

Transportation Impact Analysis: Replacing LOS with VMT



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A challenging part of environmental impact analysis is determining when a change to the existing environment is substantial enough that an impact occurs and warrants mitigation. In California, this challenge will be even more difficult as the state shifts transportation impact metrics for the California Environmental Quality Act (CEQA) from vehicle level of service (LOS) to vehicle miles traveled (VMT). This change was prompted by Senate Bill (SB) 743, passed in 2013. The law garnered some initial headlines because of the change to VMT, but those faded while the long implementation process since 2013 has played out. Lead agencies are just now getting around to implementation questions as the state completes the final rulemaking process this year, and the full evolutionary effect of the change is starting to be felt.

The latest SB 743 guidance materials are available at the website shown on the following page. The change is anticipated to go into full effect on July 1, 2020, although lead agencies can opt in any time before then, as cities such as San Francisco and Oakland have already done.

The main reason SB 743 presents a unique challenge for transportation impact analysis is that lead agencies must decide what level of VMT change caused by a project would constitute a significant transportation impact. This is different from current analysis of VMT for air quality, greenhouse gases (GHG), or energy impact analysis in California, where federal or state laws establish clear thresholds related to public health and environmental protection objectives. When not relying on the related effects of

CEQA refers to the *California Environmental Quality Act*. This statute requires identification of any significant environmental impacts of state or local action, including approval of new development or infrastructure projects. The process of identifying these impacts is typically referred to as the environmental review process.

LOS refers to *level of service*, a metric that assigns a letter grade to network performance. The typical application of LOS in cities is to measure the average amount of delay experienced by vehicle drivers at an intersection during the most congested time of day and to assign a report card range from LOS A (fewer than 10 seconds of delay) to LOS F (more than 80 seconds of delay).

VMT refers to *vehicle miles traveled*, a metric that accounts for the number of vehicle trips generated and the length or distance of those trips. For transportation impact analysis, VMT is generally expressed as VMT per capita for a typical weekday.

fuel consumption, determining what level of VMT change is significant is much more difficult. Lead agencies will essentially be deciding what amount of VMT is acceptable vs. unacceptable without the benefit of an emissions filter.

So, What Should Lead Agencies Do?

Lead agencies will need to pay close attention to the details of SB 743 found in the statute and follow the procedures already established for setting environmental impact significance thresholds in Section 15064.7 of the CEQA Guidelines. The statute contains the following language with respect to the criteria that should be considered when establishing significance thresholds.

CEQA Guidelines Update and Technical Advisory

After over four years of stakeholder-driven development through nearly 200 stakeholder meetings, public convenings, and other outreach events, OPR has transmitted its proposed CEQA Guideline implementing Senate Bill 743 to the California Natural Resources Agency. OPR has also prepared a Technical Advisory on Evaluating Transportation Impacts in CEQA, which contains OPR's technical recommendations regarding assessment of VMT, thresholds of significance, and mitigation measures. OPR may update or supplement this technical advisory in response to new information and advancements in modeling and methods. Both of these documents can be accessed through the following links:

- Proposed CEQA Guideline Implementing SB 743 (Section 15064.3)
- Technical Advisory on Evaluating Transportation Impacts in CEQA

Notice of future activity on the CEQA Guidelines will be posted on OPR's website and distributed through the CEQA Guidelines List Serve. Please sign-up on the List Serve to stay connected. The Natural Resources Agency will also post updated information about the rulemaking process on its website.

OPR developed the proposed updates related to transportation analysis separately from the rest of the CEQA Guidelines update. That proposal has been included in the Proposed Updates to the CEQA Guidelines. For more information on the comprehensive package, please visit [Current CEQA Guidelines Update](#) and the [Natural Resources Agency's website](#).

[Frequently Asked Questions](#)

SOURCE: <http://opr.ca.gov/ceqa/updates/sb-743/>

“Those criteria shall promote the reduction of greenhouse gas emissions, the development of multimodal networks, and a diversity of land uses.”

Since GHG reduction is already addressed as a separate topic in CEQA analysis, the setting of VMT thresholds solely for transportation purposes may need to emphasize the other two objectives. While this may sound straightforward, it is not clear what VMT threshold would fulfill the expectations to promote multimodal networks and land use diversity.

The state guidance suggests that “...in most instances a per capita or per employee VMT that is fifteen percent below that of existing development may be a reasonable threshold.” The evidence used to support this threshold value is based on state goals, regulations, and plans related to air pollution and GHG emissions reduction. Evidence about the quantitative relationship between VMT reduction, multimodal networks, and land use diversity is not provided in state guidance.

