

APPENDIX Q
VEHICLE MILES TRAVELED ANALYSIS

Tierra Norte Residential Development Plan
Southside of N. River Rd btw Ave Descanso and Calle Montecito
City of Oceanside
February 4, 2022

Vehicle Miles Traveled Analysis

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1.0 Introduction

The project is a General Plan Amendment (GPA) and rezone from light industrial uses to residential on two parcels for a total of 25.6 acres (Kawano parcel 9.7 acres and Nagata parcel 15.9 acres). The application includes a Planned Block Development Plan which would establish development criteria and allow for future residential development of up to 400 dwelling units. Therefore, a site plan is not available for the project site. A maximum of 400 dwelling units is proposed for a density of 15.6 units per acre (400 units / 25.6 acres). The site has historically been used for agricultural, packing, and shipping uses.

The site is located at 4617 and 4665 N. River Road in Oceanside, California. The general location of the project is shown in **Figure 1**. An aerial reference is shown in **Figure 2**.

This report includes a Vehicle Miles Traveled (VMT) analysis to determine if there is a potential California Environmental Quality Act (CEQA) VMT transportation impact.

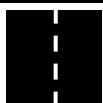


Figure 1: Project Location

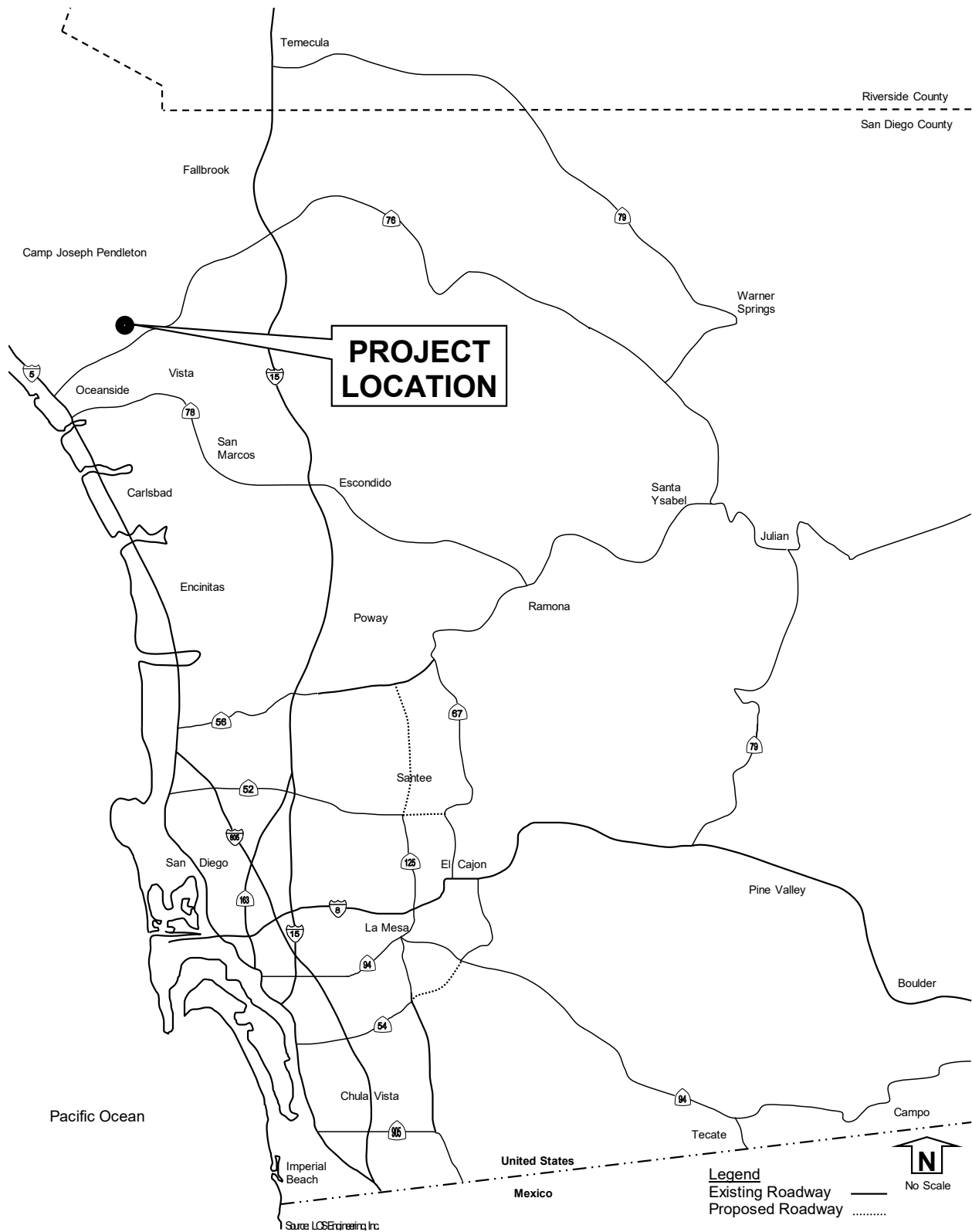


Figure 2: Aerial of Project Site



2.0 Vehicle Miles Traveled

A VMT analysis is required to satisfy the CEQA guidelines that utilize VMT as the measure of effectiveness for determining transportation impacts. The California Governor’s Office of Planning and Research (OPR) Technical Advisory developed guidance on implementing