CITY OF
LAGUNA NIGUEL

TRANSPORTATION ASSESSMENT GUIDELINES

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TRANSPORTATION ASSESSMENT GUIDELINES

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Contents

1. INTRODUCTION

The purpose of this document is to establish Transportation Assessment Guidelines for the City of Laguna Niguel while achieving compliance with the revised California Environmental Quality Act (CEQA) Guidelines related to Senate Bill 743 (SB 743). A Transportation Assessment is required to evaluate the impact of land use proposals on the existing and future traffic circulation system per the Laguna Niguel General Plan and other related impacts (e.g., site access, parking, and internal circulation). When necessary, this also includes preparing a vehicle miles traveled (VMT) assessment as a part of a project's CEQA analysis. These Transportation Assessment Guidelines present the recommended format and methodology that should generally be utilized in addressing VMT under CEQA and in preparing a Traffic Impact Study, as applicable. The basis for the methodology was derived from a "Technical Memorandum of Facts, Reasonable Assumptions, and Expert Opinions" prepared by Iteris, Inc. and is included as Appendix A.

Please note, the City may update these Guidelines on an as-needed basis to ensure current best practices are being applied for land development review and transportation analysis. The City also reserves the right to request further project specific information in its evaluation that may not be identified or described in this document.

1.1 CEQA Changes

CEQA includes administrative regulations and guidelines that set forth and explain how to determine whether an activity (i.e., proposed project) is subject to environmental review, the steps to undertake the review, and the required content of the review. One of the categories of environmental impacts that public agencies study under CEQA is traffic/transportation, including the increase in traffic that is caused by new development and is added to existing traffic conditions. Historically, these assessments have focused on congestion (vehicle delay). The outcome of this kind of analysis was a letter grade describing how well a road or intersection was functioning. Specifically, a letter grade from "A" to "F" was given, with Level of Service (LOS) "A" meaning the least amount of congestion (or vehicle delay) and LOS "F" meaning the worst level of congestion (or vehicle delay).

On September 27, 2013, SB 743 was signed into California State Law. SB 743 requires that public agencies modify their methodology for analyzing transportation impacts of land use projects subject to CEQA. SB 743 moves away from using delay-based LOS as the metric for determining a proposed project's potentially significant impacts to instead use VMT. VMT measures the number of vehicle trips generated and the length or distance of those trips. Typically, projects that are farther away from other complementary land uses and in areas without transit or active transportation infrastructure (bike lanes, sidewalks, etc.) generate more driving than development near complementary land uses with more transportation options. This shift in focus from impacts to motorists (traffic delay) to the impacts of vehicle travel on the environment is intended to better align transportation impact analysis and mitigation with the State's goals to reduce greenhouse gas (GHG) emissions and improve public health by encouraging infill development and active transportation.

As an implementing action of SB 743, in December 2018, the California Office of Planning and Research (OPR) provided a Technical Advisory to assist local jurisdictions establish new criteria for determining the significance of transportation impacts. As noted in CEQA Guidelines Section 15064.7(b), lead agencies are encouraged to formally adopt their thresholds of significance.

1.2 Laguna Niguel General Plan

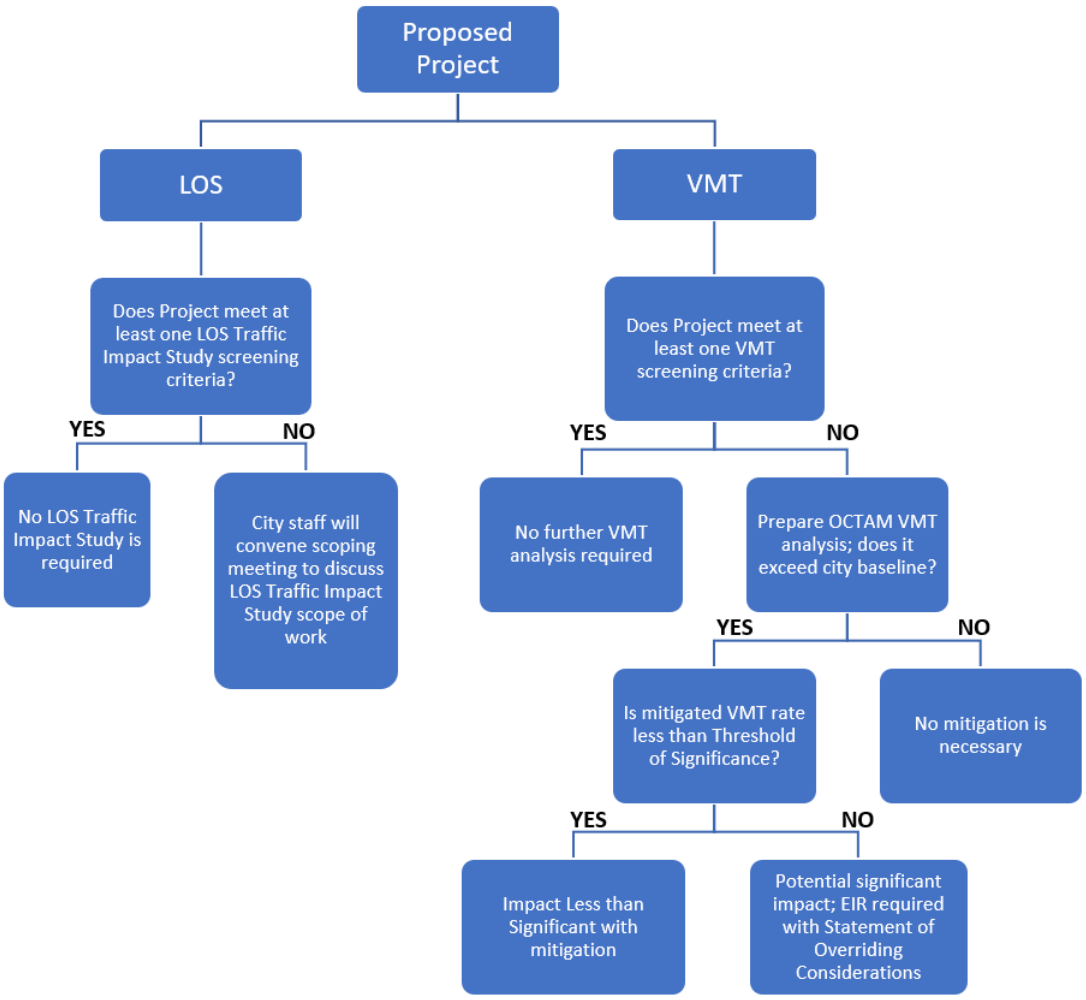
While SB 743 requires that delay or LOS no longer be used for transportation impact assessments under CEQA, the Laguna Niguel General Plan Circulation Element has adopted vehicle LOS policies that set standards for which local roadways and intersections will strive to maintain. LOS based studies will continue to be required for new land use projects to ensure consistency with these City standards. Outside of the scope of CEQA, this requirement for LOS assessment for qualifying projects will remain unchanged.

2. PROCESS FOR TRANSPORTATION ASSESSMENT

These Guidelines provide general instruction on how to prepare the necessary transportation assessments for both VMT Analysis for CEQA purposes (refer to Guidelines Section 3) and LOS Traffic Impact Studies for General Plan consistency purposes and other transportation related impacts, such as site access, parking, and internal circulation (refer to Guidelines Section 4). A flow chart overview of the process is provided in Figure 1 below.

Please note, there will be instances a project requires a VMT Analysis, but not a LOS Traffic Impact Study. It is also possible for a project to be screened from VMT Analysis and require a Traffic Impact Study with LOS analysis.

Figure 1 - **Transportation Assessment Flow Chart**



3. VMT ANALYSIS – CEQA REQUIREMENT

Consistent with state CEQA Guidelines, CEQA transportation analysis in the City is focused on the impact of automobile VMT from residents and employees. If a proposed land use project does not meet any one of the screening criteria described in Section 3.2, then a VMT Analysis is required. The process starts with an applicant or their consultant/representative completing and submitting the City's VMT Screening Form to the Community Development Department (Planning Division). The VMT Screening Form provides an easy to use tool for streamlining the VMT analysis process. An automated spreadsheet is available from the Planning Division and a PDF copy is provided in Appendix B. If a proposed project is found to not need a full VMT Analysis to satisfy CEQA, a LOS Traffic Impact Study may still be required (refer to Section 4 of these Guidelines).

3.1 VMT Methodology

Project will be analyzed for the entire VMT of their trips, including outside of the City. A project's change in VMT will be analyzed and assessed on a per capita and/or per employee basis in order to use an efficiency-based metric. These are compared to a base year[1] citywide average value to determine potential significant transportation impact.

The City calculated VMT and efficiency metrics of VMT for areas within the City using the Orange County Transportation Analysis Model (OCTAM) which is a subarea model of the Southern California Association of Government's (SCAG) travel demand model. Most projects will be analyzed using the average VMT by trip type from the model traffic analysis zone (TAZ) the project is located. The TAZ is the origin/destination location of the trips, the VMT is measured by the length the trips travel on the roadway network. Since VMT is primarily a function of the location of a project, and the TAZ is the smallest geography in the Model, a project will be assumed to have the same average VMT characteristics as neighboring development within the TAZ. For large projects that may affect both local and regional traffic patterns the City may require that the applicant perform a new select zone OCTAM model run with the new project included to identify the VMT generated by the project in more detail. Similarly, for projects where there is reason to believe that the project's VMT characteristics would vary significantly from the TAZ average, the City may require a new select zone model run.

3.2 VMT Screening Criteria for Land Use Projects

Discretionary land use projects subject to CEQA must evaluate transportation impacts related to VMT as part of the environmental review process. The City's screening criteria is intended to provide a simplified way to determine whether a project's VMT would be expected to cause a less than significant CEQA transportation impact without having to conduct a detailed VMT Analysis. The screening criteria trip limit is based on net trip generation after considering pass-by and internal capture (consistent with ITE or other approved reliable sources), and any reductions for affordable housing, and/or existing land uses that would be removed. Screening thresholds for land use projects are provided for the following:

1) *Small Projects* **-** Projects that would generate less than 500 vehicle trips per day based on the latest Institute of Transportation Engineers (ITE) Trip Generation Manual are presumed to be less than significant. As with other types of transportation analysis, the trip generation of the current uses, which have been determined to constitute the CEQA baseline condition, could be reduced from the

[1] "Base year" is the base year of the travel demand model used for the analysis.

proposed project so only net trips are assessed. A project demonstrating fewer and/or shorter trips leading to lower VMT than existing conditions may also be presumed to be less than significant.

2) *Redevelopment Projects* - For redevelopment projects, the metric looks only at the net trips generated by the redevelopment project (project trips generated by the new development minus trips generated by the previous development). If the net trips generated by the redevelopment is less that the Small Project trip threshold of 500 daily trips (as discussed in the prior section) then no additional analysis is required. Where a proposed project replaces existing VMT-generating land uses and the replacement leads to a net overall decrease in VMT, the project would lead to a less-than-significant transportation impact. If the project leads to a net overall increase in VMT, then the redevelopment project is evaluated for impact analysis based on the applicable residential or non-residential VMT rate methodology, as further discussed in subsequent sections of these Guidelines.

3) *Projects Located in a Low VMT Area* - The map-based screening of areas that display VMT below the City's threshold indicate where new development would be presumed to be less than significant. They represent areas of the City currently located near a diversity of land uses or multimodal transportation where additional development would further decrease VMT per capita or employee. The three low VMT areas of the City are:

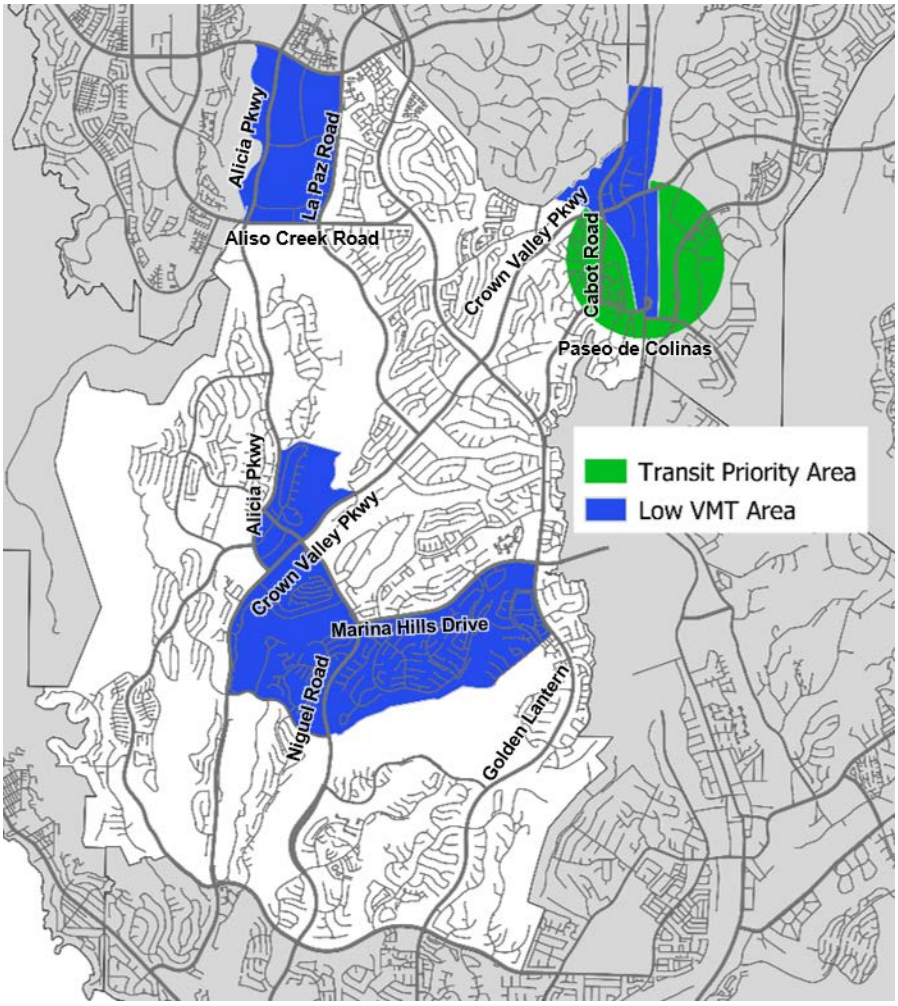
   - The Gateway Specific Plan area around the Metrolink Station (TAZ 1479 and TAZ 1629).
   - The northwest portion of the City bounded by Aliso Creek Road and La Paz Road, an employment center (TAZ 1624).
   - The central portion of the City bounded by Alicia Parkway, Crown Valley Parkway, Clubhouse Drive, Golden Lantern, Marina Hills Drive, Niguel Road, the central part of the City (TAZ 1648, TAZ 1652, TAZ 1655, and TAZ 1657).

