**ITEM #1**

**DATE:** May 27, 2020

**TO:** Orange County Planning Commission

**FROM:** OC Development Services/Planning

**SUBJECT:** Initiation of General Plan Amendment GPA 20-01 – Land Use, Transportation, and Growth Management Elements

**PROPOSAL:** Staff is requesting authorization to initiate General Plan Amendment GPA 20-01 to ensure compliance with recent State mandated changes regarding new metrics for California Environmental Quality Act transportation analysis.

**ZONING/ GENERAL PLAN:** N/A

**LOCATION:** Unincorporated Areas of Orange County

**APPLICANT:** OC Development Services

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## RECOMMENDED ACTION(S):

OC Development Services/Planning recommends the Planning Commission:

a. Receive staff report and public testimony.

b. Authorize staff to initiate General Plan Amendment GPA 20-01 to update the County of Orange Land Use, Transportation, and Growth Management Elements to ensure compliance with recent State mandated changes regarding new metrics for California Environmental Quality Act transportation analysis.

## BACKGROUND:

State law requires jurisdictions to adopt a General Plan, which includes various state-mandated elements. The General Plan is considered a long-range planning document for the management of growth and change. Each General Plan Element provides goals, policies and objectives on a variety of topics. Elements are updated periodically to ensure compliance with recent legislation and/or meet community needs, except for the Housing Element that is required to be updated every eight (8) years.

Senate Bill (SB) 743 was signed by the Governor in 2013 with the intent to more appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions. SB 743 requires that analysis of transportation impacts for California Environmental Quality Act (CEQA) documents occur through an analysis of Vehicle Miles Traveled (VMT), not Level of Service (LOS) for Land Use Projects. For Transportation projects, lead agencies for roadway capacity projects have discretion, consistent with CEQA and planning requirements, to choose which metric to use to evaluate transportation impacts. In response to SB 743, the Governor's Office of Planning and Research (OPR) released a Technical Advisory on Evaluating Transportation Impacts in CEQA (December 2018) that contains recommendations regarding assessment of Vehicle Miles Traveled (VMT), thresholds of significance, and mitigation measures (Attachment 1). More specifically, for land use projects, OPR identified VMT per capita, VMT per employee, and net VMT as new metrics for transportation analysis in CEQA.

Beginning on July 1, 2020, SB 743 provisions shall apply statewide, and the County of Orange will be utilizing the VMT metrics outlined in the December 2018 Technical Advisory to assist with our evaluation of discretionary projects under CEQA within unincorporated Orange County. The County will continue to apply the Level of Service (LOS) analysis or other traditional metrics to determine traffic impacts for operational level assessment as appropriate.

## PROPOSED PROJECT:

On August 26, 2019, a Cost Proposal was released to request written proposals from qualified Architecture - Engineer firms to assist with the implementation of SB 743. After careful consideration, LSA Associates, Inc. (LSA) was selected to lead the effort to assist with the SB 743 Implementation for the County of Orange. The scope of work included project management, technical assistance/guidance,

development of VMT thresholds and screening criteria, development of a VMT Calculation Tool, and an update to the County's Growth Management Plan (GMP) Transportation Implementation Manual. The contract with the County was executed on December 3, 2019 with an end date of February 5, 2021 (Attachment 2).

Since then, OC Development Services and other internal County agencies, including County Counsel, OC Public Works/Infrastructure, and OC Waste and Recycling have met with LSA to discuss the potential impacts and next steps to ensure compliance with SB 743. LSA will be submitting the following documents: a) memorandum that describes VMT-based methodologies, significance thresholds, and mitigation measures; b) VMT Calculator to assess VMT impacts for land development projects, roadway improvement projects and other infrastructure projects; and c) revised GMP Transportation Implementation Manual to be used as the guide for future Traffic Impact Assessment. Upon review and approval of these documents, staff will make proposed changes to the Land Use, Transportation, and Growth Management Elements. Staff is expected to return to Planning Commission with a recommendation that the Board of Supervisors adopt the proposed General Plan Amendment GPA 20-01 Land Use, Transportation and Growth Management Elements in Summer 2020.

**CEQA COMPLIANCE:**

This action is not a project within the meaning of CEQA Guidelines Section 15378 and is therefore not subject to CEQA, since it does not have the potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment. The approval of this item does not commit the County to a definite course of action in regard to a project since the action being authorized involves the initiation of an amendment to the County of Orange General Plan, which is administrative. This proposed activity is therefore not subject to CEQA. Any future action connected to this approval that constitutes a project will be reviewed for compliance with CEQA.

Submitted by:

Joanna Chang, Land Use Manager
OC Development Services/Planning

Reviewed by,

Richard Vuong, Interim Deputy Director
OC Public Works/Development Services

Attachment 1 Governor's Office of Planning and Research - Technical Advisory on Evaluating Transportation Impacts in CEQA (December 2018)

Attachment 2 Cost Proposal for SB 743 Implementation Consultant Services prepared by LSA and County Purchase Order dated December 3, 2019

# Attachment 1

# TECHNICAL ADVISORY

## ON EVALUATING TRANSPORTATION IMPACTS IN CEQA

December 2018

# Contents

## A. Introduction

This technical advisory is one in a series of advisories provided by the Governor's Office of Planning and Research (OPR) as a service to professional planners, land use officials, and CEQA practitioners. OPR issues technical assistance on issues that broadly affect the practice of land use planning and the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). (Gov. Code, § 65040, subds. (g), (l), (m).) The purpose of this document is to provide advice and recommendations, which agencies and other entities may use at their discretion. This document does not alter lead agency discretion in preparing environmental documents subject to CEQA. This document should not be construed as legal advice.

Senate Bill 743 (Steinberg, 2013), which was codified in Public Resources Code section 21099, required changes to the guidelines implementing CEQA (CEQA Guidelines) (Cal. Code Regs., Title 14, Div. 6, Ch. 3, § 15000 et seq.) regarding the analysis of transportation impacts. As one appellate court recently explained: "During the last 10 years, the Legislature has charted a course of long-term sustainability based on denser infill development, reduced reliance on individual vehicles and improved mass transit, all with the goal of reducing greenhouse gas emissions. Section 21099 is part of that strategy . . . ." (*Covina Residents for Responsible Development v. City of Covina* (2018) 21 Cal.App.5th 712, 729.) Pursuant to Section 21099, the criteria for determining the significance of transportation impacts must "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." (*Id.*, subd. (b)(1); see generally, adopted CEQA Guidelines, § 15064.3, subd. (b) [Criteria for Analyzing Transportation Impacts].) To that end, in developing the criteria, OPR has proposed, and the California Natural Resources Agency (Agency) has certified and adopted, changes to the CEQA Guidelines that identify vehicle miles traveled (VMT) as the most appropriate metric to evaluate a project's transportation impacts. With the California Natural Resources Agency's certification and adoption of the changes to the CEQA Guidelines, automobile delay, as measured by "level of service" and other similar metrics, generally no longer constitutes a significant environmental effect under CEQA. (Pub. Resources Code, § 21099, subd. (b)(3).)

This advisory contains technical recommendations regarding assessment of VMT, thresholds of significance, and mitigation measures. Again, OPR provides this Technical Advisory as a resource for the public to use at their discretion. OPR is not enforcing or attempting to enforce any part of the recommendations contained herein. (Gov. Code, § 65035 ["It is not the intent of the Legislature to vest in the Office of Planning and Research any direct operating or regulatory powers over land use, public works, or other state, regional, or local projects or programs."].)

This December 2018 technical advisory is an update to the advisory it published in April 2018. OPR will continue to monitor implementation of these new provisions and may update or supplement this advisory in response to new information and advancements in modeling and methods.

## B. Background

*VMT and Greenhouse Gas Emissions Reduction.* Senate Bill 32 (Pavley, 2016) requires California to reduce greenhouse gas (GHG) emissions 40 percent below 1990 levels by 2030, and Executive Order B-16-12 provides a target of 80 percent below 1990 emissions levels for the transportation sector by 2050. The transportation sector has three major means of reducing GHG emissions: increasing vehicle efficiency, reducing fuel carbon content, and reducing the amount of vehicle travel. The California Air Resources Board (CARB) has provided a path forward for achieving these emissions reductions from the transportation sector in its 2016 Mobile Source Strategy. CARB determined that it will not be possible to achieve the State's 2030 and post-2030 emissions goals without reducing VMT growth. Further, in its 2018 Progress Report on California's Sustainable Communities and Climate Protection Act, CARB found that despite the State meeting its 2020 climate goals, "emissions from statewide passenger vehicle travel per capita [have been] increasing and going in the wrong direction," and "California cannot meet its [long-term] climate goals without curbing growth in single-occupancy vehicle activity."[1] CARB also found that "[w]ith emissions from the transportation sector continuing to rise despite increases in fuel efficiency and decreases in the carbon content of fuel, California will not achieve the necessary greenhouse gas emissions reductions to meet mandates for 2030 and beyond without significant changes to how communities and transportation systems are planned, funded, and built."[2]

Thus, to achieve the State's long-term climate goals, California needs to reduce per capita VMT. This can occur under CEQA through VMT mitigation. Half of California's GHG emissions come from the transportation sector[3], therefore, reducing VMT is an effective climate strategy, which can also result in co-benefits.[4] Furthermore, without early VMT mitigation, the state may follow a path that meets GHG targets in the early years, but finds itself poorly positioned to meet more stringent targets later. For example, in absence of VMT analysis and mitigation in CEQA, lead agencies might rely upon verifiable offsets for GHG mitigation, ignoring the longer-term climate change impacts resulting from land use development and infrastructure investment decisions. As stated in CARB's 2017 Scoping Plan:

> "California's future climate strategy will require increased focus on integrated land use planning to support livable, transit-connected communities, and conservation of agricultural and other lands. Accommodating population and economic growth through travel- and energy-efficient land use provides GHG-efficient growth, reducing GHGs from both transportation and building energy use. GHGs can be further reduced at the project level through implementing energy-efficient construction and travel demand management approaches."[5] (*Id.* at p. 102.)

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[1] California Air Resources Board (Nov. 2018) *2018 Progress Report on California's Sustainable Communities and Climate Protection Act*, pp. 4, 5, available at https://ww2.arb.ca.gov/sites/default/files/2018-11/Final2018Report_SB150_112618_02_Report.pdf.
[2] *Id.*, p. 28.
[3] See https://ca50million.ca.gov/transportation/
[4] Fang et al. (2017) *Cutting Greenhouse Gas Emissions Is Only the Beginning: A Literature Review of the Co-Benefits of Reducing Vehicle Miles Traveled*.
[5] California Air Resources Board (Nov. 2017) *California's 2017 Climate Change Scoping Plan*, p. 102, available at https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.

In light of this, the 2017 Scoping Plan describes and quantifies VMT reductions needed to achieve our long-term GHG emissions reduction goals, and specifically points to the need for statewide deployment of the VMT metric in CEQA:

> "Employing VMT as the metric of transportation impact statewide will help to ensure GHG reductions planned under SB 375 will be achieved through on-the-ground development, and will also play an important role in creating the additional GHG reductions needed beyond SB 375 across the State. Implementation of this change will rely, in part, on local land use decisions to reduce GHG emissions associated with the transportation sector, both at the project level, and in long-term plans (including general plans, climate action plans, specific plans, and transportation plans) and supporting sustainable community strategies developed under SB 375."[6]

*VMT and Other Impacts to Health and Environment.* VMT mitigation also creates substantial benefits (sometimes characterized as "co-benefits" to GHG reduction) in both in the near-term and the long-term. Beyond GHG emissions, increases in VMT also impact human health and the natural environment. Human health is impacted as increases in vehicle travel lead to more vehicle crashes, poorer air quality, increases in chronic diseases associated with reduced physical activity, and worse mental health. Increases in vehicle travel also negatively affect other road users, including pedestrians, cyclists, other motorists, and many transit users. The natural environment is impacted as higher VMT leads to more collisions with wildlife and fragments habitat. Additionally, development that leads to more vehicle travel also tends to consume more energy, water, and open space (including farmland and sensitive habitat). This increase in impermeable surfaces raises the flood risk and pollutant transport into waterways.[7]

*VMT and Economic Growth.* While it was previously believed that VMT growth was a necessary component of economic growth, data from the past two decades shows that economic growth is possible without a concomitant increase in VMT. (Figure 1.) Recent research shows that requiring development projects to mitigate LOS may actually reduce accessibility to destinations and impede economic growth.[8,9]

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[6] *Id.* at p. 76.

[7] Fang et al. (2017) *Cutting Greenhouse Gas Emissions Is Only the Beginning: A Literature Review of the Co-Benefits of Reducing Vehicle Miles Traveled*, available at https://ncst.ucdavis.edu/wp-content/uploads/2017/03/NCST-VMT-Co-Benefits-White-Paper_Fang_March-2017.pdf.

[8] Haynes et al. (Sept. 2015) *Congested Development: A Study of Traffic Delays, Access, and Economic Activity in Metropolitan Los Angeles*, available at http://www.its.ucla.edu/wp-content/uploads/sites/6/2015/11/Haynes_Congested-Development_1-Oct-2015_final.pdf.

[9] Osman et al. (Mar. 2016) *Not So Fast: A Study of Traffic Delays, Access, and Economic Activity in the San Francisco Bay Area*, available at http://www.its.ucla.edu/wp-content/uploads/sites/6/2016/08/Taylor-Not-so-Fast-04-01-2016_final.pdf.

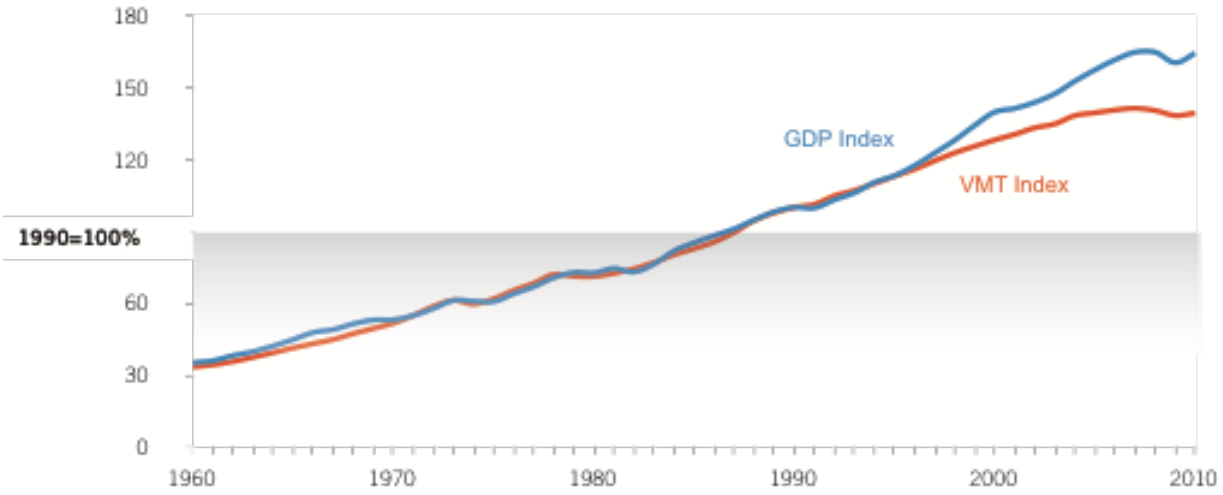


**Figure 1.** Kooshian and Winkelman (2011) *VMT and Gross Domestic Product (GDP), 1960-2010*.

## C. Technical Considerations in Assessing Vehicle Miles Traveled

Many practitioners are familiar with accounting for VMT in connection with long-range planning, or as part of the CEQA analysis of a project's greenhouse gas emissions or energy impacts. This document provides technical information on how to assess VMT as part of a transportation impacts analysis under CEQA. Appendix 1 provides a description of which VMT to count and options on how to count it. Appendix 2 provides information on induced travel resulting from roadway capacity projects, including the mechanisms giving rise to induced travel, the research quantifying it, and information on additional approaches for assessing it.

### 1. Recommendations Regarding Methodology

Proposed Section 15064.3 explains that a "lead agency may use models to estimate a project's vehicle miles traveled . . . ." CEQA generally defers to lead agencies on the choice of methodology to analyze impacts. (*Santa Monica Baykeeper v. City of Malibu* (2011) 193 Cal.App.4th 1538, 1546; see *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 409 ["the issue is not whether the studies are irrefutable or whether they could have been better" … rather, the "relevant issue is only whether the studies are sufficiently credible to be considered" as part of the lead agency's overall evaluation].) This section provides suggestions to lead agencies regarding methodologies to analyze VMT associated with a project.

**Vehicle Types.** Proposed Section 15064.3, subdivision (a), states, "For the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project." Here, the term "automobile" refers to on-road passenger vehicles, specifically cars and light trucks. Heavy-duty truck VMT could be included for modeling convenience and ease of calculation (for example, where models or data provide combined auto and heavy truck VMT). For an apples-to-apples

comparison, vehicle types considered should be consistent across project assessment, significance thresholds, and mitigation.

**Residential and Office Projects**. Tour- and trip-based approaches[10] offer the best methods for assessing VMT from residential/office projects and for comparing those assessments to VMT thresholds. These approaches also offer the most straightforward methods for assessing VMT reductions from mitigation measures for residential/office projects. When available, tour-based assessment is ideal because it captures travel behavior more comprehensively. But where tour-based tools or data are not available for all components of an analysis, a trip-based assessment of VMT serves as a reasonable proxy.

Models and methodologies used to calculate thresholds, estimate project VMT, and estimate VMT reduction due to mitigation should be comparable. For example:

- A tour-based assessment of project VMT should be compared to a tour-based threshold, or a trip-based assessment to a trip-based VMT threshold.
- Where a travel demand model is used to determine thresholds, the same model should also be used to provide trip lengths as part of assessing project VMT.
- Where only trip-based estimates of VMT reduction from mitigation are available, a trip-based threshold should be used, and project VMT should be assessed in a trip-based manner.

When a trip-based method is used to analyze a residential project, the focus can be on home-based trips. Similarly, when a trip-based method is used to analyze an office project, the focus can be on home-based work trips.

When tour-based models are used to analyze an office project, either employee work tour VMT or VMT from all employee tours may be attributed to the project. This is because workplace location influences overall travel. For consistency, the significance threshold should be based on the same metric: either employee work tour VMT or VMT from all employee tours.

For office projects that feature a customer component, such as a government office that serves the public, a lead agency can analyze the customer VMT component of the project using the methodology for retail development (see below).

**Retail Projects**. Generally, lead agencies should analyze the effects of a retail project by assessing the change in total VMT[11] because retail projects typically re-route travel from other retail destinations. A retail project might lead to increases or decreases in VMT, depending on previously existing retail travel patterns.

[10] See Appendix 1, *Considerations About Which VMT to Count,* for a description of these approaches.
[11] See Appendix 1, *Considerations About Which VMT to Count, "*Assessing Change in Total VMT" section, for a description of this approach.

**Considerations for All Projects**. Lead agencies should not truncate any VMT analysis because of jurisdictional or other boundaries, for example, by failing to count the portion of a trip that falls outside the jurisdiction or by discounting the VMT from a trip that crosses a jurisdictional boundary. CEQA requires environmental analyses to reflect a "good faith effort at full disclosure." (CEQA Guidelines, § 15151.) Thus, where methodologies exist that can estimate the full extent of vehicle travel from a project, the lead agency should apply them to do so. Where those VMT effects will grow over time, analyses should consider both a project's short-term and long-term effects on VMT.