Senate Bill 743 (SB 743) that shifts the transportation impact measure of effectiveness from Level of Service (LOS) to VMT. The OPR *Transportation Technical Advisory on Evaluating Transportation Impacts in CEQA*, December 2018 states on page 8 “As noted above, lead agencies have the discretion to set or apply their own thresholds of significance”. Excerpts from the OPR Technical Advisory are included in **Appendix A**.

The City of Oceanside *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment*, August 2020 documents a threshold of 500 project Average Daily Traffic (ADT) if inconsistent with the General Plan and 1,000 project ADT if consistent with the General Plan as the trigger for requiring a VMT analysis. Excerpts from the City of Oceanside Guidelines are included in **Appendix B**. This project with up to 400 dwelling units at 8 ADT per dwelling unit is calculated to generate up to 3,200 ADT and is required to prepare a VMT analysis.

The City of Oceanside has developed a Project Information Form (PIF) to facilitate the screening of project requirements. A completed PIF for this project is included in **Appendix C**.

2.1 VMT Significance Criteria

Residential projects use VMT per capita to define a significant transportation impact when a project exceeds a level of 15% below existing VMT (i.e. greater than 85% of the regional mean). The OPR Technical Advisory *On Evaluating Transportation Impacts in CEQA* (December 2018) outlines the significance criteria on page 15 of the Advisory:

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

The City of Oceanside guideline is consistent with the OPR significance criteria of 15% below the regional mean as shown in **Table 1**.