4) *Projects Located in Transit Priority Areas* - The City has one Transit Priority Area (TPA): the Laguna Niguel/Mission Viejo Metrolink Station. A TPA is a half-mile surrounding a major transit stop. A project with any portion of its limits inside the TPA is considered within the TPA. The TPA surrounding the Laguna Niguel Metrolink Station as shown in the following map, Figure 2. Projects in TPAs are generally be presumed to have less than significant impacts, unless the proposed development:

   - Has a Floor Area Ratio (FAR) of less than 0.75,
   - Includes more parking than required by the City,
   - Is inconsistent with the SCAG Sustainable Communities, or
   - Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

   Land use development projects in the TPA and consistent with the Laguna Niguel Gateway Specific Plan would likely be exempt from CEQA analysis. Should bus service substantially expand or a new bus/multi-modal transit stop be constructed, the boundaries of a TPA within the City should be re-evaluated.

Figure 2 - Laguna Niguel Low VMT Areas and Transit Priority Area



5) *Locally Serving Land Uses Projects* - Locally serving land uses provide goods and services to the local community. These types of land uses offer more opportunities for residents and employees to shop, dine and obtain services closer to home and work. Locally 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, the following local serving uses less than 50,000 square feet may be presumed to have a less than significant impact on VMT:

- Libraries,
- Civic Centers,
- Police/Fire Station,
- Community Centers,
- Other locally serving civic uses,
- Public schools,
- Private schools with less than 120 students,
- Community colleges with less than 400 students,
- Daycare centers,

- Urgent care facilities,
- Walk-in medical clinics,
- Auto repair/tire shops,
- Gas service station,
- Gyms/health clubs,
- Fitness studios,
- Locally serving hotels (non-destination hotels),
- Locally serving assembly uses (places of worship, community organizations).

A mixed-use project with locally serving components but is more than 50,000 square feet in total would not be screened from further analysis, however, the presumption of less than significance for locally serving project components could be described qualitatively.

For other potentially locally serving land uses the decision to screen out would be determined by City staff on a case-by-case basis, depending on the size and location of the proposed development.

6) *Affordable Housing Projects* - Adding affordable housing to infill locations generally improves jobs-housing match, in turn shortening commutes and reducing VMT. Further, "… low-wage workers in particular would be more likely to choose a residential location close to their workplace, if one is available." Evidence and guidance from OPR support a presumption of less than significant impact for a 100% affordable residential development (or the residential component of a mixed-use development) in infill locations.

   For projects that are less than 100% affordable, each affordable unit shall be deemed to have no VMT generation. The remaining market-rate units shall be subject to the VMT analysis presented in these Guidelines.

3.3 VMT Analysis Thresholds of Significance

Projects that do not meet at least one of the screening criteria described in Section 3.2 must provide additional analysis and mitigation of potential VMT impacts. Section 21099 of the Public Resource Code states that the criteria for determining the significance of transportation impacts must promote the:

1) Reduction of greenhouse gas emissions;

2) Development of multimodal transportation networks; and

3) Diversity of land uses.

The City has 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.

- Mixed-use projects: Both the residential and non-residential components of the project would be

analyzed separately, however, VMT reduction benefits due to internally captured trips and potentially other considerations that reduce VMT could be accounted for in the analysis.

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.

3.4 Mitigation Measures

Mitigation measures are required in Environmental Impact Reports and Mitigated Negative Declarations to identify feasible alternatives and mitigation measures to avoid or substantially reduce a project's significant environmental impacts.

If a significant transportation impact is identified for a project, it will be the applicant's responsibility to submit a mitigation measure plan to reduce impacts to "Less Than Significant". Options include:

- Provision of on-site transportation infrastructure,
- On-site transportation demand management (TDM),
- Off-site infrastructure improvements including roadway improvements for active transportation and multimodal infrastructure, and/or
- Off-site multimodal improvements.

The *California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures* report (2010) contains numerous potential VMT reduction strategies and a very broad range of percentage effectiveness of each measure. In lower density cities, such as Laguna Niguel, attaining the top end of the effectiveness range may not be attainable. A VMT spreadsheet calculator has been prepared that includes several example mitigation measures and uses a reduction effectiveness percentage toward the lower end of the CAPCOA report range. These example mitigation measures are shown in the table below and effectiveness percentages from CAPCOA are shown in more detail in Appendix C. Subject to City approval, project applicants are also able to provide alternative or supplementary mitigation measures in order to meet VMT thresholds or provide evidence to justify a higher percentage reduction.

Table 1 - Potential Mitigation Measures

	Strategy	Purpose	City Calculator	CAPCOA where higher
1	On-Site Pedestrian Network	Improve pedestrian network	1% VMT Reduction	0-2% VMT Reduction
2	Off-Site Bicycle Network	Provide exclusive bicycle facilities	1%-VMT Reduction	0.075% increase in bicycle commuting with each mile of bikeway per 100,000 residents
3	On-Site bikeshare	Implement bikeshare program	0.8 bicycle trips per bikeshare bike	0.03% reduction in VMT/ 1/3 vehicle trip reduced per bicycle
4	End of Trip Facilities	Providing convenience	2% VMT Reduction	2 - 5% reduction in commute vehicle trips
5	Unbundled Parking Costs	Separates parking cost	2.5% reduction per unbundled residential unit	2.6-13% reduction in vehicle trips
6	Electrical Vehicle Charging Station	Install electrical charging equipment	2 trip per day reduction per electric vehicle (EV)ownership	Substitution of non-EV trips 1:1

	Strategy	Purpose	City Calculator	CAPCOA where higher
7	Provide Parking Cash-Out Program	Incentives for no car	1% VMT Reduction per worksite	0.6-7.7% commute VMT reduction
8	Provide Bicycle Parking	Encourage bicycling	1 trip per 2.5 spaces	Part of overall improvement of design with 3-21.3% reduction
9	Provide Ride-Sharing Program	Increasing vehicle occupancy	1% commute trip reduction	1-15% commute trip reduction
10	Car Share Program	Reduce vehicle ownership	0.4% reduction	0.4-0.7% VMT reduction
11	Sponsor Vanpool/Shuttle	Provide means to work	2% reduction in commute trips	0.3-13.4% commute VMT reduction
12	Implement Transportation Demand Management Program – Required Implementation/Monitoring	Reduce drive-alone travel mode share and encourage alternative modes of travel	2% Residential/ Employee Trip Reduction	4.2% – 21.0% commute VMT reduction
13	Implement Subsidized or Discounted Transit Program	Encourage transit use by providing subsidy	0.3% Employee Trip Reduction	0.3-20% commute VMT reduction
14	Telecommuting and Alternative Work Schedules	Encouraging telecommuting and alternative work schedules reduces the number of commute trips	5.5% Employee Trip Reduction for Program	0.07-5.5% commute VMT reduction
15	Traffic Calming Measures	Reduce vehicle speeds	0.25% reduction per location	0.25 – 1.00% VMT reduction per location
16	Dedicate land for bike trails	Create off-street paths (per mile)	1% reduction per mile	Part of overall improvement of design with 3-21.3% reduction
17	Fair Share contribution to First/Last Mile project or other infrastructure	To support non-vehicle trips	Up to 2% Trip Reduction	Supportive of overall 0.1-8.2 VMT reduction for transit network improvement
18	Provide Bicycle Parking near Transit	Mode shift to biking and transit	0.1% per space up to six	Supportive of overall 0.1-8.2 VMT reduction for transit network improvement

The City will review, make necessary changes and approve the TDM plan. In addition, the City maintains a Transportation Demand Management Ordinance (Laguna Niguel Zoning Code – Subarticle 10).

3.5 Transportation Projects

Transportation projects not expected to increase VMT (such as intersection turn lanes, signalization, bicycle, pedestrian, or transit projects) would be presumed to have a "Less Than Significant" CEQA transportation impact. OPR Technical Advisory includes the following list of transportation projects that would not likely result in a significant increase in vehicle travel and therefore generally do not require an induced travel analysis:

- Rehabilitation, maintenance, replacement, safety, and repair projects designed to improve the condition of existing transportation assets.

- 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.
- Addition of an auxiliary lane of less than one mile in length designed to improve roadway safety.
- Addition of a new lane that is permanently restricted to use only by transit vehicles.
- Reduction in number of through lanes.
- Grade separation to separate vehicles from rail, transit, pedestrians, or bicycles, or to replace a lane in order to separate preferential vehicles (e.g., HOV, HOT, or trucks) from general vehicles.
- Installation, removal, or reconfiguration of traffic control devices, including Transit Signal Priority (TSP) features.
- Installation of traffic metering systems, detection systems, cameras, changeable message signs and other electronics designed to optimize vehicle, bicycle, or pedestrian flow.
- Timing of signals to optimize vehicle, bicycle, or pedestrian flow.
- Installation of roundabouts or traffic circles.
- Installation or reconfiguration of traffic calming devices.
- Initiation of new transit service.
- Conversion of streets from one-way to two-way operation with no net increase in number of traffic lanes.
- Removal or relocation of off-street or on-street parking spaces.
- Adoption or modification of on-street parking or loading restrictions (including meters, time limits, accessible spaces, and preferential/reserved parking permit programs).
- Addition of new or enhanced bike or pedestrian facilities on existing streets/highways or within existing public rights-of-way.
- Addition of Class I bike paths, trails, multi-use paths, or other off-road facilities that serve non-motorized travel.
- Installation of publicly available alternative fuel/charging infrastructure.

Transportation projects that consist of adding additional through lanes, turn lanes, or other capacity on existing or new roadways have a less than significant impact, provided the improvement is less than one (1) mile in length[2], consistent with the established General Plan Circulation Element Roadway

[2] In the SCAG region, federal regulations stipulate that no federal funds be programmed for any project that significantly increases Single Occupancy Vehicle (SOV) capacity unless the project is addressed as part of a congestion management process. The FTIP,

Classifications and the improvements can accommodate multi-modal transportation, such as pedestrian, bicycle and transit facilities. Otherwise, these project types may lead to a measurable and substantial increase in vehicle travel.

For transportation projects not examined above, a significant impact would occur if the project results in an increase to the total baseline VMT in the City (not indexed to population or employment). 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.

3.6 Cumulative Analysis

Assessment of cumulative impacts is based on the inclusion of future foreseeable projects, as represented in the OCTA future year model scenario. However, A project that falls below the threshold(s) of significance aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. Accordingly, a finding of a less-than-significant project impact would imply a less than significant cumulative impact, and vice versa.

4. LOS TRAFFIC IMPACT STUDY

A LOS Traffic Impact Study is required by the City so that the impact of land use proposals on the existing and future circulation system can be adequately assessed. It is required:

- For all projects that will add 51 or more trips during either the AM or PM peak hours to any intersection. The City, at its discretion, may also require the preparation of a LOS Traffic Impact Study, or a limited scope LOS Traffic Impact Study, for projects that add less than 51 peak hour trips to an intersection but add one or more AM or PM peak hour trips to an intersection if there are concerns regarding traffic safety, operational issues, or if the development is located near a major arterial intersection, or area heavily impacted by traffic.

- When either the AM or PM peak hour trip generation is expected to exceed 100 vehicle trips from the proposed development.

4.1 LOS Traffic Impact Study – Scope

If a LOS Traffic Impact Study is needed, the applicant is required to retain the services of a qualified registered Traffic Engineer or a registered Civil Engineer with experience in traffic engineering and draft a scope of work that will govern the conduct of the LOS Traffic Impact Study. The draft a scope of work is to be submitted to the Community Development Department (Planning Division) for review. Once received, City staff will either provide a letter confirming the scope of the LOS Traffic Impact Study or communicate other needed information or requirements. The scope of the LOS analysis may include, but not be limited to:

as the programming document for all federal transportation funds, must be consistent with the regulations. CMP is required for any SOV capacity increasing project that adds at a minimum one (1) mile or more in length per agreement between SCAG and FHWA.
Source: SCAG Federal Transportation Improvement Program 2019 Guidelines

- Collection of existing intersection and mid-block vehicle count data (as a minimum, intersections where the project will add 51 or more trips during either the AM or PM peak hours will need to be analyzed; at the discretion of the City, this threshold may be reduced).

- Evaluation of intersections utilizing either intersection capacity utilization (ICU) methodology or Highway Capacity Manual (HCM) methodology as appropriate for each intersection.

- Evaluation of multiple existing, near-term, or long-term scenarios.

- Identification of proposed and potential roadway improvements.

- Calculation of fair-share cost contributions, if applicable.

- Evaluation of project trip generation rates and trip distribution and assignment assumptions.

- Evaluation of site access, internal circulation, and on-site parking.

The City's methodology for evaluating intersection performance is generally consistent with the County Congestion Management Program (CMP). The City utilizes a performance standard of LOS D or better and the County CMP utilizes LOS E or better. The performance criteria utilized by the City for a LOS analysis is summarized in Appendix D.

LOS Traffic Impact Study scopes of work for projects within the Laguna Niguel Gateway Specific Plan are also subject to the specific requirements of the adopted Specific Plan, including the Development Entitlement Management System (DEMS).

4.2 LOS Traffic Impact Study - Content and Format

As applicable, the LOS Traffic Impact Study should contain the following sections:

1) *Title Page* **-** This page should include the project name, project address (tract or parcel number if address is not yet established), project applicant's name and address, name of the traffic engineering firm and engineer who prepared the report along with their signature, address, phone number, stamp, and date report was prepared.