Essentially, the proposed threshold means that future land use development projects and future land use plans would need to demonstrate that they are capable of producing VMT per capita or VMT per employee that is 15 percent better than existing

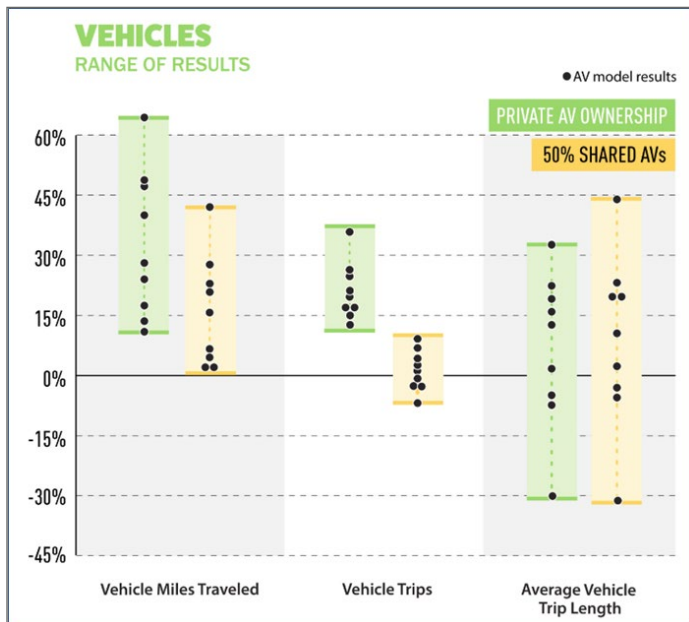
development (measured at the city or regional level). While this level of VMT reduction may already occur or be achievable in large-city central business districts and in areas surrounding high-quality passenger rail service stations, projects located in lower-density areas will have limited VMT reduction options for mitigation.

As a result, traditional transportation impact findings for land use projects and land use plans based

on LOS are likely to be reversed when the switch to VMT occurs. For example, urban infill projects are typically located in congested areas of cities where existing LOS is already poor (i.e., LOS F). Adding more people and vehicle trips in these areas tends to cause or exacerbate poor LOS conditions, leading to significant impacts. The same projects under the proposed VMT metric and threshold will likely perform better than the threshold due to the close proximity of other land uses. When land uses are located close together, trip lengths are shorter. This makes walking and bicycling viable and transit more effective. As such, the infill projects will have less-than-significant VMT impacts, lessening the regulatory burden for analysis and mitigation. On the other hand, land use projects in suburban or rural areas are more likely to have significant VMT impacts. These projects typically did not cause LOS impacts or were able to mitigate them because the local roadway system had sufficient reserve capacity or modifying local intersections was feasible due to sufficient right-of-way.

Do Lead Agencies Have Discretion in Deciding What Thresholds to Use?

The outcomes above are not fixed. Lead agencies have discretion when setting significance thresholds as outlined in Section 15064.7 of the CEQA Guidelines. While agencies should take the state's recommendations seriously, they can develop their own substantial



SOURCE: <http://www.fehrandpeers.com/autonomous-vehicle-research/>

evidence to support alternative thresholds. However, this process requires time and effort, and the clock is already ticking on final implementation of SB 743. The process is also complicated by a unique aspect of VMT—background VMT levels change in response to a variety of economic factors outside the control or influence of cities or counties. For instance, VMT per capita declined after the Great Recession, but has rebounded since about 2012 and is now increasing. Economic activity, low fuel prices, and new vehicle travel options such as transportation network companies (e.g., Uber and Lyft) have increased vehicle use.

With CEQA also requiring the analysis of cumulative conditions, forecasting project effects on future 2040 or 2050 VMT conditions becomes even more challenging. Within this time horizon, the introduction of autonomous vehicles (AVs) is likely, along with other changes in mobility. Research we have completed on the potential AV effects on VMT demonstrated the potential for substantial increases as the cost of vehicle travel (in terms of both time and money) is reduced.

Subsequent research completed by the University of California, Berkeley, suggests these findings are highly relevant.¹ In a unique experiment involving

the provision of 60 hours of free chauffeur service for one week, VMT increased 83 percent for those participating. While this experiment was conducted using a small sample of 13 test subjects from the San Francisco Bay Area, it underscores the potential challenge of setting expectations for VMT reduction as part of CEQA significance thresholds.

Other Resources

Despite the challenges highlighted in this article, various agencies have tackled SB 743 implementation and are moving forward with VMT-based impact analysis. Details about the steps involved and technical resources are available through websites and technical training offered by the University of California, Berkeley, Technical Transfer Program and the University of California Extension Programs in Davis and San Diego (see below).

SB 743 Website Resources

<http://www.fehrandpeers.com/sb743/>

<http://www.dot.ca.gov/hq/tpp/sb743.html>

SB 743 Technical Courses

TE-53 VMT Metrics Application & Analysis for SB 743 Compliance

<https://registration.techtransfer.berkeley.edu/CourseStatus.awp?&course=0500TE530000>

Updating Transportation Analysis in CEQA: How to Effectively Implement SB 743

<https://extension.ucdavis.edu/course/updating-transportation-analysis-ceqa-how-effectively-implement-sb-743>

Navigating SB 743 Implementation

<https://extension.ucsd.edu/courses-and-programs/navigating-sb-743-implementation>

¹ Harb, M., Xiao, Y., Circella, G., Mokhtarian, P., Walker, J., (2018). *Projecting Travelers into a World of Self-Driving Vehicles: Estimating Travel Behavior Implications via a Naturalistic Experiment*. Transportation Research Board.