

Ada County Highway District



LIVABLE STREETS PERFORMANCE MEASURES

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LIVABLE STREETS

ACHD's Commitment to **LIVABLE STREETS** was articulated through its 2009 Transportation Land Use Integration Plan (TLIP). This Plan included four guiding documents that help inform all activities of the District:

- Complete Streets Policy
- Livable Streets Design Guide
- Master Street Map
- Cost Share Ordinance

Since 2009, ACHD has adopted a series of various foundational documents that further articulate the vision of TLIP as it applies to various modes of travel:

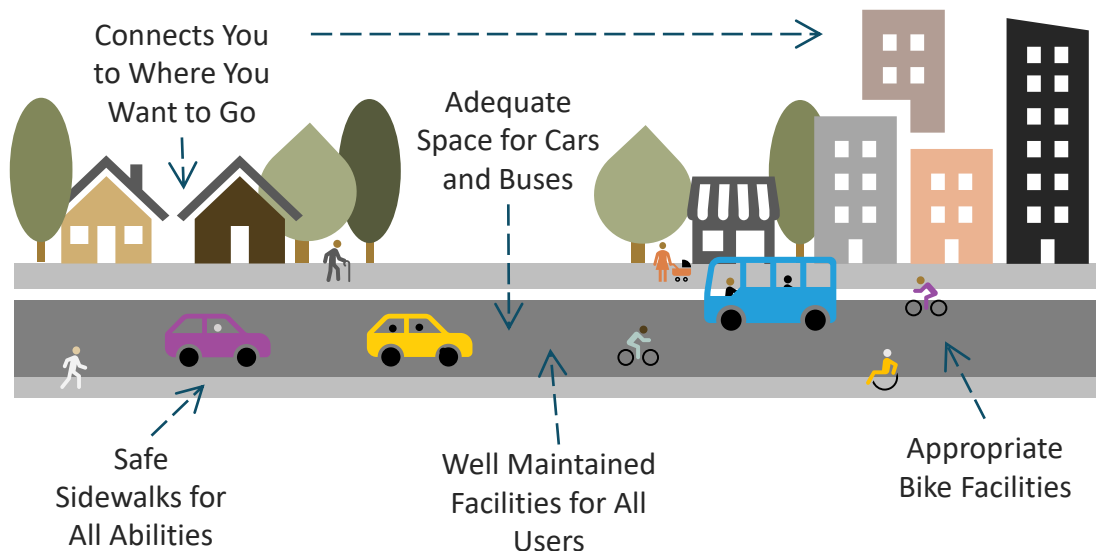
- Bike Master Plan - 2018 Addendum
- Neighborhood Bike and Pedestrian Plans
- Americans with Disability Act Transition Plan Update
- Capital Improvement Plans

This document articulates the measures and procedures ACHD will utilize to gauge the impact and experience of the various users of the transportation system. ACHD's investments will be focused on the vision of livable streets for all users.

ACHD'S COMPLETE STREETS GUIDING PRINCIPLE

Streets, bridges and transit stops within Ada County should be designed, constructed, operated and maintained so that pedestrians, bicyclists, transit riders, motorists, and people of all ages and abilities can travel safely and independently. (ACHD Policy Manual Section 3110.2)

ANATOMY OF A LIVABLE STREET



A MEASUREMENT FOR ALL

DRIVERS



LEVEL OF SERVICE (LOS)

A-C	High Comfort Driving
D	Some Traffic
E	Growing Traffic
F	Large Delays

BICYCLISTS



LEVEL OF TRAFFIC STRESS (BLTS)

1	High Comfort for All
2	High Comfort for Adults
3	Increasing Stress for Most
4	Strong and Experienced Bicyclists Only

PEDESTRIANS



LEVEL OF TRAFFIC STRESS (PLTS)

1	High Comfort for All
2	High Comfort for Adults
3	Increasing Stress for Most
4	High Stress Experience

A MEASUREMENT FOR DRIVERS

DRIVERS



LEVEL OF SERVICE (LOS)