2) *Executive Summary* - A clear and concise description of the study findings. Pertinent information in this regard should include a brief overview of the project, a short discussion of the projects traffic generation potential, the expected impacts of the project, and a summary of measures necessary to address resultant project impacts (if applicable).

3) *Introduction* - A detailed description of study procedures, plus a general overview of the proposed project site and study area boundaries, existing and proposed site uses, and existing and proposed roadways and intersections within the defined study area (defined study area to be determined by City staff as a part of the Traffic Assessment scoping process). Exhibits required for this section include a regional map showing the project vicinity and a site layout map.

4) *Project Description* - Detailed project information, including location. Exhibits in this section should include, at a minimum, a clear illustration of the project in terms of a site plan, its density, adjacent roadways, on-site parking supply, proposed traffic circulation within the project, gross square footage, number of rooms/units, phasing, and other descriptions as appropriate.

This section should also include a definition of Regional and Local access including any Congestion Management Program (CMP) roadways or intersections which will serve the proposed project. This includes all major access routes to the site with descriptions of the most likely routes to be utilized.

5) *Baseline Conditions* - Minimum information in this section should include generalized geometric descriptions (e.g., roadways as classified by the Laguna Niguel General Plan with the pavement and the right-of-way widths). A description should also be provided for existing traffic volumes that use the particular facility (include the source of the traffic count information). The adequacy of pedestrian facilities and the accessibility of bicycles and from adjacent transit stops shall also be described.

   An exhibit showing the various roadways in the study area and presenting peak hour traffic count information, as well as a table showing daily (24-hour) volumes and Master Planned roadway configurations, should be included. All traffic counts used need to have been surveyed within 24 months of the LOS Traffic Impact Study completion date unless otherwise approved by the City Traffic Engineer or designee.

6) *Traffic Generation Forecast* - The project trip generation should generally be calculated using rates from the latest edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). If a project is anticipated to have a regional impact then City staff may require the project to be analyzed using the Orange County Traffic Analysis Model (OCTAM) in which case the trip generation would be calculated by the OCTAM land use conversion factors.

   If the generation rates do not address the proposed land use(s) in sufficient detail, rates from other documented sources may potentially be used with prior approval from the City staff. This may include, for example, trip generation derived from locally observed data that includes trip generation samples from at least three (3) similar facilities. The facilities selected as samples must be approved by City staff prior to data collection as a part of the Traffic Assessment scoping process.

   Any proposed trip credit for existing operating uses that will be replaced by the proposed project should be identified. Additionally, any proposed trip generation reductions for “pass-by,” internal capture, and/or transit trips should also be identified and approved by City staff.

   A table summarizing the types of land use(s) proposed, the corresponding generation rates, and project trip generation should be included. Documented reductions to generated values as discussed above or for any “pass-by” and transit trips must be presented in the generation forecast as well.

7) *Traffic Distribution and Assignment* - Description of trip distribution and directional approach for vehicle trips to and from the project site along with the specific roadways that would be utilized by site-generated traffic should be provided. The basic methodology and assumptions used to develop trip distribution and assignments must be clearly stated. The City may have significant input into these areas, which should be identified during the Transportation Assessment scoping process.

   As part of the analysis, a graphic that shows project distribution by percentage and the direction of travel should be included.

8) *Traffic Impact Analysis* - The following analysis scenarios should be evaluated and summarized. For each condition, a summary table should also be provided.

- Existing Conditions: Analysis of existing traffic conditions, which will serve as a base of analysis for the remainder of the study. All traffic count information used to represent existing conditions should be no more than 24 months old at the time of Planning Division letter of scope approval. However, if deemed applicable, it will be at the discretion of the City to request updated counts. Wherever possible, traffic counts should be taken on Tuesday through Thursday while schools are in session and avoiding holidays. Traffic counts from the day after a holiday should also be avoided where possible. Additionally, the raw data from sources other than the City, on which existing conditions are based, must be supplied in the LOS Traffic Impact Study appendix identifying the source.

- Existing Conditions Plus Project: Projected traffic generated by the proposed project plus existing traffic conditions.

- Opening Year – Without Project: Existing traffic conditions plus modeled traffic from all the development within the study area for which an application has been submitted ("pending projects"), or that have been approved but not yet constructed for the anticipated opening year of the project.

  For projects planned for construction more than two years beyond existing conditions, an ambient traffic growth factor is to be included to account for annual increases in background traffic. This factor will be determined by the City Traffic Engineer or designee, although traffic forecasts from OCTAM have determined that a growth factor of 0.75% per annum represents the current estimated average yearly traffic growth within the City.

- Opening Year – Plus Project: Projected traffic generated by the proposed project in addition to the Opening Year – Without Project forecasts.

- Project Phasing (if applicable): Projects that are to be constructed in more than one phase will require interim year future analysis to address each phase of the development and associated traffic impacts. The year(s) to be analyzed will coincide with the scheduled phasing and will be approved by the City Traffic Engineer or designee.

- General Plan Buildout – Without Project: Buildout of Laguna Niguel General Plan combined with buildout of circulation system. OCTAM Buildout projections will be used for this purpose. A General Plan buildout analysis is generally required for any project that contributes traffic to an intersection projected to have unacceptable LOS, any project that requires a General Plan Amendment or otherwise proposes development that exceeds the land use intensity assumed for the General Plan, and/or at the discretion of the City Traffic Engineer or designee.

- General Plan Buildout – Plus Project: Projected traffic generated by the proposed project in addition to the cumulative traffic conditions of General Plan Buildout.

9) *Capacity Analysis* - Capacity analysis should be conducted at identified mid-block segments and intersections within the study area and at all proposed access points to the project. Intersection capacity calculations should be made using the ICU method unless the consultant conducting the LOS Traffic Impact Study and/or City Traffic Engineer or designee identify locations that can be better evaluated using the Operational or Planning Analysis methodologies found in the latest editions of the Highway Capacity Manual (HCM). Pre-approval to use HCM shall be obtained in writing from the City Traffic Engineer or designee. Use of the HCM methodology, in addition to an ICU-type analysis,

will be required at any study area intersection under the control of Caltrans. The capacity of individual lane type to be used in the ICU calculations are as shown below.

- Left Turn Lanes 1,700 vehicles per hour
- Through Lanes 1,700 vehicles per hour
- Right Turn Lanes 1,700 vehicles per hour
- Shared Lanes 1,700 vehicles per hour

Yellow clearance/lost time should always be 0.05 ICU.

If the distance from the edge of the outside through lane is at least 19 feet and parking is prohibited during the peak period, right turning vehicles may be assumed to utilize this "de facto" right turn lane. Otherwise, all right turn traffic shall be assigned to the outside through lane. If a right turn lane exists, right turn overlap may be assumed, if not prohibited at that location. However, the assumption of the number of vehicles turning right during the overlap phase cannot conflict with any other critical movement at that intersection. Any signal overlap assumptions must be clearly stated.

Pedestrian adjustments should be performed on a case-by-case basis and assessed according to the procedures outlined in of the latest version of the HCM for those intersection that have more than 100 pedestrians in the peak period.

10) *LOS Analysis* **-** Acceptable performance criteria for local transportation facilities are established in the Laguna Niguel General Plan Circulation Element's LOS policies. A significant impact would occur at a study intersection when project-related traffic causes:

- A signalized intersection to degrade from an acceptable LOS D or better to LOS E or LOS F; or
- The volume to capacity (V/C) ratio to increase by more than 0.01 at a signalized intersection operating at LOS E or LOS F.

If an intersection is operating at LOS E or worse and a significant impact is anticipated (V/C ratio increase of more than 0.01), improvement is needed to improve intersection operations equal to the project-generated impact on the operation of the intersection. If an impact drops from LOS D or above to LOS E or F, improvement is required to bring the LOS back to the acceptable threshold level (LOS D) as a part of the project approval. No improvement is required for intersections operating at or above the acceptable threshold.

The LOS Traffic Impact Study should include a table identifying whether the project has a significant impact at any of the study area intersections or roadway segments. Improvement(s) would be required to pre-project conditions or the project would need to participate on a "fair-share" basis to the appropriate road fee programs (if any). A project fair share percentage table should be calculated at all study area intersections to show the project's impact to the street network. Fair share shall be calculated by determining the project's percent contribution to an intersection's critical movement(s) [project's contribution in volume to critical movements divided by total critical movements volumes] attributable to the significant impact at the intersection, and applying that percentage to the cost of planned improvement necessary to mitigate the impacts to the intersection.

11) *Site Access and Internal Circulation* - Project access and internal circulation analysis based upon the proposed land use(s) and site plan proposed for the project. Any recommended off-site operational or physical changes should be identified. The analysis should, as appropriate, include an evaluation of the following:

- Location and design of project site access points/driveways including potential signalization.[3]
- Through and/or turn lanes into and out of the project site.
- Vehicular and pedestrian sign distance.
- Need for traffic signal coordination.
- Pedestrian and bicycle connectivity.
- On/off-site delivery truck circulation.
- Any other considerations identified during the Traffic Assessment scoping process.

12) *On-Site Parking* - Evaluation of on-site vehicle and bicycle parking supply versus the parking required per the Laguna Niguel Zoning Code (Subarticle 6). If the proposed development is of mixed-use type, a table shall be included presenting each land use, its size, and the code parking requirement. This table should clearly indicate how the code parking was calculated and include the proposed on-site parking supply together with the resultant surplus or deficit from code requirements.

    In some cases, specialized uses may require parking rates not identified in the City's parking code, and as such, special parking demand studies should be provided to assess the adequacy of parking. Data from at least three (3) similar sites should be included in any specialized studies. The facilities selected as samples should be approved by City Staff prior to data collection.

13) *Construction* **-** All projects should anticipate construction impacts with new development. To the extent possible, operational analysis should include information about project construction schedule such as duration, hours or operations, any required import or export, potential haul routes, traffic control plans and street closure.

14) *Recommendations* **-** The LOS Traffic Impact 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 graphic form within the traffic study.

15) *Conclusion* **-** 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 refer to the recommendations included in the LOS Traffic Impact Study to address the impacts.

[3]When a traffic signal warrant analysis is determined necessary for an unsignalized intersection by the City Traffic Engineer or designee, the assessment is to be performed using the latest adopted Manual of Uniform Traffic Control Devices (MUCTD) or California Supplement. The warrant analysis is to be included in the LOS Traffic Impact Study appendices.

APPENDIX A

Technical Memorandum of Facts, Reasonable Assumptions and Expert Opinions

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MEMORANDUM

To:	City of Laguna Niguel	**From:**	Chris Devlin, Sean Daly, Iteris, Inc.
Date:	November 4, 2020		
RE:	SB 743 Implementation in Laguna Niguel – Facts, Reasonable Assumptions, and Expert Opinion		

EXECUTIVE SUMMARY

Starting in July 2020, California Environmental Quality Act (CEQA) lead agencies including the City of Laguna Niguel, must conduct CEQA transportation analysis in conformance with Senate Bill 743 (SB 743). It directs that measures of vehicle congestion and delay will no longer be accepted as an environmental impact.

A recommended new metric for CEQA transportation analysis was developed by the Governor's Office of Planning and Research (OPR) based on the vehicle miles traveled (VMT), total distance of vehicle travel associated with a Project. This shift in CEQA transportation metric promotes outcomes intended to reduce reliance on automobile travel which align with State goals for reducing emissions, investing in multimodal transportation networks and encouraging higher density in-fill development.

The two components of the VMT are the number of vehicle trips generated and the distance they travel. The primary determinants of vehicle trips are household demographics—their size and composition—and their economic circumstances, particularly employment status and income level. The geographic distribution of households, employment, schools, shopping and recreational destinations influence the distance of travel.

In general, VMT is lower in areas where there are a diversity of land uses in close proximity—shortening trips—and where there are multimodal transportation networks—reducing the need for vehicle travel.

Since assessing total VMT would disadvantage larger projects—and generally discourage economic growth, OPR recommends the use of an "Efficiency Metric" or index of VMT by population and employment.

State law does not prohibit using the traditional, operations-based level of service analysis for non-CEQA purposes, and most Cities are retaining traffic studies to ensure adequate public infrastructure consistent with General Plan policies.

The change in metric alters CEQA transportation analysis in many ways:

- The impact being evaluated previously was the adequacy of roadway operations (i.e. congestion) now it will be tied to greenhouse gas emissions;
- The daily length of all trips per person or employee;
- The time period of level of service analysis is generally during the morning and evening peak hours whereas VMT looks at all travel during the course of a day;
- Level of service has a lot to do with the amount and quality of vehicle infrastructure while VMT is mostly influenced by land use patterns;

- Level of Service analysis looks at localized impacts while VMT analysis is regional in nature—measuring all travel even outside of the City—in fact the farther away from the City trips are made, the greater the impact;
- And finally, mitigation for level of service impacts tends to result in infrastructure improvements, while mitigation for VMT impacts tends to be for non-vehicle travel such as walking, biking, and transit, and land use mix.

The new CEQA guidelines provide for a number of screening criteria, by which a project could be presumed to be less than significant without undergoing detailed analysis:

- Projects that are too small to generate a significant number of trips or are redevelopment sites with net trips below a net significant number of trip;
- Projects located in an area that has low VMT under existing conditions;
- Transit Priority Areas – one half mile around major transit stops including the Laguna Niguel Metrolink station;
- Neighborhood retail that primarily serves the local community;
- Affordable housing units; and
- Projects focused on services that primarily serve the community such as schools, parks, community center, daycare and libraries.

A number of approaches appropriate for the analysis of different types of projects in the City were reviewed. The following thresholds of significance are recommended based on project type:

- The City's thresholds of significance for development projects and land use plans is based on residential VMT per capita or employment VMT per employee compared to the City's base year[1] average. A significant impact would occur if the VMT per capita or VMT per employee exceeds the citywide baseline average.
- For Transportation Projects, a significant impact would occur if the project would result in an increase to the total baseline VMT in the City (not indexed to population nor employment).