TABLE 1: CITY OF OCEANSIDE PROJECT THRESHOLDS

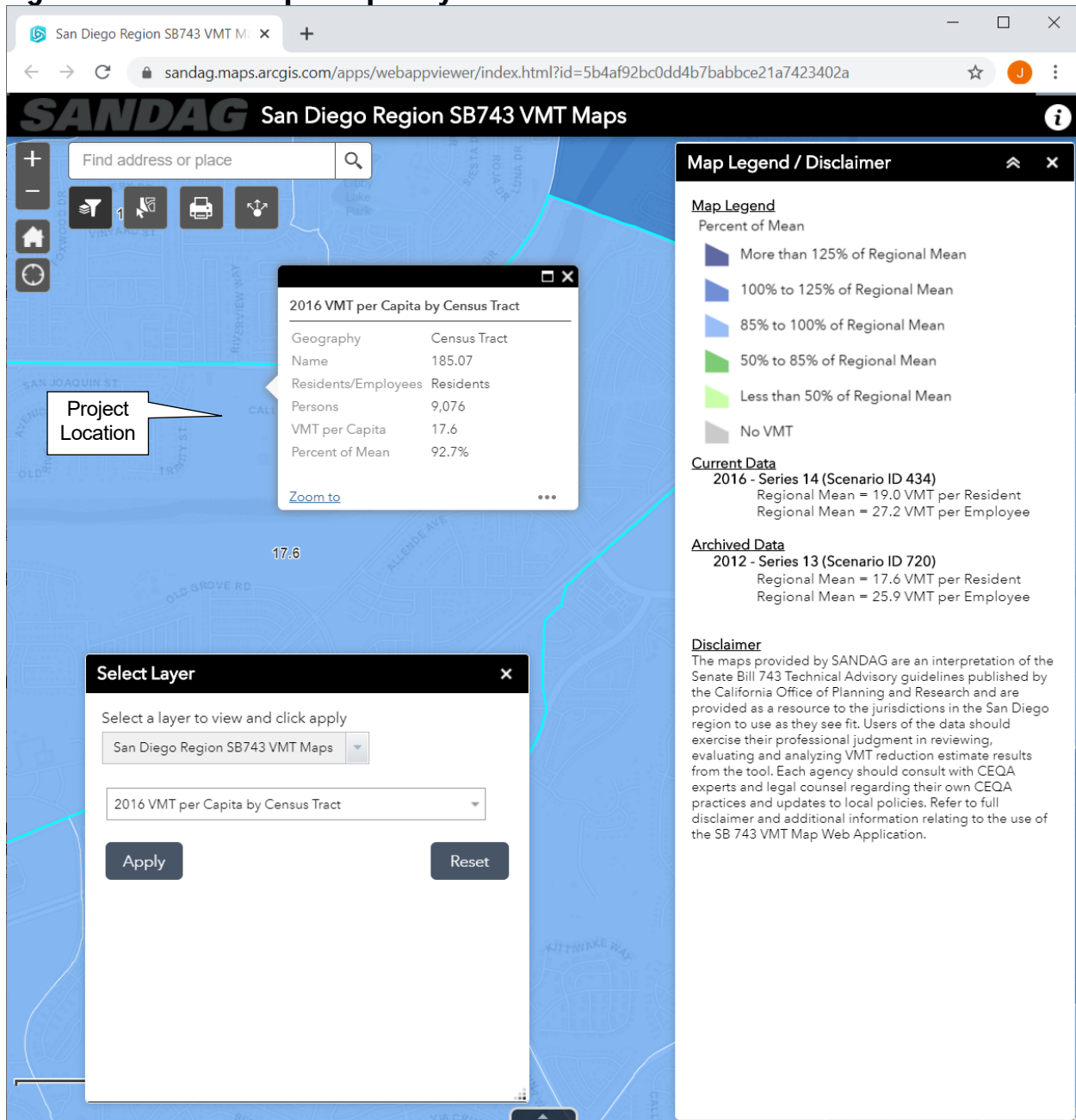
Project Type	Metric	Significance Thresholds
Residential	Resident VMT/Capita	15% below regional average

Source: City of Oceanside *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment*, August 2020.

2.2 Residential VMT per Capita Analysis

OPR and the City of Oceanside provide a map based VMT screening option for residential projects. The San Diego Regional Association of Governments (SANDAG) provides a map based VMT model for the San Diego region that includes the City of Oceanside. As shown in **Figure 3**, the project location for residential VMT per Capita by Census Tract is at 92.7% of the regional mean; therefore, the project exceeds the 85% significance threshold and is considered to have a significant transportation VMT impact. The project exceeds the VMT threshold by 7.8%.

