# CITY OF LAGUNA HILLS

## Vehicle Miles Traveled Analysis Guidelines under the California Environmental Quality Act and General Plan Development Review Traffic Study Guidelines

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# Executive Summary

The City of Laguna Hills has consolidated the Vehicle Miles Traveled (VMT) Analysis Guidelines under the California Environmental Quality Act (CEQA) and the General Plan Traffic Study Guidelines required for Development Review into this single document. The City of Laguna Hills requires that both VMT and Level of Service (LOS) effects be reviewed for all projects subject to discretionary review. A screening process is utilized to determine the appropriate level of review needed for assessing CEQA and non-CEQA related transportation/traffic impacts.

The Transportation Review Flow Chart, shown in Exhibit A, provides an overview of the typical development review process for assessing transportation and traffic impacts in the City of Laguna Hills.

The City of Laguna Hills Vehicle Miles Traveled Analysis Guidelines under the California Environmental Quality Act (VMT Guidelines) establish the methodology and thresholds of significance for analyzing transportation impacts pursuant to the latest requirements of the California Environmental Quality Act (CEQA) regarding Vehicle Miles Traveled (VMT). The Transportation Review Flow Chart shown in Exhibit A provides an overview of the typical development review process for assessing transportation impacts.

The City of Laguna Hills VMT Screening Form for Land Use Projects (VMT Screening Form) has been developed to provide an easy-to-use tool that can help streamline the VMT evaluation process. Laguna Hills recognizes the Orange County Transportation Analysis Model (OCTAM) as the preferred traffic analysis model for analyzing VMT in the City and has adopted the OCTAM Base Year 2016 citywide average home-based VMT per capita and home-based work VMT per employee efficiency metrics as the thresholds of significance for CEQA. Projects that exceed the citywide average VMT rate would be considered to have a potentially significant impact and require mitigation to reduce VMT to be equal to or below the applicable threshold.

Through the reduction of VMT, the city will reduce greenhouse gas (GHG) emissions, promote development of multi-modal transportation, and encourage a diversity of land uses. The following key strategies will be utilized for reducing VMT in the City:

- Diversifying land use
- Improving pedestrian networks
- Implementing traffic calming infrastructure
- Improving the bicycle network
- Encouraging telecommuting and alternative work schedules
- Providing ride-share programs
- Expanding transit services

The City of Laguna Hills will continue to maintain its LOS standards contained in the General Plan when approving development projects subject to a discretionary review process, and to ensure adequate traffic operations along its roadways, outside of the scope of CEQA. This consolidated Guideline includes the requirements for performing both the VMT analysis for purposes of CEQA and a traffic impact study (TIS) based upon a LOS analysis.

The City of Laguna Hills Planning and Engineering Divisions reserve the right to modify the requirements of these guidelines on a case-by-case basis and will update the guidelines as needed to address new CEQA precedent, future modeling forecasts, and overall refinement of the process moving forward.

Approved:

Kenneth H. Rosenfield, P.E.
Director of Public Services/City Engineer

September 15, 2021
Date

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# PART I - VMT GUIDELINES

## 1.0 Introduction

On July 14, 2020 the City of Laguna Hills adopted Resolution No. 2020-07-14-4, approving Vehicle Miles Traveled Analysis Guidelines under the California Environmental Quality Act (hereinafter referred to as VMT Guidelines) to help ensure that land use and transportation projects comply with the latest requirements of the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.) regarding VMT. The VMT Guidelines provide standardized criteria and established thresholds of significance to be used for analyzing transportation impacts within the City of Laguna Hills.

On September 27, 2013, Governor Brown signed Senate Bill (SB) 743 into law. SB 743 seeks to further promote the State's goals of reducing greenhouse gas (GHG) emissions and traffic-related air pollution and increase the development of multimodal transportation systems through the reduction of VMT. While SB 743 primarily focuses on projects in transit priority areas, it also authorized the California Governor's Office of Planning and Research (OPR) to change how transportation impacts are analyzed outside of transit priority areas. The new CEQA Guidelines (§ 15000 et seq.) were certified and adopted by the Natural Resource Agency in December 2018 and VMT is now identified as the most appropriate metric to evaluate a project's transportation impacts. Effective July 1, 2020, the previous CEQA metric of level of service (LOS), typically measured in terms of automobile delay or roadway capacity, generally will no longer constitute a significant environmental impact under CEQA.

The Laguna Hills VMT Guidelines are based on the recommendations provided in the OPR Technical Advisory on Evaluating Transportation Impacts in CEQA, December 2018 and incorporate the VMT modeling estimates from the Orange County Transportation Analysis Model (OCTAM). The VMT Guidelines have been tailored to take into account the local land use conditions, transportation network, and the General Plan goals and polices in the City of Laguna Hills.

The City of Laguna Hills Planning and Engineering Divisions reserve the right to modify the requirements of the VMT Guidelines on a case-by-case basis and will update the guidelines as needed to address new CEQA precedent, future modeling forecasts, and overall refinement of the process moving forward.

The City of Laguna Hills will continue to maintain LOS standards in the General Plan for the discretionary review process and to ensure adequate traffic operations along its roadways, outside of the scope of CEQA. See Exhibit A for the flow chart showing the transportation review process in the City of Laguna Hills and refer to the Traffic Impact Study Guidelines for Level of Service analysis requirements.

# 2.0 VMT Screening for Land Use Projects

All discretionary land use projects subject to CEQA must evaluate transportation impacts related to VMT as part of the environmental review process. The Transportation Review Flow Chart shown in Exhibit A provides an overview of the typical development review process for assessing transportation impacts in the City of Laguna Hills.

## 2.1 VMT Screening Form for Land Use Projects

The first step in evaluating a land use project's potential VMT impact is to perform an initial screening assessment utilizing the City of Laguna Hills VMT Screening Form for Land Use Projects (VMT Screening Form). The VMT Screening Form provides an easy-to-use tool for streamlining the VMT analysis process. An automated spreadsheet is available from the Planning Department and a PDF copy is provided in Appendix A.

## 2.2 VMT Screening Criteria

Screening criteria are a simplified way to determine whether a project would be expected to cause a less than significant impact to VMT without having to conduct a detailed study. The screening criteria adopted by the City of Laguna Hills are based on the recommendations from OPR for setting screening thresholds for land use projects.

1. **Is the project 100% affordable housing?**

   If a project consists of 100% affordable housing, then the presumption can be made that it will have a less than significant impact on VMT. According to sources provided by OPR, affordable housing projects typically generate lower VMT than market-rate housing and 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. Furthermore, a project which includes any affordable residential units may factor in the effect of the affordability on VMT into the assessment of VMT generated by those units.

**2. Is the project within one half (½) mile of qualifying transit?**

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 one half (½) mile of an existing major transit stop or an existing stop along a high-quality transit corridor will have a less than significant impact on VMT.

For purposes of the Laguna Hills VMT Guidelines, qualifying transit means a major transit stop or high-quality transit corridor, defined as follows:

- **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. (Pub. Resources Code, § 21064.3)
- **Bus rapid transit** means a public mass transit service provided by a public agency or by a public-private partnership that includes all of the following features: (1) full-time dedicated bus lanes or operation in a separate right-of-way dedicated for public transportation with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods; (2) transit signal priority; (3) all-door boarding; (4) fare collection system that promotes efficiency; and (5) defined stations. (Pub. Resources Code, § 21060.2(a)).
- **Bus rapid transit station** means a clearly defined bus station served by a bus rapid transit. (Pub. Resources Code, § 21060.2(b)).
- **High-quality transit corridor** means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours. (Pub. Resources Code, § 21155). At the time of publishing these guidelines, no high-quality transit corridors exist in the City of Laguna Hills.

The Laguna Hills Transportation Center serves as the hub for bus service in the City of Laguna Hills with daily fixed-route bus service provided by the Orange County Transportation Authority (OCTA). OCTA also provides a Dial-A-Taxi transit service for seniors, however, this on-call program does not qualify for VMT screening purposes, as it does not provide fixed-route service with regularly scheduled service times to the general public. The nearest Metrolink stations are the Laguna Niguel/Mission Viejo Station (approx. 0.6 miles from City boundary) and Irvine Station (approx. 1.85 miles from City boundary).

A project shall be considered to be within one-half mile of a major transit stop or high-quality transit corridor if all parcels within the project have no more than 25 percent of their area farther than one-half mile from the stop or corridor and if not more than 10 percent of the residential units or 100 units, whichever is less, in the project are farther than one-half mile from the stop or corridor. The analysis should also consider any substantial physical barriers that may impede pedestrian access.

Not all projects located near qualifying transit are presumed to have a less than significant impact. The presumption of less than significant does not apply if the project:

- Includes more parking for use by residents, customers, or employees of the project than required by the city (if the city requires the project to supply parking);
- Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the city, with input from SCAG); or
- Replaces affordable residential units with a smaller number of moderate or high-income residential units.

The latest bus schedules published by OCTA should be reviewed during the VMT screening process to determine whether a bus stop or corridor meets the criteria for qualifying transit. As of date of these Guidelines (July 9, 2020) the Laguna Hills Transit Center is not served by two or more major bus routes with a frequency of service interval of 15 minutes or less during peak commute periods.

Neither is the Transit Center identified in SCAG's proposed 2020 RTP/ SCS as a major transit stop.

**3. Is the project a local serving land use?**

Local serving land uses provide goods and services to the local community. Local serving land uses offer more opportunities for residents and employees to shop, dine and obtain services closer to home and work. Local serving uses can also include community resources that may otherwise be located outside of the local area. By improving destination proximity, local serving uses lead to shortened trip lengths and reduced VMT. Therefore, local serving uses may be presumed to have a less than significant impact on VMT. Projects that serve a wider regional area and population, such as regional shopping and entertainment centers would not qualify as a local serving use.

Table 1 contains a list of the eligible local serving uses in the City of Laguna Hills:

**Table 1**
**List of Local Serving Uses[1]**

| Local Serving Retail (Less Than 50 TSF) | Education/Institutional[2] | Municipal/Public Services[2] |
|---|---|---|
| • General retail/commercial less than 50,000 square feet, including:<br>• Supermarket<br>• Restaurant/cafe/bar<br>• Coffee/donut shop<br>• Dry cleaners<br>• Barber shop<br>• Hair/nails salon<br>• Banks<br>• Walk-in medical clinic<br>• Urgent Care<br>• Gas service station<br>• Auto repair/tire shop<br>• Gyms/health club<br>• Dance/yoga/fitness/martial arts studio | • Public elementary school<br>• Public middle school<br>• Public high school<br>• Private school less than 100 students[3]<br>• Community college less than 400 students[3]<br>• Day care/pre-school less than 100 students.[3]<br>• Vocational school less than 100 students.[3]<br>• Assembly uses less than 20 TSF.[3] | • Library<br>• Civic center<br>• Police/Fire station<br>• Community center<br>• Public works support facility<br>• Local Park<br>• Other local serving civic uses |

Notes:

[1] The Community Development Director and Director of Public Services reserve the right to require additional VMT analysis of any use listed above if there is indication that it may otherwise increase VMT. Other local serving uses may also be eligible for screening at the discretion of the Community Development Director or Director of Public Services

[2] Educational/institutional and municipal/public service uses qualify as local serving uses provided the use would serve the local community and provide additional services to the area that would otherwise have been located further away. These uses would typically be provided to support the local population of the city.