Projects that exceed the citywide baseline average VMT rate would be considered to have a potentially significant transportation impact and require mitigation to reduce VMT to be equal to or below the applicable City threshold. If a project exceeds the significance threshold after all feasible mitigation has been applied, then a potentially significant and unavoidable impact may occur.

To conform to State law, it is recommended the City of Laguna Niguel adopt a resolution approving guidelines that directs the use of transportation analysis consistent with current State CEQA Guidelines. This includes the use of VMT metrics for CEQA transportation analysis. The Departments of Community Development and Public Works intend to detail the approach for CEQA transportation analysis and non-CEQA traffic studies in "Transportation Assessment Guidelines."

[1] The City's "base year" is the base year of the travel demand model used for the analysis. If the most recent OCTAM baseline model scenario is not used, the applicant should state a reason.

1.0 INTRODUCTION

Beginning July 1, 2020, CEQA analysis for determining potential significant transportation impacts will transition from an automobile delay or capacity measure to a VMT metric in evaluating a project's environmental impacts under CEQA as required by SB 743. As recommended by the California Office of Planning Research (OPR) and adopted as California Natural Resources Agency guidance, the following relevant changes to CEQA guidance were adopted in 2018:

- Implementing SB 743, new Guidelines section 15064.3 establishes VMT as the most appropriate measure of transportation impacts, shifting away from the level of service analysis that evaluated a project's impacts on traffic conditions on nearby roadways and intersections.
- Section XVII of Appendix G (Environmental Checklist) previously titled "Transportation/Traffic" now renamed "Transportation," and is significantly revised to reflect the State's new focus on reducing VMT and the near elimination of concern with degrading level of service as it pertains to vehicle operations.

This shift in CEQA transportation metric promotes outcomes that reduce reliance on automobile travel which align with State goals for reducing emissions, investing in multimodal transportation networks and encouraging higher density in-fill development.

In order to comply with State law, the City of Laguna Niguel is developing Transportation Assessment Guidelines, which address VMT consistent with SB 743. This memorandum provides the technical background, analysis, and recommendations for these Guidelines. These Guidelines also provide the methods to analyze transportation impacts from plans and projects, including screening criteria, thresholds of significance, calculation methods, and mitigation measures to assist applicants in complying with CEQA when the City of Laguna Niguel is the CEQA lead agency.

The technical memorandum has the following sections:

1. SB 743 Background
2. Recommended Framework of CEQA Transportation Analysis including screening criteria
3. Threshold(s) of Significance
4. Potential Trip Reduction and Mitigation Measures
5. Estimated Threshold of Significance Potential

As a next step, draft Transportation Assessment Guidelines will be prepared for adoption by the City Council in accordance with CEQA Guidelines: California Code Regulations Title 14. Natural Resources, Division 6. California Natural Resources Agency, Chapter 3. Guidelines for the Implementation of the CEQA.

1.1 SB 743 Background

Senate Bill 743 (Steinberg, 2013), which was codified in Public Resources Code section 21099, required changes to the guidelines implementing CEQA (CEQA Guidelines) (Cal. Code Regs., Title 14, Div. 6, Ch. 3, § 15000 et seq.) regarding the analysis of transportation impacts.

Pursuant to Section 21099, the criteria for determining the significance of transportation impacts must "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." (Id., subd. (b)(1); see generally, adopted CEQA Guidelines, § 15064.3, subd. (b) [Criteria for Analyzing Transportation Impacts].) To that end, in developing the criteria, the Office of Planning and Research proposed, and the California Natural Resources Agency (Agency) certified and adopted, changes to the CEQA Guidelines that identify vehicle miles traveled (VMT) as the most appropriate metric to evaluate a project's transportation impacts. With the California Natural Resources Agency's certification and adoption of the changes to the CEQA Guidelines, automobile delay, as measured by "level of service" and other similar metrics of vehicle operation, generally no

longer constitutes a significant environmental effect under CEQA. (Pub. Resources Code, § 21099, subd. (b)(3).). The Office of Administrative Law approved the CEQA Guideline updates on December 28, 2018.

The new CEQA Guidelines (Section 15064.3, Determining the Significance of Transportation Impacts) requires all CEQA lead agencies analyze a project's transportation impacts using a VMT metric exceeding an applicable threshold by July 1, 2020.

The CEQA Guidelines give lead agencies discretion to choose the most appropriate methodology to evaluate a project's VMT impacts, however the methodology must be based on substantial evidence. Importantly, SB 743 "does not preclude the application of local general plan policies, zoning codes, conditions of approval, thresholds, or any other planning requirements pursuant to the police power or any other authority." (Pub. Resources Code § 21099(b)(4).). Thus, it does not preclude the on-going use of congestion measures as a project performance metric for operational analysis for conformance with planning for new development consistent with community values. However, the operations analysis would not be applicable to determining significance under CEQA.

The two sections of the comprehensive CEQA guideline update relevant to CEQA transportation analysis are included in their entirety as follows.

New Section 15064.3. Determining the Significance of Transportation Impacts.

(a) Purpose.

This section describes specific considerations for evaluating a project's transportation impacts. Generally, vehicle miles traveled is the most appropriate measure of transportation impacts. For the purposes of this section, "vehicle miles traveled" refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel. Except as provided in subdivision (b)(2) below (regarding roadway capacity), a project's effect on automobile delay shall not constitute a significant environmental impact.

(b) Criteria for Analyzing Transportation Impacts.

(1) **Land Use Projects**. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.

(2) **Transportation Projects**. Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.

(3) **Qualitative Analysis**. If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.

(4) **Methodology**. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental

document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

(c) Applicability.

The provisions of this section shall apply prospectively as described in section 15007. A lead agency may elect to be governed by the provisions of this section immediately. Beginning on July 1, 2020, the provisions of this section shall apply statewide.

Note: Authority cited: Sections 21083 and 21099, Public Resources Code. Reference: Sections 21099 and 21100, Public Resources Code; Cleveland National Forest Foundation v. San Diego Association of Governments (2017) 17 Cal.App.5th 413; Ukiah Citizens for Safety First v. City of Ukiah (2016) 248 Cal.App.4th 256; California Clean Energy Committee v. City of Woodland (2014) 225 Cal. App. 4th 173.

Environmental Checklist for Transportation

Section XVII of Appendix G (Environmental Checklist) previously titled "Transportation/Traffic" now renamed "Transportation," and is significantly revised to reflect the State's new focus on reducing VMT and the near elimination of concern with degrading level of service. Section XVII was revised to reduce the duplication between former subsections (a) and (f) concerning a project's conflicts with circulation plans (including vehicle, transit, bicycle, pedestrian). Subsection (b) of Section XVII now cross-references the requirements in new Section 15064.3. Subsection (c) regarding changes in air traffic patterns was eliminated. Finally, subsection (d) regarding hazards, was clarified to refer to "geometric design features".

Below are the text revisions to section XVII, with previous text **bolded**, inserted text underlined and removed text ~~struck through~~.

XVII. TRANSPORTATION~~/TRAFFIC~~.

Would the project:

Conflict with ~~an applicable~~ program **plan, ordinance or policy** ~~establishing measures of effectiveness for the performance of~~ addressing **the circulation system**, including transit, roadway, bicycle and pedestrian facilities? ~~taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?~~

Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)~~(1)~~? ~~Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?~~

~~Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?~~

~~d)~~ **Substantially increase hazards due to a** geometric **design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?**

~~e~~**d) Result in inadequate emergency access?**

~~f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?~~

2.0 RECOMMENDED FRAMEWORK OF CEQA TRANSPORTATION ANALYSIS IN THE CITY OF LAGUNA NIGUEL

A framework for CEQA transportation analysis in the City of Laguna Niguel was developed to set overall parameters of the methodology. The framework is based on City of Laguna Niguel policies, technical advisories and guidance from OPR and the Natural Resources Agency.

CEQA lead agencies determine significance thresholds, analysis methodology, and whether any particular mitigation measure is feasible in the context of the project under review. Further, CEQA allows a lead agency to approve a project that has significant environmental impacts so long as it finds that the benefits of the project outweigh those impacts.

The four outcomes of CEQA transportation analysis for a project are:

1. **Screened from Further Analysis:** Screened from analysis and presumed to be less than significant based on screening thresholds.
2. **Less than Significant**: Not screened from analysis and a CEQA transportation analysis is conducted which found the project to be less than significant.
3. **Less than Significant After Mitigation**: Not screened from analysis and a CEQA transportation analysis is conducted which found the project to be potentially significant, feasible mitigation measures are applied and the project has less than significant transportation impacts after mitigation.
4. **Statement of Overriding Considerations**: Not screened from analysis and a CEQA transportation analysis is conducted which found the project to be potentially significant, feasible mitigation measures are applied, and a project cannot achieve less than significant transportation impacts after mitigation and an Environmental Impact Report with a Statement of Overriding Considerations for the transportation impacts associated with the project is needed.

CEQA transportation analysis in the City is focused on the impact of automobile and light truck VMT from residents and employees: Section 15064.3, subdivision (a), states, "For the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project." Here, the term "automobile" refers to on-road passenger vehicles, specifically cars and light trucks.

Projects will be analyzed for the entire VMT of their trips, even outside of the City. A project's change in VMT will be analyzed and assessed on a per capita and/or per employee and compared to the average Citywide baseline in order to use an efficiency-based metric and determine whether a potential significant transportation impact would occur.

The tool used to calculate the Citywide VMT and efficiency metrics of VMT was the Orange County Transportation Analysis Model (OCTAM) which is a subarea model of the Southern California Association of Government's (SCAG) travel demand model. An individual project's VMT per capita or per employee would be derived from the average VMT from the model traffic analysis zone (TAZ) the project is located. Since VMT is primarily a function of the location of a project, and the TAZ is the smallest geography in the Model, a project will be assumed to have the same average VMT characteristics as neighboring development within the TAZ. There are 36 TAZs in the City of Laguna Niguel (see **Figure 3).** A project applicant could provide their own VMT information, provided it is based on methods and assumptions approved by the City.

Table 1 – OCTAM VMT and Socioeconomic data

Home-based VMT per Capita	24.9
Home-based work VMT per Employee	24.0
Total Population	65,410
Total Employment	19,007
Population per Occupied Household	3.0
Office Employees per TSF	3.5
Total Citywide VMT	2,614,901

The SCAG travel demand model is updated every four years, with OCTAM updated subsequently. Baseline VMT values will be updated when a new model is released. The existing/baseline year of the model will be used for CEQA baseline conditions and the future year (approximately 20-year forecast) scenario will provide future year and cumulative analysis VMT information. The City can update its transportation analysis guidelines with information from OCTA with future releases of OCTAM data.

2.1 Factors that Determine VMT

The fundamental components of the vehicle miles traveled from a site or area are the number of vehicle trips generated and the distance they travel. In the case of passenger VMT, several factors exert influences on households' ownership and use of motor vehicles. The primary determinants of personal motor vehicle travel are household demographics—including the total number of households as well as their size, composition, and geographic distribution—and their economic circumstances, particularly the employment status and income level.

These factors collectively affect household members' participation in activities outside of the home – working, shopping, conducting personal business, and recreation—which is the underlying source of their demand to travel. In turn, household members choose among non-motorized forms of travel (such as walking and cycling), public or school-provided transportation services, and travel in personal vehicles to satisfy their demands for travel.

The geographic distributions of households, employment opportunities, industrial facilities, and shopping and recreational destinations influence the use of both passenger vehicles and freight vehicles which put demand on transportation networks to complete desired connections.

With high investment in vehicle infrastructure and suburban development, Southern California is associated with high levels of vehicle use for trips and relatively long trip distances which both contribute to high levels of VMT. The following factors are correlated with lower VMT:

Land Use Density – Higher density areas encourage shorter and non-vehicle trips due to concentrating destinations, convenient walking and biking and support of more effective public transportation.

Land Use Diversity – A variety of land uses, services and types of destinations in close proximity reduce the need for long-distance driving.

Mixed Use Development – Similar to land use diversity, mixed-use developments present the opportunity for the internal capture of residential, employee and retail trips. Further, the introduction of residential units in predominately employment areas or work space in predominately residential areas improve jobs-housing balance and would reduce overall VMT.

Telecommuting/Home-based work – The improvement in technology and video conferencing is rapidly changing how and where people work. Additionally, home designs with certified wi-fi and floor plans within home offices are increasing the percentage of people who work from home on a regular or limited basis.

Affordable Housing – Affordable housing allows workers to live closer to work in areas and improve jobs-housing balance. In areas where existing jobs-housing match is closer to optimal, low income housing nevertheless generates less VMT than market- rate housing. Based on guidance from OPR, affordable housing units are screened out from VMT analysis, whether a stand-alone affordable project or a mix of affordable and market-rate units.

Redevelopment and Infill Projects – Redevelopment of infill sites allow for higher density and a new destination to an established area.

Access to Transit – Access to high-quality transit service that meets travel needs by being cost and time competitive with vehicle travel significantly reduces dependence on vehicles for travel.

Pedestrian and Bicycle-Oriented Transportation Networks – Similar to access to transit, pedestrian and bicycle networks that serve as high-quality connections reduce the use of vehicles.

In summary, a diversity of land uses and access to multimodal transportation networks promote the reduction in VMT and its associated greenhouse gas emissions.

2.2 Recommended Screening Criteria

With the California Natural Resources Agency's certification and adoption of the changes to the CEQA Guidelines, automobile delay, as measured by "level of service" and other similar metrics, no longer constitutes a significant environmental effect under CEQA. It is replaced with a VMT metric which measures the distance traveled by vehicles produced by and attracted to a proposed project.

Since the SB 743 law is intended to provide CEQA relief to projects that support the State's GHG emission goals the screening of projects as presumed as less than significant is an incentive for development in areas where vehicle trips are shorter or where other modes of transportation are supported. The screening therefore limits the technical analysis of CEQA transportation impacts to those projects which have the potential of significant impacts.

Determining whether a project may have a significant effect plays a critical role in the CEQA process. As identified by OPR in its technical advisory for SB 743 implementation (December 2018), there are a number of project conditions which may result in it being presumed to have a less than significant transportation impact.