Combining land uses for VMT analysis is not recommended. Different land uses generate different amounts of VMT, so the outcome of such an analysis could depend more on the mix of uses than on their travel efficiency. As a result, it could be difficult or impossible for a lead agency to connect a significance threshold with an environmental policy objective (such as a target set by law), inhibiting the CEQA imperative of identifying a project's significant impacts and providing mitigation where feasible. Combining land uses for a VMT analysis could streamline certain mixes of uses in a manner disconnected from policy objectives or environmental outcomes. Instead, OPR recommends analyzing each use separately, or simply focusing analysis on the dominant use, and comparing each result to the appropriate threshold. Recommendations for methods of analysis and thresholds are provided below. In the analysis of each use, a mixed-use project should take credit for internal capture.

Any project that includes in its geographic bounds a portion of an existing or planned Transit Priority Area (i.e., the project is within a ½ mile of an existing or planned major transit stop or an existing stop along a high quality transit corridor) may employ VMT as its primary metric of transportation impact for the entire project. (See Pub. Resources Code, § 21099, subds. (a)(7), (b)(1).)

**Cumulative Impacts.** A project's cumulative impacts are based on an assessment of whether the "incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." (Pub. Resources Code, § 21083, subd. (b)(2); see CEQA Guidelines, § 15064, subd. (h)(1).) When using an absolute VMT metric, i.e., total VMT (as recommended below for retail and transportation projects), analyzing the combined impacts for a cumulative impacts analysis may be appropriate. However, metrics such as VMT per capita or VMT per employee, i.e., metrics framed in terms of efficiency (as recommended below for use on residential and office projects), cannot be summed because they employ a denominator. A project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. Accordingly, a finding of a less-than-significant project impact would imply a less than significant cumulative impact, and vice versa. This is similar to the analysis typically conducted for greenhouse gas emissions, air quality impacts, and impacts that utilize plan compliance as a threshold of significance. (See *Center for Biological Diversity v. Department of Fish & Wildlife* (2015) 62 Cal.4$^{th}$ 204, 219, 223; CEQA Guidelines, § 15064, subd. (h)(3).)

## D. General Principles to Guide Consideration of VMT

SB 743 directs OPR to establish specific "criteria for determining the significance of transportation impacts of projects[.]" (Pub. Resources Code, § 21099, subd. (b)(1).) In establishing this criterion, OPR was guided by the general principles contained within CEQA, the CEQA Guidelines, and applicable case law.

To assist in the determination of significance, many lead agencies rely on "thresholds of significance." The CEQA Guidelines define a "threshold of significance" to mean "an identifiable **quantitative, qualitative[12] or performance level** of a particular environmental effect, non-compliance with which means the effect will ***normally*** be determined to be significant by the agency and compliance with which means the effect ***normally*** will be determined to be less than significant." (CEQA Guidelines, § 15064.7, subd. (a) (emphasis added).) Lead agencies have discretion to develop and adopt their own, or rely on thresholds recommended by other agencies, "provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence." (*Id*. at subd. (c); *Save Cuyama Valley v. County of Santa Barbara* (2013) 213 Cal.App.4th 1059, 1068.) Substantial evidence means "enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached." (*Id*. at § 15384 (emphasis added); *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th 1099, 1108-1109.)

Additionally, the analysis leading to the determination of significance need not be perfect. The CEQA Guidelines describe the standard for adequacy of environmental analyses:

> An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to **make a decision which intelligently takes account of environmental consequences**. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is **reasonably feasible**. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The **courts have looked not for perfection** but for **adequacy**, **completeness**, and a **good faith effort** at full disclosure.

(CEQA Guidelines, § 15151 (emphasis added).)

These general principles guide OPR's recommendations regarding thresholds of significance for VMT set forth below.

[12] Generally, qualitative analyses should only be conducted when methods do not exist for undertaking a quantitative analysis.

## E. Recommendations Regarding Significance Thresholds

As noted above, lead agencies have the discretion to set or apply their own thresholds of significance. (*Center for Biological Diversity v. California Dept. of Fish & Wildlife* (2015) 62 Cal.4th 204, 218-223 [lead agency had discretion to use compliance with AB 32's emissions goals as a significance threshold]; *Save Cuyama Valley v. County of Santa Barbara* (2013) 213 Cal.App.4th at p. 1068.) However, Section 21099 of the Public Resources Code states that the criteria for determining the significance of transportation impacts must promote: (1) reduction of greenhouse gas emissions; (2) development of multimodal transportation networks; and (3) a diversity of land uses. It further directed OPR to prepare and develop criteria for determining significance. (Pub. Resources Code, § 21099, subd. (b)(1).) This section provides OPR's suggested thresholds, as well as considerations for lead agencies that choose to adopt their own

The VMT metric can support the three statutory goals: "the reduction of greenhouse gas emissions, the development of multimodal transportation networks, ***and*** a diversity of land uses." (Pub. Resources Code, § 21099, subd. (b)(1), emphasis added.) However, in order for it to promote and support all three, lead agencies should select a significance threshold that aligns with state law on all three. State law concerning the development of multimodal transportation networks and diversity of land uses requires planning for and prioritizing increases in complete streets and infill development, but does not mandate a particular depth of implementation that could translate into a particular threshold of significance. Meanwhile, the State has clear quantitative targets for GHG emissions reduction set forth in law and based on scientific consensus, and the depth of VMT reduction needed to achieve those targets has been quantified. Tying VMT thresholds to GHG reduction also supports the two other statutory goals. Therefore, to ensure adequate analysis of transportation impacts, OPR recommends using quantitative VMT thresholds linked to GHG reduction targets when methods exist to do so.

Various legislative mandates and state policies establish quantitative greenhouse gas emissions reduction targets. For example:

- Assembly Bill 32 (2006) requires statewide GHG emissions reductions to 1990 levels by 2020 and continued reductions beyond 2020.

- Senate Bill 32 (2016) requires at least a 40 percent reduction in GHG emissions from 1990 levels by 2030.

- Pursuant to Senate Bill 375 (2008), the California Air Resources Board GHG emissions reduction targets for metropolitan planning organizations (MPOs) to achieve based on land use patterns and transportation systems specified in Regional Transportation Plans and Sustainable Community Strategies (RTP/SCS). Current targets for the State's largest MPOs call for a 19 percent reduction in GHG emissions from cars and light trucks from 2005 emissions levels by 2035.

- Executive Order B-30-15 (2015) sets a GHG emissions reduction target of 40 percent below 1990 levels by 2030.

- Executive Order S-3-05 (2005) sets a GHG emissions reduction target of 80 percent below 1990 levels by 2050.

- Executive Order B-16-12 (2012) specifies a GHG emissions reduction target of 80 percent below 1990 levels by 2050 specifically for transportation.

- Executive Order B-55-18 (2018) established an additional statewide goal of achieving carbon neutrality as soon as possible, but no later than 2045, and maintaining net negative emissions thereafter. It states, "The California Air Resources Board shall work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward this goal."

- Senate Bill 391 requires the California Transportation Plan to support 80 percent reduction in GHGs below 1990 levels by 2050.

- The *California Air Resources Board Mobile Source Strategy* (2016) describes California's strategy for containing air pollutant emissions from vehicles, and quantifies VMT growth compatible with achieving state targets.

- The California Air Resources Board's *2017 Climate Change Scoping Plan Update: The Strategy for Achieving California's 2030 Greenhouse Gas Target* describes California's strategy for containing GHG emissions from vehicles, and quantifies VMT growth compatible with achieving state targets.

Considering these various targets, the California Supreme Court observed:

> Meeting our statewide reduction goals does not preclude all new development. Rather, the Scoping Plan … assumes continued growth and depends on increased efficiency and conservation in land use and transportation from all Californians.

(*Center for Biological Diversity v. California Dept. of Fish & Wildlife*, *supra*, 62 Cal.4th at p. 220.) Indeed, the Court noted that when a lead agency uses consistency with climate goals as a way to determine significance, particularly for long-term projects, the lead agency must consider the project's effect on meeting long-term reduction goals. (*Ibid*.) And more recently, the Supreme Court stated that "CEQA requires public agencies . . . to ensure that such analysis stay in step with evolving scientific knowledge and state regulatory schemes." (*Cleveland National Forest Foundation v. San Diego Assn. of Governments* (2017) 3 Cal.5th 497, 504.)

Meeting the targets described above will require substantial reductions in existing VMT per capita to curb GHG emissions and other pollutants. But targets for overall GHG emissions reduction do not translate directly into VMT thresholds for individual projects for many reasons, including:

- Some, but not all, of the emissions reductions needed to achieve those targets could be accomplished by other measures, including increased vehicle efficiency and decreased fuel carbon content. The CARB's *First Update to the Climate Change Scoping Plan* explains:

"Achieving California's long-term criteria pollutant and GHG emissions goals will require four strategies to be employed: (1) improve vehicle efficiency and develop zero emission technologies, (2) reduce the carbon content of fuels and provide market support to get these lower-carbon fuels into the marketplace, (3) **plan and build communities to reduce vehicular GHG emissions and provide more transportation options, and (4) improve the efficiency and throughput of existing transportation systems.**"[13] CARB's *2018 Progress Report on California's Sustainable Communities and Climate Protection Act* states on page 28 that "California cannot meet its climate goals without curbing growth in single-occupancy vehicle activity." In other words, vehicle efficiency and better fuels are necessary, but insufficient, to address the GHG emissions from the transportation system. Land use patterns and transportation options also will need to change to support reductions in vehicle travel/VMT.

- New land use projects alone will not sufficiently reduce per-capita VMT to achieve those targets, nor are they expected to be the sole source of VMT reduction.

- Interactions between land use projects, and also between land use and transportation projects, existing and future, together affect VMT.

- Because location within the region is the most important determinant of VMT, in some cases, streamlining CEQA review of projects in travel efficient locations may be the most effective means of reducing VMT.

- When assessing climate impacts of some types of land use projects, use of an efficiency metric (e.g., per capita, per employee) may provide a better measure of impact than an absolute numeric threshold. (*Center for Biological Diversity*, *supra*.)

Public Resources Code section 21099 directs OPR to propose criteria for determining the significance of transportation impacts. In this Technical Advisory, OPR provides its recommendations to assist lead agencies in selecting a significance threshold that may be appropriate for their particular projects. While OPR's Technical Advisory is not binding on public agencies, CEQA allows lead agencies to "consider thresholds of significance . . . recommended by other public agencies, provided the decision to adopt those thresholds is supported by substantial evidence." (CEQA Guidelines, § 15064.7, subd. (c).) Based on OPR's extensive review of the applicable research, and in light of an assessment by the California Air Resources Board quantifying the need for VMT reduction in order to meet the State's long-term climate goals, **OPR recommends that a per capita or per employee VMT that is fifteen percent below that of existing development may be a reasonable threshold**.

Fifteen percent reductions in VMT are achievable at the project level in a variety of place types.[14]

Moreover, a fifteen percent reduction is consistent with SB 743's direction to OPR to select a threshold that will help the State achieve its climate goals. As described above, section 21099 states that the

[13] California Air Resources Board (May 2014) *First Update to the Climate Change Scoping Plan*, p. 46 (emphasis added).
[14] CAPCOA (2010) *Quantifying Greenhouse Gas Mitigation Measures*, p. 55, available at http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf.

criteria for determining significance must "promote the reduction in greenhouse gas emissions." In its document *California Air Resources Board 2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals*[15], CARB assesses VMT reduction per capita consistent with its evidence-based modeling scenario that would achieve State climate goals of 40 percent GHG emissions reduction from 1990 levels by 2030 and 80 percent GHG emissions reduction levels from 1990 by 2050. Applying California Department of Finance population forecasts, CARB finds per-capita light-duty vehicle travel would need to be approximately 16.8 percent lower than existing, and overall per-capita vehicle travel would need to be approximately 14.3 percent lower than existing levels under that scenario. Below these levels, a project could be considered low VMT and would, on that metric, be consistent with 2017 Scoping Plan Update assumptions that achieve climate state climate goals.

CARB finds per capita vehicle travel would need to be kept below what today's policies and plans would achieve.

CARB's assessment is based on data in the 2017 Scoping Plan Update and 2016 Mobile Source Strategy. In those documents, CARB previously examined the relationship between VMT and the state's GHG emissions reduction targets. The Scoping Plan finds:

> "While the State can do more to accelerate and incentivize these local decisions, local actions that reduce VMT are also necessary to meet transportation sector-specific goals and achieve the 2030 target under SB 32. Through developing the Scoping Plan, CARB staff is more convinced than ever that, in addition to achieving GHG reductions from cleaner fuels and vehicles, California must also reduce VMT. Stronger SB 375 GHG reduction targets will enable the State to make significant progress toward needed reductions, but alone will not provide the VMT growth reductions needed; there is a gap between what SB 375 can provide and what is needed to meet the State's 2030 and 2050 goals."[16]

Note that, at present, consistency with RTP/SCSs does not necessarily lead to a less-than-significant VMT impact.[17] As the Final 2017 Scoping Plan Update states,

> VMT reductions are necessary to achieve the 2030 target and must be part of any strategy evaluated in this Plan. Stronger SB 375 GHG reduction targets will enable the State to make significant progress toward this goal, but alone will not provide all of the VMT growth reductions that will be needed. There is a gap between what SB 375 can provide and what is needed to meet the State's 2030 and 2050 goals."[18]

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[15] California Air Resources Board (Jan. 2019) *California Air Resources Board 2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals*, available at https://ww2.arb.ca.gov/resources/documents/carb-2017-scoping-plan-identified-vmt-reductions-and-relationship-state-climate.

[16] California Air Resources Board (Nov. 2017) *California's 2017 Climate Change Scoping Plan*, p. 101.

[17] California Air Resources Board (Feb. 2018) *Updated Final Staff Report: Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets*, Figure 3, p. 35, available at https://www.arb.ca.gov/cc/sb375/sb375_target_update_final_staff_report_feb2018.pdf.

[18] California Air Resources Board (Nov. 2017) *California's 2017 Climate Change Scoping Plan*, p. 75.

Also, in order to capture the full effects of induced travel resulting from roadway capacity projects, an RTP/SCS would need to include an assessment of land use effects of those projects, and the effects of those land uses on VMT. (See section titled "*Estimating VMT Impacts from Transportation Projects"* below.) RTP/SCSs typically model VMT using a collaboratively-developed land use "vision" for the region's land use, rather than studying the effects on land use of the proposed transportation investments.

In summary, achieving 15 percent lower per capita (residential) or per employee (office) VMT than existing development is both generally achievable and is supported by evidence that connects this level of reduction to the State's emissions goals.

## 1. Screening Thresholds for Land Use Projects

Many agencies use "screening thresholds" to quickly identify when a project should be expected to cause a less-than-significant impact without conducting a detailed study. (See e.g., CEQA Guidelines, §§ 15063(c)(3)(C), 15128, and Appendix G.) As explained below, this technical advisory suggests that lead agencies may screen out VMT impacts using project size, maps, transit availability, and provision of affordable housing.

*Screening Threshold for Small Projects*

Many local agencies have developed screening thresholds to indicate when detailed analysis is needed. Absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with a Sustainable Communities Strategy (SCS) or general plan, projects that generate or attract fewer than 110 trips per day[19] generally may be assumed to cause a less-than-significant transportation impact.

*Map-Based Screening for Residential and Office Projects*

Residential and office projects that locate in areas with low VMT, and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT. Maps created with VMT data, for example from a travel survey or a travel demand model, can illustrate areas that are

[19] CEQA provides a categorical exemption for existing facilities, including additions to existing structures of up to 10,000 square feet, so long as the project is in an area where public infrastructure is available to allow for maximum planned development and the project is not in an environmentally sensitive area. (CEQA Guidelines, § 15301, subd. (e)(2).) Typical project types for which trip generation increases relatively linearly with building footprint (i.e., general office building, single tenant office building, office park, and business park) generate or attract an additional 110-124 trips per 10,000 square feet. Therefore, absent substantial evidence otherwise, it is reasonable to conclude that the addition of 110 or fewer trips could be considered not to lead to a significant impact.

currently below threshold VMT (see recommendations below). Because new development in such locations would likely result in a similar level of VMT, such maps can be used to screen out residential and office projects from needing to prepare a detailed VMT analysis.

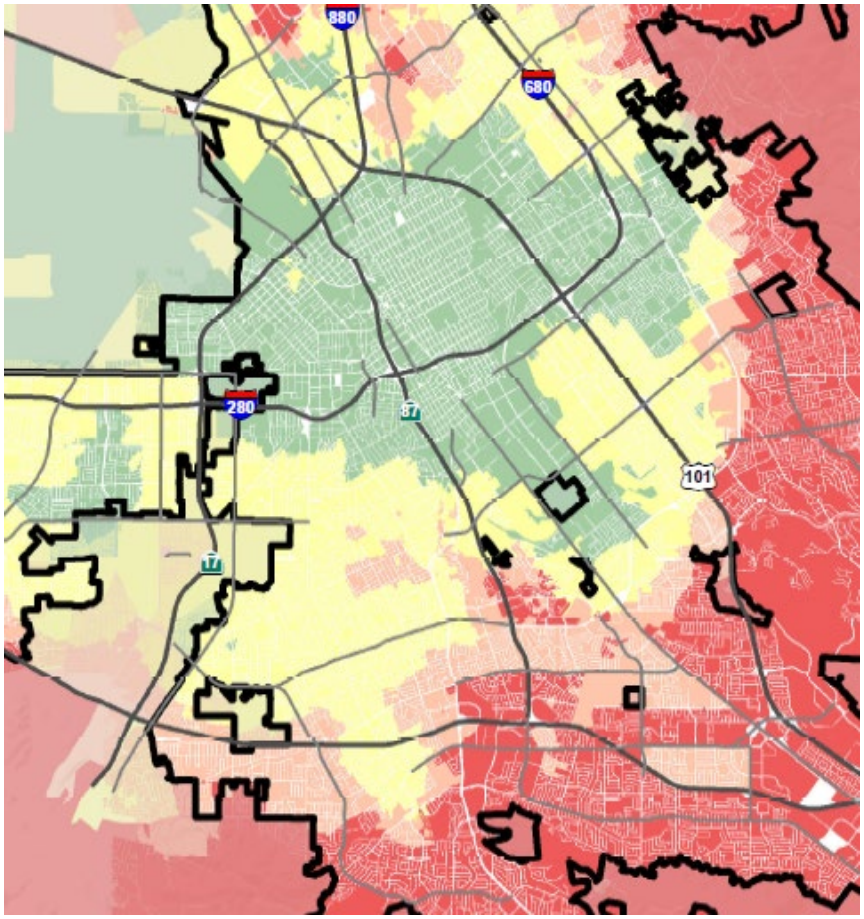



**Figure 2.** Example map of household VMT that could be used to delineate areas eligible to receive streamlining for VMT analysis. (Source: City of San José, Department of Transportation, draft output of City Transportation Model.)

*Presumption of Less Than Significant Impact Near Transit Stations*

Proposed CEQA Guideline Section 15064.3, subdivision (b)(1), states that lead agencies generally should presume that certain projects (including residential, retail, and office projects, as well as projects that are a mix of these uses) proposed within ½ mile of an existing major transit stop[20] or an existing stop

[20] Pub. Resources Code, § 21064.3 ("'Major transit stop' means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.").

along a high quality transit corridor[21] will have a less-than-significant impact on VMT. This presumption would not apply, however, if project-specific or location-specific information indicates that the project will still generate significant levels of VMT. For example, the presumption might not be appropriate if the project:

- Has a Floor Area Ratio (FAR) of less than 0.75
- Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking)
- Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization)
- Replaces affordable residential units with a smaller number of moderate- or high-income residential units

A project or plan near transit which replaces affordable residential units[22] with a smaller number of moderate- or high-income residential units may increase overall VMT because the increase in VMT of displaced residents could overwhelm the improvements in travel efficiency enjoyed by new residents.[23]

If any of these exceptions to the presumption might apply, the lead agency should conduct a detailed VMT analysis to determine whether the project would exceed VMT thresholds (see below).

