

Plan for Level of Traffic Stress (LTS)

There are a variety of performance metrics identified in the State Active Transportation Plan and used for complete streets. This guidance is intended to help WSDOT Planning teams understand and apply 'Level of Traffic Stress' in planning studies. One of the key tasks listed on the [Active transportation guidance for planning studies](#) is to plan for level of traffic stress.

Planning studies should:

- Identify needs and strategies for active transportation users based on level of traffic stress.
- Evaluate level of traffic stress at crossings (including driveways) and along roadway segments.
- Provide concepts for improving the LTS in the project development phase.

Through the State Active Transportation Plan (ATP), WSDOT has adopted 'Level of Traffic Stress', or 'LTS', as a tool for rating the performance of pedestrian and bicyclist infrastructure. LTS helps identify the quality and usability of the state highway network for active travel. The plan set a goal of lowering level of traffic stress in population centers.

Complete Streets legislation of 2022 directs WSDOT to plan, design, build, operate, and maintain complete streets facilities. See Project Delivery Memo #22-03 – Complete Streets Implementation and Design Bulletin providing direction, available at the [WSDOT Complete Streets webpage](#). Similar to the ATP, the memo and bulletin direct WSDOT to provide a low level of traffic stress where complete streets are implemented, and are currently being incorporated into the WSDOT Design Manual. Use these documents for planning studies in order to screen the study corridor and determine existing and planned levels of traffic stress.

What is Level of Traffic Stress?

LTS is a performance metric that provides a means of comparing the relative quality of active transportation facilities at different locations along the state highway network.

LTS is related to the comfort active transportation users feel, but because facilities with lower LTS (see below) are associated with greater separation between vehicles and active transportation modes, and lower vehicle speeds, such facilities can be expected to provide more reaction time for errant vehicles departing the travel lane to avoid encroaching on space intended for active transportation users.

LTS is a ranking system where level 1 feels safe and comfortable for all users, while levels 3 and 4 represent stressful conditions that many people will not or cannot use. WSDOT's LTS rankings are informed by the Safe System Approach such that the probability of a serious injury or fatality is decreased in the event of a crash. This influenced WSDOT target LTS levels of 1 and 2. Some of the benefits that are anticipated when highways and streets have a lower LTS are:

- The potential for greater systemic safety, from decreased motor vehicle speeds and physical space separating users.
- Provides facilities usually considered suitable for all ages and abilities with fully accessible features.
- Encourages more people to shift from automobile to active travel and transit.

- Supports lower cost travel options.
- Supports environment, health and equity goals.

LTS is experienced by users, and can be measured, longitudinally along a highway or street and at intersections.

LTS at intersections along highways and streets normally varies from the longitudinal measurement, as there are other complicating issues to consider. Specific guidance on intersection LTS is not yet available.

LTS can also be measured at dedicated pedestrian crossing locations. LTS at crossings can be improved with a variety of crossing enhancements, such as roundabouts, protected intersections, curb extensions, mid-block high visibility crosswalks, leading pedestrian intervals, pedestrian protection islands, and other treatments.

See the Design Manual and Traffic Manual for illustrations, examples, and details of active transportation facilities.

In some places the local street or trail network off the state highway could provide a lower stress alternative, though these facilities may not be direct enough, or address the need for people to cross the state highway. Additionally, parallel routes may not adequately serve the needs of people living, working, or seeking access to services or destinations located on the highway.

Determine LTS for state facilities in Planning Studies

Follow the procedure and tables in Chapter 1510 (pedestrians) and 1520 (bicycles) of the September 2023 edition of the WSDOT Design Manual to determine existing and planned LTS during the course of a planning study. Some additional notes:

- The Table called “BLTS and PLTS for mixed traffic” is a recommended reference for determining LTS at intersections.
- The other tables are specific to pedestrian and bicyclist LTS with certain facility types.

Note: In addition to following the procedure, and using the LTS lookup tables, it may be useful to investigate the LTS further, ideally in collaboration with a subject matter expert, to confirm accuracy of the work. For example:

- Visit the area in person to experience roadway characteristics and transportation including conditions for walking, bicycling, and use of transit.
- Consult with stakeholders and those experienced using the facility.
- Determine existing and planned destination access which can inform travel needs.
- In addition to posted speed, number of travel lanes, and traffic volumes in the lookup tables, consider factors such as turn lanes, parking lanes, turn radii, commercial driveway presence, operating speeds, sidewalk characteristics, bike lane characteristics, and crossing treatments which can serve to increase or decrease an LTS ranking (refer to “refined” LTS in the WSDOT Design Manual).

Note about GIS Data: WSDOT Online Map Center data layers for LTS are at a very high level and will be less useful for planning studies and is not recommended. Often, a low LTS roadway as determined using this data will still require sidewalks, bike lanes, and crossing improvements to meet ATP goals and/or function as a complete street. It is essential to visit the study area in person.

Related links:

- [Active transportation guidance for planning studies](#)
- [WSDOT Complete Streets](#)
- [Design Guidance for Planning Studies](#)
- See [Design Manual](#) chapters 1231, 1510, 1515, and 1520 for concepts and illustrations of active transportation facility types