Figure 3: SANDAG VMT per Capita by Census Tract



2.3 Proposed VMT Mitigation

The City of Oceanside *Traffic Impact Analysis Guidelines* recommends use of VMT reduction methodologies by SANDAG, the California Air Resources Board (CARB), or the California Air Pollution Control Officers Association (CAPCOA).

The CAPCOA *Quantifying Greenhouse Gas Mitigation Measures A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures*, August 2010 and the SANDAG Mobility Management VMT Reduction Calculator Tool were reviewed for applicability based on the project’s characteristics. The following two CAPCOA VMT reduction measures were applied (CAPCOA excerpts included in **Appendix D**):

- 1) LUT-1: Increase Residential Density. Designing the Project with increased densities, where allowed by the General Plan and/or Zoning Ordinance reduces GHG emissions associated with traffic in several ways. Density is usually measured in terms of persons, jobs, or dwellings per unit area. Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. This strategy also provides a foundation for implementation of many other strategies which would benefit from increased densities. For example, transit ridership increases with density, which justifies enhanced transit service.

- 2) SDT-1: Provide Pedestrian Network Improvements. Providing a pedestrian access network to link areas of the Project site encourages people to walk instead of drive. This mode shift results in people driving less and thus a reduction in VMT. The project will provide 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. The project will minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation will be eliminated.

The LUT-1 VMT reduction is calculated based on the number of housing units per acre. The project with 400 housing units divided by the project site of approximately 25.6 acres equals 15.6 dwelling units per acre. The SDT-1 VMT reduction is based on the project adding a sidewalk along the project frontage on N. River Road and throughout the site once a site plan is developed. The individual CAPCOA VMT reductions are shown in **Table 2**.

TABLE 2: CAPCOA VMT REDUCTION MEASURES

VMT Mitigation Measure	VMT % Reduction Range	Application	Project VMT % Reduction
LUT-1. Increase Residential Density	1.5%-30.0%	% VMT Reduction = ((15.6 project du/ac - 7.6 du/ac per CAPCOA) / 7.6 du/ac per CAPCOA) x 0.07 constant per CAPCOA	7.4%
SDT-1. Provide Pedestrian Network Improvements	0%-2%	% VMT Reduction for extent of pedestrian accommodations within project site and connecting off-site	2.0%

Source: CAPCOA 2010

VMT reduction measures are not directly additive and requires application of a multiplicative formula to account for measure redundancy. The multiplicative formula is as follows:

$$\text{Overall VMT \% Reduction} = 1 - (1 - A) * (1 - B) \dots$$

Where A, B are the individual mitigation measures.

For this project the overall VMT % Reduction = $1 - (1 - 0.074) * (1 - 0.02) = 0.093 = 9.3\%$

As shown in **Table 3**, the project transportation impact is mitigated to below a level of significance because the final VMT of 83.4% is less than 85%.

TABLE 3: PROJECT VMT MITIGATION RESULTS

Project VMT	Mitigation VMT % Reduction	VMT after Mitigation	Is Project VMT below 85% and Mitigated?
92.7%	9.3%	83.4%	Yes

In addition to the above mitigation measures, the project applicant proposes to implement Transportation Demand Management (TDM) strategies to further reduce single occupant vehicle use through promoting alternative modes of transportation. The following TDM plan will provide the means to disseminate information to residents to learn about and use alternative forms of transportation other than single occupancy vehicles. The following TDM elements (to be implemented by the developer at the time of product sales) will be provided during the sales phase and can be incorporated into the project conditions of approval.

- 1) Provide information about the SANDAG’s iCommute program (www.icommutesd.com) and encourage carpooling.
- 2) Develop and/or promote bicycle usage through a bikeshare program to help reduce vehicle usage and demand for parking by providing users with on-demand access to bikes for short-term rental, contribute to electric bicycle charging stations, contribute to bicycle infrastructure improvements, and disseminate a bicycle riders guide to make it easier for people to bike to work and/or retail destinations.
- 3) Provide pedestrian improvements such as a connection from the project site to the north side of the San Luis Rey River trail; encourage residents to walk by providing mapped walking routes; promoting walking groups; and providing incentives. Develop a bicycle riders guide.
- 4) Provide information about maps, routes, and schedules for public transit.