*Presumption of Less Than Significant Impact for Affordable Residential Development*

Adding affordable housing to infill locations generally improves jobs-housing match, in turn shortening commutes and reducing VMT.[24,25] Further, "… low-wage workers in particular would be more likely to choose a residential location close to their workplace, if one is available."[26] In areas where existing jobs-housing match is closer to optimal, low income housing nevertheless generates less VMT than market-

[21] Pub. Resources Code, § 21155 ("For purposes of this section, a high-quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.").
[22] Including naturally-occurring affordable residential units.
[23] Chapple et al. (2017) *Developing a New Methodology for Analyzing Potential Displacement,* Chapter 4, pp. 159-160, available at https://www.arb.ca.gov/research/apr/past/13-310.pdf.
[24] Karner and Benner (2016) *The convergence of social equity and environmental sustainability: Jobs-housing fit and commute distance* ("[P]olicies that advance a more equitable distribution of jobs and housing by linking the affordability of locally available housing with local wage levels are likely to be associated with reduced commuting distances").
[25] Karner and Benner (2015) *Low-wage jobs-housing fit: identifying locations of affordable housing shortages.*
[26] Karner and Benner (2015) *Low-wage jobs-housing fit: identifying locations of affordable housing shortages.*

rate housing.[27,28] Therefore, a project consisting of a high percentage of affordable housing may be a basis for the lead agency to find a less-than-significant impact on VMT. Evidence supports a presumption of less than significant impact for a 100 percent affordable residential development (or the residential component of a mixed-use development) in infill locations. Lead agencies may develop their own presumption of less than significant impact for residential projects (or residential portions of mixed use projects) containing a particular amount of affordable housing, based on local circumstances and evidence. Furthermore, a project which includes any affordable residential units may factor the effect of the affordability on VMT into the assessment of VMT generated by those units.

### 2. Recommended Numeric Thresholds for Residential, Office, and Retail Projects

**Recommended threshold for residential projects**: A proposed project exceeding a level of 15 percent below existing VMT per capita may indicate a significant transportation impact. Existing VMT per capita may be measured as regional VMT per capita or as city VMT per capita. Proposed development referencing a threshold based on city VMT per capita (rather than regional VMT per capita) should not cumulatively exceed the number of units specified in the SCS for that city, and should be consistent with the SCS.

Residential development that would generate vehicle travel that is 15 or more percent below the existing residential VMT per capita, measured against the region or city, may indicate a less-than-significant transportation impact. In MPO areas, development measured against city VMT per capita (rather than regional VMT per capita) should not cumulatively exceed the population or number of units specified in the SCS for that city because greater-than-planned amounts of development in areas above the region-based threshold would undermine the VMT containment needed to achieve regional targets under SB 375.

For residential projects in unincorporated county areas, the local agency can compare a residential project's VMT to (1) the region's VMT per capita, or (2) the aggregate population-weighted VMT per capita of all cities in the region. In MPO areas, development in unincorporated areas measured against aggregate city VMT per capita (rather than regional VMT per capita) should not cumulatively exceed the population or number of units specified in the SCS for that city because greater-than-planned amounts of development in areas above the regional threshold would undermine achievement of regional targets under SB 375.

[27] Chapple et al. (2017) *Developing a New Methodology for Analyzing Potential Displacement*, available at https://www.arb.ca.gov/research/apr/past/13-310.pdf.
[28] CAPCOA (2010) *Quantifying Greenhouse Gas Mitigation Measures*, pp. 176-178, available at http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf.

These thresholds can be applied to either household (i.e., tour-based) VMT or home-based (i.e., trip-based) VMT assessments.[29] It is critical, however, that the agency be consistent in its VMT measurement approach throughout the analysis to maintain an "apples-to-apples" comparison. For example, if the agency uses a home-based VMT for the threshold, it should also be use home-based VMT for calculating project VMT and VMT reduction due to mitigation measures.

**Recommended threshold for office projects:** A proposed project exceeding a level of 15 percent below existing regional VMT per employee may indicate a significant transportation impact.

Office projects that would generate vehicle travel exceeding 15 percent below existing VMT per employee for the region may indicate a significant transportation impact. In cases where the region is substantially larger than the geography over which most workers would be expected to live, it might be appropriate to refer to a smaller geography, such as the county, that includes the area over which nearly all workers would be expected to live.

Office VMT screening maps can be developed using tour-based data, considering either total employee VMT or employee work tour VMT. Similarly, tour-based analysis of office project VMT could consider either total employee VMT or employee work tour VMT. Where tour-based information is unavailable for threshold determination, project assessment, or assessment of mitigation, home-based work trip VMT should be used throughout all steps of the analysis to maintain an "apples-to-apples" comparison.

**Recommended threshold for retail projects:** A net increase in total VMT may indicate a significant transportation impact.

Because new retail development typically redistributes shopping trips rather than creating new trips,[30] estimating the total change in VMT (i.e., the difference in total VMT in the area affected with and without the project) is the best way to analyze a retail project's transportation impacts.

By adding retail opportunities into the urban fabric and thereby improving retail destination proximity, local-serving retail development tends to shorten trips and reduce VMT. Thus, lead agencies generally may presume such development creates a less-than-significant transportation impact. Regional-serving retail development, on the other hand, which can lead to substitution of longer trips for shorter ones, may tend to have a significant impact. Where such development decreases VMT, lead agencies should consider the impact to be less-than-significant.

Many cities and counties define local-serving and regional-serving retail in their zoning codes. Lead agencies may refer to those local definitions when available, but should also consider any project-

[29] See Appendix 1 for a description of these approaches.
[30] Lovejoy, et al. (2013) *Measuring the impacts of local land-use policies on vehicle miles of travel: The case of the first big-box store in Davis, California, The Journal of Transport and Land Use*.

specific information, such as market studies or economic impacts analyses that might bear on customers' travel behavior. Because lead agencies will best understand their own communities and the likely travel behaviors of future project users, they are likely in the best position to decide when a project will likely be local-serving. Generally, however, retail development including stores larger than 50,000 square feet might be considered regional-serving, and so lead agencies should undertake an analysis to determine whether the project might increase or decrease VMT.

***Mixed-Use Projects***

Lead agencies can evaluate each component of a mixed-use project independently and apply the significance threshold for each project type included (e.g., residential and retail). Alternatively, a lead agency may consider only the project's dominant use. In the analysis of each use, a project should take credit for internal capture. Combining different land uses and applying one threshold to those land uses may result in an inaccurate impact assessment.

***Other Project Types***

Of land use projects, residential, office, and retail projects tend to have the greatest influence on VMT. For that reason, OPR recommends the quantified thresholds described above for purposes of analysis and mitigation. Lead agencies, using more location-specific information, may develop their own more specific thresholds, which may include other land use types. In developing thresholds for other project types, or thresholds different from those recommended here, lead agencies should consider the purposes described in section 21099 of the Public Resources Code and regulations in the CEQA Guidelines on the development of thresholds of significance (e.g., CEQA Guidelines, § 15064.7).

Strategies and projects that decrease local VMT but increase total VMT should be avoided. Agencies should consider whether their actions encourage development in a less travel-efficient location by limiting development in travel-efficient locations.

***Redevelopment Projects***

Where a project replaces existing VMT-generating land uses, if the replacement leads to a net overall decrease in VMT, the project would lead to a less-than-significant transportation impact. If the project leads to a net overall increase in VMT, then the thresholds described above should apply.

As described above, a project or plan near transit which replaces affordable[31] residential units with a smaller number of moderate- or high-income residential units may increase overall VMT, because

[31] Including naturally-occurring affordable residential units.

displaced residents' VMT may increase.[32] A lead agency should analyze VMT for such a project even if it otherwise would have been presumed less than significant. The assessment should incorporate an estimate of the aggregate VMT increase experienced by displaced residents. That additional VMT should be included in the numerator of the VMT per capita assessed for the project.

If a residential or office project leads to a net increase in VMT, then the project's VMT per capita (residential) or per employee (office) should be compared to thresholds recommended above. Per capita and per employee VMT are efficiency metrics, and, as such, apply only to the existing project without regard to the VMT generated by the previously existing land use.

If the project leads to a net increase in provision of locally-serving retail, transportation impacts from the retail portion of the development should be presumed to be less than significant. If the project consists of regionally-serving retail, and increases overall VMT compared to with existing uses, then the project would lead to a significant transportation impact.

***RTP/SCS Consistency (All Land Use Projects)***

Section 15125, subdivision (d), of the CEQA Guidelines provides that lead agencies should analyze impacts resulting from inconsistencies with regional plans, including regional transportation plans. For this reason, if a project is inconsistent with the Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS), the lead agency should evaluate whether that inconsistency indicates a significant impact on transportation. For example, a development may be inconsistent with an RTP/SCS if the development is outside the footprint of development or within an area specified as open space as shown in the SCS.

## 3. Recommendations Regarding Land Use Plans

As with projects, agencies should analyze VMT outcomes of land use plans across the full area over which the plan may substantively affect travel patterns, including beyond the boundary of the plan or jurisdiction's geography. And as with projects, VMT should be counted in full rather than split between origin and destination. (Emissions inventories have sometimes spit cross-boundary trips in order to sum to a regional total, but CEQA requires accounting for the full impact without truncation or discounting). Analysis of specific plans may employ the same thresholds described above for projects. A general plan, area plan, or community plan may have a significant impact on transportation if proposed new residential, office, or retail land uses would in aggregate exceed the respective thresholds recommended above. Where the lead agency tiers from a general plan EIR pursuant to CEQA Guidelines sections 15152 and 15166, the lead agency generally focuses on the environmental impacts that are specific to the later project and were not analyzed as significant impacts in the prior EIR. (Pub. Resources Code, § 21068.5; Guidelines, § 15152, subd. (a).) Thus, in analyzing the later project, the lead agency

[32] Chapple et al. (2017) *Developing a New Methodology for Analyzing Potential Displacement,* Chapter 4, pp. 159-160, available at https://www.arb.ca.gov/research/apr/past/13-310.pdf.

would focus on the VMT impacts that were not adequately addressed in the prior EIR. In the tiered document, the lead agency should continue to apply the thresholds recommended above.

Thresholds for plans in non-MPO areas may be determined on a case-by-case basis.

### 4. Other Considerations

***Rural Projects Outside of MPOs***

In rural areas of non-MPO counties (i.e., areas not near established or incorporated cities or towns), fewer options may be available for reducing VMT, and significance thresholds may be best determined on a case-by-case basis. Note, however, that clustered small towns and small town main streets may have substantial VMT benefits compared to isolated rural development, similar to the transit oriented development described above.

***Impacts to Transit***

Because criteria for determining the significance of transportation impacts must promote "the development of multimodal transportation networks" pursuant to Public Resources Code section 21099, subd. (b)(1), lead agencies should consider project impacts to transit systems and bicycle and pedestrian networks. For example, a project that blocks access to a transit stop or blocks a transit route itself may interfere with transit functions. Lead agencies should consult with transit agencies as early as possible in the development process, particularly for projects that are located within one half mile of transit stops.

When evaluating impacts to multimodal transportation networks, lead agencies generally should not treat the addition of new transit users as an adverse impact. An infill development may add riders to transit systems and the additional boarding and alighting may slow transit vehicles, but it also adds destinations, improving proximity and accessibility. Such development also improves regional vehicle flow by adding less vehicle travel onto the regional network.

Increased demand throughout a region may, however, cause a cumulative impact by requiring new or additional transit infrastructure. Such impacts may be adequately addressed through a fee program that fairly allocates the cost of improvements not just to projects that happen to locate near transit, but rather across a region to all projects that impose burdens on the entire transportation system, since transit can broadly improve the function of the transportation system.

## F. Considering the Effects of Transportation Projects on Vehicle Travel

Many transportation projects change travel patterns. A transportation project which leads to additional vehicle travel on the roadway network, commonly referred to as "induced vehicle travel," would need to quantify the amount of additional vehicle travel in order to assess air quality impacts, greenhouse gas emissions impacts, energy impacts, and noise impacts. Transportation projects also are required to

examine induced growth impacts under CEQA. (See generally, Pub. Resources Code, §§ 21065 [defining "project" under CEQA as an activity as causing either a direct or reasonably foreseeable indirect physical change], 21065.3 [defining "project-specific effect" to mean all direct or indirect environmental effects], 21100, subd. (b) [required contents of an EIR].) For any project that increases vehicle travel, explicit assessment and quantitative reporting of the amount of additional vehicle travel should not be omitted from the document; such information may be useful and necessary for a full understanding of a project's environmental impacts. (See Pub. Resources Code, §§ 21000, 21001, 21001.1, 21002, 21002.1 [discussing the policies of CEQA].) A lead agency that uses the VMT metric to assess the transportation impacts of a transportation project may simply report that change in VMT as the impact. When the lead agency uses another metric to analyze the transportation impacts of a roadway project, changes in amount of vehicle travel added to the roadway network should still be analyzed and reported.[33]

While CEQA does not require perfection, it is important to make a reasonably accurate estimate of transportation projects' effects on vehicle travel in order to make reasonably accurate estimates of GHG emissions, air quality emissions, energy impacts, and noise impacts. (See, e.g., *California Clean Energy Com. v. City of Woodland* (2014) 225 Cal.App.4th 173, 210 [EIR failed to consider project's transportation energy impacts]; *Ukiah Citizens for Safety First v. City of Ukiah* (2016) 248 Cal.App.4th 256, 266.) Appendix 2 describes in detail the causes of induced vehicle travel, the robust empirical evidence of induced vehicle travel, and how models and research can be used in conjunction to quantitatively assess induced vehicle travel with reasonable accuracy.

If a project would likely lead to a measurable and substantial increase in vehicle travel, the lead agency should conduct an analysis assessing the amount of vehicle travel the project will induce. Project types that would likely lead to a measurable and substantial increase in vehicle travel generally include:

- Addition of through lanes on existing or new highways, including general purpose lanes, HOV lanes, peak period lanes, auxiliary lanes, or lanes through grade-separated interchanges

Projects that would not likely lead to a substantial or measurable increase in vehicle travel, and therefore generally should not require an induced travel analysis, include:

- Rehabilitation, maintenance, replacement, safety, and repair projects designed to improve the condition of existing transportation assets (e.g., highways; roadways; bridges; culverts; Transportation Management System field elements such as cameras, message signs, detection, or signals; tunnels; transit systems; and assets that serve bicycle and pedestrian facilities) and that do not add additional motor vehicle capacity
- Roadside safety devices or hardware installation such as median barriers and guardrails

[33] See, e.g., California Department of Transportation (2006) *Guidance for Preparers of Growth-related, Indirect Impact Analyses*, available at http://www.dot.ca.gov/ser/Growth-related_IndirectImpactAnalysis/GRI_guidance06May_files/gri_guidance.pdf.

- Roadway shoulder enhancements to provide “breakdown space,” dedicated space for use only by transit vehicles, to provide bicycle access, or to otherwise improve safety, but which will not be used as automobile vehicle travel lanes
- Addition of an auxiliary lane of less than one mile in length designed to improve roadway safety
- Installation, removal, or reconfiguration of traffic lanes that are not for through traffic, such as left, right, and U-turn pockets, two-way left turn lanes, or emergency breakdown lanes that are not utilized as through lanes
- Addition of roadway capacity on local or collector streets provided the project also substantially improves conditions for pedestrians, cyclists, and, if applicable, transit
- Conversion of existing general purpose lanes (including ramps) to managed lanes or transit lanes, or changing lane management in a manner that would not substantially increase vehicle travel
- Addition of a new lane that is permanently restricted to use only by transit vehicles
- Reduction in number of through lanes
- Grade separation to separate vehicles from rail, transit, pedestrians or bicycles, or to replace a lane in order to separate preferential vehicles (e.g., HOV, HOT, or trucks) from general vehicles
- Installation, removal, or reconfiguration of traffic control devices, including Transit Signal Priority (TSP) features
- Installation of traffic metering systems, detection systems, cameras, changeable message signs and other electronics designed to optimize vehicle, bicycle, or pedestrian flow
- Timing of signals to optimize vehicle, bicycle, or pedestrian flow
- Installation of roundabouts or traffic circles
- Installation or reconfiguration of traffic calming devices
- Adoption of or increase in tolls
- Addition of tolled lanes, where tolls are sufficient to mitigate VMT increase
- Initiation of new transit service
- Conversion of streets from one-way to two-way operation with no net increase in number of traffic lanes
- Removal or relocation of off-street or on-street parking spaces
- Adoption or modification of on-street parking or loading restrictions (including meters, time limits, accessible spaces, and preferential/reserved parking permit programs)
- Addition of traffic wayfinding signage
- Rehabilitation and maintenance projects that do not add motor vehicle capacity
- Addition of new or enhanced bike or pedestrian facilities on existing streets/highways or within existing public rights-of-way
- Addition of Class I bike paths, trails, multi-use paths, or other off-road facilities that serve non-motorized travel
- Installation of publicly available alternative fuel/charging infrastructure
- Addition of passing lanes, truck climbing lanes, or truck brake-check lanes in rural areas that do not increase overall vehicle capacity along the corridor

### 1. Recommended Significance Threshold for Transportation Projects

As noted in Section 15064.3 of the CEQA Guidelines, lead agencies for roadway capacity projects have discretion, consistent with CEQA and planning requirements, to choose which metric to use to evaluate transportation impacts. This section recommends considerations for evaluating impacts using vehicle miles traveled. Lead agencies have discretion to choose a threshold of significance for transportation projects as they do for other types of projects. As explained above, Public Resources Code section 21099, subdivision (b)(1), provides that criteria for determining the significance of transportation impacts must promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses. (*Id.*; see generally, adopted CEQA Guidelines, § 15064.3, subd. (b) [Criteria for Analyzing Transportation Impacts].) With those goals in mind, OPR prepared and the Agency adopted an appropriate transportation metric.

Whether adopting a threshold of significance, or evaluating transportation impacts on a case-by-case basis, a lead agency should ensure that the analysis addresses:

- Direct, indirect and cumulative effects of the transportation project (CEQA Guidelines, § 15064, subds. (d), (h))
- Near-term and long-term effects of the transportation project (CEQA Guidelines, §§ 15063, subd. (a)(1), 15126.2, subd. (a))
- The transportation project's consistency with state greenhouse gas reduction goals (Pub. Resources Code, § 21099)[34]
- The impact of the transportation project on the development of multimodal transportation networks (Pub. Resources Code, § 21099)
- The impact of the transportation project on the development of a diversity of land uses (Pub. Resources Code, § 21099)

The CARB Scoping Plan and the CARB Mobile Source Strategy delineate VMT levels required to achieve legally mandated GHG emissions reduction targets. A lead agency should develop a project-level threshold based on those VMT levels, and may apply the following approach:

1. Propose a fair-share allocation of those budgets to their jurisdiction (e.g., by population);

[34] The California Air Resources Board has ascertained the limits of VMT growth compatible with California containing greenhouse gas emissions to levels research shows would allow for climate stabilization. (See *The 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target* (p. 78, p. 101); *Mobile Source Strategy* (p. 37).) CARB's *Updated Final Staff Report on Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets* illustrates that the current Regional Transportation Plans and Sustainable Communities Strategies will fall short of achieving the necessary on-road transportation-related GHG emissions reductions called for in the 2017 Scoping Plan (Figure 3, p. 35). Accordingly, OPR recommends not basing GHG emissions or transportation impact analysis for a transportation project solely on consistency with an RTP/SCS.

2. Determine the amount of VMT growth likely to result from background population growth, and subtract that from their "budget";
3. Allocate their jurisdiction's share between their various VMT-increasing transportation projects, using whatever criteria the lead agency prefers.

