalks, sidewalks, and bicycle facilities

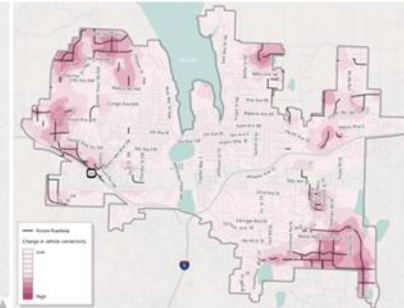
Existing Roadway Network



Proposed Connections



Delta Existing - Proposed



WSDOT Route Directness Index



State highways in communities can be one of the **biggest barriers** to active transportation

Improving the availability of low-stress crossings that are well integrated into connected active transportation networks will increase the opportunity for people to choose walking and biking modes

Combining route directness and LTS

WSDOT-Pedestrian Level of Traffic Stress

Exhibit 1510-1 Pedestrian Level of Traffic Stress (PLTS) in mixed traffic (no marked bicycle lane, with or without shoulder) (New Exhibit 2023)

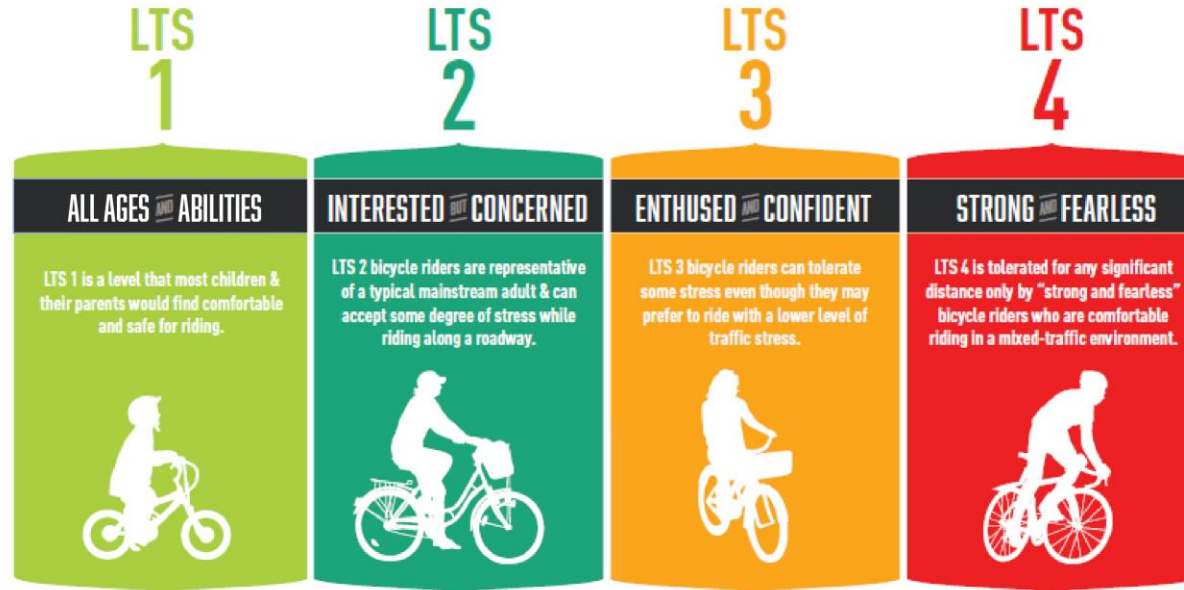
PLTS in mixed traffic (no pedestrian facility)								
Lanes	AADT	Target Speed						
		≤20	25	30	35	40	45	50+
1 thru lane per direction (or 1 lane one-way street)	0 - 750	1	1	3	4	4	4	4
	751 - 1500	1	2	3	4	4	4	4
	1501 - 3000	2	2	3	4	4	4	4
	> 3000	2	3	3	4	4	4	4
2 thru lanes per direction	0 - 6000	3	3	3	4	4	4	4
	> 6000	3	3	4	4	4	4	4
3+ thru lanes per direction	Any ADT	4	4	4	4	4	4	4

Exhibit 1510-2 Pedestrian Level of Traffic Stress (PLTS) based on Sidewalk Width (New Exhibit 2023)

Greater than Minimum Sidewalk Present (6' or greater)								
Lanes	AADT	Target Speed						
		≤20	25	30	35	40	45	50+
1 thru lane per direction (or 1 lane one-way street)	0 - 750	1	1	2	2	3	4	4
	751 - 1500	1	1	2	2	3	4	4
	1501 - 3000	1	1	2	2	3	4	4
	> 3000	2	2	2	2	3	4	4
2 thru lanes per direction	0 - 6000	2	2	2	2	3	4	4
	> 6000	2	2	2	2	3	4	4
3+ thru lanes per direction	Any ADT	2	2	2	3	3	4	4