3.0 Conclusion

This VMT analysis was based on guidance from the Governor’s OPR Technical Advisory and the City of Oceanside *Draft Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment*, August 2020. OPR developed guidance for implementing Senate Bill 743 (SB 743) requirements that shifts the transportation impact measure of effectiveness from Level of Service (LOS) to VMT. The City of Oceanside *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment*, August 2020 documents a threshold of 500 project Average Daily Traffic (ADT) if inconsistent with the General Plan and 1,000 project ADT if consistent with the General Plan as the trigger for requiring a VMT analysis. This project with 3,200 ADT is required to prepare a VMT analysis.

The threshold for a VMT impact is defined when a project exceeds a level of 15% below the existing VMT (i.e. greater than 85% of the regional mean) or is considered to shorten trips. The San Diego Regional Association of Governments (SANDAG) provides a map based VMT model for the San Diego region that includes the City of Oceanside. The project site is located in a Census Tract with a VMT per Capita at 92.7% of the regional mean; therefore, the project exceeds the 85% significance threshold and is considered to have a significant transportation VMT impact. The transportation VMT impact is mitigated to below a level of significance with a final VMT of 83.4%, which is less than 85% of the regional mean through the application of CAPCOA measures LUT-1 Increase Residential Density and SDT-1 Provide Pedestrian Network Improvements.

In addition to the above mitigation measures, the project applicant proposes to implement Transportation Demand Management (TDM) strategies to further reduce single occupant vehicle use through promoting alternative modes of transportation. The following TDM plan will provide the means to disseminate information to residents to learn about and use alternative forms of transportation other than single occupancy vehicles. The following TDM elements (to be implemented by the developer at the time of product sales) will be provided during the sales phase and can be incorporated into the project conditions of approval.

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- 3) Provide pedestrian improvements such as a connection from the project site to the north side of the San Luis Rey River trail; encourage residents to walk by providing mapped walking routes; promoting walking groups; and providing incentives. Develop a bicycle riders guide.
- 4) Provide information about maps, routes, and schedules for public transit.

Appendix A

Excerpts from OPR Technical Advisory

TECHNICAL ADVISORY

ON EVALUATING TRANSPORTATION IMPACTS IN CEQA



December 2018

D. General Principles to Guide Consideration of VMT

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

To assist in the determination of significance, many lead agencies rely on “thresholds of significance.” The CEQA Guidelines define a “threshold of significance” to mean “an identifiable **quantitative, qualitative¹² or performance level** of a particular environmental effect, non-compliance with which means the effect will **normally** be determined to be significant by the agency and compliance with which means the effect **normally** will be determined to be less than significant.” (CEQA Guidelines, § 15064.7, subd. (a) (emphasis added).) Lead agencies have discretion to develop and adopt their own, or rely on thresholds recommended by other agencies, “provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence.” (*Id.* at subd. (c); *Save Cuyama Valley v. County of Santa Barbara* (2013) 213 Cal.App.4th 1059, 1068.) Substantial evidence means “enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached.” (*Id.* at § 15384 (emphasis added); *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th 1099, 1108-1109.)

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

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

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

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

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

E. Recommendations Regarding Significance Thresholds

As noted above, lead agencies have the discretion to set or apply their own thresholds of significance.