## 2. Estimating VMT Impacts from Transportation Projects

CEQA requires analysis of a project's potential growth-inducing impacts. (Pub. Resources Code, § 21100, subd. (b)(5); CEQA Guidelines, § 15126.2, subd. (d).) Many agencies are familiar with the analysis of growth inducing impacts associated with water, sewer, and other infrastructure. This technical advisory addresses growth that may be expected from roadway expansion projects.

Because a roadway expansion project can induce substantial VMT, incorporating quantitative estimates of induced VMT is critical to calculating both transportation and other impacts of these projects. Induced travel also has the potential to reduce or eliminate congestion relief benefits. An accurate estimate of induced travel is needed to accurately weigh costs and benefits of a highway capacity expansion project.

The effect of a transportation project on vehicle travel should be estimated using the "change in total VMT" method described in *Appendix 1*. This means that an assessment of total VMT without the project and an assessment with the project should be made; the difference between the two is the amount of VMT attributable to the project. The assessment should cover the full area in which driving patterns are expected to change. As with other types of projects, the VMT estimation should not be truncated at a modeling or jurisdictional boundary for convenience of analysis when travel behavior is substantially affected beyond that boundary.

***Transit and Active Transportation Projects***

Transit and active transportation projects generally reduce VMT and therefore are presumed to cause a less-than-significant impact on transportation. This presumption may apply to all passenger rail projects, bus and bus rapid transit projects, and bicycle and pedestrian infrastructure projects. Streamlining transit and active transportation projects aligns with each of the three statutory goals contained in SB 743 by reducing GHG emissions, increasing multimodal transportation networks, and facilitating mixed use development.

***Roadway Projects***

Reducing roadway capacity (for example, by removing or repurposing motor vehicle travel lanes) will generally reduce VMT and therefore is presumed to cause a less-than-significant impact on transportation. Generally, no transportation analysis is needed for such projects.

Building new roadways, adding roadway capacity in congested areas, or adding roadway capacity to areas where congestion is expected in the future, typically induces additional vehicle travel. For the types of projects previously indicated as likely to lead to additional vehicle travel, an estimate should be made of the change in vehicle travel resulting from the project.

For projects that increase roadway capacity, lead agencies can evaluate induced travel quantitatively by applying the results of existing studies that examine the magnitude of the increase of VMT resulting from a given increase in lane miles. These studies estimate the percent change in VMT for every percent change in miles to the roadway system (i.e., "elasticity").[35] Given that lead agencies have discretion in choosing their methodology, and the studies on induced travel reveal a range of elasticities, lead agencies may appropriately apply professional judgment in studying the transportation effects of a particular project. The most recent major study, estimates an elasticity of 1.0, meaning that every percent change in lane miles results in a one percent increase in VMT.[36]

**To estimate VMT impacts from roadway expansion projects:**

1. Determine the total lane-miles over an area that fully captures travel behavior changes resulting from the project (generally the region, but for projects affecting interregional travel look at all affected regions).
2. Determine the percent change in total lane miles that will result from the project.
3. Determine the total existing VMT over that same area.
4. Multiply the percent increase in lane miles by the existing VMT, and then multiply that by the elasticity from the induced travel literature:

**[% increase in lane miles] x [existing VMT] x [elasticity] = [VMT resulting from the project]**

A National Center for Sustainable Transportation tool can be used to apply this method: https://ncst.ucdavis.edu/research/tools

This method would not be suitable for rural (non-MPO) locations in the state which are neither congested nor projected to become congested. It also may not be suitable for a new road that provides new connectivity across a barrier (e.g., a bridge across a river) if it would be expected to substantially

[35] See U.C. Davis, Institute for Transportation Studies (Oct. 2015) *Increasing Highway Capacity Unlikely to Relieve Traffic Congestion*; Boarnet and Handy (Sept. 2014) *Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Greenhouse Gas Emissions*, California Air Resources Board Policy Brief, available at https://www.arb.ca.gov/cc/sb375/policies/hwycapacity/highway_capacity_brief.pdf.
[36] See Duranton and Turner (2011) *The Fundamental Law of Road Congestion: Evidence from US cities*, available at http://www.nber.org/papers/w15376.

shorten existing trips. If it is likely to be substantial, the trips-shortening effect should be examined explicitly.

The effects of roadway capacity on vehicle travel can also be applied at a programmatic level. For example, in a regional planning process the lead agency can use that program-level analysis to streamline later project-level analysis. (See CEQA Guidelines, § 15168.) A program-level analysis of VMT should include effects of the program on land use patterns, and the VMT that results from those land use effects. In order for a program-level document to adequately analyze potential induced demand from a project or program of roadway capacity expansion, lead agencies cannot assume a fixed land use pattern (i.e., a land use pattern that does not vary in response to the provision of roadway capacity). A proper analysis should account for land use investment and development pattern changes that react in a reasonable manner to changes in accessibility created by transportation infrastructure investments (whether at the project or program level).

***Mitigation and Alternatives***

Induced VMT has the potential to reduce or eliminate congestion relief benefits, increase VMT, and increase other environmental impacts that result from vehicle travel.[37] If those effects are significant, the lead agency will need to consider mitigation or alternatives. In the context of increased travel that is induced by capacity increases, appropriate mitigation and alternatives that a lead agency might consider include the following:

- Tolling new lanes to encourage carpools and fund transit improvements
- Converting existing general purpose lanes to HOV or HOT lanes
- Implementing or funding off-site travel demand management
- Implementing Intelligent Transportation Systems (ITS) strategies to improve passenger throughput on existing lanes

Tolling and other management strategies can have the additional benefit of preventing congestion and maintaining free-flow conditions, conferring substantial benefits to road users as discussed above.

## G. Analyzing Other Impacts Related to Transportation

While requiring a change in the methodology of assessing transportation impacts, Public Resources Code section 21099 notes that this change "does not relieve a public agency of the requirement to analyze a project's potentially significant transportation impacts related to air quality, noise, safety, or any other impact associated with transportation." OPR expects that lead agencies will continue to

[37] See National Center for Sustainable Transportation (Oct. 2015) *Increasing Highway Capacity Unlikely to Relieve Traffic Congestion*, available at http://www.dot.ca.gov/newtech/researchreports/reports/2015/10-12-2015-NCST_Brief_InducedTravel_CS6_v3.pdf; see Duranton and Turner (2011) *The Fundamental Law of Road Congestion: Evidence from US cities*, available at http://www.nber.org/papers/w15376.

address mobile source emissions in the air quality and noise sections of an environmental document and the corresponding studies that support the analysis in those sections. Lead agencies should continue to address environmental impacts of a proposed project pursuant to CEQA's requirements, using a format that is appropriate for their particular project.

Because safety concerns result from many different factors, they are best addressed at a programmatic level (i.e., in a general plan or regional transportation plan) in cooperation with local governments, metropolitan planning organizations, and, where the state highway system is involved, the California Department of Transportation. In most cases, such an analysis would not be appropriate on a project-by-project basis. Increases in traffic volumes at a particular location resulting from a project typically cannot be estimated with sufficient accuracy or precision to provide useful information for an analysis of safety concerns. Moreover, an array of factors affect travel demand (e.g., strength of the local economy, price of gasoline), causing substantial additional uncertainty. Appendix B of OPR's General Plan Guidelines summarizes research which could be used to guide a programmatic analysis under CEQA. Lead agencies should note that automobile congestion or delay does not constitute a significant environmental impact (Pub. Resources Code, §21099(b)(2)), and safety should not be used as a proxy for road capacity.

## H. VMT Mitigation and Alternatives

When a lead agency identifies a significant impact, it must identify feasible mitigation measures that could avoid or substantially reduce that impact. (Pub. Resources Code, § 21002.1, subd. (a).) Additionally, CEQA requires that an environmental impact report identify feasible alternatives that could avoid or substantially reduce a project's significant environmental impacts.

Indeed, the California Court of Appeal recently held that a long-term regional transportation plan was deficient for failing to discuss an alternative which could significantly reduce total vehicle miles traveled. In *Cleveland National Forest Foundation v. San Diego Association of Governments, et al.* (2017) 17 Cal.App.5th 413, the court found that omission "inexplicable" given the lead agency's "acknowledgment in its Climate Action Strategy that the state's efforts to reduce greenhouse gas emissions from on-road transportation will not succeed if the amount of driving, or vehicle miles traveled, is not significantly reduced." (*Cleveland National Forest Foundation*, *supra*, 17 Cal.App.5th at p. 436.) Additionally, the court noted that the project alternatives focused primarily on congestion relief even though "the [regional] transportation plan is a long-term and congestion relief is not necessarily an effective long-term strategy." (*Id.* at p. 437.) The court concluded its discussion of the alternatives analysis by stating: "Given the acknowledged long-term drawbacks of congestion relief alternatives, there is not substantial evidence to support the EIR's exclusion of an alternative focused primarily on significantly reducing vehicle trips." (*Ibid*.)

Several examples of potential mitigation measures and alternatives to reduce VMT are described below. However, the selection of particular mitigation measures and alternatives are left to the discretion of

the lead agency, and mitigation measures may vary, depending on the proposed project and significant impacts, if any. Further, OPR expects that agencies will continue to innovate and find new ways to reduce vehicular travel.

Potential measures to reduce vehicle miles traveled include, but are not limited to:

- Improve or increase access to transit.
- Increase access to common goods and services, such as groceries, schools, and daycare.
- Incorporate affordable housing into the project.
- Incorporate neighborhood electric vehicle network.
- Orient the project toward transit, bicycle and pedestrian facilities.
- Improve pedestrian or bicycle networks, or transit service.
- Provide traffic calming.
- Provide bicycle parking.
- Limit or eliminate parking supply.
- Unbundle parking costs.
- Provide parking cash-out programs.
- Implement roadway pricing.
- Implement or provide access to a commute reduction program.
- Provide car-sharing, bike sharing, and ride-sharing programs.
- Provide transit passes.
- Shifting single occupancy vehicle trips to carpooling or vanpooling, for example providing ride-matching services.
- Providing telework options.
- Providing incentives or subsidies that increase the use of modes other than single-occupancy vehicle.
- Providing on-site amenities at places of work, such as priority parking for carpools and vanpools, secure bike parking, and showers and locker rooms.
- Providing employee transportation coordinators at employment sites.
- Providing a guaranteed ride home service to users of non-auto modes.

Notably, because VMT is largely a regional impact, regional VMT-reduction programs may be an appropriate form of mitigation. In lieu fees have been found to be valid mitigation where there is both a commitment to pay fees and evidence that mitigation will actually occur. (*Save Our Peninsula Committee v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 140-141; *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359; *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 727–728.) Fee programs are particularly useful to address cumulative impacts. (CEQA Guidelines, § 15130, subd. (a)(3) [a "project's incremental contribution is less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact"].) The mitigation program must undergo CEQA evaluation, either on the program as a whole, or the in-lieu fees or other mitigation must be evaluated

on a project-specific basis. (*California Native Plant Society v. County of El Dorado* (2009) 170 Cal.App.4th 1026.) That CEQA evaluation could be part of a larger program, such as a regional transportation plan, analyzed in a Program EIR. (CEQA Guidelines, § 15168.)

Examples of project alternatives that may reduce vehicle miles traveled include, but are not limited to:

- Locate the project in an area of the region that already exhibits low VMT.
- Locate the project near transit.
- Increase project density.
- Increase the mix of uses within the project or within the project's surroundings.
- Increase connectivity and/or intersection density on the project site.
- Deploy management strategies (e.g., pricing, vehicle occupancy requirements) on roadways or roadway lanes.

## Appendix 1. Considerations About Which VMT to Count

Consistent with the obligation to make a good faith effort to disclose the environmental consequences of a project, lead agencies have discretion to choose the most appropriate methodology to evaluate project impacts.[38] A lead agency can evaluate a project's effect on VMT in numerous ways. The purpose of this document is to provide technical considerations in determining which methodology may be most useful for various project types.

**Background on Estimating Vehicle Miles Traveled**

Before discussing specific methodological recommendations, this section provides a brief overview of modeling and counting VMT, including some key terminology.

Here is an illustrative example of some methods of estimating vehicle miles traveled. Consider the following hypothetical travel day (all by automobile):

1. Residence to Coffee Shop
2. Coffee Shop to Work
3. Work to Sandwich Shop
4. Sandwich Shop to Work
5. Work to Residence
6. Residence to Store
7. Store to Residence

*Trip-based* assessment of a project's effect on travel behavior counts VMT from individual trips to and from the project. It is the most basic, and traditionally the most common, method of counting VMT. A trip-based VMT assessment of the residence in the above example would consider segments 1, 5, 6 and 7. For residential projects, the sum of home-based trips is called *home-based* VMT.

A *tour-based* assessment counts the entire home-back-to-home tour that includes the project. A tour-based VMT assessment of the residence in the above example would consider segments 1, 2, 3, 4, and 5 in one tour, and 6 and 7 in a second tour. A tour-based assessment of the workplace would include segments 1, 2, 3, 4, and 5. Together, all tours comprise *household* VMT.

[38] The California Supreme Court has explained that when an agency has prepared an environmental impact report:

> [T]he issue is not whether the [lead agency's] studies are irrefutable or whether they could have been better. The relevant issue is only whether the studies are sufficiently credible to be considered as part of the total evidence that supports the [lead agency's] finding[.]

(*Laurel Heights Improvement Assn. v. Regents of the University of California* (1988) 47 Cal.3d 376, 409; see also *Eureka Citizens for Responsible Gov't v. City of Eureka* (2007) 147 Cal.App.4th 357, 372.)

Both trip- and tour-based assessments can be used as measures of transportation efficiency, using denominators such as per capita, per employee, or per person-trip.

*Trip- and Tour-based Assessment of VMT*

As illustrated above, a tour-based assessment of VMT is a more complete characterization of a project's effect on VMT. In many cases, a project affects travel behavior beyond the first destination. The location and characteristics of the home and workplace will often be the main drivers of VMT. For example, a residential or office development located near high quality transit will likely lead to some commute trips utilizing transit, affecting mode choice on the rest of the tour.

Characteristics of an office project can also affect an employee's VMT beyond the work tour. For example, a workplace located at the urban periphery, far from transit, can require an employee to own a car, which in turn affects the entirety of an employee's travel behavior and VMT. For this reason, when estimating the effect of an office development on VMT, it may be appropriate to consider total employee VMT if data and tools, such as tour-based models, are available. This is consistent with CEQA's requirement to evaluate both direct and *indirect* effects of a project. (See CEQA Guidelines, § 15064, subd. (d)(2).)

*Assessing Change in Total VMT*

A third method, estimating the *change in total VMT* with and without the project, can evaluate whether a project is likely to divert existing trips, and what the effect of those diversions will be on total VMT. This method answers the question, "What is the net effect of the project on area VMT?" As an illustration, assessing the total change in VMT for a grocery store built in a food desert that diverts trips from more distant stores could reveal a net VMT reduction. The analysis should address the full area over which the project affects travel behavior, even if the effect on travel behavior crosses political boundaries.

*Using Models to Estimate VMT*

Travel demand models, sketch models, spreadsheet models, research, and data can all be used to calculate and estimate VMT (see Appendix F of the preliminary discussion draft). To the extent possible, lead agencies should choose models that have sensitivity to features of the project that affect VMT. Those tools and resources can also assist in establishing thresholds of significance and estimating VMT reduction attributable to mitigation measures and project alternatives. When using models and tools for those various purposes, agencies should use comparable data and methods, in order to set up an "apples-to-apples" comparison between thresholds, VMT estimates, and VMT mitigation estimates.

Models can work together. For example, agencies can use travel demand models or survey data to estimate existing trip lengths and input those into sketch models such as CalEEMod to achieve more

accurate results. Whenever possible, agencies should input localized trip lengths into a sketch model to tailor the analysis to the project location. However, in doing so, agencies should be careful to avoid double counting if the sketch model includes other inputs or toggles that are proxies for trip length (e.g., distance to city center). Generally, if an agency changes any sketch model defaults, it should record and report those changes for transparency of analysis. Again, trip length data should come from the same source as data used to calculate thresholds to be sure of an "apples-to-apples" comparison.

Additional background information regarding travel demand models is available in the California Transportation Commission's "2010 Regional Transportation Plan Guidelines," beginning at page 35.

## Appendix 2. Induced Travel: Mechanisms, Research, and Additional Assessment Approaches

Induced travel occurs where roadway capacity is expanded in an area of present or projected future congestion. The effect typically manifests over several years. Lower travel times make the modified facility more attractive to travelers, resulting in the following trip-making changes:

- **Longer trips.** The ability to travel a long distance in a shorter time increases the attractiveness of destinations that are farther away, increasing trip length and vehicle travel.
- **Changes in mode choice.** When transportation investments are devoted to reducing automobile travel time, travelers tend to shift toward automobile use from other modes, which increases vehicle travel.
- **Route changes.** Faster travel times on a route attract more drivers to that route from other routes, which can increase or decrease vehicle travel depending on whether it shortens or lengthens trips.
- **Newly generated trips.** Increasing travel speeds can induce additional trips, which increases vehicle travel. For example, an individual who previously telecommuted or purchased goods on the internet might choose to accomplish those tasks via automobile trips as a result of increased speeds.
- **Land Use Changes.** Faster travel times along a corridor lead to land development farther along that corridor; that new development generates and attracts longer trips, which increases vehicle travel. Over several years, this induced growth component of induced vehicle travel can be substantial, making it critical to include in analyses.

Each of these effects has implications for the total amount of vehicle travel. These effects operate over different time scales. For example, changes in mode choice might occur immediately, while land use changes typically take a few years or longer. CEQA requires lead agencies to analyze both short-term and long-term effects.

*Evidence of Induced Vehicle Travel.* A large number of peer reviewed studies[39] have demonstrated a causal link between highway capacity increases and VMT increases. Many provide quantitative estimates of the magnitude of the induced VMT phenomenon. Collectively, they provide high quality evidence of the existence and magnitude of the induced travel effect.

[39] See, e.g., Boarnet and Handy (Sept. 2014) Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Greenhouse Gas Emissions, California Air Resources Board Policy Brief, available at https://www.arb.ca.gov/cc/sb375/policies/hwycapacity/highway_capacity_brief.pdf; National Center for Sustainable Transportation (Oct. 2015) *Increasing Highway Capacity Unlikely to Relieve Traffic Congestion*, available at http://www.dot.ca.gov/research/researchreports/reports/2015/10-12-2015-NCST_Brief_InducedTravel_CS6_v3.pdf.

Most of these studies express the amount of induced vehicle travel as an "elasticity," which is a multiplier that describes the additional vehicle travel resulting from an additional lane mile of roadway capacity added. For example, an elasticity of 0.6 would signify an 0.6 percent increase in vehicle travel for every 1.0 percent increase in lane miles. Many of these studies distinguish "short run elasticity" (increase in vehicle travel in the first few years) from "long run elasticity" (increase in vehicle travel beyond the first few years). Long run elasticity is larger than short run elasticity, because as time passes, more of the components of induced vehicle travel materialize. Generally, short run elasticity can be thought of as excluding the effects of land use change, while long run elasticity includes them. Most studies find a long run elasticity between 0.6 and just over 1.0,[40] meaning that every increase in lanes miles of one percent leads to an increase in vehicle travel of 0.6 to 1.0 percent. The most recent major study finds the elasticity of vehicle travel by lanes miles added to be 1.03; in other words, each percent increase in lane miles results in a 1.03 percent increase in vehicle travel.[41] (An elasticity greater than 1.0 can occur because new lanes induce vehicle travel that spills beyond the project location.) In CEQA analysis, the long-run elasticity should be used, as it captures the full effect of the project rather than just the early-stage effect.