The following project conditions are recommended to be considered in the review of projects prior to or at the CEQA Checklist stage to determine if a project can be presumed to have a less than significant CEQA transportation impact or if a specialized study is required for that determination. Nevertheless, the City should maintain discretion to approve a project applicant's conditions for a presumption of less than significant to be applicable.

Small Projects

OPR suggests a small project that would generate 110 trips per day or less generally may be assumed to cause a less-than-significant transportation impact and thus not warrant further VMT analysis. Several cities are adopting higher trip thresholds for small projects. An ITE report on behalf of the San Diego Association of Governments (SANDAG) recommended that the small projects threshold be based on regional standards for transportation analyses that were documented in the Guidelines for Traffic Impact Studies in the San Diego Region (ITE/SANTEC, 2000) and have been in use for over 18 years. Their recommendation was that for projects consistent with the General Plan or Community Plan, VMT impacts could be presumed insignificant for projects generating less than 1,000 daily trips. For Projects inconsistent with the General Plan or Community Plan, VMT impacts could be presumed insignificant for projects generating less than 500 daily trips (www.SANDAG.org\SB743).

Another approach to defining small projects is through the stated goal of achieving GHG reduction through VMT analysis. The California Air Resources Board (CARB) stated in its 2017 Scoping Plan:

> "Employing VMT as the metric of transportation impact statewide will help to ensure GHG reductions

planned under SB 375 will be achieved through on-the-ground development, and will also play an important role in creating the additional GHG reductions needed beyond SB 375 across the State."

Therefore, the link between GHG reduction and VMT analysis can be used to screen projects, and a small project is one that generates less GHG emissions than thresholds established by the South Coast Air Quality Management District (SCAQMD).

Analysis by air quality specialists at LSA Associates compared GHG emissions to average daily trips using defaults in the CalEEMod model. The analysis concluded GHG emissions from a project of less than 500 daily could typically be considered less than significant, as follows:

"In order to characterize the effect of changes in project-related average daily trips (ADT) to the resulting greenhouse gas (GHG) emissions the air quality model CalEEMod was used. This model was selected because it is provided by the California Air Resources Board to be used state-wide for developing project-level GHG emissions. CalEEMod was used with the built-in default trip lengths and types to show the vehicular GHG emissions from incremental amounts of ADT. The following table shows the resulting annual vehicle miles traveled (VMT) and GHG emissions from the incremental ADT:

Table 2 - Representative VMT and GHG Emissions from CalEEMod

Average Daily Trips (ADT)	*Annual Vehicle Miles Traveled (VMT)*	*GHG Emissions (Metric Tons CO_2e per year)*
200	*683,430*	*258*
300	*1,021,812*	*386*
400	*1,386,416*	*514*
500	*1.703,020*	*643*
600	*2,043,623*	*771*

Source: CalEEMod version 2016.3.2. Example project used: 50 Single-Family Homes in Orange County.
CO_2e = carbon dioxide equivalent GHG = Greenhouse Gas

A common GHG emissions threshold is 3,000 metric tons of carbon dioxide equivalent[i] (CO_2e) per year (MT CO_2e/yr). The vehicle emissions are typically more than 50 percent of the total project GHG emissions. Thus, a project with 500 ADT would generally have total project emissions that would be less than 1,300 MT CO_2e/yr. As this level of GHG emissions would be less than 3,000 MT CO_2e/yr, the emissions of GHG from a project up to 500 ADT would typically be less than significant.

Carbon dioxide equivalent (CO_2e) is a concept developed to provide one metric that includes the effects of numerous GHGs. The global warming potential (GWP) of each GHG characterizes the ability of each GHG to trap heat in the atmosphere relative to another GHG. The GWPs of all GHGs are combined to derive the CO_2e."
Source: LSA Associates, Jan 15, 2020

Additional supporting justification shown in **Table 3** is taken from publicly available work performed for the City of Laguna Hills using the CalEEMod Version 2016.3.2 which was used to calculate GHG emissions for six (6) common land uses. The quantities in each of the tested land use generates 500 daily trips and all land use categories generate less than the SCAQMD significance threshold of 3,000 Metric Tons of Carbon Dioxide Equivalents per Year.

Table 3 – Estimated GHG Emissions for 500 Daily Trips Screening Criteria

Emissions Source	$MTCO_2e/Yr$ [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	1,546.3	1,526.9	1,477.6	610.7	486.1	1,049.5
Energy Sources	209 .3	137.0	280.3	254 .7	49.7	423.7
Area Sources	1 7.9	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[2]					
Exceed Threshold?	No	No	No	No	No	No
Percent Below Threshold	39%	42%	37%	68%	82%	44%

[1] $MTCO_2e$ = Metric Tons of Carbon Dioxide Equivalents per Year

[2] 3,000 $MTCO_2e$ is also commonly used by the City of Laguna Niguel as a Greenhouse Gas Emission threshold for CEQA purposes.

Furthermore, the scale of projects at a 500 daily trip small project level is equivalent to the City's requirement of a LOS Traffic Impact Study for projects that add 51 or more trips during peak hours—peak hours are generally 10 percent of the total daily trips. This would mean the standard for review for both CEQA transportation assessment and LOS Traffic Impact studies would be consistent.

Therefore, based on an analysis of GHG emissions, project with 500 daily trips or less are considered small projects and screened from VMT analysis.

To put projects of 500 daily trips into perspective, **Table 4** shows the approximate percentage change on total Citywide VMT for typical residential and non-residential development projects that produce 110, 250, and 500 daily trips. The calculations were based on VMT statistics taken from OCTAM and socioeconomic date as shown in **Table 4**. A 500 daily trip project would add around 0.16% of VMT to Citywide VMT.

Table 4 – Project Percentage of Citywide VMT

Type	Land Use	110 trips[1]	250 trips[1]	500 trips[1]
Residential	Single Family (DU)	11	26	53
	Multifamily (DU)	15	34	68
	Average (DU)	13	30	60.5
	Percent Increase in Citywide VMT	0.04%	0.09%	0.17%
Employment	General Office (TSF)	11.3	25.65	51.3
	Percent Increase in Citywide VMT	0.04%	0.08%	0.16%

[1] Daily trips calculated from ITE Trip Generation Manual, 10th Edition, 2017.

City of Laguna Niguel Recommendation: Considering the link between GHG emissions and VMT established by CARB and the State Legislature, the use of 500 daily trips as the VMT screening threshold for small projects is proposed. Therefore, small projects that generate 500 daily trips or less based on ITE trip generation rates for proposed land uses are deemed exempt from further VMT analysis and VMT impacts are considered less than significant.

Redevelopment Projects

Where a proposed project replaces existing VMT-generating land uses that constitutes a baseline condition under CEQA, and the replacement uses lead to a net overall decrease in VMT, the project would lead to a less-than-significant transportation impact. If the project leads to a net overall increase in VMT, then the thresholds developed by the jurisdiction should apply.

City of Laguna Niguel Recommendation: One of the intended goals of SB 743 is to support infill development to encourage active transportation and reduce average trip lengths. In order to encourage such infill development, OPR suggests using a metric that looks at only the net trips generated by the redevelopment project (project trips generated by the new development minus trips generated by the previous development). For redevelopment projects, the calculation of net project trips generated in accordance with OPR advice is proposed. If the net trips generated by the redevelopment is less that the Small Project trip threshold of 500 daily trips (as discussed in the prior section) then no additional analysis is required. If a redevelopment project does not meet this screening criteria, then the redevelopment project is evaluated for impact analysis based on the applicable residential or non-residential VMT rate methodology, as further discussed in subsequent sections of this document.

Map-Based Screening of Projects Within Low VMT Areas:

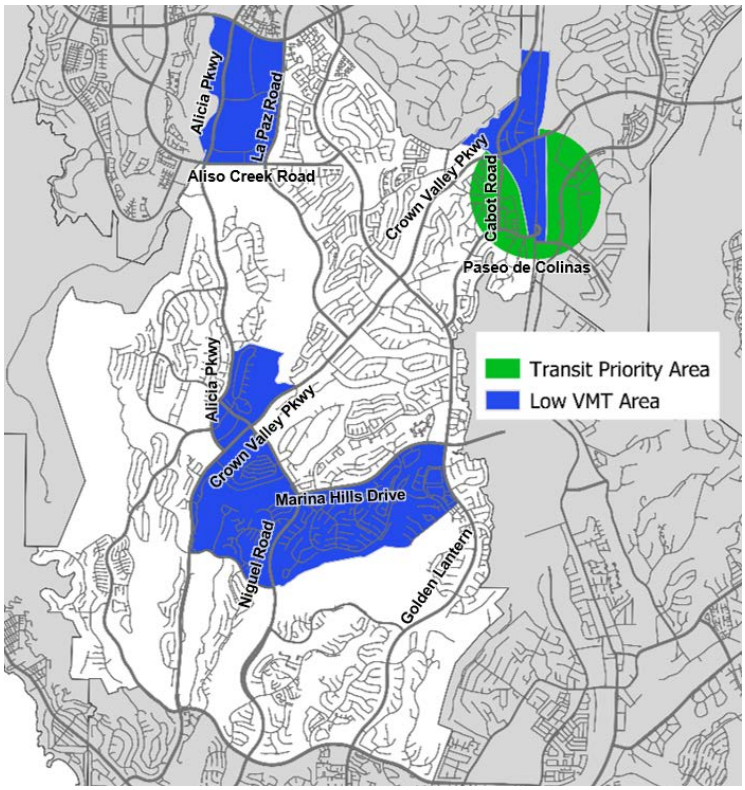
Residential and office (or other land use) projects that are located in areas with low VMT, and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT and thus not warrant further CEQA analysis. Maps created with VMT data from a travel demand model can illustrate areas that are currently below the City average threshold VMT.

City of Laguna Niguel Recommendation: OCTA's traffic model OCTAM was used to calculate VMT by Traffic Analysis Zone (TAZ) geography. A map of TAZs where residential VMT per capita and employment VMT per employee were both below the Citywide average was prepared. They represent areas of the City currently located near a diversity of land uses or multimodal transportation where additional development would further decrease VMT per capita or employee. Three distinct areas of the City meet this criterion:

- The Gateway Specific Plan area around the Metrolink Station (TAZ 1479 and TAZ 1629).
- The northwest portion of the City bounded by Aliso Creek Road and La Paz Road, an employment center (TAZ 1624).
- The central portion of the City bounded by Alicia Parkway, Crown Valley Parkway, Club House Drive, Golden Lantern, Marina Hills Drive, Niguel Road, the central part of the City (TAZ 1648, TAZ 1652, TAZ 1655, and TAZ 1657).

Based on this review, it is reasonable for a project proposed in these areas to be presumed to be less than significant TAZs with blue shading in **Figure 1** represent low VMT/capita areas compared to the Citywide average, however, these areas would be subject to the screening criteria and VMT analysis presented in this document the same as projects located outside these areas.

Figure 1 – Low VMT Zones compared to City Average (Source OCTAM) and Transit Priority Area



Transit Priority Areas

Transit Priority Areas (TPAs) are located within ½ mile of a major transit stop, and projects within them can be generally presumed to be less than significant. A "major transit stop" is "*a 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*" as defined by Public Resources Code §21064.3.

Projects in TPAs are generally be presumed to have less than significant impacts, but that such presumption might be inappropriate if the proposed development:

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

SB 743 stated aesthetic and parking impacts of a residential, mixed-use residential, or employment center project on an infill site within a transit priority area shall not be considered significant impacts on the environment.

There is currently one TPA located within the City which is the area surrounding the Laguna Niguel/Mission Viejo Metrolink Station shown in green. Land use development projects in the TPA and consistent with the Laguna Niguel Gateway Specific Plan would likely be exempt from CEQA analysis.

City of Laguna Niguel Recommendation: The screening out of any projects that are located within the existing TPA in **Figure 2** below that meet the following criteria are proposed:

A residential or mixed-use project, or a project with a floor area ratio of at least 0.75 on commercially-zoned property, including any required subdivision or zoning approvals, is exempt from VMT analysis if the project satisfies the following criteria:

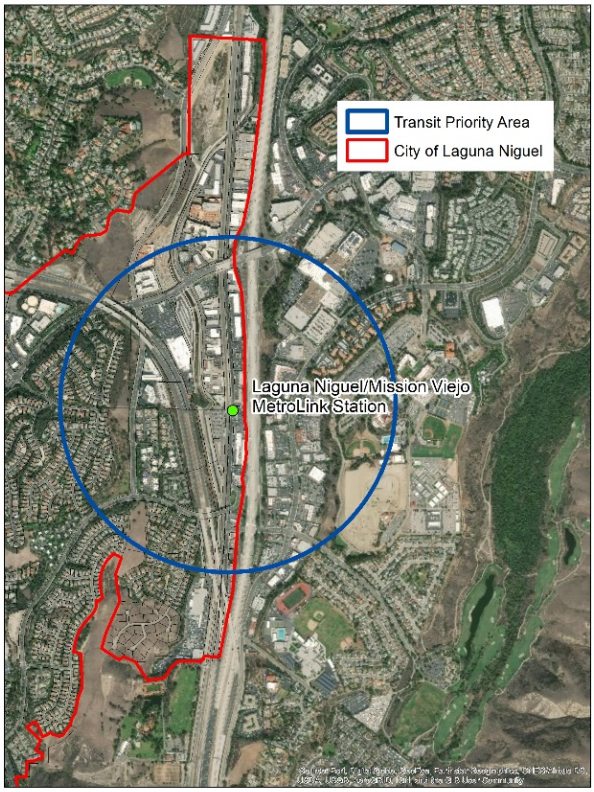
(A) It is located within a transit priority area as defined in Public Resources Code section 21099(a)(7);

(B) It is consistent with a Specific Plan for which an Environmental Impact Report was certified; and

(C) It is consistent with the general use designation, density, building intensity, and applicable policies specified for the project area in either a sustainable communities strategy or an alternative planning strategy for which the State Air Resources Board has accepted the determination that the sustainable communities strategy or the alternative planning strategy would achieve the applicable greenhouse gas emissions reduction targets.