Minimum Sidewalk Present (5')								
Lanes	AADT	Target Speed						
		≤20	25	30	35	40	45	50+
1 thru lane per direction (or 1 lane one-way street)	0 - 750	1	1	2	4	4	4	4
	751 - 1500	1	1	2	4	4	4	4
	1501 - 3000	1	1	2	4	4	4	4
	> 3000	2	2	2	4	4	4	4
2 thru lanes per direction	0 - 6000	2	2	2	4	4	4	4
	> 6000	2	2	3	4	4	4	4

Bicycle LTS Example - Bellevue



Bicycle LTS Example - Bellevue

Speed Limit (mph)	Arterial Traffic Volume*	No Marking	Sharrow Lane Marking	Striped Bike Lane	Buffered Bike Lane	Protected Bike Lane	Physically Separated Bikeway
≤25	<3k	1	1	1	1	1	1
	3-7k	3	2	2	2	1	1
	≥7k	3	3	2	2	1	1
30	<15k	4	3	2	2	1	1
	15-25k	4	4	3	3	3	1
	≥25k	4	4	3	3	3	1
35	<25k	4	4	3	3	3	1
	≥25k	4	4	4	3	3	1
40	Any volume	4	4	4	4	3	1

* Approximate volume thresholds
 Number in each cell represents Bicycle LOS

WSDOT-Bicycle Level of Traffic Stress

Exhibit 1520-5 Bicycle Level of Traffic Stress in mixed traffic (no bicycle facility) (New Exhibit 2023)

BLTS in mixed traffic (no bicycle facility)								
Lanes	AADT	Target Speed						
		≤20	25	30	35	40	45	50+
1 thru lane per direction (or 1 lane one-way street)	0 - 750	1	2	3	4	4	4	4
	751 - 1500	1	2	3	4	4	4	4
	1501 - 3000	2	2	3	4	4	4	4
	> 3000	2	3	3	4	4	4	4
2 thru lanes per direction	0 - 6000	3	3	3	4	4	4	4
	> 6000	3	3	4	4	4	4	4
3+ thru lanes per direction	Any ADT	4	4	4	4	4	4	4

Exhibit 1520-6 Bicycle Level of Traffic Stress for Conventional Bike Lane (paint stripe only) (New Exhibit 2023)

Conventional Bike Lanes (5' or greater)								
Lanes	AADT	Target Speed						
		≤20	25	30	35	40	45	50+
1 thru lane per direction (or 1 lane one-way street)	0-750	1	2	2	4	4	4	4
	751-1500	1	2	2	4	4	4	4
	1501-3000	1	2	2	4	4	4	4
	3000+	2	2	2	4	4	4	4
2 thru lanes per direction	0-6000	2	2	3	4	4	4	4
	>6000	3	3	3	4	4	4	4
3+ thru lanes per direction	Any ADT	3	3	4	4	4	4	4

Exhibit 1520-7 Bicycle Level of Traffic Stress for Buffered Bike Lane (painted buffer 2 foot wide or greater) (New Exhibit 2023)

Buffered Bike Lanes (minimum 2' buffer / greater than or equal to 7 feet total)								
Lanes	AADT	Target Speed						
		≤20	25	30	35	40	45	50+
1 thru lane per direction (or 1 lane one-way street)	0-750	1	1	2	3	4	4	4
	751-1500	1	1	2	3	4	4	4
	1501-3000	1	1	2	3	4	4	4
	3000+	2	2	2	3	4	4	4
2 thru lanes per direction	0-6000	2	2	2	3	4	4	4
	>6000	2	2	3	3	4	4	4