[3] Use would also typically generate less than 500 ADT.

**4. Is the Project in a low VMT area?**

Projects located 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. If a project is located in a Traffic Analysis Zone (TAZ) with VMT per capita or VMT per employee that is less than or equal to the citywide average, than the project is considered to be located in a low VMT area and can be presumed to have a less than significant impact on VMT. OCTAM is the preferred traffic model for screening and analyzing VMT in the City of Laguna Hills.

Residential projects shall utilize and compare the TAZ VMT/capita rate to the citywide average VMT/capita rate. Non-residential projects shall utilize and compare the VMT/employee rate to the citywide average VMT/employee rate. For mixed-use projects in which the residential component is considered the primary use, and the non-residential component is less than 50,000 square feet of local serving retail, the analysis shall be run as a residential project and the VMT/capita rate should be used. If a mixed-use project consists of non-local serving uses, a separate screening assessment should be prepared for both the residential and non-residential components of the project.

Exhibit B provides a map of the OCTAM TAZ's in the City of Laguna Hills. Users may also contact the Planning Department to obtain a Google Earth (.kmz) file that shows the OCTAM TAZ boundaries.

**5. Are the project's net daily trips less than 500 ADT?**

Projects that generate less than 500 net average daily trips (ADT) would not cause a substantial increase in the total citywide or regional VMT and are therefore presumed to have a less than significant impact on VMT. Appendix C provides additional discussion, evidence and analysis regarding the application of the 500 ADT screening criteria and how it has been established within the context of CEQA.

The latest edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual is the preferred source for calculating trip generation in the City of Laguna Hills. The use of other sources of trip generation must be approved by the Community Development or Public Services Department. The screening criteria trip limit is based on net trip generation after considering pass-by, internal capture, affordable housing, and/or existing land use trips.

- Pass-by trips include the portion of the project traffic that is already on the adjacent roadway and passes by the site as an intermediate stop. Typically applied to

retail/commercial uses only. Pass-by calculations should be consistent with ITE or other verified sources.

- Internal capture trips are trips that both begin and end on the project site. Commonly found in mixed-use developments, internal capture trips help can significantly reduce VMT. Internal capture credits should be consistent with the NCHRP Report 684 Enhancing Trip Capture Estimation for Mixed-Use Developments or other verified sources.

- Affordable housing trip credits can be taken for any dwelling unit within a project that is deemed affordable, as defined by the Community Development Director.

- Existing land use trip credits can be taken for land uses on a project site that are currently operational or that have been previously operational, provided such credits are consistent with the baseline principles in CEQA which permit an existing condition baseline based on historical use.

# 3.0 VMT Impact Analysis

Projects that do not meet at least one (1) of the screening criteria described in Section 2.0, must provide additional analysis and mitigation of potential VMT impacts.

## 3.1 VMT Thresholds of Significance

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.

The Laguna Hills VMT Guidelines have relied upon the recommendations provided by OPR and modeling data provided by OCTA to establish the following quantified thresholds of significance for VMT for land development projects:

- Residential Projects: A significant transportation impact occurs if the project's home-based VMT per capita exceeds the base year citywide average VMT per capita.

- Non-residential Projects: A significant transportation impact occurs if the project's employment VMT per employee exceeds the base year citywide average VMT per employee.

The citywide average VMT per capita and VMT per employee values are determined using the base year OCTAM modeling statistics. Ensuring land use development projects reduce VMT rates to be at

or below the current base year citywide average will result in an overall decrease in citywide VMT and GHG emissions.

## 3.2 Mitigating Impacts Using the VMT Screening Form

To help streamline the VMT evaluation process, the City of Laguna Hills allows certain projects to utilize the OCTAM base year VMT statistics from the TAZ in which the project is located to mitigate potentially significant impacts.

To be eligible for mitigating impacts using the VMT Screening Form, projects should generate less than 2,400 ADT and be located in a TAZ with sufficient base year demographic data to provide a reasonable estimate of VMT patterns for the area. For example, residential projects must be located in a TAZ with existing housing to provide a reasonable sample size of VMT/capita and non-residential projects must be located in a TAZ with existing employment to provide a reasonable sample size of VMT/employee for evaluation and mitigation purposes.

Utilizing the VMT statistics from the OCTAM base model as a means for assessing project-specific VMT is effective because, generally, land uses of a similar type that are in the same geographic area will tend to exhibit similar VMT. Such land uses will have similar access to the same transportation network and produce and attract trips in a similar manner. The presumption that similar land uses located in the same geographic area would exhibit similar transportation patterns is consistent with the OPR Technical Advisory methodology regarding map-based screening.

A project is required to reduce the base year VMT rate for the TAZ in which the project is located to be less than or equal to the citywide VMT average. The percent reduction required to achieve the citywide average VMT is calculated as follows:

$$\textit{Percent Reduction Required} = 1 - (\textit{citywide average rate}/\textit{project TAZ rate})$$

## 3.3 Project-Specific VMT Modeling

Projects that do not satisfy at least one (1) of the VMT screening criteria and generate 2,400 or more net daily trips, or are not able to effectively mitigate impacts on the VMT Screening Form, shall analyze VMT impacts by using OCTAM to model project-specific VMT.

The Orange County Congestion Management Program uses 2,400 ADT as a screening criterion for assessing whether projects may require a CMP-level Traffic Impact Analysis, and projects that generate over 2,400 ADT have a greater potential to affect travel demand patterns in the OCTAM. Therefore, to help ensure larger projects do not exceed the assumptions of the OCTAM, projects that generate more than 2,400 ADT would require project-specific VMT modeling.

Project-specific VMT modeling shall determine if the project would have a significant impact based on the following scenarios:

- OCTAM base year plus project conditions
- OCTAM future year with project conditions

VMT modeling should include project generated VMT per capita and/or VMT per employee for the project and compare the results to the applicable threshold of significance.

The geography analyzed by the OCTAM VMT tool must nest into zones. To obtain project-specific VMT data, a new OCTAM zone may need to be created and/or adjustments may need to be made to the Orange County Projections (OCP) data and zone boundaries to reflect the project specifics. The latest version of OCTAM shall be used when performing VMT modeling.

Prior to initiating the modeling work, the traffic engineer consultant shall meet with city staff to outline the scope of work of this further analysis. This meet and confer effort is intended to focus the modeling work to meet the intent of these guidelines.

## 3.4 RTP/SCS Consistency Requirements

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, OPR recommends that 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. Projects should review the data currently available through SCAG concerning RTP/SCS compatibility.

A project may also be inconsistent with the RTP if it exceeds (either directly or cumulatively) the number of housing units specified in SCAG's Regional Housing Needs Assessment (RHNA) Final Allocation Plan for the City of Laguna Hills (particularly above moderate-income housing). If the addition of the project would cause the citywide housing supply to exceed the RHNA Allocation, then additional modeling may need to be provided to analyze the effect on future year citywide and project TAZ VMT rates.

## 3.5 Impacts to Transit and Active Transportation

Consistent with the OPR Technical Advisory, the City of Laguna Hills recommends that when determining the effects of a project on transportation, the analysis 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.

The analysis should examine if the project is consistent with adopted policies, plans, or programs regarding active transportation or public transit facilities, or otherwise decreases the performance or safety of such facilities and make a determination as to whether it has the potential to conflict with existing or proposed facilities supporting these travel modes.

# 4.0 Mitigation Measures

The source document for quantifying VMT mitigation measures shall be the California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures, August 2010. Other sources of VMT reduction measures may be approved by the Public Services Director, provided substantial evidence is included to justify the VMT reduction estimates. All VMT reduction measures to be applied to the project shall be clearly listed and quantified with supplemental calculations and attachments.

The location setting of a project matters when it comes to the effectiveness that mitigation measures have on reducing VMT. Projects in suburban settings (such as those commonly found in the City of Laguna Hills) typically have limited access to transit, multimodal infrastructure and diverse land use destinations that support effective transportation demand management (TDM) strategies. Thus, the potential VMT reduction in suburban settings is limited.

Users should identify the appropriate project location setting, as defined by CAPCOA (Page 59-60), when estimating potential VMT reduction and follow the recommendations from CAPCOA when considering the maximum percent reduction achievable.

The California Emissions Estimator Model (CalEEMod) developed by CAPCOA may be used to help quantify VMT reduction measures. It is recommended that any VMT reduction measures used for mitigating VMT be consistent with the requirements for reducing greenhouse gas emissions within the CEQA document.

Appendix D includes the fact sheets from CAPCOA listing the transportation measures for VMT reduction.

After all feasible mitigation measures are applied, the mitigated Project VMT Rate should be compared to the applicable thresholds of significance to determine whether the project has effectively reduced the impact to less than significant levels. The mitigated Project VMT Rate is calculated as follows:

$$Mitigated\ Project\ VMT\ Rate = Unmitigated\ Project\ VMT\ Rate * (1 - Total\ VMT\ Reduction)$$

If the mitigated Project VMT rate is below the citywide average rate, then the Project is presumed to have a less than significant impact with mitigation. If the mitigated Project VMT rate remains above the citywide average rate after all feasible mitigation has been applied, then a potentially significant and unavoidable impact may occur.

# 5.0 Transportation Projects

The City of Laguna Hills requires that transportation projects subject to CEQA review should generally follow the OPR Technical Advisory recommendations for considering the effects of transportation projects on VMT, as provided in Appendix E. In general, OPR indicates that 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.

The City of Laguna Hills VMT Scoping Form for Transportation Projects is provided in Appendix B.

Projects listed by OPR 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 listed by OPR 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

- 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

- Timing of signals to optimize vehicle, bicycle, or pedestrian flow

- Installation of roundabouts or traffic circles

- Installation or reconfiguration of traffic calming devices

For a complete list of the projects listed by OPR that would not likely lead to a substantial or measurable increase in vehicle travel, please refer to the OPR Technical Advisory excerpt provided in Appendix E.

The City of Laguna Hills also recognizes that the build-out of the City's planned circulation network is integral in achieving the local and regional transportation and land use goals and objectives, such as those identified in City's General Plan and the SCAG RTP/SCS.

Therefore, transportation projects that consist of adding new through lane capacity to arterial highways would be presumed to have a less than significant impact, provided the improvement is less than one (1) mile in length, consistent with the established General Plan Circulation Element Roadway Classifications and the improvements can accommodate multi-modal transportation, such as pedestrian, bicycle, and transit facilities. Typically, through lane capacity projects less than one mile in length are considered minor modifications to a roadway that would not generally result in substantial changes to the travel demand patterns in the OCTAM.

Construction of other transportation facilities not expressly listed herein or in the OPR guidance document, that in the opinion of the Public Works Manager would not directly increase the VMT in the City, may be presumed to have a less than significant impact for CEQA.

# PART II - TRAFFIC IMPACT STUDY GUIDELINES

## 6.0 Objectives

The City of Laguna Hills has prepared these Traffic Impact Study Guidelines (TIS Guidelines) to ensure that future developments are adequately assessed with respect to General Plan Consistency from a traffic operation, level of service (LOS), site access/circulation, and parking standpoint. TIS Guidelines are needed to provide consistency throughout the City of Laguna Hills in the preparation of traffic and parking impact studies, while still allowing flexibility for a variety of potential projects. The TIS Guidelines establish procedures that a traffic engineer preparing a study should use to adequately assess and minimize the impacts of a project during the development review and approval process.