*Quantifying Induced Vehicle Travel Using Models.* Lead agencies can generally achieve the most accurate assessment of induced vehicle travel resulting from roadway capacity increasing projects by applying elasticities from the academic literature, because those estimates include vehicle travel resulting from induced land use. If a lead agency chooses to use a travel demand model, additional analysis would be needed to account for induced land use. This section describes some approaches to undertaking that additional analysis.

Proper use of a travel demand model can capture the following components of induced VMT:

- Trip length (generally increases VMT)
- Mode shift (generally shifts from other modes toward automobile use, increasing VMT)
- Route changes (can act to increase or decrease VMT)
- Newly generated trips (generally increases VMT)
    - Note that not all travel demand models have sensitivity to this factor, so an off-model estimate may be necessary if this effect could be substantial.

However, estimating long-run induced VMT also requires an estimate of the project's effects on land use. This component of the analysis is important because it has the potential to be a large component of

[40] See Boarnet and Handy (Sept. 2014) *Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Greenhouse Gas Emissions*, California Air Resources Board Policy Brief, p. 2, available at https://www.arb.ca.gov/cc/sb375/policies/hwycapacity/highway_capacity_brief.pdf.

[41] Duranton and Turner (2011) *The Fundamental Law of Road Congestion: Evidence from US cities*, available at http://www.nber.org/papers/w15376.

the overall induced travel effect. Options for estimating and incorporating the VMT effects that are caused by the subsequent land use changes include:

1. *Employ an expert panel.* An expert panel could assess changes to land use development that would likely result from the project. This assessment could then be analyzed by the travel demand model to assess effects on vehicle travel. Induced vehicle travel assessed via this approach should be verified using elasticities found in the academic literature.
2. *Adjust model results to align with the empirical research.* If the travel demand model analysis is performed without incorporating projected land use changes resulting from the project, the assessed vehicle travel should be adjusted upward to account for those land use changes. The assessed VMT after adjustment should fall within the range found in the academic literature.
3. *Employ a land use model, running it iteratively with a travel demand model.* A land use model can be used to estimate the land use effects of a roadway capacity increase, and the traffic patterns that result from the land use change can then be fed back into the travel demand model. The land use model and travel demand model can be iterated to produce an accurate result.

A project which provides new connectivity across a barrier, such as a new bridge across a river, may provide a shortened path between existing origins and destinations, thereby shortening existing trips. In rare cases, this trip-shortening effect might be substantial enough to reduce the amount of vehicle travel resulting from the project below the range found in the elasticities in the academic literature, or even lead a net reduction in vehicle travel overall. In such cases, the trip-shortening effect could be examined explicitly.

Whenever employing a travel demand model to assess induced vehicle travel, any limitation or known lack of sensitivity in the analysis that might cause substantial errors in the VMT estimate (for example, model insensitivity to one of the components of induced VMT described above) should be disclosed and characterized, and a description should be provided on how it could influence the analysis results. A discussion of the potential error or bias should be carried into analyses that rely on the VMT analysis, such as greenhouse gas emissions, air quality, energy, and noise.

Attachment 2

# COUNTY OF ORANGE
## PURCHASE ORDER
### County Procurement Office

## ORDER SUMMARY INFORMATION

**PO NUMBER: DO-080-20016058**

**ORDER AMOUNT: $75,000.00**

**Order Date:** 12/03/19
**Procurement Folder:** C018484
**Procurement Type:** Request for Proposals - RFP

**Board Award Date:** 02/06/18
**Board Award Number:** 17-00128
**Cited Authority:** DPA: Board of Supervisors Approval

## VENDOR INFORMATION

**Name/Address:**

VC0000005823: LSA ASSOCIATES INC

20 EXECUTIVE PARK
SUITE 200
IRVINE, CA 92614

**Contact:**

TERI DE LA CRUZ
949-553-0666

## SIGNATURE(S)

**Received By:**

| Print Name | Signature | Date |
|---|---|---|
| | | |

**Authorized By:**

| Print Name | Signature | Date |
|---|---|---|
| | | |

## ORDER DESCRIPTION

CTO: CONSULTANT FOR SB 743 IMPLEMENTATION
MA-080-18010944 CTO: CONSULTANT FOR SB 743 IMPLEMENTATION - CTO, SOW AND PROPOSAL ATTACHED HERETO. SC RX. 1383973

| REQUESTOR: | ISSUER: | BUYER: |
|---|---|---|
| WEI ZHU<br>714-647-3976<br>WEI.ZHU@OCPW.OCGOV.COM | SABRINA CORREA<br><br>sabrina.correa@ocpw.ocgov.com | |

## SHIPPING INFORMATION

OC PUBLIC WORKS: DESIGN/ROAD

601 N ROSS ST

SANTA ANA, CA 92701-5564

**Shipping Method:**
**FOB:**
**Delivery Date:**
**Delivery Type:**

## BILLING INFORMATION

OC PUBLIC WORKS: ACCOUNTS PAYABLE

PO BOX 4048

SANTA ANA, CA 92702-4048

## COMMODITY: 90600-ARCHITECTURAL SERVICES, PROFESSIONAL; ON-CALL REGULATORY SVCS

| Line | Quantity | UOM | Unit Price | Service Amount | Service From | Service To | Line Sub Total | Tax Amount | Line Total |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00000 | | $0.00 | $75,000.00 | 02/06/18 | 02/05/21 | $75,000.00 | $0.00 | $75,000.00 |

## ACCOUNTING LINE INFORMATION

| Line | Fund | Dept | Budget Control | Unit | Object | Sub Object | Dept Object | Job Number | Line Total |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 115 | 080 | 115 | 5160 | 1900 | | | | $75,000.00 |


LSA

PROPOSAL FOR

# SB 743 IMPLEMENTATION

FOR
ORANGE COUNTY PUBLIC WORKS

***October 31, 2019***

LSA

CARLSBAD
FRESNO
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

October 31, 2019

Joanna Chang
Orange County Public Works
300 North Flower Street
Santa Ana, CA 92703

Subject: Addendum #1 – Proposal for SB 743 Implementation for Orange County Public Works

Dear Ms. Chang:

**Project Manager**
Anthony Petros
20 Executive Park, Suite 200
Irvine, CA 92614
tony.petros@lsa.net
(949) 553-0666

**Principal in Charge**
Ken Wilhelm
20 Executive Park, Suite 200
Irvine, CA 92614
ken.wilhelm@lsa.net
(949) 553-0666

LSA's Transportation Team is a group of professionals with expertise in Senate Bill (SB) 743, vehicle miles traveled (VMT), and California Environmental Quality Act (CEQA) analyses, as well as experience with the multiple stakeholders involved in this process. LSA is a recognized leader on SB 743 and understands the current regulatory environment and body of practice proposed throughout the State that will ensure a successful product for Orange County Public Works (OCPW).

As a full-service environmental services firm, LSA closely follows changes to California planning law. In 2013, the State Legislature adopted SB 743, and the Governor's Office of Planning and Research (OPR) has interpreted this law as a mandate to reform the *State CEQA Guidelines* to remove congestion, delay, and level of service (LOS) as criteria in CEQA impact assessments. VMT is recognized as the new CEQA metric for transportation impacts. This is a watershed change in the direction of municipal planning and capital projects delivery. The LSA Team has been part of the discussion regarding SB 743 and changes to the *State CEQA Guidelines* since 2013. LSA representatives have traveled around the State introducing the new methods and approaches to agency personnel and private interests. LSA consistently participates in the Institute of Transportation Engineers' (ITE) SB 743 Task Force, which meets with OPR representatives to discuss proposed changes and their implementation.

The LSA Team believes that all long-range planning efforts should include some consideration or strategy for complying with this new regulatory requirement. The LSA Team's approach leads to a legally defensible strategy for both traffic study guideline revisions and nexus study preparation in light of the changing regulatory environment.

Environmental planning and CEQA documentation have been the cornerstones of LSA's professional services since the firm was founded in 1976, and continue to be two of LSA's key practice areas. For more than 43 years, LSA has operated as a full-service environmental planning and impact assessment firm with strong in-house technical support services covering the majority of the areas necessary to prepare and/or review environmental documents. LSA currently holds an on-call contract with the County of Orange (County) and has provided traffic analyses for various projects under this contract.

Anthony Petros will serve as Project Manager and will provide direct guidance in the development and implementation of this project. Mr. Petros will manage the LSA Team and will serve as the main point of contact for OCPW. He will also direct SB 743 policy analysis and alternatives and facilitate discussions among key staff. Mr. Petros has more than 35 years of experience overseeing project planning for cities throughout California, including managing active transportation projects and project development processes. Mr. Petros currently serves as an active member of the ITE SB 743 Task Force. He managed the preparation of the first Sustainable Communities Strategy (SCS) in Southern California and is considered an expert on both SB 375 and SB 743. He has traveled throughout the State to inform agencies, attorneys, and members of the building industry of State requirements.

Ken Wilhelm will serve as Principal in Charge and provide quality assurance/quality control (QA/QC) for the project prior to submittal to OCPW. Mr. Wilhelm has extensive experience in processing traffic impact studies, parking demand analyses, and operational studies through public agencies as part of entitlements and capital improvement programs. Mr. Wilhelm has worked on transportation and traffic-related projects for OCPW under LSA's current on-call contract as well as many other projects throughout Orange County.

To create successful implementation, OCPW requires a consultant that is familiar with all of the following: the SB 743 legislation and process, VMT calculations and criteria, the County of Orange Transportation Implementation Manual, Orange County's travel efficiencies relative to its region, and current CEQA practices. The LSA Team is familiar with each of these tools. Unlike other firms in the industry, the LSA Team combines knowledge of transportation planning with more than 43 years of experience with CEQA. Trust and service are the foundation of LSA's business.

The LSA Team welcomes the opportunity to discuss project strategy in further detail. If you have any questions, please contact Mr. Petros at (949) 553-0666 or tony.petros@lsa.net.

Sincerely,

**LSA Associates, Inc.**

Mike Trotta
Chief Executive Officer

# TABLE OF CONTENTS



## APPENDICES

## FIRM BACKGROUND

Because of the LSA Team's long history with Senate Bill (SB) 743, its specific involvement with Orange County Public Works (OCPW), and its knowledge of vehicle miles traveled (VMT) thresholds, the LSA Team possesses integral knowledge of OCPW's objectives and the potential issues that may arise as those objectives are fulfilled.

LSA has been a part of the SB 743 conversation since the bill first circulated in 2013. LSA Principal Anthony Petros has met with Christopher Calfee, the Governor's Office of Planning and Research (OPR) Chief Counsel (and now Deputy Secretary and General Counsel at the California Natural Resources Agency), in his office in Sacramento on numerous occasions. Mr. Petros has participated in numerous meetings, conferences, and webinars hosted by the OPR, the Southern California Association of Governments (SCAG), the Sacramento Area Council of Governments (SACOG), and other State and regional agencies. He is part of the Institute of Transportation Engineers (ITE) SB 743 Task Force and has contributed to opinion pieces and technical materials for the group. Mr. Petros has made SB 743 presentations to the Urban Land Institute, the American Planning Association, the Association of Environmental Planners, numerous attorneys and planning firms, and government agencies throughout California. LSA has monitored and been directly involved in each phase of the rule-making process with key OPR and California Natural Resources Agency staff.

### LSA Information

**Year Founded**
1976

**Form of Organization**
California Corporation

**Office Locations**
Irvine, CA (Headquarters): 98 staff
Carlsbad, CA: 11 staff
Fresno, CA: 4 staff
Los Angeles, CA: 2 staff
Palm Springs, CA: 8 staff
Point Richmond, CA: 48 staff
Riverside, CA: 28 staff
Roseville, CA: 18 staff
San Luis Obispo, CA: 5 staff

**Number of Employees**
222

**Services Offered**
Transportation and Mobility Services
Environmental Consulting and Analysis (California Environmental Quality Act [CEQA]/National Environmental Policy Act [NEPA])
Air Quality and Greenhouse Gas Analysis
Sustainability Services
Noise Analysis
Biological Resources
Cultural Resources
Paleontological Resources
Historic Resources
Visual Resources
Water Quality
Section 4(f) Evaluations

## LSA TEAM

The most important aspect of LSA's overall service is the firm's project management skills. On a daily basis, this translates into tracking and expediting documents through the steps necessary to successfully achieve the completion of project requirements in a timely manner. LSA employs a "Project Manager-centered" system for the management of technical projects and planning document preparation that puts the responsibility for coordinating and conducting projects in the hands of the individual Project Manager. Strong verbal and written communication skills, diplomacy, and advanced organizational skills are critical in meeting LSA's criteria for a well-qualified Project Manager. LSA's commitment of senior-level staff, depth of expertise, and emphasis on communication between subject experts and lead agencies have earned LSA a reputation for thorough, credible, and objective analysis.

Qualifications of the key staff are listed below, and detailed resumes are provided in **Appendix A**.

### *Anthony Petros*

**Role:** Project Manager
**Education:** Master of Regional Planning Candidate; B.A., Social Ecology; B.S., Biological Sciences
**Years of Experience:** 35

Mr. Petros brings 35 years of experience in transportation planning and mobility to this project. He is a member of the ITE SB 743 Task Force and has visited with key OPR staff in Sacramento on numerous occasions. He has presented throughout the State on SB 743 initiatives and on the potential benefits and impacts of SB 375 protocols. Mr. Petros is a guest lecturer on sustainable planning at California State University, Fullerton, and the University of Southern California and is the Chair of the Advisory Committee for the Graduate Program in Public Policy at the University of California, Irvine. His extensive resume includes quality control and deliverables management for the City of Fresno General Plan and the City of Fresno VMT thresholds, managing the first Orange County Sustainable Communities Strategy (OC SCS), and leading the Orange County Transportation Authority (OCTA) 2014 and 2018 Long-Range Transportation Plans (LRTPs). Mr. Petros has also been involved in many strategic planning initiatives.

### *Ken Wilhelm*

**Role:** Principal in Charge
**Education:** B.A., Sociology
**Years of Experience:** 28

Mr. Wilhelm has been an integral LSA Team member for 25 years and has successfully completed transportation planning, traffic-engineering, and parking services for a multitude of public and private agencies. As Principal in Charge, Mr. Wilhelm will provide quality assurance for all LSA work products before they are presented to OCPW. Mr. Wilhelm is dedicated to providing exceptional management and preparation of traffic and transportation documents. His focus over the last 10 years has been converting the Irvine Business Complex (IBC) into a mixed-use environment, including 15,000 residential dwelling units and 48 million square feet (sf) of nonresidential uses. He has managed dozens of traffic impact studies, access analyses, and parking studies for a mix of projects within the IBC with the goal of converting the area into an urban village.

Mr. Wilhelm has an exceptional knowledge of and familiarity with Orange County and has been successfully managing and completing projects within the County for more than two decades. Notable projects include the James A. Musick Jail expansion, the Laguna Canyon Road Project Report, the IBC Traffic Impact Analyses, the Orange County Great Park NEPA Report/Clearance), and the Concordia University Campus Master Build Out Plan.

### *Ambarish Mukherjee, PE, AICP*

**Role:** Technical/Modeling Task Lead
**Education:** Master of City and Regional Planning with a concentration in Transportation and Land Use Planning, as well as Geographic Information Systems; Bachelor of Architecture
**Years of Experience:** 14

Mr. Mukherjee conducts traffic and transportation studies, transportation modeling, and traffic impact analyses for a wide variety of large and small projects, including residential developments, mixed-use developments, commercial and office projects, parking structures, roadway and circulation improvements, General Plans, and Specific Plans. Mr. Mukherjee's areas of expertise include Traffic Impact Studies, VMT/vehicle hours traveled analysis, pedestrian and bicycle planning, transportation modeling, transit routing, goods movement, transportation funds and grants management, geographic information system (GIS) analysis, and statistical and analytical research. He is experienced with model development and application practices in California. He has used the Orange County Transportation Analysis Model (OCTAM) for numerous projects throughout Orange County. He served as the Project Manager for LSA's on-call support for the Riverside County Transportation Analysis Model (RivTAM). Mr. Mukherjee has a thorough understanding of TransCAD as well as model inputs and assumptions. He also frequently works on other models statewide, including the Fresno Council of Governments (COG) VMIP 2, SCAG's Regional Transportation Plan (RTP) model, the Kern COG VMIP 2, and several other travel demand models nationwide.

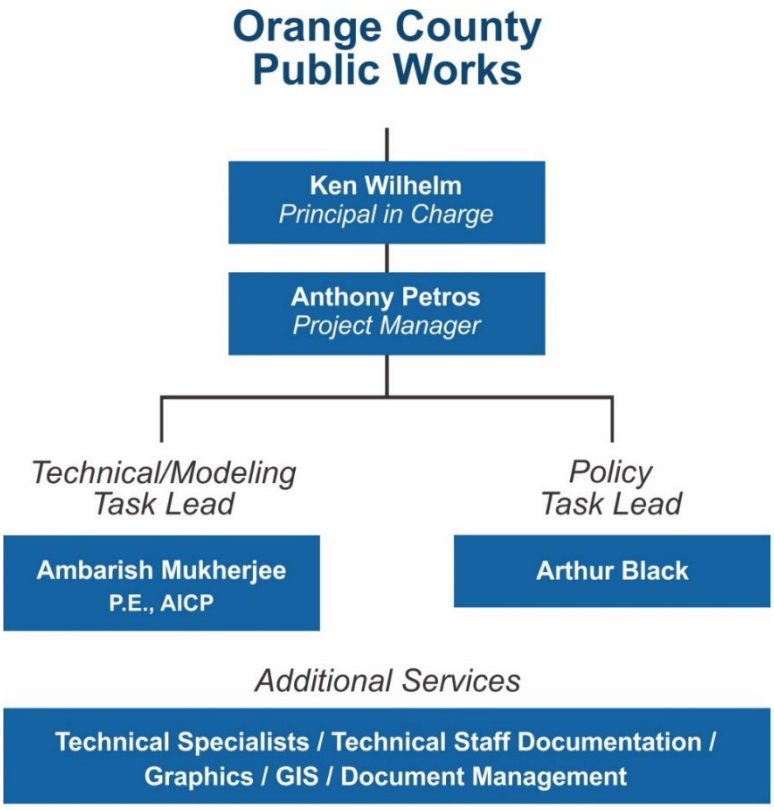
### *Arthur Black*

**Role:** Policy Task Lead
**Education:** Master of Urban and Regional Planning;
B.S., Industrial Management
**Years of Experience:** 15

Mr. Black will provide transportation planning support services for this project. His primary responsibilities include the preparation of neighborhood and homeowners' association studies, traffic and parking studies, operational analyses, and transportation planning research that has included parking generation rates, transit planning, traffic calming, internal trip capture, and transit mode share. Mr. Black actively follows the implementation of SB 743, including attending meetings at SCAG with Christopher Calfee.

## Team Organizational Chart

An organizational chart of key project staff is provided on the following page.




## PROJECT UNDERSTANDING

As a result of the final rule-making surrounding SB 743 and the implementation deadline of July 1, 2020, OCPW wishes to initiate the efficient shift from delay-based LOS CEQA traffic analyses to VMT CEQA traffic analyses. The LOS metric will still be available to analyze capital projects and program other capital needs (i.e., fee programs). OCPW is seeking a qualified consultant team to assist with guidance and analysis in its preparation of a set of deliverables to ease the transition from LOS assessments to VMT assessments. These deliverables include the following:

1. Recommendations for appropriate VMT thresholds for unincorporated County territory;
2. A VMT calculator tool; and
3. Revisions to the County's Traffic Impact Analysis Guidelines to include VMT analysis for CEQA and LOS for General Plan and Specific Plan conformity.

OCPW is not asking for a consultant team to conduct traffic forecasting or detailed parcel-level technical analyses, recommend specific mitigation strategies, or provide associated training.