A-C	High Comfort Driving
D	Some Traffic
E	Growing Traffic
F	Large Delays



Adopted minimum acceptable planning threshold for Arterials. No adopted threshold for Collectors and Local roads

VEHICULAR LEVEL OF SERVICE DESCRIPTION

The Vehicular Level of Service performance measure provides a transparent framework to guide assessment of vehicular networks. The LOS reflects relative comfort of roads and intersections. The original methodology was developed by the Florida Department of Transportation. This methodology has been adapted to reflect local experience.

Planning LOS thresholds based on peak hour volumes and specific facility design components (typically the number of travel lanes) help determine the relative comfort for drivers on a corridor. Separate measures for arterial roadways and intersections are derived from tables adopted through the most current [Capital Improvement Plan](#).

Vehicular LOS is evaluated for the future condition using the travel demand model. This ensures that projects that are built meet the needs for the expected growth projected by the land use jurisdictions for the next 20 years.

A MEASUREMENT FOR BICYCLISTS

BICYCLISTS



LEVEL OF TRAFFIC STRESS (BLTS)



Desired facility level for an All Ages and Abilities network. May not be feasible in some land use contexts.

BIKE LEVEL OF TRAFFIC STRESS DESCRIPTION

The Level of Traffic Stress Analysis provides a transparent framework to guide assessment of bicycle facility networks. The BLTS reflects relative comfort and safety of roads and intersections. The original methodology was developed and documented in the 2012 Mineta Transportation Institute *Report 11-19: Low-Stress Bicycling and Network Connectivity*. Since the 2012 report, numerous adaptations and updates have occurred. This methodology has been adapted to reflect local experience.

To identify the BLTS for a specific road segment or intersection, the user would select the appropriate table on the following pages.

Segments

- Mixed Traffic
- Bike Lane + Buffered Bike Lane
- Raised Lane, Protected Lane, or Multi-Use Paths

Intersections

- Unsignalized
- Signalized and Enhanced Crossings
- Roundabouts

In all cases, scores are determined by the weakest link principle, meaning that the least comfortable quality of a roadway or intersection determines the score or ranking for that location.

A MEASUREMENT FOR BICYCLISTS

BICYCLISTS



LEVEL OF TRAFFIC STRESS (BLTS)



Desired facility level for an All Ages and Abilities network. May not be feasible in some land use contexts.

MIXED TRAFFIC

Used in situations where there is no dedicated bike facility, or the dedicated facility is frequently blocked forcing the bicyclist to take the lane.

# of Auto Lanes	Average Daily Traffic	Posted Speed (Actuals When Available)						
		20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50+ mph
2-Way Street (No Centerline)	0-750	LTS 1	LTS 1	LTS 2	LTS 2	LTS 3	LTS 4	LTS 4
	751-1500	LTS 1	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4	LTS 4
	1501-3000	LTS 2	LTS 2	LTS 2	LTS 3	LTS 4	LTS 4	LTS 4
	3000+	LTS 2	LTS 3	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4
1-3 (With Centerline)	0-750	LTS 1	LTS 1	LTS 2	LTS 2	LTS 3	LTS 4	LTS 4
	751-1500	LTS 2	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4	LTS 4
	1501-3000	LTS 2	LTS 3	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4
	3000+	LTS 3	LTS 3	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4
4-5	0-8000	LTS 3	LTS 3	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4
	8000+	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4	LTS 4	LTS 4
6+	Any ADT	LTS 3	LTS 4	LTS 4	LTS 4	LTS 4	LTS 4	LTS 4

Adjustment Factors

- Traffic calming features in place on roads with 3 or less lanes – Lower 1 LTS

A MEASUREMENT FOR BICYCLISTS

BICYCLISTS



LEVEL OF TRAFFIC STRESS (BLTS)



Desired facility level for an All Ages and Abilities network. May not be feasible in some land use contexts.