The City's Scoping Agreement for Traffic and Parking Studies is included in Appendix F. This scoping agreement needs to be completed by the consulting traffic engineer and approved by the city prior to commencing the actual traffic or parking impact study. The scoping agreement follows the requirements of the TIS Guidelines and ensures that the traffic engineering consultant follows the appropriate City-approved procedures when completing the study. Traffic and parking studies need to be prepared under the direction of a registered traffic engineer or civil engineer experienced in the preparation of traffic/parking studies. The study is to be signed and stamped by the responsible engineer.

## 7.0 Study Requirements

A variety of projects may require traffic or parking impact studies. Three levels of studies are included in these guidelines. Each level of traffic or parking impact study will require different criteria with respect to the study requirements. The following are the requirements of various types of projects:

A. A project that generates less than 50 peak hour trips and less than 500 trip-ends per day and is consistent with the zoning/general plan designation for the property would require an access circulation/parking review letter only. This type of study would analyze specific impacts at the site itself and ensure that appropriate design measures be implemented with the project.

B. A project that adds 50 or more peak hour trips or 500 or more trip-ends per day and is consistent with the zoning/general plan designation for the property would require a traffic impact study. This study would follow the "build-up method" of traffic analysis. The analysis scenarios would include the following:

- Existing Conditions
- Existing Plus Project Conditions
- Project Opening Year with Cumulative Projects Without Project Conditions
- Project Opening Year with Cumulative Projects with Project Conditions

C. If a project (either public or privately initiated) requires a Zone Change or a General Plan Amendment, a General Plan Buildout Analysis without and with the Project may be required, in addition to the requirements in item B above. However, if the proposed project can prove that it generates less than or equal number of trips as the approved zoning and general plan designation for the property, then it is exempt from providing a General Plan Buildout Analysis. If the project generates more trips than the approved zoning and general plan designation for the property, then the following two additional scenarios may be required, as determined by the Planning and Engineering Divisions in addition to item B above:

- General Plan Buildout without the Project
- General Plan Buildout with Project

D. All traffic impact studies that require a General Plan Buildout analysis shall be consistent with the current OCTA version of OCTAM and the City of Laguna Hills traffic model.

# 8.0 Study Area

The study area for the traffic impact study should be determined in the traffic study scoping agreement, including which intersections and roadway links should be studied. Generally speaking, intersections where the project would generate 50 or more peak hour trips would be assessed as part of the study. In some cases the City may determine other intersections may be required as a result of the projects location with respect to critical nearby intersections. For smaller projects, analysis of the adjacent intersections and project driveways would be required and would be identified during the preparation of the scoping agreement.

The scoping agreement should also determine if a project has the potential to impact Congestion Management Plan (CMP) facilities in accordance with the latest CMP Traffic Impact Analysis Requirements or Caltrans controlled facilities in accordance with the latest Caltrans requirements.

The scoping agreement should also identify intersections and roadways segments within the study area that are part of the Master Plan of Arterial Highways (MPAH).

# 9.0 Existing Conditions

The existing roadway conditions in the study area would be identified in this section of the study. This would include the existing roadway classification, traffic control, roadway geometrics (lane configurations), traffic signal phasing, and existing AM/PM traffic counts and roadway segment average daily traffic volumes. Depending upon the type of project and its location, mid-day traffic counts may also be required.

All traffic counts should be obtained within one year of completion of the traffic impact study, or as approved by the Planning and Engineering Divisions. The traffic engineering consultant can consult with the City's traffic engineer to identify potential sources of existing traffic volumes. New average daily traffic volumes should be obtained for roadway segments adjacent the project unless they are available from other sources. Other roadway segment Average Daily Traffic (ADT) volumes can be estimated from the peak hour volumes.

# 10.0 Project Trip Generation

10.1.1 The project trip generation should be based upon the latest edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual. When data listed in the ITE Trip Generation Manual is not available or is not appropriate to use for a particular project, other sources such as San Diego Association of Government (SANDAG) Traffic Generator's Manual or special trip generation studies can be obtained by the consultant and presented to the City staff prior to the approval of the traffic study scoping agreement. Truck intensive projects will require the trip generation to be converted to Passenger Car Equivalents (PCE's). Any trip credit for existing operating uses should be identified.

10.1.2 Pass-by Trips – The use of pass-by trip adjustments may be allowed for appropriate land uses (i.e., gas station, fast-food restaurants, etc.) and would be approved in conjunction with the traffic study scoping agreement. The ITE Trip Generation Handbook can be consulted for pass-by trip adjustments. Project access points and intersections directly adjacent to the project shall include the full project trip generation without taking a reduction for pass-by trips.

10.1.3 Internal capture – In the case of some mixed-use projects, internal capture adjustments can be made to eliminate double counting of project trips. Again, the ITE Trip Generation Handbook or other recognized sources can be utilized to determine potential trip reductions as a result of

internal capture. Any internal capture is to be identified and approved in the traffic study scoping agreement.

10.1.4 Transit Adjustment – In most cases, there would be no adjustment to account for potential public transit uses. However, some types of projects located in specific locations within the city may be subject to having higher transit usage. Full documentation of the transit reduction should be included and approved in the traffic impact study.

# 11.0 Background Traffic

Typically, for project opening year conditions without and with the project, the "build-up" method would be utilized to determine future traffic volumes. An ambient growth rate would be applied to existing traffic counts to determine the background traffic volumes in the traffic impact study. Additionally, any cumulative (related) projects would need to be identified and accounted for in the analysis, if they occur within two miles of the project site.

A cumulative project is defined as a project application that has been deemed complete, a project that has been approved, or is under construction but not yet operating. The "cumulative projects" list can be generated by the Planning Department when approval of a scope of work is requested.

The project opening year would be based upon the time frame when the project would be fully built out and occupied. Identification of the project opening year should be included and approved in the traffic study scoping agreement.

# 12.0 Capacity Analysis

The capacity analysis for all project conditions should include an assessment of level of service (LOS) at signalized intersections, unsignalized intersections, project driveways, and in some cases, roadway segments. The level of service analysis would be based upon the following:

12.1.1 Intersection Capacity Utilization (ICU) methodology should be used to analyze signalized study area intersections;

12.1.2 Saturation flow value of 1,700 vehicles per lane per hour for all lanes; no adjustments are used for protected movements with dedicated lanes (including both right and left turns). An adjustment of 0.85 should be used for right turn movements where there is a right turn or "defacto" right turn lane adjacent to the curb lane (lane width equal or greater than 19-feet).

12.1.3 A clearance interval factor of 5% (0.05) should be applied to the ICU calculations. The cycle time is 100 seconds for ICU analysis purposes.

12.1.4 The ICU Level of Service ranges are as follows:

**Table 2**
**ICU Level of Service Description**

| Level of Service | Volume to Capacity Ratio | Description |
|---|---|---|
| A | 0.00 - 0.60 | Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all divers find freedom of operation. |
| B | 0.61 - 0.70 | Very good operation. An occasional approach phase is fully utilized. Many drivers feel somewhat restricted within platoons of vehicles. |
| C | 0.71 - 0.80 | Good operation. Major approach phases fully utilized. Most drivers feel somewhat restricted. |
| D | 0.81 - 0.90 | Fair operation. Drivers may have to wait through more than one red signal indication. Queues may develop but dissipate rapidly, without excessive delays. |
| E | 0.91 - 1.00 | Poor operation. Volumes at or near capacity. Vehicle may wait through several signal cycles. Long queues form upstream from intersections. |
| F | ≥1.00 | Forced flow. Represents jammed conditions. Intersection operates below capacity with low volumes. Queues may block upstream intersections. |

12.1.5 Weekday peak-hour analysis periods are defined as follows (unless otherwise defined in the traffic study scoping agreement):

7:00 to 9:00 AM

4:00 to 6:00 PM

12.1.6 The highest one-hour period in both the AM and PM peak periods, as determined by four consecutive 15-minute count periods should be used in the ICU calculations.

12.1.7 Variations in peak-hour volumes can affect LOS calculations, because they vary from day-to-day. To minimize these variations, no counts should be taken on Mondays, Fridays, holidays or weekends. Counts should be taken when school is in session.

12.1.8 If the distance from the edge of the outside through lane is 19 feet or greater than and parking is prohibited during the peak period, right turning vehicles may be assumed to utilize this "unofficial" right turn lane. Otherwise, all right turn traffic is assigned to the

through lane. If a right turn lane exists, right turn activity is checked for conflicts with other critical movements. It should be assumed that right turn movements are accommodated during non-conflicting left turn phases (e.g., northbound right turns during westbound left turn phase), as well as non-conflicting through flows (e.g., northbound right turn movements and north/south through flows). Right turn movements become critical when conflicting movements (e.g., northbound right turns, southbound left turns, and eastbound through flows) represent a sum of V/C ratios that are greater than the normal through/left turn critical movements.

12.1.9 HCM Methodology: Study area intersections that are stop sign controlled with stop control on the minor street or project driveway only should be analyzed using the unsignalized intersection methodology of the latest Highway Capacity Manual. For these intersections, the calculation of level of service is dependent on the occurrence of gaps occurring in the traffic flow of the main street. The level of service should be calculated using data collected describing the intersection configuration and traffic volumes at these locations. The level of service should be determined based on the worst individual movement or movements sharing a single lane. The relationship between the level of service and delay is different than for signalized intersections.

The HCM level of service is defined for the various analysis methodologies as follows:

**Table 3**
**HCM Level of Service Description**

| LOS | Average Control Delay Per Vehicle (Seconds) | | Description |
|---|---|---|---|
| | Signalized | Unsignalized | |
| A | 0.00 - 10.00 | 0.00 - 10.00 | Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all divers find freedom of operation. |
| B | 10.01 - 20.00 | 10.01 - 15.00 | Very good operation. An occasional approach phase is fully utilized. Many drivers feel somewhat restricted within platoons of vehicles. |
| C | 20.01 - 35.00 | 15.01 - 25.00 | Good operation. Major approach phases fully utilized. Most drivers feel somewhat restricted. |
| D | 35.01 - 55.00 | 25.01 - 35.00 | Fair operation. Drivers may have to wait through more than one red signal indication. Queues may develop but dissipate rapidly, without excessive delays. |
| E | 55.01 - 80.00 | 35.01 - 50.00 | Poor operation. Volumes at or near capacity. Vehicle may wait through several signal cycles. Long queues form upstream from intersections. |
| F | >80.00 | >50.00 | Forced flow. Represents jammed conditions. Intersection operates below capacity with low volumes. Queues may block upstream intersections. |

For all-way stop conditions the average intersection delay/LOS should be utilized, whereas for cross-street stop conditions the worse- case movement delay/LOS should be utilized. For Caltrans controlled intersections both the ICU and HCM level of service should be determine and presented in the traffic analysis.

# 13.0 Traffic Signal Warrants Analysis

A traffic signal warrant analysis should be performed for any unsignalized study area intersection that may require signalization. For existing intersections, the Caltrans Peak Hour Warrant analysis should be used for this review. For future intersections the Caltrans Average Daily Traffic warrant should be utilized. Just because the intersection may meet the Traffic Signal Warrant Criteria a traffic signal may not be the most appropriate traffic control device as a result of several other factors such as the location of adjacent signalized intersections and other conditions.