A primary concern for the successful completion of the development of VMT guidelines is that SB 743 has yet to be fully vetted. Although a library of resources has been created since the State law's adoption in 2013 and a small handful of agencies have implemented VMT practices, no fully defined CEQA process has been completed and challenged to characterize and refine the law's application.

Draft guidelines have been circulated twice. A Technical Advisory has been prepared and revised three times. Some agencies have adopted the OPR Technical Advisory approach completely. Others believe they have established "substantial evidence" to depart from the OPR's direction. It remains to be seen where the courts will rule on the application of VMT as a CEQA threshold. Therefore, OCPW has little direction from the State and other agencies as to the sanctioned methods to calculate VMT or, more important, the thresholds to use in legally defensible analyses. LSA believes this represents an opportunity more than a constraint.

Another concern is that the direction that SB 743 threshold development is taking appears to favor dense, infill urban development. As a result, these possible thresholds could impact the viability of traditional land use development in emerging areas of the State, including portions of unincorporated Orange County. The new consideration of "induced growth" could directly impact the ability of OCPW to complete major capital- and capacity-enhancing projects. OCPW may find through its efforts and with the assistance of its consultant clarification and confirmation that OCPW projects would have deleterious effects on VMT production (depending on the methods used); would require the preparation of detailed, time-consuming, and costly Environmental Impact Reports (EIRs); and, at worst, would require Statements of Overriding Consideration for approval. The LSA Team believes that this may eventuality be offset by adoption of alternative thresholds and metrics, based on substantial evidence.

The lack of consistent, replicable, and reliable data regarding VMT production in the region is another fundamental concern. Many of the standard tools in use today, such as the California Emissions Estimator Model (CalEEMod), are based on gross assumptions of trip length over an entire air quality management basin. Other VMT-estimating tools will render different and disparate results given the same input data. LSA has conducted numerous case studies as part of the ITE SB 743 Task Force and found that for six land use scenarios analyzed with six VMT tools, the results were all different, with inconsistent deviation and correlation.

Feasible mitigation measures are a concern with SB 743 implementation. The California Air Pollution Control Officers Association (CAPCOA) Green Book is the general reference for VMT-based offsets. The OPR identifies the Green Book as a primary resource for SB 743 mitigation measures, yet evidence is lacking regarding the efficacy and feasibility of many of the CAPCOA strategies. Specific and measurable reductions in VMT due to strategies such as mode shift and selective land use have not yet been demonstrated. Mitigation measures for capacity-enhancing capital projects may be greater than the investment in the initial project.

Many of these strategies assume individual behavioral shifts that rely on intangible or nonexistent evidence. Many decision-makers are uneasy accepting noncapital traffic mitigation measures, and project opponents could sue over indefensible and infeasible mitigation strategies. In a recent joint SCAG/SACOG meeting, the agencies' consultants and the OPR's primary transportation planning consultant publicly acknowledged that most VMT impacts in emerging and rural State areas will not be mitigated. Possible project-specific mitigation to completely offset the impacts may not exist.

# PROJECT EXPERIENCE AND QUALIFICATIONS

## LSA Qualifications

LSA is a diversified transportation, environmental, and community planning corporation headquartered in Irvine, with nine offices throughout California and more than 200 dedicated and innovative employees. LSA has been involved in a rich diversity of complex and challenging transportation/mobility projects throughout California for more than 43 years. LSA managed and successfully completed the first OC SCS and both the 2014 and 2018 LRTPs for OCTA. Additionally, LSA was awarded a contract with the Fresno COG for a similar Scope of Work related to VMT thresholds.

### *Representative Senate Bill 743 Experience*

LSA's transportation planning, engineering staff, CEQA practitioners, and Project Managers stay abreast of SB 743 and the implications for evaluating transportation impacts under CEQA. LSA is familiar with the OPR's January 2016 *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA*, the Technical Advisories, and the draft specifications for thresholds, methodology, safety, and mitigation recommendations for implementing SB 743.

LSA is a recognized leader on SB 743 and has participated in a number of presentations on this subject throughout the State.

LSA understands that the recommended thresholds of significance have been refined to better align with the State's climate policies and its diversity of communities (e.g., urban and rural). The OPR recommends that the new procedures remain optional until July 1, 2020, to give agencies time to identify appropriate thresholds for their communities and to update traffic impact fee programs to align with the new impact methodology.

The LSA Team is following the changes closely and has presented at roundtables sponsored by several city planning departments as they update their transportation impact review guidelines. LSA will continue being proactive in following the State's guidance through the adoption process and in working with clients to identify the best approaches to traffic impact analysis in concert with the *State CEQA Guidelines* revision.

## Mr. Petros' Summary of Presentations for SB 743 in California from the Governor Signing in 2013 to the Present

- Orange County Council of Governments Board of Directors
- Joint Orange County Traffic Engineering Council and Southern Section Institute of Transportation Engineers (regional meetings)
- Community Development Directors of Orange County (annual luncheon)
- Orange County Business Council Executive Committee
- Urban Land Institute Sustainable Planning Committee (repeated occasions)
- American Planning Association Annual Meeting
- Association of Environmental Planners Annual Meeting
- Association of Environmental Planners Central Valley Meeting
- Institute of Transportation Engineers Annual Meeting
- Institute of Transportation Engineers SB 743 Task Force, Case Study Manager
- Western Riverside Council of Governments Technical Advisory Committee
- Southern California Association of Governments Los Angeles Offices (five stakeholder meetings)
- Building Industry Association Government Affairs Committee (repeated occasions)
- City of Newport Beach Executive Management
- City of Costa Mesa Planning and Public Works Key Management
- City of Yorba Linda Planning and Public Works Key Management
- City of Long Beach Planning and Public Works Key Management
- San Bernardino Associated Governments Traffic Forecasting Group
- San Luis Obispo County Planning and Public Works Management
- San Luis Obispo Council of Governments Key Management
- Governor's Office of Planning and Research Sacramento offices with the Chief Counsel and Chief Planner (two informal discussions)
- Alpha Lambda Luncheon
- Numerous private development interests and major legal firms
- University of California, Irvine, Graduate Program in Public Policy instructional case studies

## LSA Documentation and Library

LSA has a working knowledge of and has delivered presentations about the source materials presented below:

- SB 743 Text:
  http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB743
- OPR CEQA Guidelines Update Website:
  http://www.opr.ca.gov/ceqa/updates/sb-743/
- Technical Advisory on Evaluating Transportation Impacts in CEQA (December 2018):
  http://www.opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf
- California Department of Transportation SB 743 Implementation:
  https://dot.ca.gov/programs/transportation-planning/office-of-smart-mobility-climate-change/sb-743
- Caltrans Transportation Demand Modeling and Simulation:
  https://dot.ca.gov/programs/transportation-planning/multi-modal-system-planning/statewide-modeling/transportation-demand-modeling-simulation
- San Diego Association of Governments Regional Travel Demand Model Technical White Paper (May 2013):
  https://www.sandag.org/uploads/publicationid/publicationid_1795_16802.pdf
- SCAG 2016–2040 RTP/SCS:
  http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS.pdf
- CAPCOA Quantifying Greenhouse Gas Mitigation Measures:
  http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

### *Relevant Project Experience*

The relevant project experience listed below highlights LSA's capabilities for providing the required services to OCPW. LSA has prepared VMT analyses for various clients throughout California.

#### CITY OF FRESNO VMT THRESHOLDS, FRESNO, CALIFORNIA

**Client:** City of Fresno
**Project Dates**: July 2019–Ongoing
**Key Personnel**: Tony Petros, Ambarish Mukherjee, Ravi Palakurthy

LSA has recently been approved to provide the City of Fresno with services to establish VMT thresholds for subsequent CEQA documentation. LSA is working with the City of Fresno traffic forecasting tool to provide an updated existing land use base (existing conditions reflect the base conditions for new CEQA conformity). LSA will address several policy-related issues that have been raised by the OPR in its recent Technical Advisory related to SB 743. These issues include a detailed definition of the region to evaluate criteria from the baseline condition in order to consider a model screening application for streamlining and small projects, high-quality transit corridors, transit-oriented development zones, and more. LSA will prepare a model user interface for ease of use that is a GIS-based tool with citywide mapping and that will provide the City of Fresno with training, support, and a user guide.

#### CITY OF FRESNO GENERAL PLAN, FRESNO, CALIFORNIA

**Client:** City of Fresno
**Project Dates**: December 2018–Ongoing
**Key Personnel**: Tony Petros, Ambarish Mukherjee, Ravi Palakurthy

LSA was selected to prepare the updated City of Fresno General Plan EIR and traffic analysis. The traffic analysis will be conducted to address general traffic flow, arterial hierarchy, and land use and circulation consistency. Using daily and peak-hour roadway segment values, adequate capacity will be demonstrated for study area roadways in Fresno and the surrounding areas. In addition, the General Plan Land Use Element will be analyzed using VMT as a metric. LSA is currently revising modules of the Fresno traffic-forecasting tool to reflect an updated existing condition (VMT is a comparison of post-project to existing conditions). Traffic analysis zone VMT forecasts are being compiled, and low, moderate, and high VMT zones are being identified. A regional average is being established, and the final General Plan project will be compared to the regional average for net change in VMT as a result of General Plan implementation.

#### GLOBEMASTER CORRIDOR SPECIFIC PLAN VMT ANALYSIS, LONG BEACH, CALIFORNIA

**Client:** Linscott, Law & Greenspan
**Project Dates**: April 2019–Ongoing
**Key Personnel**: Tony Petros, Ambarish Mukherjee, Ravi Palakurthy

LSA prepared a VMT analysis for the Globemaster Corridor Specific Plan (GCSP) project in the City of Long Beach. The GCSP provides the planning and regulatory framework for guiding future development and attracting quality jobs to the 432.12-acre GCSP area adjacent to the Long Beach Airport, Interstate 405, and surrounding residential and business community. The regional (City) VMT per capita for both base (2012) and future (2040) model scenarios was obtained from the 2016

SCAG RTP model runs. Existing (2019) VMT per capita was developed by interpolating between base and future-year VMT data obtained from the SCAG RTP model. Project select zone model runs were used to develop project VMT. Project VMT per capita was calculated for both base (2012) and future (2040) model scenarios. The existing (2018) project VMT per capita was developed by interpolating between the base and future year VMT per capita for the project.

### 2014 AND 2018 LRTPS, ORANGE COUNTY, CALIFORNIA

**Client:** OCTA
**Project Dates**: October 2017–November 2018
**Cost**: $239,300
**Budget Performance**: Budget met, no amendments
**Schedule Performance**: On schedule
**Key Personnel**: Tony Petros, Arthur Black

LSA served as the prime consultant working with OCTA in the preparation of the 2014 and 2018 LRTPs. The LRTP is the County of Orange contribution to the SCAG RTP. It identifies the mobility projects and programs desired and necessary to meet the County's transportation needs both currently and in the future, taking into account multiple considerations such as existing transportation policies and commitment, stakeholder input, and revenues available to implement the LRTP. The LSA Team functioned as an extension of OCTA staff to consolidate internal comments and present recommendations to OCTA's Project Manager. The 2014 and 2018 LRTPs highlighted opportunities to grow and connect multiple travel modes. Targeted infrastructure investments were identified that will reduce dependence on automobiles. The LSA Team also prepared draft staff reports and written communications at the request of OCTA's Project Manager. The LRTP also considered the linkages created by SB 375 regulation and requirements for SCSs.

### CITY OF LONG BEACH GENERAL PLAN LAND USE AND URBAN DESIGN ELEMENTS EIR, LONG BEACH, CALIFORNIA

**Client:** City of Long Beach
**Project Dates**: October 2014–July 2015, July 2019–Ongoing
**Cost**: $130,000
**Budget Performance**: Budget met, no amendments
**Schedule Performance**: On schedule
**Key Personnel**: Tony Petros, Ambarish Mukherjee, Arthur Black

The City of Long Beach updated its Circulation Element, recognizing that the mobility of people is not always improved by facilitating automobile travel. As such, the City of Long Beach is transitioning away from performance measures focused on automobile LOS. Until that transition is complete, however, an analysis of potential impacts to automobile LOS at intersections was required for the updated Land Use and Urban Design Elements. LSA performed this analysis by examining the anticipated increases in socioeconomic factors and equating the increase in those factors to an increase in

traffic volume. Using the SCAG RTP traffic model, LSA extracted socioeconomic and traffic volume data for the Long Beach area. LSA then overlaid land use categories and intensities for areas of change in Long Beach. Traffic was forecast based on the relative change in intensity across the City. System performance was evaluated and disclosure of impacts provided. LSA performed this citywide analysis. The regional traffic model was used to forecast changes in VMT. The traffic analysis included a disclosure of the Land Use Element's effects on VMT. The LSA analysis provided to the City a defensible assessment of impacts while facilitating multimodal transitions within Long Beach.

## TASKS AND DELIVERABLES

LSA is prepared to undertake the Scope of Work as presented by OCPW. Here, LSA wishes to simply amplify how LSA will approach each task and provide the elements the LSA Team believes are critical to successfully complete the work plan.

### Task 0: Project Coordination and Administration

It has been the LSA Team's experience that successful strategic planning projects start with disciplined project management. The foundation for this type of project management is frequent communication with project partners using effective tools and practices. LSA has delivered strategic planning and transportation plans to other cities, counties, and Metropolitan Planning Organizations (MPOs)/Regional Transportation Planning Agencies based on this principle, and LSA will continue this practice with OCPW as LSA assists in OCPW's pursuit of SB 743 compliance.

The objective of this task is to facilitate the project kickoff and, most important, set a foundation for good project management and accounting. This includes establishing the work plan, schedule, and general budget parameters for subsequent monitoring; coordinating and tracking project schedules, reports, and milestones; providing a method for progress evaluation and communication; and managing critical-path activities. The fundamental element that leads to successful project management is a dedicated, engaged management team.

#### *LSA Team Management Approach*

While LSA prides itself on its technical document preparation, the LSA Team believes that the most important aspect of its overall services is its project management skills. LSA's successful record of quality products, its proven ability to meet demanding schedules, and its reputation with past and current clients provide the best guarantee of success in meeting OCPW's needs for the implementation of SB 743.

The following list demonstrates LSA's methods and procedures for managing schedules and budgets and the LSA tactics employed to ensure quality control.

- **Communication:** Effective project management extends beyond the use of sophisticated tools. LSA's experience is that the single most critical element for the successful completion of the project is the early development of clear

**Keys to Project Management:**

- Budgeting Time and Resources
- Coordinating and Tracking Schedules
- Managing Critical-Path Activities
- Evaluating Progress
- Continuously Communicating with OCPW

channels for communication between the LSA Team's Project Manager and the client. At a minimum, the LSA Project Managers prepare monthly status reports. These reports include narrative descriptions of all major activities performed during the month; however, contact with the client typically takes place much more frequently. Ongoing and frequent communication between Mr. Petros and the OCPW Project Manager will serve as the primary vehicle for identifying emerging project issues and solutions early on to minimize schedule impacts.

- **Understanding the Issues/Project Schedule:** Most of LSA's staff members have 5 or more years of professional experience with LSA. The Principal in Charge and Project Manager selected for this assignment have more than 50 combined years of experience in transportation planning, modeling, and legislation. The LSA Team has developed the ability to identify key issues and solutions early in the environmental process, which assists in foreseeing problems and avoiding potential cost overruns or schedule delays. These skills are used to advise clients of impending issues and to assist in resolving those issues. Additionally, the LSA Team's significant technical and regulatory experience results in a "big picture" understanding of project delivery. The LSA Team can easily identify strategies to respond to project delays and to provide options for getting projects back on track while maintaining the legal defensibility of the documents being prepared.
- **Product Review:** To ensure that LSA's product meets the best technical and professional quality sought by the highest industry standards, LSA has developed an internal document review program for each document before it leaves the office. Once a document is prepared, it is reviewed and corrected by a professional editor and then receives Principal review prior to its submission to the client.
- **Budget Control:** Project billing is tracked by internal accounting software that enables LSA Project Managers to track project budget status on a weekly basis to assist in maintaining tight control over project budgets.
- **Commitment of Senior Personnel:** When necessary, LSA uses upper-level, experienced personnel not just as supervisors but also as the primary investigators and authors of technical reports, EIRs, and planning documents. This use of upper-level staff eliminates the need for multiple internal reviews. LSA has found that in some situations, it is most efficient to use senior staff members qualified in their areas of expertise.
- **Commitment to Scheduling Needs:** LSA's commitment to meeting scheduling needs and project demands extends to doing whatever it takes to complete the job. LSA's work in the past has required staff time at nights and on weekends in order to meet critical client deadlines. LSA has also reduced handling time by using 24-hour reprographic houses capable of compiling electronic documents, as well as printing, packaging, and mailing completed hard copy documents in a single, efficient operation.
- **Quality Management:** LSA manages quality throughout the life of the project, not merely at the end of the project. LSA's overall goal is to improve quality on each subsequent project. This requires implementation of strategies to improve quality at the very beginning of each project and carrying those strategies throughout the project and beyond.

### *Monthly Accountability*

The LSA Team has deep experience in conducting successful monthly project accountability over a long-term planning effort. The team will provide regular monthly communication through email and other accounting software regarding project status, milestone progress, deliverables, personnel matters, and invoicing. Action minutes will be prepared as part of the monthly accountability. The LSA Team takes an interactive and integrated approach to project management and communications.

### *Ongoing Communication and Tracking of Progress*

The LSA Team will make contacts using the telephone, email, and any other acceptable communication medium on a regular basis. All milestones, tasks, deliverables, requests, and products will be subject to review and reconsideration by the OCPW Project Manager and the LSA Team. The objective is to have a seamless process, linked by regular communication that advances to an expected conclusion. LSA will use the action time matrix to follow all project progress and monitor deliveries and team-member responsibilities through the duration of the project.

### *Quality Control*

LSA's Principals recently reviewed and updated the corporate Quality Assurance/Quality Control (QA/QC) Plan, and it is available for review upon request. The LSA Team is committed to active QA/QC procedures and identifies senior-level Principal staff members as the QA/QC officers on all its projects. The LSA Team has identified Mr. Wilhelm as the LSA Principal who will follow not only the project team's QA/QC requirements but also LSA's own requirements for proper project management.

## Task 1: Kickoff Meeting

The LSA Team will schedule and host a project kickoff meeting upon receiving the Notice to Proceed. The LSA Team already has a working knowledge of all the SB 743 foundational documents through its 6-year investment in this regulatory development process. In addition, LSA served as the prime consultant in preparation of the OCTA 2014 and 2018 LRTPs and was the inaugural author of the OC SCS. The LSA Team also keeps a reference copy of the 2019 SCAG RTP/SCS available for use in other projects. LSA is knowledgeable regarding these reference documents and will bring that knowledge and a review of any other related documents to the kickoff meeting.

The purpose of this meeting will be to review and confirm the work plan and schedule, to confirm the chain of communication and reporting, and to establish the next steps in the project activity. LSA will circulate the proposed agenda and will record actions in subsequent minutes.

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| ***Task 1 Deliverable:*** | • *Kickoff meeting with staff including a meeting agenda and minutes* |

## Task 2: Develop Vehicle Miles Traveled Thresholds and Screening Criteria

The OPR and the California Natural Resources Agency have offered guidance on thresholds for VMT production in the Technical Advisory, dated December 2018. Note that the Technical Advisory is a

supporting document that does not have the weight of legal fact. It can be used or departed from with substantial evidence. This Technical Advisory speaks to limited land use categories (residential, office, and retail), but does not address industrial, agricultural, institutional, and other major land use categories. Furthermore, the advisory thresholds are based on equivalencies to greenhouse gas (GHG) reduction strategies over the entire State. The advisory thresholds are equivalent between GHG and VMT, and are not sensitive to location and setting.

