



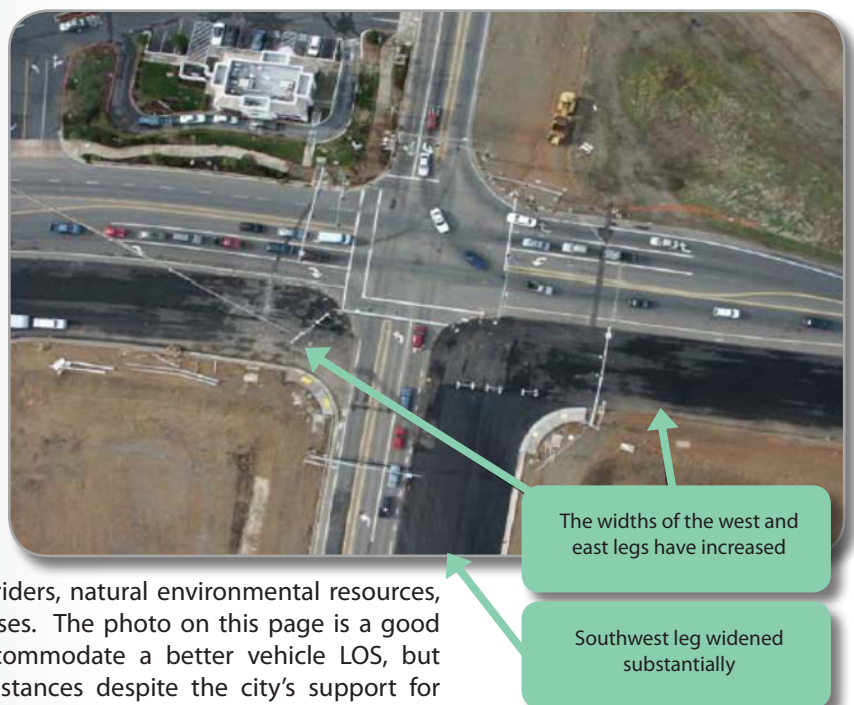
Vehicle Level of Service Policies and Complete Streets: How Roadway Planning Influences Walkable and Bikable Communities

With communities across the country now recognizing the importance of “complete streets,” what does implementation of a city or county’s complete streets policy actually look like? While bike lanes and sidewalks are an important component of making a complete street, the underlying design guidelines and policies for roadways and parking are equally influential in creating livable communities.

California law requires each county and city in the state to adopt a *General Plan*. This “local constitution” contains policies that establish thresholds for providing future infrastructure. For transportation, many general plans establish one threshold for roadway traffic operations known as Level of Service (LOS), which is often the only threshold that is evaluated to determine the size and design of the roadway system. LOS is defined by the highway capacity manual (HCM), Transportation Research Board, 2000 as “a quality measure describing the operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.” This quality measure though is only measured from a driver’s perspective and ignores the perspective of other users such as pedestrians and bicyclists. Further, LOS thresholds may conflict with other community values including:

- Creating pleasant and safe walking and bicycle environments
- Developing well utilized public transportation systems
- Minimizing impacts to natural resources
- Reducing vehicle travel to minimize air pollution and greenhouse gas emissions

When general plans fail to address these potential conflicts or tradeoffs, vehicle LOS tends to dominate any subsequent impact evaluation of land use or transportation projects that are governed by the general plan. In other words, the transportation impact analysis required to comply with the California Environmental Quality Act (CEQA) and demonstrate that a project is consistent with the general plan are only measured against the LOS threshold. The impact analysis will often ignore the effects on pedestrians, bicyclists, transit riders, natural environmental resources, and emissions of air pollutants and green-house gases. The photo on this page is a good example of an intersection being widened to accommodate a better vehicle LOS, but creating longer pedestrian and bicycle crossing distances despite the city’s support for a transportation network conducive to walking and bicycling.





Part of the issue with how LOS is used in most cities and counties is due to how it is reported. As defined by the HCM, LOS is divided into six categories, ranging from LOS A to F, just like a report card. LOS A represents free-flow travel, LOS B through D represent increasing density but primarily stable conditions, LOS E represents conditions at or near the capacity of the facility in question, and LOS F represents over-capacity, forced flow conditions. The unfortunate consequence of a grading system similar to school report cards is that members of the public, planners, decision-makers, and traffic engineers alike, often consciously or unconsciously, relate the two. In other words, there is a tendency to equate LOS D at an intersection with receiving a poor grade on a report card. While achieving a grade of a on a report card is the primary objective in school, achieving LOS A at an urban signalized intersection, for example, would likely be undesirable as public policy since it would mean utilizing only about half of the intersection's peak hour capacity.

Establishing a LOS policy should consider the perspective of all users within the context of the community's economic, environmental, and social values. This approach requires recognizing the following tradeoffs associated with different LOS thresholds, which ensures that the policy will represent clear community priorities and provide specific exceptions when other community values are considered more important than LOS.

LOS Policy Tradeoffs:

- 1. Costs** - Because LOS policies influence the size and type of transportation infrastructure investment, maintaining a higher LOS (e.g. LOS A, B, or C) may be an inefficient use of public funds. Re-thinking LOS policy may be particularly timely for cities and counties struggling with limited infrastructure funds.
- 2. Safety** - Higher LOS thresholds are associated with higher vehicle speeds for peak and non-peak hours, which increases the potential that collisions between vehicles and bicyclists or pedestrians could be fatal.
- 3. Infill Development** - Most LOS policies are a disincentive for developers to build in urban areas because of higher mitigation costs to offset additional traffic on already congested streets. Further, the report card approach to LOS sends a message to infill neighbors that LOS D, E, and F conditions are failing grades despite these types of conditions being conducive in many cases to a better environment for walking, bicycling, and using transit.
- 4. Sustainable Transportation Modes** - Traditional LOS policy measures driver comfort and convenience, which means that considerations for pedestrians or bicyclists using the same facility are not incorporated. Negative impacts to pedestrians and bicyclists include increased crossing distances for pedestrians and bicyclists at intersections, resulting from roadway widening.
- 5. Physical Space** - The goal of an efficient transportation network is to increase the capacity for person-trips, not just vehicle-trips. Current LOS policies typically focus on moving vehicles through the network instead of people.
- 6. Air Quality and Greenhouse Gasses** - LOS thresholds influence travel speeds and potentially influence induced travel effects, both of which, can result in higher levels of air pollutant and greenhouse gas emissions.

For more information on LOS policies contact Ron Milam at r.milam@fehrandpeers.com or (916) 773-1900.