# 14.0 Roadway Segment Analysis

A roadway segment analysis would only be required for a Zone Change or General Plan Amendment Traffic Analysis where the project would generate more traffic than the designated General Plan or Zoning Land uses would permit. The analysis should identify all roadways within the study area that are listed on the County's Master Plan of Arterial Highways (MPAH).

The assessment of roadway segment level of service would be based upon the following standard ADT relationship. The City of Laguna Hills requires level of service D or better for all roadway segments.

**Table 4**
**Roadway Segment Level of Service**

| Type of Roadway | Lane Configuration | Levels of Service | | | | | |
|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F |
| Principal | 8 lanes divided | 45,200 | 52,500 | 60,000 | 67,500 | 75,100 | - |
| Major | 6 lanes divided | 33,900 | 39,400 | 45,000 | 50,600 | 56,300 | - |
| Primary | 4 lanes divided | 22,500 | 26,300 | 30,000 | 33,800 | 37,500 | - |
| Secondary | 4 lanes undivided | 15,000 | 17,500 | 20,000 | 22,500 | 25,000 | - |
| Commuter | 2 lanes divided | 11,300 | 13,200 | 15,000 | 17,000 | 18,800 | - |
| Commuter | 2 lanes undivided | 7,500 | 8,800 | 10,000 | 11,300 | 12,500 | - |

If the above ADT analysis shows that the projected ADT values exceed Level of Service D, then a peak hour directional analysis should be completed based upon a peak hour directional capacity of 1,700 vehicles per hour per lane. To ensure adequacy of the roadway segments, directional volume/capacity (V/C) ratio would be calculated to determine if peak hour directional segment volumes would exceed a V/C ratio of 0.90.

# 15.0 Level of Service Standards

The City of Laguna Hills General Plan Mobility Element level of service standard for intersections and roadway segments is LOS D. This would be appropriate for both signalized and unsignalized intersections and roadway segments listed in the MPAH. This level of service indicates an ICU or V/C ratio of 0.90 or less for signalized study intersections. It should be noted that the City's General Plan Circulation Mobility Element recognizes that not all traffic roads are attributed to land use decisions made by the City, and that specific intersections may have physical or other constraints that create difficulties making sufficient improvements to achieve the acceptable LOS policy. Critical intersections will be identified by the city prior to completing the traffic study scoping agreement and should be identified within the traffic impact study. Additionally, any CMP designated intersections shall not exceed a LOS of E, per OCTA standards.

# 16.0 Level of Service Impacts

A project's LOS impact is determined based upon the existing and projected future LOS at an intersection or roadway segment. A LOS impact is identified when an intersection or roadway segment is operating at an ICU or V/C ratio at or below 0.90 and the project causes the level to exceed 0.90 by an impact equal to or greater than 0.01. Furthermore, if an intersection or roadway segment is already operating at a LOS E or F, any ICU or V/C ratio impact equal to or greater than 0.01 would be considered a significant impact by the project. For unsignalized intersections, if the LOS with the project exceeds LOS D then a level of service impact would occur if the following conditions are met; the project increases the delay by 2-seconds or more, the project contributes 50 or more peak hour trips to the intersection, and traffic signal warrants are satisfied.

The traffic impact study should include a table identifying whether the project has a level of service impact at any of the study area intersections or roadway segments. Improvements would be required to restore traffic operations at the affected facility to pre-project conditions. For cumulative level of service impacts, a project may be eligible for paying a fair-share of the total improvement cost. A project fair share percentage table should be calculated for all facilities with cumulative impacts. The fair-share percentage should be calculated by taking the project's traffic contribution to an affected intersection or roadway segment and dividing it by the overall growth in traffic during the future conditions.

Projects may also be eligible to participate in road fee programs (if any) and pay in-lieu fees to satisfy roadway improvement requirements.

# 17.0 Site Access and Circulation Review

As part of the traffic impact study, project access and internal circulation should be reviewed based upon the proposed land uses and site plan proposed for the project. Any recommended changes to the circulation system, access or traffic control should be identified in the traffic impact study. Where truck traffic is anticipated, truck turning templates should be reviewed for both the project driveways and internal circulation. Drive aisles and parking spaces should be designed based upon the City's Parking Code requirements.

# 18.0 Parking Requirements

The parking provided by the project must be adequate to meet the anticipated use of the site. Typically, the City's parking code should be utilized to determine the adequacy of the parking. In some cases where there are mixed use projects a shared parking plan can be provided, per the requirements of the Laguna Hills Municipal Code (LHMC), Section 9-44.070. Except within the City's Urban Village Specific Plan (UVSP) area, a shared parking study, based on the latest edition of the Urban Land Institute (ULI) Shared Parking document, should be provided. This study analyzes peak parking demand for each individual use and the times of the day that those uses are in greatest demand. The ULI shared parking analysis must use parking demand rates based upon the City's parking code.

In some cases, specialized uses may require parking rates not identified in the City's parking code. As identified in LHMC Section 9.44.020, the Community Development Director shall have the authority to determine the appropriate parking requirements, and special parking demand studies should be provided to assess the adequacy of parking. The need for these types of studies would be identified in the scoping agreement. Data from at least three (3) similar sites should be included in any specialized studies.

# 19.0 Queuing Analysis

A queuing analysis may be required for certain projects (i.e., private gated communities, restaurants or pharmacies with drive-thru lanes, etc.) to ensure that adequate vehicle stacking is available in the proposed site plan. Various methodologies are available to assess project queuing including the "Crommelin Methodology" and other queuing methodologies included in the ITE Land Development Traffic Manual. As an alternative, on-site queuing studies of similar uses may be utilized to assess the queuing for a project. Observed queuing studies should be conducted at existing locations where the ADT of the adjoining roadway is similar to the site being evaluated in

Laguna Hills. In all cases the queuing analysis should determine the 95th percentile queue length for the storage lane(s). An average vehicle length of 20-feet per vehicle should be utilized to determine the appropriate storage length.

# 20.0 Special Issues (if any)

In some cases, there may be special issues that may be addressed as part of the traffic or parking assessment. Special issues may depend on the specific type of land use being proposed and these will be identified in the traffic study scoping agreement.

# 21.0 Recommendations

The traffic study should include a list of recommendations to be incorporated as part of the project conditions. These recommendations should be included in both written and graphical form within the traffic study. If the project creates a Direct LOS Impact based upon a comparison of the Existing vs. Existing Plus Project conditions, then the project may be responsible for the full improvements that are required to meet the City's LOS standards. If the project contributes an indirect (cumulative) LOS impact, based upon a comparison of the Opening or Future year conditions to the Opening or Future year with the Project conditions then a Fair Share contribution for the improvements would be required. The project's fair share contribution should be identified in the recommendations section of the report.

# 22.0 Conclusions

A summary and conclusion section should be included to summarize the findings of the traffic study. The conclusion section would identify the impact of the proposed project and the recommended roadway improvements included in the traffic study report.

# 23.0 Exhibits

Exhibits should be provided to adequately describe the proposed project in graphic format. This would include a location map, site plan, existing roadway conditions and lane configuration, existing traffic volumes, project trip distribution maps, project buildout without and with the project traffic volumes, cumulative projects location map, cumulative projects trip distribution maps, cumulative projects traffic volumes, general plan buildout traffic volumes without and with

the project (when applicable), and an exhibit showing the graphic representation of proposed project recommendations and improvements.

# 24.0 Tables

The traffic impact study should contain sufficient tables to identify project impacts. This would include table summaries of existing levels of service, project trip generation rates, project trip generation, existing plus project level of service, project buildout without and with the project levels of service, general plan buildout without and with the project levels of service, a summary table of all traffic levels of service considered in the traffic study, a parking requirement table, a queuing analysis table (when applicable) and a table summarizing study recommendations.

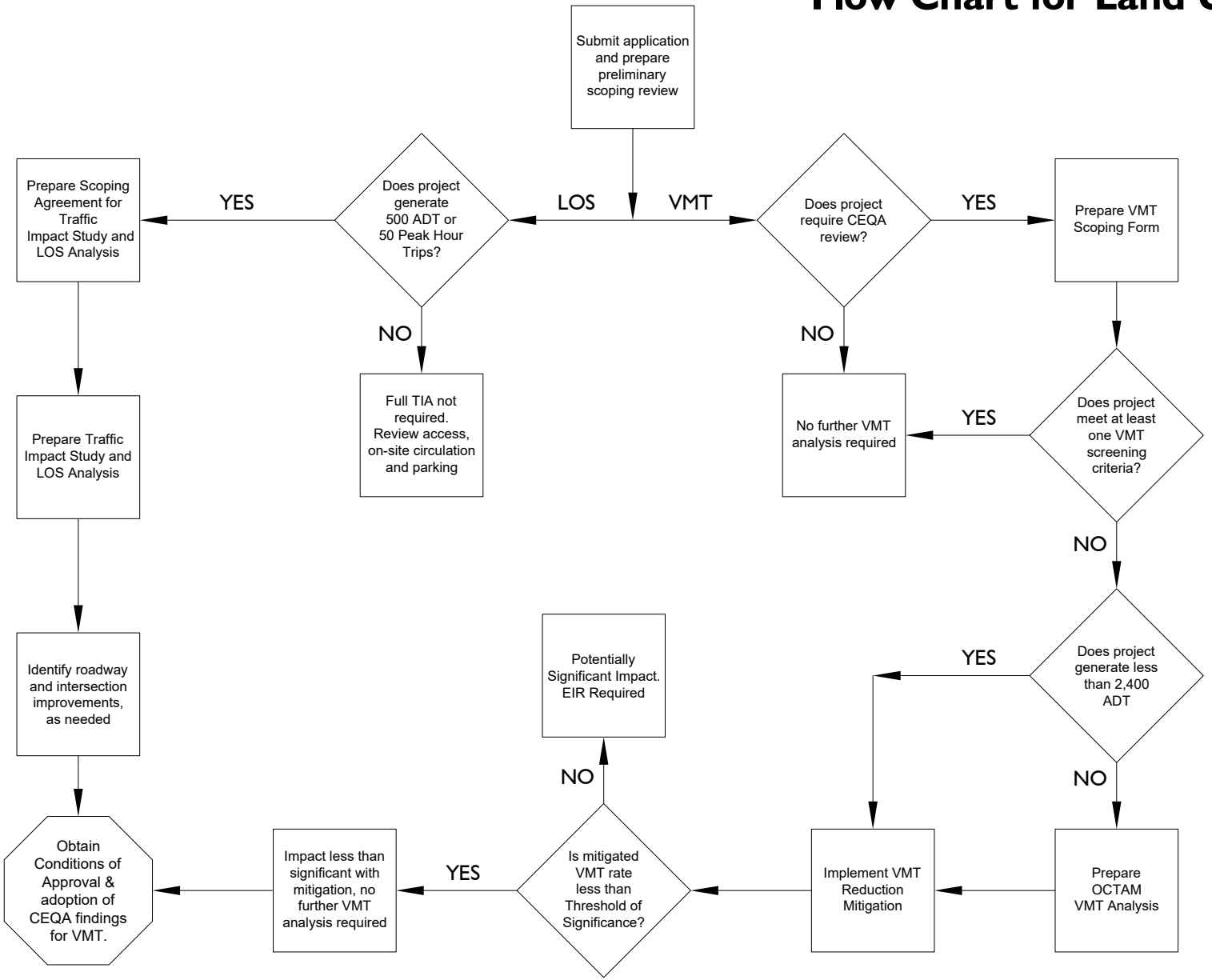
# 25.0 Appendices

Appendices should include traffic counts, level of service worksheets, traffic signal warrants for all study scenario conditions, queuing data, any parking related material utilized in the analysis and any relevant references utilized to complete the study.