BIKE LANE AND BUFFERED BIKE LANES

Used in situations where there is a dedicated bike lane with or without a painted buffer. Bike lane width is measured exclusive of the gutter pan.

# of Auto Lanes	Bike Lane Width (Includes Buffer)	Posted Speed (Actuals When Available)						
		20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50+ mph
2-3	6'+	LTS 1	LTS 1	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4
	4' or 5'	LTS 2	LTS 2	LTS 2	LTS 2	LTS 3	LTS 4	LTS 4
4-5	6'+	LTS 2	LTS 2	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4
	4' or 5'	LTS 2	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4	LTS 4
6+	Any Width	LTS 3	LTS 3	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4

Adjustment Factors

- Heavily Utilized Parking Adjacent to a 4' or 5' Bike Lane – Add 1 LTS
- Roadway Pavement Condition Index Rating Below 70 – Add 1 LTS
- Frequent Commercial Driveway Crossings – Add 1 LTS

RAISED/PROTECTED LANES AND MULTI-USE PATHS

Used in situations where there are protected bike lanes or multi-use paths. For all segments (between intersections), these would be considered LTS 1.

Adjustment Factors

- Raised Bike Lanes At >35 MPH – Add 1 LTS
- Frequent Commercial Driveways – Add 1 LTS
- Bike lanes using only candles – Add 1 LTS

A MEASUREMENT FOR BICYCLISTS

BICYCLISTS



LEVEL OF TRAFFIC STRESS (BLTS)



Desired facility level for an All Ages and Abilities network. May not be feasible in some land use contexts.

UNSIGNALIZED INTERSECTIONS

Used in situations where there is no signal. To rank, the highest stress score of any leg would be utilized.

Posted Speed	Total Auto Lanes Crossed		
	1-3 Lanes	4-5 Lanes	6+ Lanes
20-25	LTS 1	LTS 2	LTS 4
30	LTS 1	LTS 2	LTS 4
35	LTS 3	LTS 3	LTS 4
40+	LTS 3	LTS 4	LTS 4

Adjustment Factors

- Adding a Rectangular Rapid Flashing Beacon (RRFB) – Lower 1 LTS
- Refuge medians of at least 8' with a vertical element would reduce the total number of lanes crossed at one time to the distance from curb to median.
- Intersections with a Bike Lane and Right Turn Lane – Add 1 LTS

ROUNDABOUTS

Used in situations with a roundabout to describe the experience when bicyclists take the lane. For those mixing with pedestrians, the pedestrian table would be used.

Circulating Lanes	Total Entry Leg ADT (VPD)	LTS
1	<6000	LTS 2
1	>6000	LTS 3
2+ (Partial or Full)	Any	LTS 4

Adjustment Factors

- Slip lane present – Add 1 LTS

A MEASUREMENT FOR BICYCLISTS

BICYCLISTS



LEVEL OF TRAFFIC STRESS (BLTS)

- 1 High Comfort for All
- 2 High Comfort for Adults
- 3 Increasing Stress for Most
- 4 Strong and Experienced Bicyclists Only

Desired facility level for an All Ages and Abilities network. May not be feasible in some land use contexts.

SIGNALIZED INTERSECTIONS AND ENHANCED CROSSINGS

Used in situations where there is a signal present. To rank, the highest stress score of any leg would be utilized.

Intersection Features	Total Auto Lanes Crossed At One Time		
	1-3	4-5	6+
Enhanced Crossing w/ Median Refuge	LTS 1	N/A	N/A
Protected Intersection or Enhanced Crossing (No Refuge)	LTS 1	LTS 2	LTS 3
Floating Bike Lane (Left of RTL)	LTS 2	LTS 3	LTS 4
Bike Lane (Right of RTL or Thru-Right Lane)	LTS 3	LTS 4	LTS 4

Adjustment Factors

- Refuge medians of at least 8' with a vertical element would reduce the total number of lanes crossed at one time to the distance from curb to median.