To the extent additional areas within the City qualify as TPA's in the future, projects in such areas would also be screened out.

Figure 2 - Existing TPAs in Laguna Niguel



Locally Serving Retail and other Locally Serving Land Uses

The OPR Technical Advisory states that "new retail development typically redistributes shopping trips rather than creating new trips," estimating the total change in VMT (i.e., the difference in total VMT in the area affected with and without the project) is the OPR's recommended way to analyze a retail project's transportation impacts. Analysis of total change in VMT can be a technically difficult, therefore OPR offers potential screening based on the local vs. regional service area for retail projects.

By adding retail opportunities into the urban fabric and thereby improving retail destination proximity, local-serving retail development tends to shorten trips and reduce VMT. Thus, lead agencies generally may presume such development creates a less-than-significant transportation impact. Regional-serving retail development, on the other hand, which can lead to substitution of longer trips for shorter ones, may tend to have a significant impact." Where such development decreases VMT, lead agencies should consider the impact to be less-than-significant. Lead agencies may refer to local definitions when available but should also consider any project "local serving retail" if it is less than 50,000 square feet.

Additionally other locally serving land uses under 50,000 square feet include daycare centers, schools, parks, community centers, and libraries intended for local use could be presumed to have a less-than-significant impact on transportation based on the discretion of the City.

City of Laguna Niguel Recommendation: All retail projects under 50,000 square feet be considered locally serving and be screened out from VMT analysis. Additionally, other locally serving land uses under 50,000 square feet could be presumed to have less than significant transportation impacts. These uses include, but are not limited to:

- Libraries,
- Civic Centers,
- Police/Fire Stations,
- Community Centers,
- Other locally serving civic uses,
- Public schools,
- Private schools with less than 120 students,[1]
- Community colleges with less than 400 students,[1]
- Daycare centers,
- Urgent care facilities,
- Walk-in medical clinics,
- Auto repair/tire shops,
- Gas service stations,
- Gyms/health clubs,
- Fitness studios,
- Locally serving hotels (non-destination hotels), and
- Locally serving assembly uses (places of worship, community organizations).

Note
[1] Use would typically generate less than 500 daily trips

A mixed-use project with locally serving components but is more than 50,000 square feet in total would not be screened from further analysis, however, the presumption of less than significance for locally serving project components could be described qualitatively.

For other potentially locally serving land uses the decision to screen out will be determined by City staff on a case-by-case basis, depending on the size and location of the proposed development.

Affordable Housing

OPR guidance indicates that adding affordable housing to infill locations generally improves jobs-housing match, in turn shortening commutes and reducing VMT. Further, "… low-wage workers in particular would be more likely to choose a residential location close to their workplace, if one is available." OPR states that evidence supports a presumption of less than significant impact for a 100 percent affordable residential development (or the residential

component of a mixed-use development) in infill locations. If projects with all affordable units are exempt from VMT analysis, the presumption is individual affordable units are also exempt from VMT analysis. Therefore, if a project has a mix of affordable and market-rate units, the affordable units within the project would be exempt from VMT analysis and the remaining market-rate units would be subject to VMT analysis in accordance with the provisions of these Guidelines.

City of Laguna Niguel Recommendation: 100% affordable housing unit projects will be considered exempt from VMT analysis, consistent with the OPR Technical Advisory. For projects that are less than 100% affordable, each affordable unit shall be deemed to have no VMT generation. The remaining market-rate units shall be subject to the VMT analysis presented in these Guidelines.

Mixed-Use Development

Mixed-use development on its own would not allow an applicant to presume less than significant transportation impacts. Each component of a mixed use development should be assessed separately with any internal capture or other reduction in VMT due to reduction in the number of or distance of vehicle trips can be included in analysis to demonstrate reduction in VMT as compared to comparable non-mixed-use projects.

2.3 Travel Demand Modeling Results

The primary tool for calculating VMT are travel demand models. These computerized models use socioeconomic (demographic and employment) data to generate trips that are loaded onto and distributed through a network. The model networks are developed to mimic the transportation system (number of lanes, speed limit, train stations, etc.). The models are calibrated based on transportation pattern data of traffic counts, origin-destination data, and various other data sources. The land use and transportation network of the City of Laguna Niguel are included in the SCAG region's Regional Transportation Plan/Sustainable Communities Strategy (SCS) travel demand model.

The travel demand model is a Federal requirement as part of the region's air quality conformity determination for the approval of Federal funding for transportation projects and the region's SCS. This is an important point since the model's primary purpose and its methodological structure is developed to adhere to its statutory requirements rather than for its use in studying transportation phenomena. Since transportation analysis, including VMT analysis, is secondary to the travel demand model's purpose the model the components and methodology for VMT analysis involves technical issues and some assumptions and "work-arounds" which need to be documented carefully if the City wants to apply consistent and legally defensible guidelines for conforming with SB 743.

Not all types of VMT are analyzed based on guidance from OPR and the Natural Resources Agency and the VMT is split into different land use and trip type components of home-based (residential) VMT and work-based (employment) VMT. These VMT will be indexed by the number of residents and the number of employees, respectively. Therefore, the two VMT metrics are in the two following categories:

- **Residential VMT per capita**: Home-Based Production VMT / Residential Population; and
- **Employment VMT per employee**: Home-Based Work Attraction VMT and Work-Based Production.

In order to develop the VMT component of the metrics, travel demand model outputs by trip purpose and productions and attractions must be considered. The delineation of productions and attractions include both ends of an origin and destination trip. For example, production VMT for home-based work trips represents the total VMT of all commute trips VMT for people living in the City to and from wherever they work. The attraction VMT represents the VMT of all people commuting to and from the City for work no matter where they live.

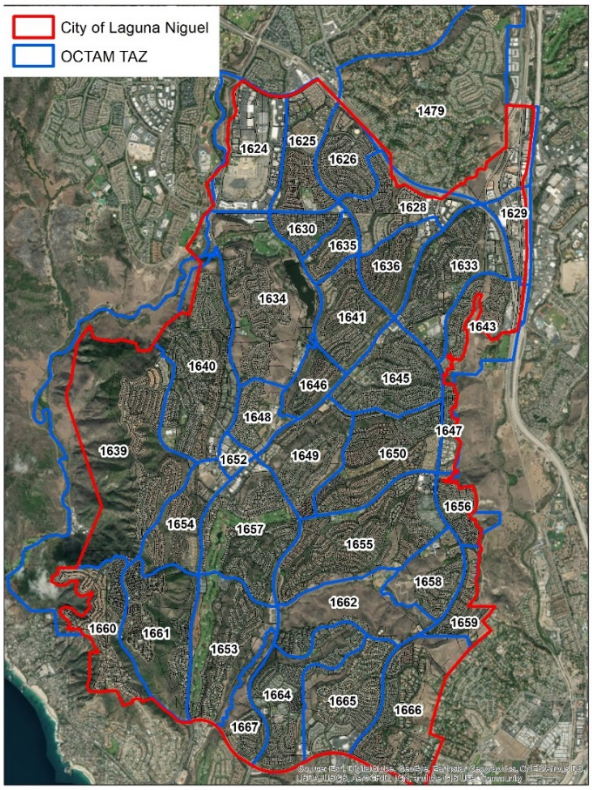
Cells highlighted in yellow in **Table 5** show the total VMT from OCTAM associated with home-based trips and highlighted in green represent work-based VMT.

Table 5 - Trip Categories Used for VMT Analysis

ID	Purpose	Production VMT	Attraction VMT
1	Home-based Work	1,104,575	456,168
2	Home-based School	13,446	10,372
3	Home-based University	439,091	152,313
4	Home-based Other	71,597	-
7	Home-based University	33,513	87,439
8	Work-Based Other	129,619	116,768
9	Other Based Other	1,104,575	456,168
Total		**1,791,841**	**823,060**
Used in VMT Calculation		**1,628,709**	**456,168**
Population, Employment		65,410	19,007
VMT/Capita, VMT/Employment		24.9	24.0

OCTAM was obtained from OCTA and run for the existing conditions (2018). A map of the OCTAM TAZs is shown in **Figure 3**.

Figure 3 - City of Laguna Niguel TAZs in OCTAM



Note: Zone 1479 only includes a small section of the City of Laguna Niguel north of Crown Valley with the majority of the TAZ consisting of Nellie Gail Ranch in Laguna Hills so this TAZ was excluded from the calculations.

Table 6 contains the detailed VMT, population and employment values for the Existing conditions model run. The average VMT/capita for residents living in Laguna Niguel is almost 40% higher than for Orange County as a whole. This is reflective of the relatively housing rich higher income areas with limited public transit opportunities. While there are job opportunities within the City, many residents need to travel outside of the City to work. However, the average VMT per employee for jobs located within Laguna Niguel is very similar to the County average.

Table 6 - Existing Conditions City of Laguna Niguel VMT Characteristics

Geography	Home-Based VMT	Population	VMT/ Capita	Work-Based VMT	Employees	VMT/ Employee
City Total	**1,628,709**	**65,410**	24.9	**456,168**	**19,007**	24.0
County Total	56,915,305	3,179,626	17.9	41,214,543	1,710,147	24.1
Region Total	305,754,489	17,530,240	17.4	170,422,237	7,575,266	22.5

Table 7 shows that using OCTAM data there is expected to be relatively little population growth within the City between today and 2045 (2%) and residential VMT and the City's future forecast VMT per capita does not really change. However, there is a slightly higher percentage forecast increase in employment (11%) and VMT per employee increases slightly but at a similar rate to the County average.

Table 7 - Year 2045 Forecasts Conditions City of Laguna Niguel VMT Characteristics

Geography	Home-Based VMT	Population	VMT/ Capita	Work-Based VMT	Employees	VMT/ Employee
City Total	**1,667,215**	**66,866**	**24.9**	**527,696**	**21,145**	**25.0**
County Total	63,201,581	3,534,620	17.9	49,240,559	1,980,433	24.9
Region Total	362,416,458	20,425,520	17.7	206,955,356	9,324,967	22.2

2.0 THRESHOLDS OF SIGNIFICANCE

A key step in the environmental review process is to determine whether a project may cause a significant effect on the environment. Thresholds of significance can inform not only the decision of whether to prepare an EIR but also the identification of effects to be analyzed in depth in the EIR. The requirement to make detailed findings on the feasibility of alternatives or mitigation measures to reduce or avoid the significant effects, and when found to be feasible, changes in the project to lessen the adverse environmental impacts.

Section 15064.7 defines a threshold as "an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant." (CEQA Guidelines § 15064.7, subd. (a)

Geographic Areas for VMT Thresholds

The OPR Technical Advisory also provides jurisdictions discretion over the level of geography that thresholds are determined by in comparison to a proposed project. It suggests residential thresholds could be developed at the City or Regional level while non-residential thresholds should be determined at the regional level due to the longer (and more regional) trip length of employment trips compared to other trip purposes. Verbiage in the OPR Technical Advisory page 16 states for very large regions (such as the SCAG region) the county might be a better proxy for regional travel: *"In cases where the region is substantially larger than the geography over which most workers would be expected to live, it might be appropriate to refer to a smaller geography, such as the county, that includes the area over which nearly all workers would be expected to live".* Potential geographies for significance thresholds in the City of Laguna Niguel include:

- City of Laguna Niguel
- Orange County
- SCAG Region

City of Laguna Niguel Recommendation Based on the outcomes of the VMT analysis in **Tables 5** and **6** and consistent with practice in several other communities, it is recommended the City base its CEQA transportation significance on a comparison to the relevant City average for both residential and non-residential land uses.

Even though employment trips are more regional in nature, the unique trip patterns of the City make it difficult to compare to the City or regional average directly. Many of the factors affecting both home-based and work-based VMT are outside of the City and therefore outside of the City's ability to mitigate. By using the City's geography as a point of comparison, focused mitigation for projects with high VMT can focus on improvements within the City's jurisdiction.

How to Determine Significance Thresholds

Section 15064 of the CEQA Guidelines provides general criteria to guide agencies in determining the significance of environmental effects of their projects as required by section 21083 of the Public Resources Code. The Natural Resources Agency updated CEQA Guidelines Section 15064 to expressly clarify that agencies may rely on standards adopted for environmental protection as thresholds of significance. An agency that relies on a threshold of significance should explain how application of the threshold indicates a less than significant effect.

The OPR Technical Advisory includes recommendations for the types of projects and thresholds of significance to apply to those projects. OPR determined that 15 percent reductions in VMT are achievable at the project level in a variety of place types and consistent with SB 743's objective to assist the State achieve its climate goals. This is based on the cumulative effect of location of land use development, neighborhood and site enhancement, parking

policies and pricing, transit system improvements and commute reduction.[2]

Despite the OPR recommendations for significance thresholds, individual jurisdictions are free to pursue their own thresholds provided that substantial evidence supporting these thresholds is provided. Below are some examples of thresholds of percent VMT index as compared to baseline:

- Baseline - City of Laguna Hills, City of Aliso Viejo[3], City of Corona, City of Pasadena, City of Glendora
- 4 percent below Baseline - County of San Bernardino
- 15 percent below Baseline - City of Santa Ana, City of Beverley Hills, City of Irvine, City of Los Angeles, City of San Jose

Many of the cities adopting the OPR-recommended 15 percent threshold are places where the majority of the city falls within transit priority areas. With most areas of these cities screened out, few projects in these cities would require CEQA transportation analysis making the 15 percent below baseline threshold a rarely tested event. Achieving a 15 percent below baseline VMT value for a new development outside a TPA would be unlikely since the proximity to high-quality multimodal transportation systems are a major factor in lowering VMT.

Since the VMT per capita and per employee metrics recommended by the State are relative metric, setting a specific threshold must be done so within the local land use and transportation network context of the lead agency. In some communities the difference between a threshold of 15 percent below baseline and equal to baseline would not substantially change the parts of the City above or below the threshold while other Cities may see dramatic differences. Cities with highly different areas and ranges of transportation accessibility would not see much of a difference within the range of potential thresholds, while those with relatively consistent VMT characteristics (such as the City of Laguna Niguel) may have few or no zones that have VMT 15 percent below the City average.