# Exhibits

Exhibit A

# City of Laguna Hills Transportation Impact Analysis Flow Chart for Land Use Projects

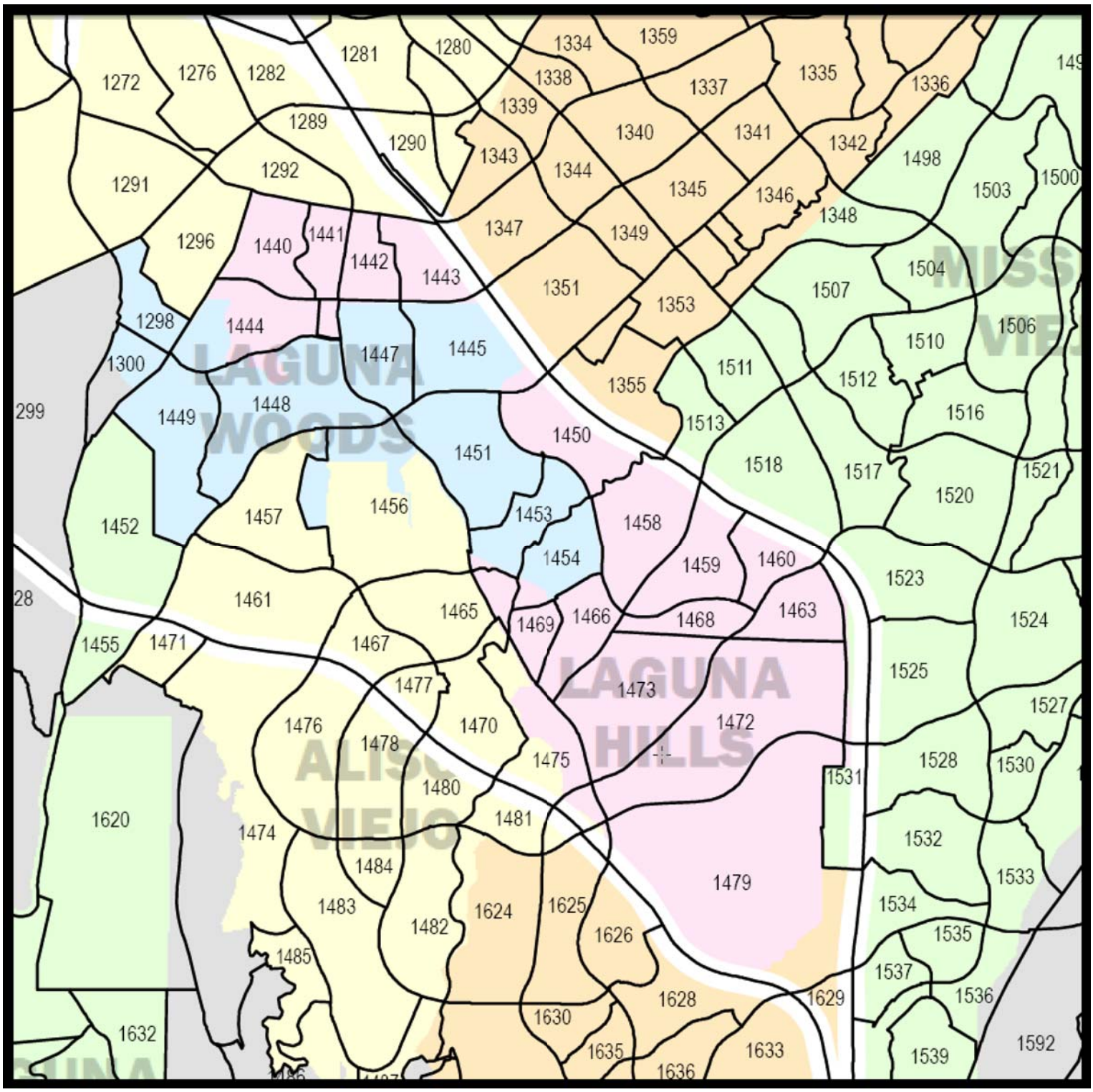





RK engineering group, inc.

Exhibit B

# OCTAM TAZ Map for the City of Laguna Hills

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RK engineering group, inc.

# Appendices

# Appendix A

City of Laguna Hills VMT Screening Form for Land Use Projects

**CITY OF LAGUNA HILLS**
**VMT SCREENING FORM FOR LAND USE PROJECTS**

This Screening Form acknowledges the City of Laguna Hills requirements for the evaluation of vehicle miles traveled (VMT) under CEQA. The analysis provided in this form should follow the City of Laguna Hills approved TIA Guidelines, dated _____.

## I. Project Description

**Case Number:**

**Project Name:**

**Project Location:**

**Project Description:**
(Please attach a copy of the project Site Plan)

**Current GP Land Use:** **Proposed GP Land Use:**

**Current Zoning:** **Proposed Zoning:**

If a project requires a General Plan Amendment or Zone change, then additional information and analysis should be provided to ensure the project is consistent with RTP/SCS Strategies and RHNA Allocation Plan.

## II. VMT Screening Criteria

| | | | | | |
|---|---|---|---|---|---|
| **A. Is the Project 100% affordable housing?** | **YES** | | **NO** | | Attachments: |
| **B. Is the Project within 1/2 mile of qualifying transit?** | **YES** | | **NO** | | Attachments: |
| **C. Is the Project a local serving land use?** | **YES** | | **NO** | | Attachments: |
| **D. Is the Project in a low VMT area?** | **YES** | | **NO** | | Attachments: |
| **E. Are the Project's Net Daily Trips less than 500 ADT?** | **YES** | | **NO** | | Attachments: |

**Low VMT Area Evaluation:**

| **Citywide VMT Averages[1]** | | |
|---|---|---|
| Citywide Home-Based VMT = | 21.6 | VMT/Capita |
| Citywide Employment VMT = | 25.1 | VMT/Employee |

| **Project TAZ** | **VMT Rate for Project TAZ[1]** | **Type of Project** | |
|---|---|---|---|
| | VMT/Capita | Residential: | |
| | VMT/Employee | Non-Residential: | |

[1] Base year (2016) projections from OCTAM.

**Trip Generation Evaluation:**

**Source of Trip Generation:**

**Project Trip Generation:** **Average Daily Trips (ADT)**

| | | | | | |
|---|---|---|---|---|---|
| Internal Trip Credit: | YES | | NO | | % Trip Credit: |
| Pass-By Trip Credit: | YES | | NO | | % Trip Credit: |
| Affordable Housing Credit: | YES | | NO | | % Trip Credit: |
| Existing Land Use Trip Credit: | YES | | NO | | Trip Credit: |

**Net Project Trip Generation:** **Average Daily Trips (ADT)** Attachments:

**Does project trip generation warrant an LOS evaluation outside of CEQA?** **YES** - - **NO** - -

## III. VMT Screening Summary

**A. Is the Project presumed to have a less than significant impact on VMT?**
A Project is presumed to have a less than significant impact on VMT if the Project satisfies at least one (1) of the VMT screening criteria.

--

**B. Is mitigation required?**
If the Project does not satisfy at least one (1) of the VMT screening criteria, then mitigation is required to reduce the Project's impact on VMT.

--

**C. Is additional VMT modeling required to evaluate Project impacts?**

| YES | -- | NO | -- |
|---|---|---|---|

If the Project does not satisfy at least one (1) of the VMT screening criteria AND generates 2,400 or more net daily trips, then additional VMT modeling using OCTAM is required. If the project generates less than 2,400 net daily trips, the Project TAZ VMT Rate can be used for mitigation purposes.

## IV. MITIGATION

| | | |
|---|---|---|
| **A. Citywide Average VMT Rate (Threshold of Significance) for Mitigation Purposes:** | -- | -- |
| **B. Unmitigated Project TAZ VMT Rate:** | -- | -- |
| **C. Percentage Reduction Required to Achieve the Citywide Average VMT:** | -- | |

**D. VMT Reduction Mitigation Measures:**

| | |
|---|---|
| **Source of VMT Reduction Estimates:** | |
| **Project Location Setting** | |

| | VMT Reduction Mitigation Measure: | Estimated VMT Reduction (%) |
|---|---|---|
| 1. | | 0.00% |
| 2. | | 0.00% |
| 3. | | 0.00% |
| 4. | | 0.00% |
| 5. | | 0.00% |
| 6. | | 0.00% |
| 7. | | 0.00% |
| 8. | | 0.00% |
| 9. | | 0.00% |
| 10. | | 0.00% |
| **Total VMT Reduction (%)** | | **0.00%** |

(Attach additional pages, if necessary, and a copy of all mitigation calculations.)

| | | |
|---|---|---|
| **E. Mitigated Project TAZ VMT Rate:** | -- | -- |

**F. Is the project presumed to have a less than significant impact with mitigation?**

--

If the mitigated Project VMT rate is below the Citywide Average Rate, then the Project is presumed to have a less than significant impact with mitigation. If the answer is no, then additional VMT modeling may be required and a potentially significant and unavoidable impact may occur. All mitigation measures identified in Section IV.D. are subject to become Conditions of Approval of the project. Development review and processing fees should be submitted with, or prior to the submittal of this Form. The Planning Department staff will not process the Form prior to fees being paid to the City.

| Prepared By | | Developer/Applicant | |
|---|---|---|---|
| **Company:** | | **Company:** | |
| **Contact:** | | **Contact:** | |
| **Address:** | | **Address:** | |
| **Phone:** | | **Phone:** | |
| **Email:** | | **Email:** | |
| **Date:** | | **Date:** | |

**Approved by:**

| | |
|---|---|
| **Laguna Hills Community Development Dept. Date** | **Laguna Hills Public Services Dept. Date** |

# Appendix B

City of Laguna Hills VMT Screening Form for Transportation Projects

# CITY OF LAGUNA HILLS VMT SCREENING FORM FOR TRANSPORTATION PROJECTS



**This Review Form acknowledges the City of Laguna Hills requirements for the CEQA Transportation evaluation of the following Transportation project with respect to Vehicle Miles Traveled. The analysis provided in this form must follow the City of Laguna Hills Approved TIA Guidelines, dated _____.)**

**Project No.:**
**Related Projects:**
**Project Name:**
**Project Limits::**
**Project Description:**
**Anticipated Date of Construction:**

**(Please attach a copy of the Project Improvement Plans with the appropriate project information)**

| | Consultant | Agency doing the Construction |
|---|---|---|
| **Company Name:** | | |
| **Contact Person:** | | |
| **Address:** | | |
| **Telephone:** | | |
| **Primary Contact Email** | | |

| | | | | |
|---|---|---|---|---|
| **A. Is this a City Project ?** | **YES** | | **NO** | |
| **B. Is this a Private Development Project ?** | **YES** | | **NO** | |
| **C. Does this project qualify for an Exemption per the City's TIA Guidelines? (See Section D for Exemptions)** | **YES** | | **NO** | |