A MEASUREMENT FOR PEDESTRIANS

PEDESTRIANS



LEVEL OF TRAFFIC STRESS (PLTS)



Desired facility level for an All Ages and Abilities network. May not be feasible in some land use contexts.

PEDESTRIAN LEVEL OF TRAFFIC STRESS DESCRIPTION

The Level of Traffic Stress Analysis provides a transparent framework to guide assessment of pedestrian facility networks. PLTS is an emerging practice as of 2021. The PLTS reflects relative comfort and safety of roads and intersections. This methodology has been adapted to reflect local experience.

To identify the PLTS for a specific road segment or intersection, the user would review the appropriate table(s) as noted below. In all cases, scores are determined by the weakest link principle, meaning that the least comfortable quality of a roadway or intersection determines the ranking for that location.

Segments

For segments, all below tables would be reviewed. The highest stress score for any of the tables would be the assigned PLTS for the segment.

- Sidewalk Presence
- Sidewalk Buffer
- Sidewalk Width and Condition

Intersections

Only the applicable table would be used to describe the intersection.

- Unsignalized
- Signalized and Enhanced Crossings
- Roundabouts

A MEASUREMENT FOR PEDESTRIANS

PEDESTRIANS



LEVEL OF TRAFFIC STRESS (PLTS)



Desired facility level for an All Ages and Abilities network. May not be feasible in some land use contexts.

SIDEWALK PRESENCE

Sidewalk Presence	# of Travel Lanes	Posted Speed (Actuals When Available)				
		20 mph	25 mph	30 mph	35 mph	40+ mph
Complete Both Sides	2 Lanes	LTS 1	LTS 1	LTS 1	LTS 1	LTS 2
	3+ Lanes	LTS 1	LTS 1	LTS 1	LTS 1	LTS 2
Complete 1 Side	2 Lanes	LTS 2	LTS 2	LTS 2	LTS 2	LTS 3
	3+ Lanes	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4
Incomplete Both Sides	2 Lanes	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4
	3+ Lanes	LTS 2	LTS 2	LTS 4	LTS 4	LTS 4

Adjustment Factors

- Frequent Commercial Driveways – Add 1 LTS
- Low volume residential streets less than 25 MPH – Lower 1 LTS

SIDEWALK BUFFER

Total Travel Lanes	Total Buffer Width (Includes Landscaping, Parking, Bike Lanes, etc)			
	<5'	5'-10'	11'-14'	15'+
1-2	LTS 2	LTS 2	LTS 1	LTS 1
3	LTS 3	LTS 2	LTS 1	LTS 1
4-5	LTS 4	LTS 3	LTS 2	LTS 1
6+	LTS 4	LTS 4	LTS 3	LTS 2

Adjustment Factors

- Low volume residential streets with 1-2 lanes – Lower 1 LTS
- Buffers for multi-use paths to be measured at centerline of the pathway.
- Buffers with street trees – Lower 1 LTS

A MEASUREMENT FOR PEDESTRIANS

PEDESTRIANS



LEVEL OF TRAFFIC STRESS (PLTS)



Desired facility level for an All Ages and Abilities network. May not be feasible in some land use contexts.

SIDEWALK WIDTH AND CONDITION

Actual Sidewalk Width	Sidewalk Condition			
	Very Good	Good	Fair	Poor
<4'	LTS 4	LTS 4	LTS 4	LTS 4
4'	LTS 3	LTS 3	LTS 3	LTS 4
5'	LTS 2	LTS 2	LTS 2	LTS 4
6'+	LTS 1	LTS 1	LTS 2	LTS 3

Adjustment Factors

- Low volume residential streets with 4'-5' sidewalk – Lower 1 LTS
- 5' detached sidewalk in very good or good condition – Lower 1 LTS