For the City of Laguna Niguel, 42 percent of the residents and 55 percent of employees are located in areas below the average VMT per resident and per employee respectively. Whereas only 15 percent of residents and zero percent of employees are located in areas 15 percent below the baseline values respectively.

Since the State's intent is to encourage development that reduces VMT, a threshold value from baseline to 15 percent below baseline would achieve this intent. In order for the City to make a policy judgement about how to distinguish significant impacts from less-than significant impacts, it looked at two technical factors:

- What is achievable through future development and land use policies?
    - Comparing the Existing Travel Demand Model Scenario to the Future Model Scenario – this indicates how cumulative land use development are forecasted to change VMT.
- What is achievable through transportation investment?
    - Assessing the feasibility and effectiveness of new transit/transportation projects within the City
        - TDM and multimodal infrastructure improvements that serve existing development implemented as off-site mitigation from future projects.
        - On-site and off-site TDM and multimodal infrastructure improvements to serve future projects in the City.
        - Regional transit centers.

This technical review is described further in the following Sections 4 and 5. Based on the analysis in **Table 6**, forecasted City land use and transportation network development could reduce VMT per capita of new residential projects to baseline levels a gross scale, while new employment VMT per employee could not be reduced to baseline

[2] CAPCOA (2010) Quantifying Greenhouse Gas Mitigation Measures, p. 55, available at http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf.
[3] The City of Aliso Viejo's baseline is General Plan Buildout.

levels. While this analysis was conducted for all forecasted growth in the City rather than individual projects, it indicated that new residential development in areas with current low residential VMT per capita would likely be less than significant whereas those in areas of higher VMT would be significant and require mitigation. The analysis indicates development with employees would need to be focused on local residents or near transit services in order to achieve less than significance.

City of Laguna Niguel Recommendation: A threshold of baseline or below is proposed. This threshold would support development in the City's transit priority area and areas of lower average VMT to support a reduction in GHG emissions. Furthermore, the simplicity of interpreting and implementing the threshold allows for clearer delineation of significant verses less than significant impacts.

Cumulative CEQA Analysis

A project's cumulative impacts are based on an assessment of whether the "incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." (Pub. Resources Code, § 21083, subd. (b)(2); see CEQA Guidelines, § 15064, subd. (h)(1).) Therefore a cumulative analysis is based on the inclusion of future foreseeable projects, as represented in the OCTA future year model scenario.

The OPR Technical advisory states when using an absolute VMT metric, i.e., total VMT (as recommended below for retail and transportation projects), analyzing the combined impacts for a cumulative impacts analysis may be appropriate. However, metrics such as VMT per capita or VMT per employee, i.e., metrics framed in terms of efficiency (as recommended below for use on residential and office projects), cannot be summed because they employ a denominator. A project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. Accordingly, a finding of a less-than-significant project impact would imply a less than significant cumulative impact, and vice versa. This is similar to the analysis typically conducted for greenhouse gas emissions, air quality impacts, and impacts that utilize plan compliance as a threshold of significance. (See Center for Biological Diversity v. Department of Fish & Wildlife (2015) 62 Cal.4th 204, 219, 223; CEQA Guidelines, § 15064, subd. (h)(3).)

3.0 TRANSPORTATION PROJECTS

The methodology for testing transportation projects is different from a residential or office project in that it looks at the total VMT, rather than an efficiency metric such as VMT per capita. For transportation projects that significantly increase roadway capacity, induced travel also needs to be assessed. However, the analysis would only be performed for a subset of capacity increasing projects. According to the OPR Technical Advisory, the following *"projects that would not likely lead to a **substantial** or measurable increase in vehicle travel, and therefore generally should not require an induced travel analysis, include:"*

- Rehabilitation, maintenance, replacement, safety, and repair projects designed to improve the condition of existing transportation assets.
- 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.
- Addition of an auxiliary lane of less than one mile in length designed to improve roadway safety.
- Addition of a new lane that is permanently restricted to use only by transit vehicles.
- Reduction in number of through lanes.
- Grade separation to separate vehicles from rail, transit, pedestrians or bicycles, or to replace a lane in order to separate preferential vehicles (e.g., HOV, HOT, or trucks) from general vehicles.

- Installation, removal, or reconfiguration of traffic control devices, including Transit Signal Priority (TSP) features
- Installation of traffic metering systems, detection systems, cameras, changeable message signs and other electronics designed to optimize vehicle, bicycle, or pedestrian flow.
- Timing of signals to optimize vehicle, bicycle, or pedestrian flow.
- Installation of roundabouts or traffic circles.
- Installation or reconfiguration of traffic calming devices.
- Initiation of new transit service.
- Conversion of streets from one-way to two-way operation with no net increase in number of traffic lanes
- Removal or relocation of off-street or on-street parking spaces.
- Adoption or modification of on-street parking or loading restrictions (including meters, time limits, accessible spaces, and preferential/reserved parking permit programs).
- Addition of new or enhanced bike or pedestrian facilities on existing streets/highways or within existing public rights-of-way.
- Addition of Class I bike paths, trails, multi-use paths, or other off-road facilities that serve non-motorized travel.
- Installation of publicly available alternative fuel/charging infrastructure.

Transportation projects that consist of adding additional through lanes, turn lanes, or other capacity on existing or new roadways have a less than significant impact, provided the improvement is less than one (1) mile in length[4], 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. Otherwise, these project types would likely lead to a measurable and substantial increase in vehicle travel.

For transportation projects not examined above, a significant impact would occur if the project results in an increase to the total baseline VMT in the City (not indexed to population or employment).

4.0 POTENTIAL TRIP REDUCTION AND MITIGATION MEASURES

CEQA requires that an Environmental Impact Report identify feasible alternatives and mitigation measures that could avoid or substantially reduce a project's significant environmental impacts (Pub. Resources Code, § 21002.1, subd. (a).)

OPR lists potential mitigation measures many of which require efforts beyond individual projects because "…VMT is largely a regional impact". Regional VMT-reduction programs or an in-lieu fee program based on a programmatic EIR are listed as options. Reduced VMT can be achieved through changes in land use and the built environment which can reduce vehicle trips or trip length or through investment in non-vehicle infrastructure and services.

OPR's discussion of project alternatives focus on alternative locations or land uses on a site—which would not be an alternative for an individual project applicant. Changes to land use or the built environment can only be handled at the General Plan, community plan or specific plan level. Mitigation options available to individual project are

[4] In the SCAG region, federal regulations stipulate that no federal funds be programmed for any project that significantly increases Single Occupancy Vehicle (SOV) capacity unless the project is addressed as part of a congestion management process. The FTIP, as the programming document for all federal transportation funds, must be consistent with the regulations. CMP is required for any SOV capacity increasing project that adds at a minimum one (1) mile or more in length per agreement between SCAG and FHWA.
Source: SCAG Federal Transportation Improvement Program 2019 Guidelines

investment in non-vehicle infrastructure and services commonly referred to as transportation demand management (TDM):

On-Site Infrastructure

Bicycle Infrastructure: The bicycle infrastructure category includes implementing or improving on-street bicycle facilities, bike parking, and showers/changing rooms. These measures can support safe and comfortable bicycle travel through improvements in infrastructure, parking, and supportive facilities.

Parking Measures: The parking measures category includes reducing parking, unbundling parking, and pricing parking. Unbundling parking can allow for a separation of parking cost from property cost, allowing those who wish to purchase parking spaces that option. Similarly, parking cash out requires employers to offer employees a "cash-out" option for the monthly value of the free or subsidized parking space.

On-Site Travel Demand Management

Commute Vehicle Trip Reductions: The commute trip reduction category includes required commute trip reduction through carpools, vanpools or rideshare. Employer-sponsored vanpools or shuttles can connect employees to a project site by providing new opportunities for access, through more direct routes at lower costs. Ride share programs increase vehicle occupancy by providing ride-matching services. These types of strategies replace single-occupancy vehicle trips with multiple riders in one vehicle. Other options include providing telework options, guaranteed ride home for transit commuters, providing on-site amenities at places of work, such as priority parking for carpools and vanpools, secure bike parking, showers and locker rooms and a guaranteed ride home service to users of non-auto modes. Other strategies such as transit pass subsidies and incentives by employers or could be provided if transit service is available.

Shared Mobility: The shared mobility category includes ride-matching, car share, bike share, and school carpool programs. Car share programs allow people to have on-demand access to a vehicle, as needed, which can serve as a supportive strategy that enhances other TDM strategies, such as parking unbundling. Bike share programs allow people to have on-demand access to a bicycle, as needed, to improve access and connectivity. School carpool programs encourage ride-sharing for students.

Off-Site Infrastructure

Neighborhood Enhancements: The neighborhood enhancements category includes traffic calming and pedestrian network improvements. Implementation of traffic calming measures throughout and around a project site can encourage people to walk, bike, or take transit through better connections and elimination of barriers as can the provision of a neighborhood electric vehicle network.

Bicycle Lanes/Trails: With the increase in popularity and availability of electric bicycles, bicycle travel is becoming more popular in cities like Laguna Niguel even with its hilly terrain. Linking bicycle lanes, trails, and facilities to transit, office, and shopping can provide a successful means of reducing VMT.

Off-Site Multimodal Infrastructure

Many off-site measures may not be appropriate for all parts of the City, which is currently relatively underserved by transit and contains several relatively low land use density areas. An individual developer or even the City has limited influence on transit agencies to provide mitigation measures such as increased transit service for a site-specific development.

The implementation of feasible and effective mitigations will require a proven nexus to proposed project. Under the current CEQA transportation analysis, the nexus was between site trips and their impact to the operations of the transportation system. This was concentrated nearer to the project, so the nexus was clear both in where the

significant impacts occurred and enacting mitigation measures that directly mitigated the impact in terms of the nexus to the project's activity and the location. Under SB 743, the significant impact would be more intense the farther away a vehicle traveled from the project site.

Several industry efforts have been made to quantify the effectiveness of TDM measures for example in the *California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures* report (2010) and has been used in Climate Action Plans to determine the ability of mitigation measures to reduce VMT and GHG emissions. This document provides a very broad range of percentage effectiveness the top end of which may not be attainable in many lower density cities such as Laguna Niguel. A VMT spreadsheet calculator has been prepared that includes several example mitigation measures. These example mitigation measures and assumed VMT reduction percentage are shown in **Table 8**. Subject to City approval, project applicants would be able to provide alternative or supplementary mitigation measures in order to meet VMT thresholds or provide evidence to justify a higher percentage reduction.

Table 8 – Example VMT reduction Measures and Percentage Effectiveness

	Strategy	Purpose	City Calculator	CAPCOA where higher
1	On-Site Pedestrian Network	Improve pedestrian network	1% VMT Reduction	0-2% VMT Reduction
2	On-Site Bicycle Network	Provide exclusive bicycle facilities	1% VMT Reduction	0.075% increase in bicycle commuting with each mile of bikeway per 100,000 residents
3	On-Site bikeshare	Implement bikeshare program	0.8 bicycle trips per bikeshare bike	0.03% reduction in VMT/ 1/3 vehicle trip reduced per bicycle
4	End of Trip Facilities	Providing convenience	2% VMT Reduction	2 - 5% reduction in commute vehicle trips
5	Unbundled Parking Costs	Separates parking cost	2.5% reduction per unbundled residential unit	2.6-13% reduction in vehicle trips
6	Electrical Vehicle Charging Station	Install electrical charging equipment	2 trip per day reduction per neighborhood electric vehicle (NEV) ownership	Substitution of non-ZEV trips 1:1
7	Provide Parking Cash-Out Program	Incentives for no car	1% VMT Reduction per worksite	0.6-7.7% commute VMT reduction
8	Provide Bicycle Parking	Encourage bicycling	1 trip per 2.5 spaces	Part of overall improvement of design with 3-21.3% reduction
9	Provide Ride-Sharing Program	Increasing vehicle occupancy	1% commute trip reduction	1-15% commute trip reduction
10	Car Share Program	Reduce vehicle ownership	0.4% reduction	0.4-0.7% VMT reduction
11	Sponsor Vanpool/Shuttle	Provide means to work	2% reduction in commute trips	0.3-13.4% commute VMT reduction
12	Implement Transportation Demand Management Program – Required Implementation/Monitoring	Reduce drive-alone travel mode share and encourage alternative modes of travel	2% Residential/ Employee Trip Reduction	4.2% – 21.0% commute VMT reduction
13	Implement Subsidized or Discounted Transit Program	Encourage transit use by providing subsidy	0.3% Employee Trip Reduction	0.3-20% commute VMT reduction
14	Telecommuting and Alternative Work Schedules	Encouraging telecommuting and alternative work schedules reduces the number of commute trips	5.5% Employee Trip Reduction for Program	0.07-5.5% commute VMT reduction

	Strategy	Purpose	City Calculator	CAPCOA where higher
15	Traffic Calming Measures	Reduce vehicle speeds	0.25% reduction per location	0.25 – 1.00% VMT reduction per location
16	Dedicate land for bike trails	Create off-street paths (per mile)	1% reduction per mile	Part of overall improvement of design with 3-21.3% reduction
17	Fair Share contribution to First/Last Mile project or other infrastructure	To support non-vehicle trips	Up to 2% Trip Reduction	Supportive of overall 0.1-8.2 VMT reduction for transit network improvement
18	Provide Bicycle Parking near Transit	Mode shift to biking and transit	0.1% per space up to six	Supportive of overall 0.1-8.2 VMT reduction for transit network improvement

In March 2020, SCAG released a request for proposal to initiate a study to look at the feasibility of a region wide mitigation program and or mitigation bank, however as of October 2020 no programs have been implemented and the only mitigation available will be through the City. The City will continue to monitor the progress of these initiatives.