**D. Exemption Criteria:** **Check all that apply:**

| | |
|---|---|
| 1. Rehabilitation, maintenance, replacement, safety and repair projects. | |
| 2. Roadway safety or hardware installation projects. | |
| 3. Roadway shoulder or parking lane enhancements. | |
| 4. Reconfiguration of traffic lanes to accommodate turn lanes, to a left turn lanes or may other modifications to accommodate existing traffic. | |
| 5. Addition of new through lanes that are consistent with the city's general plan and circulation element that has had previous CEQ a review. | |
| 6. Installation of traffic signals, traffic control devices and TSM (transportation system management) syster | |
| 7. Installation of traffic calming devices or roundabouts. | |
| 8. Installation of transit facilities including transit service, bus stops bus turnouts and any other transit related facilities. | |
| 9. Conversion of streets from one way to two way operation or removal or installation of on street parking spaces. | |
| 10. Installation of traffic or other signage to facilitate traffic operations for vehicles including bicycles public transit and pedestrians. | |
| 11. Addition of new or enhanced bicycle or pedestrian facilities. | |
| 12. Installation of publicy available alternative fuel claim charging infrastructure. | |
| 13. Construction of other transportation facilities exempt per OPR recommendation or that in the opinion of the public service says director would not directly increase the VMT in the city. | |

| | | | | |
|---|---|---|---|---|
| **E. Does the project require OCTAM VMT modeling to determine the impact on induced travel?** | **YES** | | **NO** | |

**Note: The Transporation Project Scoping Form and appropriate fee must be submitted with, or prior to submittal of this form. The Engineering Department staff will not process the Form prior to the fee being paid to the City.**

| Recommended by: | Approved by: |
|---|---|
| **Consultant's Representative:** | **Laguna Hills Planning Department:** |
| **Date:** | **Date:** |
| **Revised on:** | **Laguna Hills Public Services Dept.** |
| **Approved on:** | **Date:** |

# Appendix C

Evaluation of Daily Trip Screening Criteria

# Appendix C: Evaluation of Daily Trip Screening Criteria

The City of Laguna Hills recognizes projects that generate less than 500 Average Daily Traffic (ADT) would generally be assumed to cause less than significant transportation impact under CEQA. This is consistent with the general concept recommended by OPR for small project screening. However, OPR recommends that 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 ADT generally may be assumed to cause a less than significant transportation impact. This section provides further analysis and evidence for justifying the City of Laguna Hills Daily Trip Screening Criteria.

## 1. Impact to Total Citywide VMT

The following analysis was prepared to look at how an individual project's ADT would contribute to changes in the total citywide VMT. OCTAM base year 2016 statistics were used to show potential changes from developments of varying size. Table C-1 shows the change in citywide VMT from six (6) different land use projects that generate 110 ADT, 250 ADT, 500 ADT and 2,400 ADT.

As shown in Table C-1, the incremental change in the citywide VMT from a project that generates 500 ADT would range from approximately 0.1% to 0.33% increase. While the increase is approximately 4.5 times higher than a project that generates 110 ADT, the relative change is still considered insignificant in comparison to the total citywide VMT and it would not be expected to significantly change the City's VMT efficiency rates. Thus, a project that generates 500 ADT would have the potential to meet the criteria for a small project in the City of Laguna Hills.

**Table C-1**
**Evaluation of Screening Criteria**

| Land Use | 110 ADT[1] | 250 ADT[1] | 500 ADT[1] | 2,400 ADT[1] |
|---|---|---|---|---|
| **Residential** | | | | |
| Single Family (DU) | 11 | 26 | 53 | 254.4 |
| Percent Increase in Citywide VMT | 0.04% | 0.10% | 0.20% | 0.96% |
| Multifamily (DU) | 15 | 34 | 68 | 326.4 |
| Percent Increase in Citywide VMT | 0.06% | 0.13% | 0.26% | 1.23% |
| Senior Housing (DU) | 29 | 67 | 135 | 648 |
| Percent Increase in Citywide VMT | 0.07% | 0.16% | 0.33% | 1.56% |
| **Employment** | | | | |
| General Office (TSF) | 11.3 | 25.65 | 51.3 | 246.2 |
| Percent Increase in Citywide VMT | 0.06% | 0.13% | 0.26% | 1.23% |
| General Retail (TSF) | 2.9 | 6.6 | 13.2 | 63.4 |
| Percent Increase in Citywide VMT | 0.02% | 0.05% | 0.10% | 0.47% |
| General Light Industrial (TSF) | 22.2 | 50.4 | 100.8 | 531.8 |
| Percent Increase in Citywide VMT | 0.06% | 0.14% | 0.28% | 1.33% |

[1] ADT calculated based on ITE Trip Generation Manual, 10th Edition, 2017.

The statistical data from OCTAM base year 2016 that was used for evaluating the screening criteria in Table C-1 is provided in Table C-2 for reference.

**Table C-2**
**OCTAM Base Year 2012 Stats**

| | |
|---|---|
| Home-based VMT per Capita | 21.6 |
| Home-based work VMT per Employee | 25.1 |
| Total Population | 33,776 |
| Total Employment | 18,482 |
| Total Occupied Households | 11,517 |
| Population per Occupied Household | 2.93 |
| Population per Senior Household* | 1.87 |
| Office Employees per TSF* | 3.33 |
| Retail Employees per TSF* | 5.00 |
| Industrial Employees per TSF* | 1.67 |
| Total Citywide VMT | 1,675,477 |

*Estimated from other sources

## 2. Impact to GHG Emissions

GHG emissions from mobile sources (i.e. cars and trucks) are typically the largest source of operational emissions generated by a land use project. The quantity of GHG emissions generated by mobile sources is positively correlated to VMT; the more VMT a project generates, the more GHG emissions it will generate. Since SB 743 seeks to reduce GHG emissions through the reduction of VMT, the VMT screening criteria should ensure that all potential projects that are presumed to be less than significant for transportation would also be less than significant for greenhouse gas.

This section provides a brief analysis, evidence and quantification of GHG emissions based on the recommended daily trip screening criteria of 500 ADT and compares the results to the SCAQMD Interim CEQA GHG Significance Thresholds. The California Emissions Estimator Model Version 2016.3.2 (CalEEMod) was used to calculate GHG emissions for six (6) common land uses in the City of Laguna Hills. CalEEMod is a statewide land use emissions computer model developed for the California Air Pollution Control Officers Association (CAPCOA) in collaboration with the California air districts.

Estimates of mobile source emissions require information on three parameters: VMT (trip generation x trip length), vehicle fleet mix, and emission factors (quantity of emission for each mile traveled or time spent idling by each vehicle).

**Table C-3**
**Estimated GHG Emissions for 500 ADT Screening Criteria**

| Emissions Source[2] | MTCO2e/Year[1] | | | | | |
|---|---|---|---|---|---|---|
| | Single Family (53 DU) | Multifamily (68 DU) | Senior Housing (135 DU) | General Office (51.3 TSF) | General Retail (13.2 TSF) | Light Industrial (100.8 TSF) |
| **Mobile Sources** | 1546.3 | 1526.9 | 1477.6 | 610.7 | 486.1 | 1,049.5 |
| **Energy Sources** | 209.3 | 137.0 | 280.3 | 254.7 | 49.7 | 423.7 |
| **Area Sources** | 17.9 | 23.0 | 45.6 | 0.0 | 0.0 | 0.0 |
| **Water** | 26.8 | 34.4 | 68.3 | 70.2 | 7.5 | 141.6 |
| **Waste** | 31.3 | 15.7 | 31.2 | 24.0 | 7.0 | 69.1 |
| **Total Annual GHG Emissions** | **1,831.6** | **1,737.0** | **1,903.0** | **959.5** | **550.3** | **1,683.8** |
| **SCAQMD Threshold** | 3,000 | | | | | |
| **Exceed Threshold?** | No | No | No | No | No | No |
| **Percent Below Threshold** | 39% | 42% | 37% | 68% | 82% | 44% |

[1] MTCO2e = Metric Tons of Carbon Dioxide Equivalents per Year
[2] CalEEMod default parameters were used in all emissions calculations except for changes to the following; trip generation rates were changed to reflect the latest ITE 10 Trip Gen Manual, 10th Edition, and changes were made to the home-based and worker trip lengths to reflect citywide averages of 21.6 VMT/capita and 25.1 VMT/worker.

As shown in Table C-3, the estimated GHG emissions from land use projects that generate 500 ADT or less would be expected to be well below the applicable SCAQMD thresholds of significance. Therefore, projects that generate 500 ADT or less would generally be presumed to have a less than significant impact for greenhouse gas.

# Appendix D

CAPCOA Fact Sheets for the Quantification of VMT Reduction

**Table 6-2: Transportation Category**

| Transportation | | | | | | |
|---|---|---|---|---|---|---|
| Category | Measure Number | Strategy | BMP | Grouped With # | Range of Effectiveness | |
| | | | | | Percent Reduction in GHG Emissions | Basis |
| Land Use / Location | LUT-1 | Increase Density | | | 1.5-30.0% | VMT |
| | LUT-2 | Increase Location Efficiency | | | 10-65% | VMT |
| | LUT-3 | Increase Diversity of Urban and Suburban Developments (Mixed Use) | | | 9-30% | VMT |
| | LUT-4 | Incr. Destination Accessibility | | | 6.7-20% | VMT |
| | LUT-5 | Increase Transit Accessibility | | | 0.5-24.6% | VMT |
| | LUT-6 | Integrate Affordable and Below Market Rate Housing | | | 0.04-1.20% | VMT |
| | LUT-7 | Orient Project Toward Non-Auto Corridor | | | NA | |
| | LUT-8 | Locate Project near Bike Path/Bike Lane | | | NA | |
| | LUT-9 | Improve Design of Development | | | 3.0-21.3% | VMT |
| Neighborhood / Site Design | SDT-1 | Provide Pedestrian Network Improvements | | | 0-2% | VMT |
| | SDT-2 | Traffic Calming Measures | | | 0.25-1.00% | VMT |
| | SDT-3 | Implement a Neighborhood Electric Vehicle (NEV) Network | | | 0.5-12.7% | VMT |
| | SDT-4 | Urban Non-Motorized Zones | | SDT-1 | NA | |
| | SDT-5 | Incorporate Bike Lane Street Design (on-site) | | LUT-9 | NA | |
| | SDT-6 | Provide Bike Parking in Non-Residential Projects | | LUT-9 | NA | |
| | SDT-7 | Provide Bike Parking in Multi-Unit Residential Projects | | LUT-9 | NA | |
| | SDT-8 | Provide EV Parking | | SDT-3 | NA | |
| | SDT-9 | Dedicate Land for Bike Trails | | LUT-9 | NA | |
| Parking Policy / Pricing | PDT-1 | Limit Parking Supply | | | 5-12.5% | |
| | PDT-2 | Unbundle Parking Costs from Property Cost | | | 2.6-13% | |
| | PDT-3 | Implement Market Price Public Parking (On-Street) | | | 2.8-5.5% | |
| | PDT-4 | Require Residential Area Parking Permits | | PDT-1, 2 & 3 | NA | |