LSA will review currently contemplated thresholds as indicated in the Technical Advisory. LSA will review the OC LRTP, the SCAG RTP/SCS, air pollution control district materials, and other relevant sources to determine whether support is clear for thresholds that depart from the OPR guidance. If the RTP and the air pollution control district have identified feasible plans to reduce GHGs in the South Coast Air Basin, the LSA Team can evaluate whether equivalencies exist between the GHG reduction and VMT production.

The "region" will be a term to be discussed with the County. The selection of a region is a vital part of the VMT calculation, particularly for change in total VMT. The region should be large enough to accommodate the range of trip lengths that occur for a project while keeping the scope of the project at a reasonable scale. Potential regions may include the entire Orange County region or the air pollution control district boundary. It is noted that basing regions on political boundaries may truncate trip lengths; however, complete and specific data are pertinent to calculating accurate VMT.

Currently, State technical guidance identifies screening criteria for select conditions. These include proximity to transit areas and high quality transit corridors, local serving retail (less than 50,000 square feet), low trip generating uses and consistency with the RTP (i.e., floor-to-area ratio of less than 0.75 with limited parking). Other conditions do exist, or are desirable in the future, that should be considered screening criteria in unincorporated County areas. These may include denser areas of specific size and scale, specific housing types for workers, agricultural services that have low VMT profiles, and more.

All the following should be considered under the envelope of SB 743's intent: the reduction of GHGs, the promotion of infill development, more robust multimodal transportation options, and mixed-use development.

The LSA Team will create technical foundations for each of the desired screening criteria where possible. For example, the RTP commits to a GHG reduction of 18 percent by 2035. VMT is reduced in the plan 7.4 percent when compared to the baseline condition. There may be substantial evidence to create screening criteria and VMT thresholds of no net change in per capita VMT or a modest percent reduction consistent with the RTP efforts. These foundations will be discussed and evaluated with the County in an effort to gain consensus on screening criteria.

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| ***Task 2 Deliverables:*** | • *Draft and final draft technical memorandums on proposed VMT thresholds and screening criteria* |

## Task 3: Develop Vehicle Miles Traveled Calculation Tool

VMT is simply the product of the number of trips and those trips' length of travel. Although this is a simple calculation, there are multiple approaches to quantify the trips and trip lengths. Methods vary from application to application. GHG emissions, air quality assessments, and other technical studies will calculate VMT in manners appropriate for that specific use.

The LSA Team will develop a VMT calculation tool tailored to Orange County. The County currently has a trip-based model, which will be used as the primary resource in the development of the VMT tool.

LSA will create a spreadsheet-style interface where new development applications could be entered into the forecasting tool and areas of the County identified as below, at, or over threshold. This would be the primary test to determine CEQA impacts.

LSA will develop this interface using the approved rates and trip lengths that will be used to enter project data and to arrive at project-specific VMT for those uses included in the OPR Technical Advisory. This will look like a standard trip-generation table (for ease of interpretation) and will include internal trip capture for mixed uses and trip length statistics based on the recognized tools (e.g., CalEEMod).

LSA will also address exemptions to thresholds for these analyses. For example, the Technical Advisory suggests that developments of smaller sizes could be deemed insignificant generators of VMT and not subject to the threshold analysis requirements. Land use projects within 0.5 mile of transit hubs and/or high-quality transit corridors may be considered less than significant, according to the OPR guidance documents.

Furthermore, former Governor Jerry Brown had acknowledged the value of ports and goods movement to the economic prosperity of the State and had indicated an exemption of VMT analyses for heavy truck movements within California. Small projects, warehousing projects with heavy trucks, and other land use and mobility strategies that may provide a secondary benefit to the County will be identified and discussed as possible exemptions within the thresholds.

Following the lead from the OPR in the Technical Advisory of the guidelines, the LSA Team will also suggest screening and minimum values for VMT thresholds. These screening thresholds will be developed based on OPR guidance.

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| ***Task 3 Deliverable:*** | • *Interactive spreadsheet tool to determine project VMT* |

## Task 4: Update Environmental Thresholds and Guidelines Manual

Although the County does not currently use an Environmental and Thresholds and Guidance Manual, it is the LSA Team's understanding that the County is seeking guidance for evaluating projects under the new VMT thresholds. The CEQA Guidelines (California Code of Regulations [CCR] Section 15064.7) encourage each public agency to develop and publish thresholds of significance that the agency uses in determining the significance of environmental effects. Task 4 acknowledges

that it is a priority of the County to develop VMT thresholds and to make them available for public review. Therefore, as part of this task, LSA will review and propose updates to the County's Traffic Impact Analysis Guidelines to incorporate required VMT analysis.

Additionally, LSA will document VMT thresholds applicable to projects within the County. The manual will provide guidance regarding how a VMT analysis needs to be conducted for projects, and provide information regarding screening criteria and thresholds. The document will also include information regarding projects that may be eligible for exemption from any VMT analysis.

The County currently uses LOS and delay metrics to plan, program, and fund many capital projects. While LOS and delay will not be metrics for CEQA impact assessment, they are valuable tools to size new capacity appropriately. In addition, LOS and delay are the current metrics to determine development impact fee increments and establish project nexus.

LSA will augment the Traffic Impact Analysis Guidelines to include discussions of the use of LOS for congestion relief, sizing of new infrastructure, consistency with existing plans and development, and implementation of impact fee programs.

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| ***Task 4 Deliverable:*** | • *Update the County's Traffic Impact Study Policies to address VMT analysis required of new projects* |

## ADDITIONAL REFERENCES

LSA has provided a list of clients who have received services comparable to those in this RFP.

**References and Contact Information**

| California Natural Resources Agency | Western Riverside Council of Governments | Orange County Council of Governments |
|---|---|---|
| **Christopher Calfee**<br>Deputy Secretary and General Counsel<br>1416 9th Street, Suite 1311<br>Sacramento, CA 95814<br>(916) 653-5656<br>christopher.calfee@resources.ca.gov | **Rick Bishop**<br>Executive Director<br>4080 Lemon Street, 3rd Floor<br>Riverside, CA 92501<br>(951) 955-8303<br>rbishop@wrcog.us | **Marnie O'Brien Primmer**<br>Executive Director<br>1 Civic Center Plaza<br>Irvine, CA 92623<br>(949) 698-2856<br>edoccog@gmail.com |

| Institute of Transportation Engineers SB 743 Task Force | Riverside County Transportation Department, TLMA | San Bernardino County Transportation Authority |
|---|---|---|
| **Erik Ruehr, P.E., PTOE**<br>ITE SB 743 Task Force<br>9520 Padgett Street, Suite 213<br>San Diego, CA 92126<br>(858) 566-1766<br>eruehr@vrpatechnologies.com | **Kevin Tsang, P.E.**<br>Senior Civil Engineer<br>4080 Lemon Street, 8th Floor<br>Riverside, CA 92501<br>(951) 955-6828<br>ktsang@rivco.org | **Tim Byrne**<br>Project Delivery Manager<br>1170 West 3rd Street, 2nd Floor<br>San Bernardino, CA 92410<br>(909) 884-8276<br>tbyrne@gosbcta.com |

| Holland & Knight |
|---|
| **Jennifer Hernandez**<br>Partner<br>50 California Street, Suite 2800<br>San Francisco, CA 94111<br>(415) 743-6927<br>jennifer.hernandez@hklaw.com |

## COST PROPOSAL

LSA has provided hourly rates by classification. These rates have been negotiated through LSA's current on-call contract with OCPW. Based on this scope of work and the rate structure, a budget of $75,000 will be necessary to conduct the tasks included in this proposal.

| Classification Titles | Hourly Rate |
|---|---|
| Principal Environmental Planner/CEO | $353.34 |
| Principal Environmental Planner | $220.09 |
| Associate Environmental Planner | $171.71 |
| Senior Environmental Planner | $124.58 |
| Environmental Planner | $99.38 |
| Assistant Environmental Planner | $76.99 |
| Principal Transportation Engineer | $205.72 |
| Associate Transportation Engineer | $148.25 |
| Transportation Engineer | $137.67 |
| Assistant Transportation Engineer | $87.12 |
| Senior Air Quality Specialist | $135.38 |
| Senior Greenhouse Gas/Climate Change Specialist | $133.06 |
| Senior Noise Specialist | $141.51 |
| Climate Change Specialist | $108.38 |
| Noise Analyst | $74.28 |
| Air Quality Specialist | $109.39 |
| Assistant Geographic Information Systems Specialist | $72.11 |
| Associate Graphics Technician | $159.60 |
| Graphics Technician | $133.98 |
| Senior Editor | $93.07 |
| Associate Editor | $117.02 |
| Editor | $91.03 |
| Senior Word Processor | $91.64 |

| County of Orange Public Works SB 743 Implementation Budget Estimate | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Person -->** | **Principal Transportation Engineer** | **Associate Transportation Engineer** | **Transportation Engineer** | **Associate Graphics Technician** | **Senior Editor** | **Senior Word Processor** | **LSA TOTAL** |
| **Hourly Rate -->** | **$205.72** | **$148.25** | **$137.67** | **$159.60** | **$93.07** | **$91.64** | **TOTAL** |
| Task 0: Coordination and Administration | 40 | | | | | | $8,228.80 |
| Task 1: Kick Off Meeting | 8 | 8 | | | 2 | 2 | $3,201.18 |
| Task 2: Develop Thresholds and Screening | 40 | 40 | 40 | 20 | 4 | 4 | $23,596.44 |
| Task 3: VMT Calculation Tool | 10 | 60 | 80 | 8 | 4 | 4 | $23,981.44 |
| Task 4: Update Thresholds | 28 | 40 | 16 | 8 | 4 | 4 | $15,908.52 |
| **TOTAL HOURS** | **126** | **148** | **136** | **36** | **14** | **14** | |
| **TOTAL FEES** | **$25,920.72** | **$21,941.00** | **$18,723.12** | **$5,745.60** | **$1,302.98** | **$1,282.96** | **$74,916.38** |

# APPENDIX A

# RESUMES

# ANTHONY L. PETROS
PROJECT MANAGER

## EXPERTISE

Transportation Planning and Impact Analysis

Parking Analysis

## EDUCATION

Cornell University, Master of Regional Planning (M.R.P.) Candidate, 1985.

University of California, Irvine, B.A., Social Ecology, 1983.

University of California, Irvine, B.S., Biological Sciences, 1982.

## PROFESSIONAL EXPERIENCE

Principal, LSA, Irvine, California, 1984–Present.

## PROFESSIONAL AFFILIATIONS

City of Newport Beach, City Councilmember, District 2, 2012–2016

Institute of Transportation Engineers, Member

Orange County Traffic Engineers Council

Newport-Mesa Unified School District Measure A Oversight Committee, Inaugural Chairman

City of Newport Beach, Bicycle Safety Committee

City of Costa Mesa Chamber of Commerce, Past President

## PROFESSIONAL RESPONSIBILITIES

Mr. Petros' primary responsibilities include the management and supervision of the transportation function of LSA in California. This role includes the preparation and review of comprehensive traffic and parking studies, operational and engineering analyses, Project Study Reports/Project Reports, complete streets and modal analyses, and long-range and strategic planning efforts. Emphasis is placed on the coordination of transportation projects with municipal and agency administrators and other stakeholder interests. Communication and consensus-building efforts are of paramount concern.

Mr. Petros has decades of experience in regional and strategic planning and has provided these services to clients over extended periods of time. He understands regional policy and combines that with a deep knowledge of technical issues regarding regional forecasting. He managed a multi-year Strategic Services contact with the Orange County Transportation Authority (OCTA) addressing issues of Caltrans coordination, regional consistency with Southern California Association of Governments (SCAG) and countywide mobility services. Mr. Petros is a consultant to Orange County Council of Governments (OCCOG) and helped draft the OC Complete Streets Initiative scope of work. He was the Project Manager for the data collection and validation of two rounds of SCAG Regional Transportation Plan (RTP) traffic forecasting model updates. He was the manager for the 2014 and 2018 Long Range Transportation Plans (LRTP) and the Orange County Sustainable Communities Strategy (OC SCS) for the OCTA; and successfully obtained the federal Presidential Permit for the border penetration at the Cross Border Xpress (airport) in the City of San Diego.

Mr. Petros is also a regional policy instructor and is an instructor in the Graduate Program in Public Policy at UC Irvine. He has been guest lecturer on regional planning and mobility at USC and Cal State Fullerton as well. He has made presentations on regional issues for the ULI, AEP, APA and ITE. He is a recognized leader in regional mobility and solution based planning.

## PROJECT EXPERIENCE

### City of Fresno VMT Threshold
### Fresno, California

LSA has recently been approved to provide the City of Fresno with services to establish VMT thresholds for subsequent CEQA documentation. LSA has started working with the City of Fresno traffic forecasting tool to provide an updated existing land use base (existing conditions reflect the base conditions for new CEQA conformity). LSA will be addressing several policy related issues that have been raised by the State Office of Planning and Research in their recent Technical Advisory related to SB 743 legislation. These issues include definition of the region to evaluate, criteria from the baseline condition to consider, model screening application for streamlining and small projects, high quality transit corridors and transit oriented development zones and more. LSA will prepare a model user interface for ease of use that is a GIS based tool with citywide mapping. LSA will also provide the City with training, support and a user guide.

### City of Fresno General Plan
### Fresno, California

LSA has been awarded the contract to prepare the updated City of Fresno General Plan EIR and traffic analysis. The traffic analysis will be conducted to address

## PROJECT EXPERIENCE (CONTINUED)

general traffic flow, arterial hierarchy and land use and circulation consistency. Using daily and peak hour roadway segment values, adequate capacity will be demonstrated for study area roadways in Fresno and the surrounds. In addition, the General Plan land use element will be analyzed using vehicle miles traveled (VMT) as a metric. LSA is currently revising modules of the Fresno traffic forecasting tool to reflect an updated existing condition (VMT is a comparison of post project to existing conditions). Traffic analysis zone VMT forecasts are being compiled and low, moderate and high VMT zones are identified. A regional average is being established and the final General Plan project will be compared to that regional average for net change in VMT as a result of General Plan implementation.

### OCTA Strategic Advisory Services
### Orange County, California

LSA was requested by senior OCTA staff to assist in discrete tasks related to long-range strategic planning efforts for the agency. These tasks include a review and critique of the Measure M2 program and the agency's sustainability practices, consolidation of service delivery metrics and overall management indicators, assistance with the Measure M2 10-Year Review, and support services in the review of SB 743. LSA has traveled to Sacramento, hosted meetings with the Orange County Business Council and key county leaders, and participated in panels and conferences around the State gathering information and developing strategies related to implementation of SB 743. LSA has become the recognized leader in SB 743 interpretation and its implementation in the County.

### Orange County Sustainable Communities Strategy
### Orange County, California

Orange County has accepted delegation for the preparation of an OC SCS to demonstrate compliance with SB 375. This landmark legislation is part of the broader California Global Warming Solutions Act of 2006 and links land use and transportation to reduce VMT and greenhouse gas emissions. Mr. Petros serves as the Project Manager for the OC SCS effort. Leading a multidisciplinary team, Mr. Petros was responsible for coordinating with agency staff, elected officials, technicians, and scientists in the development of a comprehensive strategy. Mr. Petros and his team developed and documented many best management practices used by agencies to address land use and transportation planning, and collaborating with SCAG representatives to achieve thresholds set by the California Air Resources Board.

### OCTA 2014 Long-Range Transportation Plan
### Orange County, California

LSA was the prime consultant and Mr. Petros served as the overall Project Manager working with the OCTA to prepare the 2014 LRTP, Orange County's contribution to the SCAG RTP. It identifies the mobility projects and programs desired and necessary to meet Orange County's transportation needs now and in the future, taking into account multiple considerations, such as current transportation policies and commitments, stakeholder input, and revenues available to implement the LRTP. The LRTP also considered the linkages created by the recent SB 375 regulation and requirements for the SCS. As the author of the inaugural OC SCS, Mr. Petros and LSA have unparalleled experience in comprehending the details of SB 375 linkages and developing meaningful strategies and plans. As the prime consultant who developed the long-range transportation strategies for the LRTP, Mr. Petros was positioned to provide maximum benefit to the OCTA in the development of efficient and actionable policies and plans for this assignment.

### General Plan Land Use and Urban Design Elements EIR
### Long Beach, California

LSA prepared an EIR for the City of Long Beach General Plan Land Use (LUE) and Urban Design Elements (UDE) Project. The LUE and UDE were prepared as companion documents to each other and were integrated with the new Mobility Element. The LUE will replace land use designations with Placetypes that are more flexible and comprehensive, and will lead to a subsequent comprehensive zoning code update. The UDE will provide minimum design standards for the Placetypes and their respective component development types and patterns. In support of the EIR, LSA prepared technical documentation, including air quality/greenhouse gas emissions, noise, and traffic analyses, as well as assisted with Native American consultation. Mr. Petros is serving as Principal for the Transportation Group providing quality assurance of the traffic technical report.

# KEN WILHELM
PRINCIPAL IN CHARGE

## EXPERTISE

Transportation Planning and Traffic Impact Assessment

Transportation Funding Applications

Data Collection and Analysis

Parking Demand Analysis

Bicycle Planning

## EDUCATION

Chapman University, B.A., Sociology, 1990.

## PROFESSIONAL EXPERIENCE

Principal, LSA, Irvine, California, Transportation and Traffic Division, 1996–Present.

Research Analyst, Metropolitan Water District of Southern California, Real Estate/ Engineering Services Branch, 1996.

Transportation Planner, P&D Consultants, Inc., Transportation and Aviation Division, 1995.

Planner II, County of Orange, Environmental Management Agency, Transportation Long Range Planning Division, 1991–1995.

## PROFESSIONAL AFFILIATIONS

Orange County Traffic Engineering Council

Institute of Transportation Engineers

## PROFESSIONAL RESPONSIBILITIES

Mr. Wilhelm has more than 25 years of direct experience in the management and preparation of traffic, parking, and bicycle studies throughout California. His primary responsibilities include the supervision, design and technical analyses of private development and public capital improvement projects as they relate to mobility and the regional circulation system. Mr. Wilhelm has extensive experience in processing traffic impact studies, parking demand analyses, and operational studies through public agencies as part of entitlements and capital improvement programs. Mr. Wilhelm also has experience in the preparation and review of City Circulation Elements, EIRs, and bicycle transportation plans. Mr. Wilhelm has assisted agencies with acquiring transportation funding through federal, State, and local grant programs. Mr. Wilhelm's focus over the last 10 years has been converting the Irvine Business Complex (IBC) into a mixed-use environment, including 15,000 residential dwelling units and 48 million square feet of nonresidential uses. He has managed dozens of traffic impact studies, access analyses, and parking studies for a mix of projects within the IBC with the goal of converting the area into an urban village.

## PROJECT EXPERIENCE

### Public Storage (231 W. Capitol Expressway) Transportation Analysis San Jose, California

Mr. Wilhelm managed preparation of a Transportation Analysis for the proposed 427,395-square-foot (sf) Public Storage project at 231 West Capitol Expressway in San José, California. The analysis was prepared consistent with the *Transportation Analysis Handbook* (City of San José 2018), the *Envision San José 2040 General Plan* (City of San José 2011 [as amended 2018]), and applicable provisions of the California Environmental Quality Act (CEQA). This study satisfies the City's requirements for a CEQA analysis and a Local Transportation Analysis (LTA).