APPENDIX B

Traffic Assessment Screening Form / VMT Calculator

CEQA Transportation Analysis Screening Tool for Development Projects

May 27, 2020

This tool estimates the potential VMT of a land use project, where the City of Laguna Niguel is the CEQA lead agency

The Output of the tool indicates if a project is likely to be "Presumed Less than Signficant" or "Potentially Significant" based on VMT characteristics of land uses near the project site. It is appropriate for CEQA Checklist Screening but is not a substitute for individualized Transportation Analysis for a CEQA document

The user inputs project information in Green Cells
Calcluated outputs are in Blue Cells

Legend
User Input: xxxx
Calculated Value: xxxx

1 Project Information

Insert the Project Applicant Name, a Title (if needed) and Description)

Applicant Name:
Project Name:
Project Description:

The Address Number followed by the Simplified Street Name (no direction or suffix), if there is no Address, the Assessors Number may be used in the Output Sheet

	Number	Street (no street suffix, e.g. Ave., Blvd.)
Address		

Case Number:

Current GP Land Use:
Proposed GP Land Use:
Current Zoning:
Proposed Zoning:

2 Project Description

The size of the Existing Development and the Size of the Proposed Development are Input

Type	Unit	Existing	Project	Change
Employment - Office Building	1000s Sq Feet			-
Employment - Hospital	1000s Sq Feet			-
Employment - Medical/Dental Office	1000s Sq Feet		73	73
Employment - Movie Theater	1000s Sq Feet			-
Hotel	Rooms			-
Industrial - Heavy	1000s Sq Feet			-
Industrial - Light	1000s Sq Feet			-
Industrial - Warehouse	1000s Sq Feet			-
Retail - Store	1000s Sq Feet			-
Retail - Restaurant	1000s Sq Feet			-
Residential - Apartment	Units		50	45
Residential - Assisted Living	Beds			-
Residential - Single Family	Units			-
Residential - Townhouse	Units			-
Number of Affordable Housing Units	Units	5	0	-5

List Project Elements Which May Effect Project VMT

Project Elements	Unit	Value	
Preferential parking for carpool vehicles	≥5% of emp. spaces		
Bicycle parking and shower facilities	Number of spaces		
Shower facilities	Yes/No		
Information on transportation alternatives	Yes/No		
Vanpool vehicle assessiblity	Min 3 per 100 spaces		
Subsidy for transit passes	Yes/No		
Subsidy for carpool/vanpool	Yes/No		
Flex time / Alt work weeks	Yes/No		
Telecommuting	Yes/No		Number
Electric Vehicle Chargers	Number of chargers		

If the project would be community-serving

Is this project a:	
Library	
School	
Park	
Community Center	
Other Comm. Serving	

3 CEQA Checklist Screening

	Project	Screened	
Small Project Size (fewer than 500 trips per day)			*Calculated value from trip generation*
Within a Low VMT Area			*Calculated from project location*
Within a Transit Priority Area			*Calculated from project location*
Is Neighborhood-Serving Retail			*Retail portion only* *Neighborhood serving retail*
Community Serving			*Other types of community serving*

Screened to be Presumed as Less Than Significant?

A Yes states if the project is screened from further analysis

If "No" the following Potential Mitigation Measures could be implemented to reduce to less than signficant

4 Mitigation Measures

If the Project is above the City threshold, then mitigation options to reduce the project VMT are options. A project that could not be mitigated by these mitigation options could work with the City to identify additional mitigation or whether a Statement of Overriding Considerations is an option.

Strategy	Purpose	Implementation	Number
On-Site Pedestrian Network	Improve pedestrian network	Yes	
On-Site Bicycle Network	Provide exclusive bicycle facilities	Yes	
On-Site Bikeshare	Implement bikeshare program	Yes	0
End of Trip Facilities	Providing convenience	Yes	
Unbundled Parking Costs	Separates parking cost from property costs	Yes	
Electrical Vehicle Charging Station	Install electrical charging equiptment	Yes	0
Provide Parking Cash-Out Program	Incentives for alternative transportation	Yes	
Provide Bicycle Parking	Encourage bicycling	Yes	0
Provide Ride-Sharing Program	Increasing vehicle occupancy	Yes	
Car Share Program	Reduce vehicle ownership	Yes	
Sponsor Vanpool/Shuttle		Yes	
Implement Transportation Demand Management Program – Required Implementation/Monitoring	Reduce drive-alone travel mode share and encourage alternative modes of travel	Yes	
Implement Subsidized or Discounted Transit Program	Encourage transit use by providing subsidy	Yes	
Telecommuting and Alternative Work Schedules	Encouraging telecommuting and alternative work schedules reduces the number of commute trips	Yes	
Traffic Calming Measures	Reduce vehicle speeds	Yes	0
Dedicate land for bike trails	Create off-street paths (per mile)	Yes	0
Improve traffic flow	Manage traffic flow	Yes	
Fair Share contribution to First/Last Mile project or other intrastructure	To support non-vehicle trips	Yes	
Provide Bicycle Parking near Transit	Mode shift to biking and transit	Yes	0

Resulting VMT Estimates

	Base Project VMT	Threshold VMT	VMT After MM	Above/Below
Residential				
Employment				

Presumed Less Than Significant CEQA Transportation Impact After Mitigation: Yes

5

APPENDIX C

VMT Reduction Measures and Effectiveness from CAPCOA

Example VMT Reduction Mitigation Actions and Recommended Application

The following VMT Reduction Mitigation Actions are intended to be applied at the project level where VMT based on the project's type, location, and intensity has been developed.
These actions would be applied to mitigate CEQA transportation impacts.
The literature review of potential actions was reviewed for effectiveness and application in the City
A simplified VMT effectiveness level was recommended for ease of practical application at the project level.

Type	Strategy	VMT Reduction Potential	Elements	Literature Range of Effectiveness	Target Population	Recommended VMT Reduction Value
On-Site Infrastructure	Provide Pedestrian Network	Mode Shift to walking	● Build a pedestrian access network that internally links all uses and connects to all existing or planned external streets and pedestrian facilities contiguous with the project site ● Minimize barriers to pedestrian access and interconnectivity ● Eliminate physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation	0 - 2% VMT reduction	All Trips	1% on-site, 2% off-site improvements
	Incorporate Bike Lane Street Design (on-site)	Mode shift to biking	● Incorporate bicycle lanes, routes, and shared-use paths into street systems, new subdivisions, and large developments ● On-street bike accommodations provide a continuous network of routes, facilitated with markings and signage ● Increase access to transit hubs, thereby expanding “catchment area” of transit stops and increasing ridership ● Bicycle access can also reduce parking pressure on heavily-used and/or heavily-subsidized feeder bus lines and auto-oriented park-and-ride facilities	1% increase in share of workers commuting by bicycle (for each additional mile of bike lanes per square mile)	Commute Trips	1% per mile of Class II or higher facility
	Provide Bike Parking in Non-Residential Projects	Mode shift to biking	● Build short-term and long-term bicycle parking facilities to meet peak season maximum demand	0.625% Shift to Bicycles	Commute Trips	Reduce vehicle trips by 1 per 2.5 bicycle spaces provided
	Provide End of Trip Facilities (such as on-site food service, gym, shower)	Mode shift to biking	● Provide "end-of-trip" facilities for bicycle riders including showers, secure bicycle lockers, and changing spaces.	2 - 5% reduction in commute vehicle trips	Commute Trips	2% for meeting City Requirements
	Electrical Vehicle Charging Station	Increase ZEV VMT	● Build electrical charging infrastructure ● Build solar energy generation and battery storage	Subsitute fuel trips 1:1 based on charging capability	All Trips	1:1 substitution of non-ZEV trips
	Provide Bike Parking in Multi-Unit Residential Projects	Mode shift to biking	● Build long-term bicycle parking at apartment complexes or condominiums without garages	0.625% Shift to Bicycles	Commute Trips	Reduce vehicle trips by 1 per 2.5 bicycle spaces provided
On-Site TDM	Implement Transportation Demand Management Program – Required Implementation/Monitoring	Mode shift from SOV	● Established performance standards (e.g. trip reduction requirements) ● Required implementation ● Regular monitoring and reporting	4.2 – 21.0% commute VMT reduction	Commute Trips	4% for TMO participation
	Provide Ride-Sharing Programs	Increase carpooling	● Create a ride-sharing program as well as a permanent transportation management association membership and funding requirement	1 – 15% commute VMT reduction	Commute Trips	1% for meeting City requirements
	Implement Subsidized or Discounted Transit Program	Mode shift to transit	● Provide subsidized/discounted daily or monthly public transit passes ● Provide free transfers between all shuttles and transit to participants ● Potential use of parking revenue to offset the cost of such a project	0.3 – 20.0% commute VMT reduction	Commute Trips	0.3% for transit subsidy program

Type	Strategy	VMT Reduction Potential	Elements	Literature Range of Effectiveness	Target Population	Recommended VMT Reduction Value
On-Site TDM (cont.)	Telecommuting and Alternative Work Schedules	Trip elimination+C6	● Alternative work schedules could take the form of staggered starting times, flexible schedules, or compressed work weeks.	0.07 – 5.50% commute VMT reduction	Commute Trips	up to 5.5% for approved program
	Implement Preferential Rideshare Parking Program	Increase carpooling	● Provide preferential parking in convenient locations (such as near public transportation or building front doors) in terms of free or reduced parking fees, priority parking, or reserved parking for commuters who carpool, vanpool, ride-share or use alternatively fueled vehicles	Not quantified	Commute Trips	1% for approved program
	Implement Car-Sharing Program	Decrease auto trips	● Implement a car-sharing program with on-demand access to a shared fleet of vehicles on an as-needed basis. ● Car-sharing programs can be grouped into three general categories: residential- or citywide-based, employer-based, and transit station-based. ● Transit station-based programs focus on providing the "last-mile" solution and link transit with commuters' final destinations. ● Residential-based programs work to substitute entire household based trips. Employer-based programs provide a means for business/day trips for alternative mode commuters and provide a guaranteed ride home option.	0.4 – 0.7% VMT reduction, 37% reduction in car-share member VMT	All Trips	0.4%
	Provide Employer-Sponsored Vanpool/Shuttle	Increase carpooling	● A vanpool will usually service employees commute to work while a shuttle will service nearby transit stations and surrounding commercial centers. ● Purchasing or leasing vans for employee use, and often subsidizing the cost of at least program administration ● Scheduling within the employers purview, and rider charges are normally set on the basis of vehicle and operating cost.	0.3 – 13.4% commute VMT	Commute Trips	2% for approved program
	Implement Bike-Sharing Program	Mode shift to biking	● Establish a bike-share station, kiosk or rack especially near commercial and transit hubs.	1/3 vehicle trip reduced per day or 0.8 rides per day per bike	All Trips	0.8 trips reduced per day per bicycle
	Implement Commute Trip Reduction Marketing	Encourage non-vehicle travel	Marketing strategies can include: ● New employee orientation of trip reduction and alternative mode options ● Event promotions ● Publications	0.8 – 4.0% commute VMT	All Trips	Required component of TDM Program
Off-Site Infrastructure	Traffic Calming Measures	Enhance Safety, mode shift to walking and biking	● Project design includes pedestrian/bicycle safety and traffic calming measures in excess of jurisdiction requirements. ● Roadways will be designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips with traffic calming features. ● Traffic calming features may include: marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others.	0.25 – 1.00% VMT reduction based on % of streets with improvements 25% to 100%	All Trips	0.25% per block/ intersection of traffic calming Based on City Approval
	Dedicated Land for Bike Trails	Mode shift to biking	● Provide for, contribute to, or dedicate land for the provision of off-site bicycle trails linking the project to designated bicycle commuting routes in accordance with an adopted citywide or countywide bikeway plan		Commute Trips	1% per mile of Class II or higher facility

Type	Strategy	VMT Reduction Potential	Elements	Literature Range of Effectiveness	Target Population	Recommended VMT Reduction Value
Off-Site Infrastructure (cont.)	Improve Traffic Flow		● Signalization improvements to reduce delay ● Incident management to increase response time to breakdowns and collisions ● Intelligent Transportation Systems (ITS) to provide real-time information regarding road conditions and direction ● Speed management to reduce high free-flow speeds	0.02%, however may not counterbalance induced modal demand	All Trips	None
	Implement Transit Access Improvements	Mode shift to transit	● Build sidewalk/ crosswalk safety enhancements ● Create new path to transit stop	0.1 – 8.2% VMT reduction	All Trips	None
	Require Project Contributions to Transportation Infrastructure Improvement Projects	Varies	● The local transportation agency should be consulted for specific needs ● Larger projects will require a proportionate share contribution to the development and/or continuation of a regional transit system ● Contributions may consist of dedicated right-of-way, capital improvements, easements, etc.	0.02%, however may not counterbalance induced modal demand	All Trips	Quantify VMT reduction from Planned Infrastructure, 1:1 credit fair share contribution
Off-Site Multimodal Improvements	Provide Bike Parking Near Transit	Mode shift to biking and transit	● Provide short-term and long-term bicycle parking near rail stations, transit stops, and freeway access points.	0.625% Shift to Bicycles	All Trips	Coordinate with Transit Agencies

APPENDIX D
Level of Service Definitions

LEVEL OF SERVICE DEFINITIONS

For intersections, Level of Service is described in terms of Intersection Capacity Utilization (ICU).

LEVEL OF SERVICE	OPERATING CONDITION	ICU VALUE
A	Free flowing, virtually no delay. Minimal traffic	<0.60
B	Free low and choice of lanes. Delays are minimal. All cars clear intersection easily.	0.61-0.70
C	State flow. Queue at signal starting to get relatively long. Delays starting to become a factor but still within "acceptable" limits.	0.71-0.80
D	Approaching unstable flow. Queues at intersection are quite long but most cars clear intersection on their green signal. Occasionally, several vehicles must wait for a second green signal. Congestion is moderate	0.81-0.90
E	Severe congestion and delay. Most of the available capacity is used. Many cars must wait through a complete signal cycle to clear the intersection.	0.91-1.00
F	Excessive delay and congestion. Most cars must wait through more than one on one signal cycle. Queues are very long and drivers are obviously irritated.	>1.00

For areas of roadways situated between intersections, LOS is described via a "mid-block roadway link" analysis. Highway capacity manual-Chapter 15 is used to find the LOS provided under section "Mitigation Measures' and duplicated here for quick reference.