UNSIGNALIZED CROSSINGS

Speed Limit	Total Auto Lanes Crossed At One Time		
	1-3 Lanes	4-5 Lanes	6+ Lanes
20-25	LTS 1	LTS 2	LTS 4
30	LTS 1	LTS 2	LTS 4
35	LTS 2	LTS 3	LTS 4
40+	LTS 3	LTS 4	LTS 4

Adjustment Factors

- No Illumination Present – Add 1 LTS
- Ramps Inaccessible per Inventory – Add 1 LTS
- Add a Rectangular Rapid Flashing Beacon (Median required when over 3 lanes) – Lower 1 LTS
- Pedestrian refuge medians of at least 8' with a vertical element would reduce the total number of lanes crossed at one time to the distance from curb to median.

A MEASUREMENT FOR PEDESTRIANS

PEDESTRIANS



LEVEL OF TRAFFIC STRESS (PLTS)



Desired facility level for an All Ages and Abilities network. May not be feasible in some land use contexts.

SIGNALIZED INTERSECTIONS AND CROSSINGS

Intersection Features	Total Auto Lanes Crossed At One Time			
	1-3	4-5	6-7	8+
PHB or Ped Signal	LTS 1	LTS 2	LTS 4	LTS 4
Signalized Intersection	LTS 1	LTS 2	LTS 3	LTS 4

Adjustment Factors

- Ramps and Pushbuttons Inaccessible per Inventory – Add 1 LTS
- No Illumination Present – Add 1 LTS
- Add Leading Pedestrian Interval – Lower 1 LTS
- Pedestrian refuge medians of at least 8’ with a vertical element would reduce the total number of lanes crossed at one time to the distance from curb to median.
- Frequency of signalized crossing opportunities should be considered during project design.

ROUNDABOUTS

Lanes Crossed	LTS w/o Enhanced Crossing	LTS w/ Enhanced Crossing
1	LTS 2	LTS 1
2+	LTS 2	LTS 1

Adjustment Factors

- Slip lane present – Add 1 LTS

IMPLEMENTATION STRATEGY

Moving the **LIVABLE STREETS PERFORMANCE MEASURES** from idea into everyday practice is a key part of the success of this effort. Many activities are already underway. The list here is a summary of current and proposed actions being taken to fully embrace the measures set forth in this document. The identified responsible department and timeline is a guide to encourage ongoing effort to implement these measures.

In all things, ACHD is committed to its Complete Streets policy and seeking to meet the desired performance levels identified here.



ONGOING EFFORTS

EFFORT DESCRIPTION	RESPONSIBLE DEPARTMENT
Expand the scope of roadway maintenance projects to include a comprehensive improvement for all users.	Planning
Establish multi-use paths and raised or protected bike lanes as the standard bike facility treatment on arterial roadways.	Planning
Select and acquire sweeper equipment for use in protected bike lanes.	Maintenance
Development typical drawings reflecting best practices for raised bike lanes and multi-use paths (including at driveways and intersections).	Design
Establish an interim policy for the construction of temporary multi-use paths along arterial roadways with development.	Development Services
Hire a Bicyclist and Pedestrian Program Coordinator to facilitate implementation.	Planning

NEW EFFORTS

EFFORT DESCRIPTION	RESPONSIBLE DEPARTMENT	TIMELINE
Hold training for all project team members on new metrics.	Planning	Summer 2021
Develop projects that meet desired performance levels during project scoping. Document if not able to meet.	Planning	Summer 2021
Review current design efforts to determine if projects will meet desired LTS upon construction. Revise as feasible.	Capital Projects	Summer 2021
Establish comprehensive project prioritization process to be used across all categories and modes for the IFYWP.	Planning	Fall 2021
Review Sections 7100 and 7200 for modifications to bring development review in alignment with new measures.	Development Services	Winter 2022
Review and adjust other ACHD policies as identified that support implementing Livable Streets.	All	Ongoing