## Transportation - continued

| Category | Measure Number | Strategy | BMP | Grouped With # | Range of Effectiveness | |
|---|---|---|---|---|---|---|
| | | | | | Percent Reduction in GHG Emissions | Basis |
| Trip Reduction Programs | TRT-1 | Implement Voluntary CTR Programs | | | 1.0-6.2% | Commute VMT |
| | TRT-2 | Implement Mandatory CTR Programs – Required Implementation/Monitoring | | | 4.2-21.0% | Commute VMT |
| | TRT-3 | Provide Ride-Sharing Programs | | | 1-15% | Commute VMT |
| | TRT-4 | Implement Subsidized or Discounted Transit Prog. | | | 0.3-20.0% | Commute VMT |
| | TRT-5 | Provide End of Trip Facilities | | TRT-1, 2 & 3 | NA | |
| | TRT-6 | Telecommuting and Alternative Work Schedules | | | 0.07-5.50% | Commute VMT |
| | TRT-7 | Implement Commute Trip Reduction Marketing | | | 0.8-4.0% | Commute VMT |
| | TRT-8 | Implement Preferential Parking Permit Program | | TRT-1, 2 & 3 | NA | |
| | TRT-9 | Implement Car-Sharing Program | | | 0.4-0.7% | VMT |
| | TRT-10 | Implement School Pool Program | | | 7.2-15.8% | School VMT |
| | TRT-11 | Provide Employer-Sponsored Vanpool/Shuttle | | | 0.3-13.4% | Commute VMT |
| | TRT-12 | Implement Bike-Sharing Program | | SDT-5, LUT-9 | NA | |
| | TRT-13 | Implement School Bus Program | | | 38-63% | School VMT |
| | TRT-14 | Price Workplace Parking | | | 0.1-19.7% | Commute VMT |
| | TRT-15 | Implement Employee Parking “Cash-Out” | | | 0.6-7.7% | Commute VMT |

| Transportation - continued | | | | | | |
|---|---|---|---|---|---|---|
| Category | Measure Number | Strategy | BMP | Grouped With # | Range of Effectiveness | |
| | | | | | Percent Reduction in GHG Emissions | Basis |
| Transit System Improvements | TST-1 | Provide a Bus Rapid Transit System | | | 0.02-3.2% | VMT |
| | TST-2 | Implement Transit Access Improvements | | TST-3, TST-4 | NA | |
| | TST-3 | Expand Transit Network | | | 0.1-8.2% | VMT |
| | TST-4 | Increase Transit Service Frequency/Speed | | | 0.02-2.5% | VMT |
| | TST-5 | Provide Bike Parking Near Transit | | TST-3, TST-4 | NA | |
| | TST-6 | Provide Local Shuttles | | TST-3, TST-4 | NA | |
| Road Pricing / Management | RPT-1 | Implement Area or Cordon Pricing | | | 7.9-22.0% | VMT |
| | RPT-2 | Improve Traffic Flow | | | 0-45% | VMT |
| | RPT-3 | Require Project Contributions to Transportation Infrastructure Improvement Projects | | RPT-2, TST-1 to 6 | NA | |
| | RPT-4 | Install Park-and-Ride Lots | | RPT-1, TRT-11, TRT-3, TST-1 to 6 | NA | |
| Vehicles | VT-1 | Electrify Loading Docks and/or Require Idling-Reduction Systems | | | 26-71% | Truck Idling Time |
| | VT-2 | Utilize Alternative Fueled Vehicles | | | Varies | |
| | VT-3 | Utilize Electric or Hybrid Vehicles | | | 0.4-20.3% | Fuel Use |

# Appendix E

OPR Technical Advisory
Excerpt on the Evaluation of Transportation Projects

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.

# Appendix F

Traffic Study Scoping Agreement

# Appendix F
# TRAFFIC STUDY SCOPING AGREEMENT

This letter acknowledges the City of Laguna Hills requirements for traffic impact analysis of the following project. The analysis must follow the City of Laguna Hills Traffic Impact Study Guidelines.

The Traffic Study pertains to which of the following:

- ☐ Access / Internal Circulation / Parking Review (less than 50 peak hour trips or 500 ADT)
- ☐ Project Buildout Traffic Impact Study (50 or more peak hour trips or 500 ADT)
- ☐ Zone Change / General Plan Amendment Traffic Impact Study (more trips than existing zoning / General Plan)
- ☐ Parking Study Only
- ☐ Other: _____

Case Numbers: _____
Project Name: _____
Project Address: _____
Project Description: _____

| Consultant | Developer |
|---|---|
| Name: _____ | Name: _____ |
| Address: _____ | Address: _____ |
| _____ | _____ |
| Telephone: _____ | Telephone: _____ |

**A. Trip Generation Source:** ITE Trip Generation, Latest Edition or other approved source

Current GP Land Use _____ Proposed Land Use _____
Current Zoning _____ Proposed Zoning _____

| | Current Trip Generation to be Credited: | | | Project Trip Generation: | | | Net Trip Generation: | | |
|---|---|---|---|---|---|---|---|---|---|
| | In | Out | Total | In | Out | Total | In | Out | Total |
| AM Trips | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| PM Trips | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

Internal Trip Allowance ☐ Yes ☐ No _____ % Trip Discount
Pass-By Trip Allowance ☐ Yes ☐ No _____ % Trip Discount

The full project trips should be applied to the trips at adjacent study area intersections and project driveways and shall be indicated on a report figure.

**B. Trip Geographic Distribution (%):** North = _____ % South = _____ % East = _____ % West = _____ %
(attached exhibit for detailed assignment)

**C. Background Traffic**

Project Build-out Year _____ Annual Ambient Growth Rate: _____ %
Phase Year(s) _____
Other area projects to be analyzed: To be provided by the City of Laguna Hills.
Model/Forecast methodology _____

**D. Study intersections:** (NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____

**E. Other Jurisdictional Impacts:**

Is this project within a City's Sphere of Influence or one-mile radius of City boundaries? ☐ Yes ☐ NO

If so, name of adjacent City Jurisdiction: _____

**F. Site Plan** (please attach reduced copy)

**G. Specific issues to be addressed in the Study** (To be filled out by the City of Laguna Hills)

_____

**H. Existing Conditions**

Traffic count data must be new or recent. Provide traffic count dates if using other than new counts.

Date of counts: _____

**I. Level of Service (LOS)**

Acceptable intersection LOS for this study: D or Better

**Recommended by:**

_____ _____

Consultant's Representative Date

**Approved Traffic Study Specifications:**

_____ _____

City of Laguna Hills Date

# Appendix G

RK Engineering Group, Inc. Resumes of Key Personnel

# Robert Kahn, P.E., T.E

Founding Principal

## Areas of Expertise

Traffic Engineering

Transportation Planning

Transportation Solutions

Traffic Impact Analysis

Circulation Systems for Planned Communities

Traffic Control Device Warrants

Traffic Calming

Traffic Safety Studies

Bicycle Planning

Parking Demand Studies

Transportation Demand Management

Traffic Signal, Signing and Striping Plans

Traffic Control Plans

Parking Lot Design

Acoustical Engineering

Noise Impact Studies

Expert Witness / Legal Services

## Professional History

RK Engineering Group, Inc., Founding Principal
2001-Present

RKJK & Associates, Inc., Principal, 1990-2000

Robert Kahn and Associates, Inc., Principal, 1988-1990

Jack G. Raub Company,
Vice President Engineering Planning, 1977-1988

The Irvine Company, Program Engineer, 1972-1977

Caltrans CA Division of Highways, Assistant Engineer, 1968-1972

## Representative Experience

Robert Kahn, P.E., has worked professionally in traffic engineering and transportation planning since 1968. He received his Master of Science degree in civil engineering from the University of California, Berkeley, Institute of Transportation and Traffic Engineering. Mr. Kahn received his Bachelors degree in Civil Engineering from the University of California, Berkeley.

Mr. Kahn started his career in California Division of Highways (Caltrans) and developed the first computerized surveillance and control system for the Los Angeles area. Mr. Kahn developed the California Incident Detection Logic which is utilized throughout California for the detection of traffic incidents on the freeway system.

Mr. Kahn has worked for a major land development company preparing Master Plans for infrastructure. He also has worked eleven years with a multi-disciplined consulting engineering firm in charge of the Engineering Planning Department. This included all facets of preliminary design, tentative map preparation, transportation and environmental engineering, and public agency coordination.

Mr. Kahn has provided traffic and transportation services to major planned communities including Aliso Viejo, Coto De Caza, Foothill Ranch, Highlands Ranch in Denver, Colorado, Mission Viejo, Talega Planned Community in San Clemente, and Wolf Valley Ranch in Temecula. He has also provided contract traffic engineering services to the Cities of Irvine, Norwalk, Perris and San Jacinto in Riverside County, California.

Mr. Kahn has prepared traffic impact studies for numerous communities throughout Southern California, Nevada and in Colorado. Major traffic impact studies include the Aliso Viejo Town Center, the Summit Development, the Shops at Mission Viejo, Kaleidoscope, Dana Point Headlands, Foothill Ranch, Talega, Majestic Spectrum, and Centre Pointe in the City of Chino.

His work in the area of parking demand studies and parking lot design has been extensive. Shared parking studies for the Aliso Viejo Town Center, Foothill Ranch Towne Centre, Trabuco Plaza and numerous commercial sites have been completed to accurately determine the peak parking demand for mixed use projects. Mr. Kahn has been able to make the most efficient utilization of parking lots by maximizing efficient and safe systems.

# Robert Kahn, P.E., T.E

Founding Principal

## Education

University of California, Berkeley, M.S., Civil Engineering, 1968

University of California, Berkeley, B.S., Civil Engineering, 1967

University of California, Los Angeles, Graduate Courses in Transportation Systems, 1970

## Registrations

California Registered Civil Engineer
No. 20285 – April 1971

California Registered Professional Engineer
Traffic, No. 0555 – June 1977

Colorado Professional Engineer
No. 22934, November 1984

Nevada Professional Engineer Civil
No. 10722 – March 1994

County of Orange, California Certified Acoustical Consultant
No. 201020 - 1984

## Affiliations

Institute of Transportation Engineers (ITE)

American Society of Civil Engineers (ASCE)

Urban Land Institute (ULI)

Orange County Traffic Engineers Council (OCTEC)

## Teaching

UCI Graduate Urban Design Studio Class – Guest Instructor

ITS Berkeley – Tech Transfer
Fundamentals of Traffic Engineering – Instructor

UCI Senior Civil Engineering Mentoring Program (CE181)

Mr. Kahn has been an innovator in developing and implementing traffic calming techniques. Over twenty years ago, Mr. Kahn refined the design and implementation standards for speed humps for use in local neighborhoods. Most recently, he has been involved in the development of modern roundabouts in lieu of traffic signals or other traffic control devices at intersections. Mr. Kahn previously presented the use of traffic calming devices in newly developing communities to the Institute of Transportation Engineers Traffic Calming Conference in Monterey, California.

Mr. Kahn has been involved in the design of traffic signal systems, signing and striping plans on hundreds of projects for both the public and private sector. Most recently, he has completed the design of several traffic signals which will serve the renovated Shops at Mission Viejo Mall. Mr. Kahn was in charge of a major ITS project for the City of Irvine, which provided fiberoptic interconnect and closed circuit TV along Barranca Parkway, Alton Parkway and Lake Forest Drive.