Example: City of Kenmore Bike LOS Standard

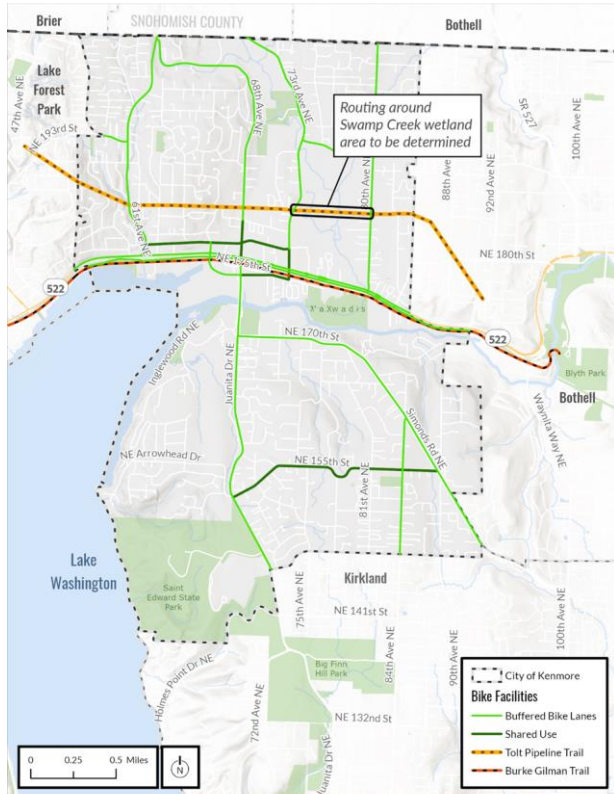


Table T-5. Bicycle LOS – Facility Requirements

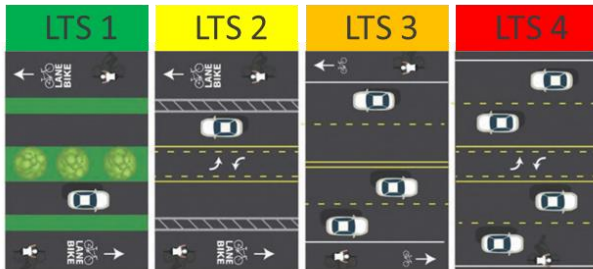
LOS	Within Bicycle Priority Network
	Provides minimum treatment* recommendation, as shown within Bicycle Priority Network
	Provides a lower-level facility* than recommended in the Bicycle Priority Network
	No bicycle facility

* Bicycle facilities – lowest-level to highest-level of treatment: shared; bike lanes; buffered bike facility; separated trail.

North Bend Way Complete Street Corridor Plan

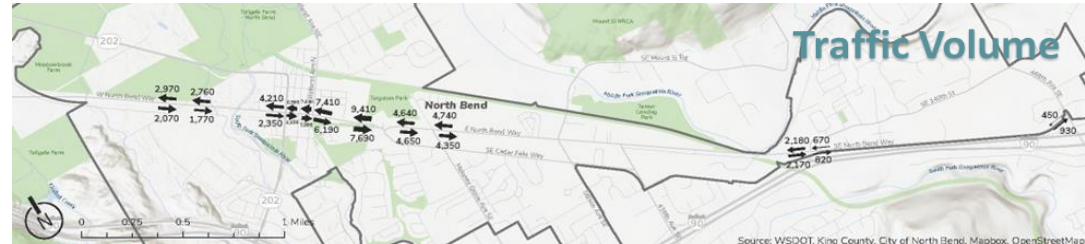
North Bend Way Multimodal Assessment

- Suitable for all ages and abilities
- Connections to destinations
- Level of Traffic Stress (LTS)



Source: WSDOT

Examples of facility types and associated bicycle level of traffic stress (BLTS) is illustrated above. Facilities with a BLTS 1 are likely to appeal to 100 percent of people who want to ride a bicycle. Facilities with a BLTS 2 may include more separation than standard bike lines, but no physical barrier. 81 percent of bicycle riders would use this facility. Facilities with a BLTS 3 may include minimal separation with about 12 percent of riders who would use this facility. Only about 1 percent of riders would use BLTS 4 facilities where no separated space is offered.

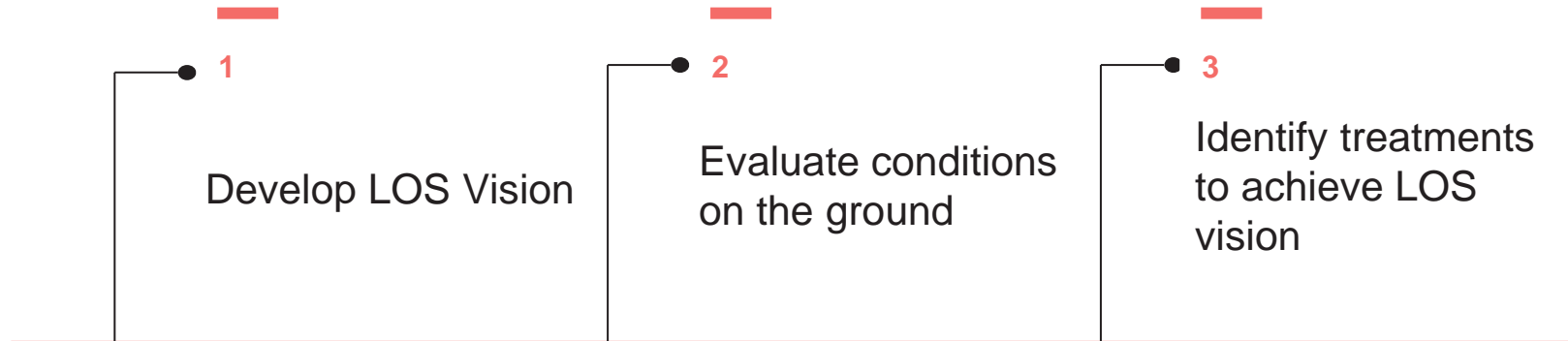


Multimodal Impact Fees

Multimodal projects within **ROW** have always been allowed (but often not included)

SB 5254: bike/ped facilities outside of the street/road **ROW** designed with multimodal commuting as an intended use are eligible

Building Your Multimodal Project List



Targeted Outreach



Workshops in the community (pop ups & studios) or places people are already going (grocery stores, pre-existing community events)



Bikeshop/walkshop



Bike & Ped groups



Community based organization outreach



Outreach via local schools



Social media and targeted advertising



Outreach to minority owned businesses



Questions?

Thank you!

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