The CEQA analysis analyzes the project's vehicle miles traveled (VMT) against the City's standardized thresholds. The LTA evaluates the a.m. and p.m. peak-hour levels of service (LOS) and queueing during a typical weekday at the study area intersections for Existing, Background (Existing Plus Approved Projects), and Project (Existing Plus Approved Project Plus Project) scenarios. Access and on-site circulation, as well as pedestrian, bicycle, and transit facilities, were also analyzed within the project vicinity. The Transportation Analysis was approved by the City on August 29, 2019.

### Irvine Business Complex Traffic Impact Analyses Irvine, California

By virtue of LSA's work in the Irvine Business Complex for more than 20 years, Mr. Wilhelm demonstrates a level of understanding few can rival. LSA has participated in more than 60 land development and/or capital improvement projects in the IBC alone (or the equivalent of more than three projects per year over the last 20 years, through both recessions and economic downturns). Because of this experience, LSA has amassed a concrete understanding of the plans, policies, and procedures for the characterization and analysis of major mixed-use urban village projects. Mr. Wilhelm and LSA staff have used this experience to develop methods to identify internal trip capture, pedestrian

## PROJECT EXPERIENCE (CONTINUED)

attractions, transit provisions, and land-use interactions for a multitude of individual land uses and their combinations. Since adoption of the IBC Vision Plan in 2010, Mr. Wilhelm has worked with the City of Irvine and private developers to meet the transportation goals of this area with 15,000 residential dwelling units and 48 million square feet of nonresidential uses.

### Aera Energy Master Planned Community
### Los Angeles and Orange Counties, California

Mr. Wilhelm served as Project Manager to prepare a Traffic Impact Analysis (TIA) to identify the short-term and long-range impacts of the Aera Master Planned Community (AMPC) development, which is located on the border of Los Angeles and Orange Counties between Harbor Boulevard to the west and SR-57 to the east. The AMPC proposed a maximum of 3,600 dwelling units, 300,000 square feet of commercial/retail use, an elementary school, and a golf course. The proposed access to the project site is along Brea Canyon Road and Harbor Boulevard, two heavily congested corridors. The traffic study has been prepared in support of the project EIR and will address the environmental effects associated with implementation of a General Plan Amendment, a Zone Change, and a Specific Plan for the AMPC project. The TIA includes an intersection and roadway segment analysis at more than 60 locations and a freeway mainline and ramp analysis on State Route 60 and SR-57. The Counties of Los Angeles and Orange are the Responsible Agencies, as the project boundary encompasses unincorporated areas of each county. Coordination throughout the TIA process has been made with both Counties, as well as with Caltrans Districts 7 and 12 and the Cities of Diamond Bar, Industry, La Habra Heights, La Habra, and Brea.

The TIA also evaluated the effect of existing longer-distance commute trips that might be replaced and eliminated with a shorter trip from this project. An analysis of vehicle miles traveled (VMT) was provided within the traffic study for purposes of disclosing the VMT of the project compared to an alternative project location and in order to examine the project's consistency with SCAG's regional VMT goals.

### Laguna Canyon Road (SR-133) Project Report
### Orange County, California

Mr. Wilhelm assisted in the preparation of the Project Report for the widening of Laguna Canyon Road. The document was coordinated with Caltrans District 12, the County of Orange, the FHWA, the Irvine Company, surrounding cities, and several utility companies. Caltrans approved the Project Report in 2001, and the project was completed in 2006.

# AMBARISH MUKHERJEE, PE, AICP

TECHNICAL / MODELING TASK LEAD

## EXPERTISE

Travel Demand Modeling

Traffic Impact Studies

Land Use and Transportation Modeling and Simulation

Roadway and Freeway Operations Analysis

Pedestrian & Bicycle Planning

Transit Routing

Goods Movement

Transportation Funds & Grants Management

GIS Analysis

Statistical & Analytical Research.

Intelligent Transportation Systems

## EDUCATION

University of Texas at Arlington, Texas. Master of City and Regional Planning with concentration in Transportation and Land Use Planning, and GIS. 2003–2005.

Recipient of the prestigious Graduate Dean's Fellowship for the entire period of study.

Graduate Certificate in Geographic Information System.

Indian Institute of Technology, Kharagpur, India. Bachelor of Architecture (Honors). 1998–2003.

## PROFESSIONAL RESPONSIBILITIES

As an Associate and Senior Transportation Planner at LSA's Riverside office, Mr. Mukherjee specializes in travel demand modeling and public infrastructure projects as well as conducts Traffic Impact Analyses (TIAs) for a wide variety of large and small projects including transit projects, residential development, mixed-use development, commercial and office projects, parking structures, roadway and circulation improvements, and General Plans and Specific Plans. He is currently in-charge of LSA's Riverside Office Transportation group. Prior to joining LSA, he worked with the Fort Worth Transportation Authority as a Transit Planner.

## PROJECT EXPERIENCE

### City of Fresno VMT Threshold
### Fresno, California

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### City of Fresno General Plan
### Fresno, California

LSA has been awarded the contract to prepare the updated City of Fresno General Plan EIR and traffic analysis. The traffic analysis will be conducted to address general traffic flow, arterial hierarchy and land use and circulation consistency. Using daily and peak hour roadway segment values, adequate capacity will be demonstrated for study area roadways in Fresno and the surrounds. In addition, the General Plan land use element will be analyzed using vehicle miles traveled (VMT) as a metric. LSA is currently revising modules of the Fresno traffic forecasting tool to reflect an updated existing condition (VMT is a comparison of post project to existing conditions). Traffic analysis zone VMT forecasts are being compiled and low, moderate and high VMT zones are identified. A regional average is being established and the final General Plan project will be compared to that regional average for net change in VMT as a result of General Plan implementation.

### Riverside County Traffic Analysis Model (RivTAM) On-Call Modeling and Support (2009 – 2017)
### Riverside County, California

Mr. Mukherjee was the project manager and lead analyst on this project and performed various modeling tasks using the RivTAM model. RivTAM, which was developed as a sub-regional model using the SCAG RTP model, is a TransCAD 5.0 based model and is extensively used for preparing transportation studies within Riverside County.

# AMBARISH MUKHERJEE, PE, AICP

TECHNICAL / MODELING TASK LEAD

## CONTINUING EDUCATION

TransCAD Training, Caliper Corporation, September 2009.

PTV America, VISSIM Training, December 2011.

Dowling Associates, Inc., Oakland: Traffix Software Training, December 2007.

University of California Extension, Berkeley, Basic SYNCHRO and SimTraffic: Tools for Traffic Signal Timing, September 2007.

University of California Extension, Berkeley, Fundamentals of Signal Timing and Operations, March 2007.

## PROFESSIONAL AFFILIATIONS

American Institute of Certified Planners (AICP): Membership Number 023158

American Planning Association (APA)

Institute of Transportation Engineers (ITE)

Professional Civil Engineer (California): License Number C88084

## PROFESSIONAL EXPERIENCE

Associate/Senior Transportation Planner. LSA Associates, Inc., Riverside. California. 2006–present.

Service Planner I. Fort Worth Transportation Authority, Fort Worth, Texas. 2005.

Graduate Research Assistant. School of Urban and Public Affairs, University of Texas at Arlington. 2003–2004.

## PROJECT EXPERIENCE (CONTINUED)

### Globemaster Corridor Specific Plan VMT Analysis
### Long Beach, California

LSA was hired to prepare a VMT analysis for the Globemaster Corridor Specific Plan project in the city of Long Beach. Mr. Mukherjee was the project manager for this project. The GCSP provides the planning and regulatory framework for guiding future development and attracting quality jobs to the approximately 432.12-acre GCSP area located in an area adjacent to the Long Beach Airport, I-405 Freeway and surrounding residential and business community. The regional (City) VMT per capita for both base (2012) and future (2040) model scenarios were obtained from the SCAG RTP model runs. Existing (2019) VMT per capita was developed by interpolating between base and future year VMT data obtained from SCAG RTP model. Project select zone model runs were utilized to develop project VMT. Project VMT per capita was calculated for both base (2012) and future (2040) model scenarios. The existing (2018) project VMT per capita was developed by interpolating between the base and future year VMT per capita for the project.

### General Plan Land Use and Urban Design Elements Traffic Analysis
### Long Beach, California

The City of Long Beach updated its Circulation Element recognizing that the mobility of people is not always improved by facilitating automobile travel. As such, the City is transitioning away from performance measures focused on automobile level of service. As part of this project, the City requested preparation of a VMT analysis. Mr. Mukherjee updated the 2016 SCAG RTP model to incorporate General Plan land uses into the model. Model runs were conducted to develop VMT estimates that were then compared to regional VMT estimates.

### Laguna Niguel Town Center Modeling and VMT Analysis
### Unincorporated Riverside County, California

Mr. Mukherjee is the project manager for this project and is currently preparing a VMT analysis using the Orange County Traffic Analysis Model (OCTAM). The proposed project is a mixed-use development that will include 275 multi-family dwelling units, 54,410 sf of office use and 79,920 sf of retail. Three separate select zone runs are being created to separate out the VMT for the three different land uses. As part of this analysis, the project will be compared to the regional VMT obtained from OCTAM.

### Paradise Valley Specific Plan Modeling and VMT Analysis
### Unincorporated Riverside County, California

Mr. Mukherjee prepared the model runs for the Paradise Valley Specific Plan using the RivTAM model. The project area was subdivided into 20 new TAZs and the socio-economic data updated within the new zones to incorporate the proposed project within the new TAZs. Mr. Mukherjee also conducted VMT analysis for the proposed project.

# ARTHUR BLACK
POLICY TASK LEAD

## EXPERTISE

Transportation Planning

Parking Demand and Shared Parking Studies

Transit Systems

## EDUCATION

California State Polytechnic University, Pomona, Masters of Urban and Regional Planning, 2012.

Grove City College, Pennsylvania, B.S., Industrial Management, 1999.

## PROFESSIONAL CERTIFICATIONS / REGISTRATIONS

American Planning Association

Institute of Transportation Engineers

Orange County Transportation Engineers Council

## PROFESSIONAL EXPERIENCE

Senior Transportation Planner, LSA, Irvine, California, December 2006–Present.

Logistical Support, United States Marine Corps, 4th Light Armored Reconnaissance Battalion, Camp Pendleton, California, 2002–2009.

## PROFESSIONAL RESPONSIBILITIES

Mr. Black's primary responsibilities include the production of technical reports for the transportation function of LSA in Irvine, California. This role involves the preparation of traffic and parking studies, operational analysis, and transportation planning research. Mr. Black has also assisted in the development of the Orange County Sustainable Communities Strategy and the Orange County Long Range Transportation Plan. Mr. Black has prepared reports for development and transportation projects, and his transportation planning research has included parking generation rates, transit planning, traffic calming, internal trip capture, and transit mode share. Mr. Black has followed the implementation of Senate Bill 743 including attending meetings at the Southern California Association of Governments with Chris Calfee, Senior Counsel for the Governor's Office of Planning and Research.

## PROJECT EXPERIENCE

### General Plan Land Use and Urban Design Elements Traffic Analysis
### Long Beach, California

The City of Long Beach updated its Circulation Element recognizing that the mobility of people is not always improved by facilitating automobile travel. As such, the City is transitioning away from performance measures focused on automobile level of service. Until that transition is complete, however, an analysis of potential impacts to automobile level of service at intersections was required for the updated Land Use and Urban Design Elements. Mr. Black performed this citywide analysis. The regional traffic model was used to forecast changes in VMT. Mr. Black's traffic analysis included a disclosure of the Land Use Element's effects on VMT.

### Orange County Sustainable Communities Strategy
### Orange County, California

Mr. Black assisted with the preparation of the Orange County Sustainable Communities Strategy (OCSCS) for the Orange County Council of Governments (OCCOG). This document is a subregional component to the regional SCS prepared by Southern California Association of Governments and is included in the Regional Transportation Plan. The SCS addresses the relationship between transportation and land uses and identifies strategies for reducing greenhouse gas emissions from cars and light trucks. Mr. Black's responsibilities included collecting and organizing comments received from OCTA, the OCCOG, and community stakeholders to ensure appropriate comments were addressed in future revisions to the document.

### OCTA 2014 and 2018 Long Range Transportation Plan
### Orange County, California

Mr. Black was a member of the team assisting OCTA in the preparation of the 2014 Long Range Transportation Plan (LRTP). The LSA team was also selected by OCTA to prepare the 2018 LRTP. With the 2014 LRTP, the LSA Team built on the Orange County Sustainable Communities Strategy (OCSCS) to integrate land use planning into the LRTP. The 2014 LRTP also presented transportation planning for multiple travel modes and added the goal of supporting mode

## PROJECT EXPERIENCE (CONTINUED)

choice. The 2018 LRTP will continue to build on the idea of developing transportation networks that offer viable alternatives. Metrics are being added to allow OCTA to track progress towards sustainability and qualify for funding through new State and federal programs.

### Growth Management Area Administration
### Orange County, California

Mr. Black assisted with the organization effort for Technical Advisory Committee and elected officials meetings for Growth Management Areas 2 and 10 for 4 years. Mr. Black's responsibilities included coordination with the appropriate cities' staff to create a comprehensive picture of land use changes and the subsequent future needs of the transportation network.

### Aera Energy Master Planned Community
### Counties of Los Angeles and Orange, California

Mr. Black assisted in the traffic impact analysis of a 3,000-acre project encompassing land in both Los Angeles and Orange Counties. The analysis included determining project impacts on roadways and intersections already at or near operational capacity. In addition, an operational analysis was prepared to plan internal intersections. An assessment of VMT with the project and with alternative project locations was included in the traffic analysis.

### On-Call Transportation Services
### Anaheim, California

Mr. Black provides the City of Anaheim with on-call parking and transportation services. Many of these efforts have been in and around the Anaheim Resort and adjacent Platinum Triangle and Center City areas. Projects completed for the City of Anaheim include parking studies and event traffic management for large congregation churches, parking demand management for the Packing District, and traffic improvement on Imperial Highway.

### PacifiCenter
### Anaheim, California

Mr. Black assisted in the traffic impact analysis of this planned transit-oriented development in the City of Anaheim. The analysis included traffic microsimulation to determine the adequacy of internal roadways and intersections. Traffic microsimulations were also used to determine the effect of additional project traffic at a nearby freeway ramp intersections, project intersections, and the roadway in between. Subsequent to the traffic study, Mr. Black prepared a matrix of land use options that would result in the same traffic impacts. He used this matrix to prepare a revision to the Specific Plan governing the project area.

# APPENDIX B

# LETTERS OF REFERENCE

ORANGE COUNTY
OC Community Resources
Our Community. Our Commitment.

**DYLAN WRIGHT**
DIRECTOR
OC COMMUNITY RESOURCES

**CYMANTHA ATKINSON**
DEPUTY DIRECTOR
OC COMMUNITY RESOURCES

**MIKE KAVIANI**
DIRECTOR
OC ANIMAL CARE

**CYMANTHA ATKINSON**
INTERIM DIRECTOR
OC HOUSING & COMMUNITY DEVELOPMENT & HOMELESS SERVICES

**RENEE RAMIREZ**
DIRECTOR
OC COMMUNITY SERVICES

**STACY BLACKWOOD**
DIRECTOR
OC PARKS

**SHERRY TOTH**
ACTING COUNTY LIBRARIAN
OC PUBLIC LIBRARIES

September 3, 2019

LSA Associates, Inc.
Tony Petros, Principal Transportation Planner
20 Executive Park, Suite 200
Irvine, CA 92614

Mr. Petros:

This letter of reference is written on behalf of LSA. It is our understanding that LSA is submitting a Request for Proposals for Senate Bill (SB) 743 Implementation for Orange County Public Works.

LSA's work is high quality, timely, professional, well organized and clearly written. Most importantly to Orange County Parks, LSA maintains a current understanding and expertise relating to new developments in transportation.

LSA was the overall Project Manager for the effort of the Orange County Loop (OC Loop), managing the preliminary engineering over the three gap closure strategies, as well as the environmental documentation and the public outreach. LSA's Mobility group prepared the Master Plan of Arterial Highways (MPAH) amendment for Esperanza Boulevard to accommodate a Class IV cycle track. This is a direct application of the Complete Streets strategies from the Orange County Complete Streets Initiative. LSA assisted with the engineering, environmental assessment, and public outreach for this innovative project, and understands how a streamlined MPAH process could assist in project delivery.

LSA has been professional and willing to "do whatever it takes" to keep our project on track, and we are pleased to submit this letter of reference on their behalf. Please feel free to contact my office should further information be required.

Sincerely,

09-03-2019
Date

Tuan Richardson
OC Parks Planning & Design | Project Manager
(949) 585-6451
tuan.richardson@ocparks.com

OCparks

13042 OLD MYFORD ROAD
IRVINE, CA 92602
PHONE: 866.OCPARKS
FAX: 714-667-6511

# CITY OF LONG BEACH

DEPARTMENT OF DEVELOPMENT SERVICES

411 West Ocean Blvd., 3rd Floor, Long Beach, CA 90802 Phone: 562-570-6194

PLANNING BUREAU


September 4, 2019

LSA
Tony Petros, Principal Transportation Planner
20 Executive Park, Suite 200
Irvine, CA 92614

Mr. Petros:

This letter of reference is written on behalf of LSA. It is our understanding that LSA is submitting a Request for Proposals for Senate Bill (SB) 743 Implementation for Orange County Public Works.

LSA's work is high quality, timely, professional, well organized and clearly written. Most importantly to the City of Long Beach, LSA maintains a current understanding and expertise relating to new developments in transportation and mobility.

LSA's Mobility group prepared a Traffic Impact Analysis (TIA) as well as an analysis of potential impacts to vehicle miles traveled (VMT) for the City of Long Beach General Plan Land Use Element. LSA demonstrated many times their commitment to maintaining our schedule; their credibility with resource agencies, which helped to speed up the process; and their ability to communicate with our staff to obtain the information necessary to complete our project.

LSA has been professional and willing to "do whatever it takes" to keep our project on track, and we are pleased to submit this letter of reference on their behalf. Please feel free to contact my office should further information be required.

Respectfully,


Patricia A. Diefenderfer, AICP
Advance Planning Officer
Department of Development Services, Planning Bureau
City of Long Beach
411 W. Ocean Blvd., 3rd Floor
Long Beach, CA 90802
(562) 570-6261

# City of Banning
## Public Works Department

September 11, 2019

LSA Associates, Inc.
Tony Petros, Principal Transportation Planner
20 Executive Park, Suite 200
Irvine, CA 92614

Mr. Petros:

This letter of reference is written on behalf of LSA. It is our understanding that LSA is submitting a Request for Proposals for Senate Bill (SB) 743 Implementation for Orange County Public Works.

LSA's work is high quality, timely, professional, well organized and clearly written. Most importantly to Orange County Public Works, LSA maintains a current understanding and expertise relating to new developments in transportation.

LSA recently completed multiple projects within the City of Banning (City) including the Butterfield Specific Plan Traffic Impact Analysis (TIA), City's General Plan Amendment to eliminate the Highland Home Road Overpass and conversion of City's LOS standard from LOS C to LOS D, Rancho San Gorgonio Specific Plan modeling and I-10 Bypass project modeling. As part of these projects, LSA used RivTAM to update the model within the City to incorporate each project into the model. Additionally, the roadway network within the City was refined to build a more detailed roadway network for the traffic model within each project area. A key element in this process was coordination between the Traffic Analysis Zone (TAZ) structure and the roadway network. LSA coordinated the TAZ and network updates so that the resulting data appropriately represented conditions within the City. LSA also updated the base-year and future-year socio-economic data (SED) to incorporate each project into the model.

LSA has been professional and willing to "do whatever it takes" to keep our project on track, and we are pleased to submit this letter of reference on their behalf. Please feel free to contact my office should further information be required.

Respectfully,

Art Vela, P.E.
Public Works Director/City Engineer
City of Banning
951-922-3130

LSA

www.lsa.net