Mr. Kahn has been involved in acoustical engineering since 1978. He was in responsible charge of the Aliso Viejo Noise Monitoring Program which redefined the 65 CNEL noise contours for MCAS El Toro. He has also developed computer applications of the FHWA Noise Model.

Mr. Kahn has prepared numerous noise impact reports in the Aliso Viejo, Mission Viejo, Foothill Ranch, Santa Margarita, Ladera and Talega Planned Communities. Noise impacts from stationery sources including car washes, loading docks, air conditioning compressors, drive-thru speakers and other sources have been evaluated in the Aliso Viejo Auto Retail Center Noise Study, Albertsons Store 606 Noise Study-Rancho Cucamonga, Pro Source Distribution Building Final Noise Study in Ontario. Major specific plan and zone change noise studies have been prepared for the Summit Heights Specific Plan in Fontana, Lytle Creek Land and Resources Property in Rialto, Tamarack Square in Carlsbad, California, International Trade and Transportation Center in Kern County, California, and Sun City/Palm Springs.

Mr. Kahn founded the firm of Robert Kahn and Associates in 1988, which was the predecessor to RKJK & Associates, Inc. in 1990. He has made presentations to the ITE and the California Public Works Conference. Mr. Kahn has published numerous articles on traffic impact assessment, traffic calming, striping and the status of Bicycle Sharing in the USA. He was awarded the Wayne T property award in 2011-2012. Mr. Kahn has been a mentor and advisor to the UCI Senior Civil Engineering Project (CE181) for the past several years. He provides students the opportunity to develop a real life transportation project for the program.

# Mohammad "Alex" Tabrizi, P.E., T.E. Principal

## Areas of Expertise

Traffic Engineering

Transportation Planning & Engineering

Traffic Impact Analysis

Transportation Demand Management Plans & Strategies

Due Diligence Studies

Traffic Signal Timing & Progression Analysis

Site Access, Wayfinding & Circulation System Design & Review

Project & Infrastructure Phasing

Roundabout Analysis

Traffic Control Device Warrants

Traffic Calming & Traffic Safety Studies

Parking Demand Studies & Parking Lot Design

## Professional History

RK Engineering Group, Inc., 2014-Present

California Board for Professional Engineers, Land Surveyors & Geologists - Expert Consultant & Traffic Engineering Occupational Task Force Member, 2016-Present

RBF Consulting, Associate, 2005-2014

Urban Crossroads, Inc., Engineering Aide, 2003-2005

## Education

University of California, Irvine, B.S., Civil Engineering, 2005

## Registrations

California Registered Civil Engineer
No. 78923 – December 2011

California Registered Traffic Engineer
No. 2722 – December 2014

## Affiliations

American Society of Civil Engineers (ASCE)

Orange County Traffic Engineers Council (OCTEC)

## Representative Experience

Alex Tabrizi, P.E., T.E., has worked professionally in the field traffic engineering and transportation planning/engineering since 2003. He received his bachelors of science degree in civil engineering with an emphasis on structural engineering from the University of California, Irvine.

Mr. Tabrizi has extensive experience in providing transportation planning and engineering consulting services and expertise to a wide range of clients including private sector, land developers, public agencies, various districts of California Department of Transportation (Caltrans), and local governments. Mr. Tabrizi has completed and supervised preparation of hundreds of complex transportation planning and parking demand/utilization studies over the past decade with successful track record in providing innovative, cost-effective and practical technical consulting services and solutions for politically sensitive, complex, and unique projects involving numerous stakeholders and requiring to meet accelerated project schedules.

As an Expert consultant to the California Board for Professional Engineers, Land Surveyors, and Geologists, Mr. Tabrizi assists the Board with development, maintenance, and validation of material for the Board's professional licensing examinations.

Mr. Tabrizi is also a member of the Traffic Engineering Occupational Analysis Task Force assisting the State's Board of Engineers in determining descriptive information about the tasks performed by Traffic Engineers in the industry and the knowledge standards required to adequately perform those tasks.

Mr. Tabrizi has performed transportation planning studies dealing with various stages of project development, such as signal warrant analysis, circulation analysis, full traffic impact analysis, roundabout analysis and parking studies. He has prepared traffic flow visual simulations combining measured vehicular and pedestrian volumes with aerial imagery to show existing and future traffic circulation for public understanding and discussion. Mr. Tabrizi has also completed a number of transportation engineering and roadway design projects ranging from preparing preliminary studies and reports such as Caltrans Project Reports (PR) and City street improvement concepts to final construction plans, specifications, and cost estimates for Caltrans highway improvement projects.

Mr. Tabrizi is knowledgeable in computer applications for transportation engineering and planning, including, AutoCAD, Microstation with InRoads, Traffix, HCS, Synchro/ SimTraffic, and aaSIDRA.

RK engineering group, inc.

# Mohammad "Alex" Tabrizi, P.E., T.E. Principal

## Representative Projects

- Corona de Mar / Coast Highway Bypass Traffic Review (Newport Beach, CA)
- Dover Shores & Mariners Traffic Review (Newport Beach, CA)
- Marymount College Facilities Expansion EIR (Rancho Palos Verdes, CA)
- Murrieta Hills Residential & Commercial Specific Plan (Murrieta, CA)
- Ridgeline Apartments (San Bernardino, CA)
- TTM 15731 (Highland, CA)
- TTM 19992 (Rancho Cucamonga, CA)
- Oxnard Village SP (Oxnard, CA)
- Lost Canyons Residential & Golf Club (Simi Valley, CA)
- Vantis Live/Work & Apartments (Aliso Viejo, CA)
- Palmdale TOD Transit Village (Palmdale, CA)
- Fox Plaza Mixed Use Traffic & Parking Analysis (Riverside, CA)
- Lambert Ranch Traffic Impact Analysis (Irvine, CA)
- 301 East Jeanette Lane Residential Project (Santa Ana, CA)
- Metro Goldwyn Mayer (MGM) Office Building (Beverly Hills, CA)
- Moorpark Studios West - Largest Independent Movie Studios in the US (Moorpark, CA)
- City of La Habra City-Wide Engineering & Traffic Survey
- City of Upland City-Wide Engineering & Traffic Survey
- City of Upland City-Wide Traffic Signal & Equipment Review
- Indian Wells Tennis Garden Stadium (Indian Wells, CA)
- Casino San Pablo Traffic Analysis (San Pablo, CA)
- Glendale Galleria Traffic & Parking Support (Glendale, CA)
- Galleria at Tyler Expansion Project (Riverside, CA)
- The Shops at Tanforan Site Circulation & Wayfinding (San Bruno, CA)
- The Boulevards at South Bay On-Site Circulation (Carson, CA)
- Hilton Garden Inn Hotel (Irvine, CA)
- Raytheon South Campus Specific Plan (El Segundo, CA)
- In-N-Out Restaurant (El Segundo, CA)

## Representative Projects (Continued)

- Porsche Experience Center (Carson, CA)
- Downtown Summer Festival Parking Management Plan (Laguna Beach, CA)
- Trabuco Road Corridor Analysis (Irvine, CA)
- University Drive Street Improvements (Irvine, CA)
- Main Street Downtown Merge Relocation & Street Improvements (Fort Bragg, CA)
- Perris Bicycle & Trail Master Plan (Perris, CA)
- Campus Pointe / Chestnut Avenue Roundabout Analysis (Fresno, CA)
- Walmart (Rialto, CA)
- State Route 1 / Marina Highway Roundabout Analysis (Marina, CA)
- State Route 217 / Hollister Avenue Interchange Roundabout Analysis (Goleta, CA)
- City of Brawley Non-Motorized Transportation Plan (Brawley, CA)
- Alesandro Boulevard Corridor Implementation Project Traffic Analysis (Moreno Valley, CA)
- State Route 57 Northbound Widening Traffic Analysis (Caltrans District 12)
- Mater Dei High School Expansion (Santa Ana, CA)
- Interstate 15 / State Route 79 South Interchange Improvement Design Project (Riverside County, CA)
- Interstate 5 HOV Lane Extension Project (Caltrans)
- La Pata Avenue Gap Closure & Camino Del Rio Extension Project (Orange County, CA)
- Bloomington Phase 1 Traffic Impact Analysis (County of San Bernardino, CA)
- Bell Business Center Traffic Impact Analysis (Bell, CA)

# Bryan Estrada, AICP, PTP

Principal

## Areas of Expertise

Transportation and Environmental Planning

Transportation Demand Management

Traffic Impact Studies

Parking Studies

Air Quality Analysis

Greenhouse Gas/Global Climate Change Analysis

Environmental Acoustics/Noise Analysis

CEQA Compliance

Synchro Traffic Analysis Software

California Emissions Estimator Model (CalEEMod)

FHWA Noise Modeling

SoundPLAN Software

AutoCAD

## Education and Training

University of California, Irvine, B.A., Urban Studies

California Air Resources Board, Air Quality Training Program

Geo Instruments Vibration Monitoring Short Course

## Professional History

RK Engineering Group, Inc.

Principal

2007 - Present

## Certificates and Affiliations

American Institute of Certified Planners (AICP)

Professional Transportation Planner (PTP)

American Planning Association

Association of Environmental Professionals

## Representative Experience

Mr. Bryan Estrada is a native of Southern California and also stayed in the area by attending the University of California, Irvine, School of Planning, Policy and Design where he received a Bachelor of Arts degree in Urban Studies. Mr. Estrada's multidisciplinary background is concentrated around current transportation challenges and their environmental impacts within urban areas. Mr. Estrada is committed to sustainable development practices, transportation demand management, and global climate change awareness.

Since 2007, Mr. Estrada has gained experience in the many aspects of Transportation and Environmental Planning while working with RK Engineering Group. He is an active member of the American Planning Association (APA) and the Association of Environmental Professionals (AEP), and stays up to date on the latest trends and topics concerning CEQA policy. He is frequently engaged with local government agencies, community groups, and developers to help to craft innovative solutions to mitigate traffic, noise and air quality impacts throughout the community.

Mr. Estrada's experience includes traffic/transportation planning, air quality and greenhouse gas analysis, and environmental acoustics/noise analysis. He has also contributed to the design and construction of traffic signal plans, signing and striping plans and traffic control plans. He is regularly out in the field performing assessments and inventories of project sites and meeting with community stakeholders.

Mr. Estrada works on transportation and environmental planning projects that range from focused site-specific technical studies to regional and General Plan level analyses. His recent work includes Mixed Use Development projects in Downtown Huntington Beach, the City of Aliso Viejo General Plan Update and Aliso Viejo Town Center Vision Plan, Eleanor Roosevelt High School eStem Academy Traffic Impact Study and On-Site Circulation Plan (Eastvale, CA), Great Wolf Lodge Resort (Garden Grove, CA), Starbucks Coffee Shops (multiple locations through Southern California), Paradise Knolls Specific Plan (Jurupa Valley, CA), Vista Del Agua Specific Plan (Coachella, CA), and Monterey Park Hotel Mixed Use Development Project (Monterey Park, CA).

Mr. Estrada has obtained the American Institute of Certified Planners (AICP) certification granted by the American Planning Association and the Professional Transportation Planner (PTP) certification granted by the Transportation Professional Certification Board.