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

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

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

- Assembly Bill 32 (2006) requires statewide GHG emissions reductions to 1990 levels by 2020 and continued reductions beyond 2020.
- Senate Bill 32 (2016) requires at least a 40 percent reduction in GHG emissions from 1990 levels by 2030.
- Pursuant to Senate Bill 375 (2008), the California Air Resources Board GHG emissions reduction targets for metropolitan planning organizations (MPOs) to achieve based on land use patterns and transportation systems specified in Regional Transportation Plans and Sustainable Community Strategies (RTP/SCS). Current targets for the State's largest MPOs call for a 19 percent reduction in GHG emissions from cars and light trucks from 2005 emissions levels by 2035.
- Executive Order B-30-15 (2015) sets a GHG emissions reduction target of 40 percent below 1990 levels by 2030.

Appendix B

Excerpts from City of Oceanside VMT and LOS Guidelines

City of Oceanside

Traffic Impact Analysis Guidelines for

Vehicle Miles Traveled (VMT) and Level of Service Assessment



August 2020
Final Version

Trip Distribution / Assignment Procedure

Typically, two methods are used to determine trip distribution and assignment for transportation analysis and are considered acceptable by the City.

- The first method utilizes engineering judgement based on existing traffic data and land use patterns. This method requires the consultant to provide a map with project distribution and trip assignments to the City for review prior to conducting analysis.
- The second method utilizes the SANDAG Regional Travel Demand Model to perform a select zone or link analysis. **This approach is typically used for larger projects and shall be used for any project that generates over 2,400 ADT.**

Once trip distribution and assignment assumptions are submitted to the City, the City will review and provide feedback on assumptions. If necessary, the developer or consultant may coordinate with the City Traffic Engineer to discuss trip distribution and assignment for any clarification or considerations to travel patterns that are not readily apparent.

7.0 SCREENED OUT PROJECTS

SB 743 eliminates the need for some projects to be analyzed for CEQA purposes that support VMT reduction, these projects are considered screened out for VMT analysis. Screened out is defined as projects not needed to be analyzed for CEQA purposes that already support VMT reduction.

The projects listed in **Table 2** are presumed to be considered VMT-reducing projects. The projects listed are either locally serving or are based on substantial evidence provided by the OPR Technical Advisory Committee supporting SB 743 implementation. A project may be required to conduct a VMT analysis at the discretion of City Staff if it is unclear the project qualifies as screened out or based on the City Traffic Engineer's discretion.

Table 2 – Screened Out Projects

Project Type
Projects located in a Transit Priority Areas (TPA) or Smart Growth Opportunity Area as identified in the most recent SANDAG San Diego Forward Regional Plan and is consistent with the General Plan at the time of project application. ⁽¹⁾⁽²⁾
Projects located in a low-VMT generating area identified on the most recent SANDAG SB 743 VMT Screening map
Locally serving K-12 schools
Day care centers
Local parks
Locally serving retail uses less than 50,000 square feet, including: gas stations, banks, restaurants, grocery stores, and shopping centers
Community institutions (Public libraries, fire stations, local government)
Locally serving hotels (e.g. non-destination hotels, non-regionally serving)
Student housing projects on or adjacent to college campuses
Local serving community colleges that are consistent with the assumptions noted in the most recent SANDAG Regional Transportation Plan/Sustainable Communities Strategy
Affordable housing projects ⁽³⁾
Assisted living facilities
Senior housing (as defined by HUD)
Transit projects
Bike projects
Pedestrian projects
Safety improvement projects (e.g. RRFBs and high visibility crosswalks at uncontrolled locations, pedestrian count down timers, additionally projects identified through the Highway Safety Improvement Program)
Safe Routes to School
Projects generating less than 500 daily vehicle trips (if inconsistent with adopted General Plan)
Projects generating less than 1,000 daily vehicle trips (if consistent with adopted General Plan)

(1) Projects located in a TPA must be able to access the transit station within a ½ mile walking distance or 6 minute walk continuously without discontinuity of sidewalk or obstructions to the route. Qualifying transit stops means a site containing an existing rail transit station 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 (OPR, 2017). A high-quality transit corridor may also be considered if a corridor with fixed route bus service has service intervals no longer than 15 minutes during peak commute hours (OPR, 2017).

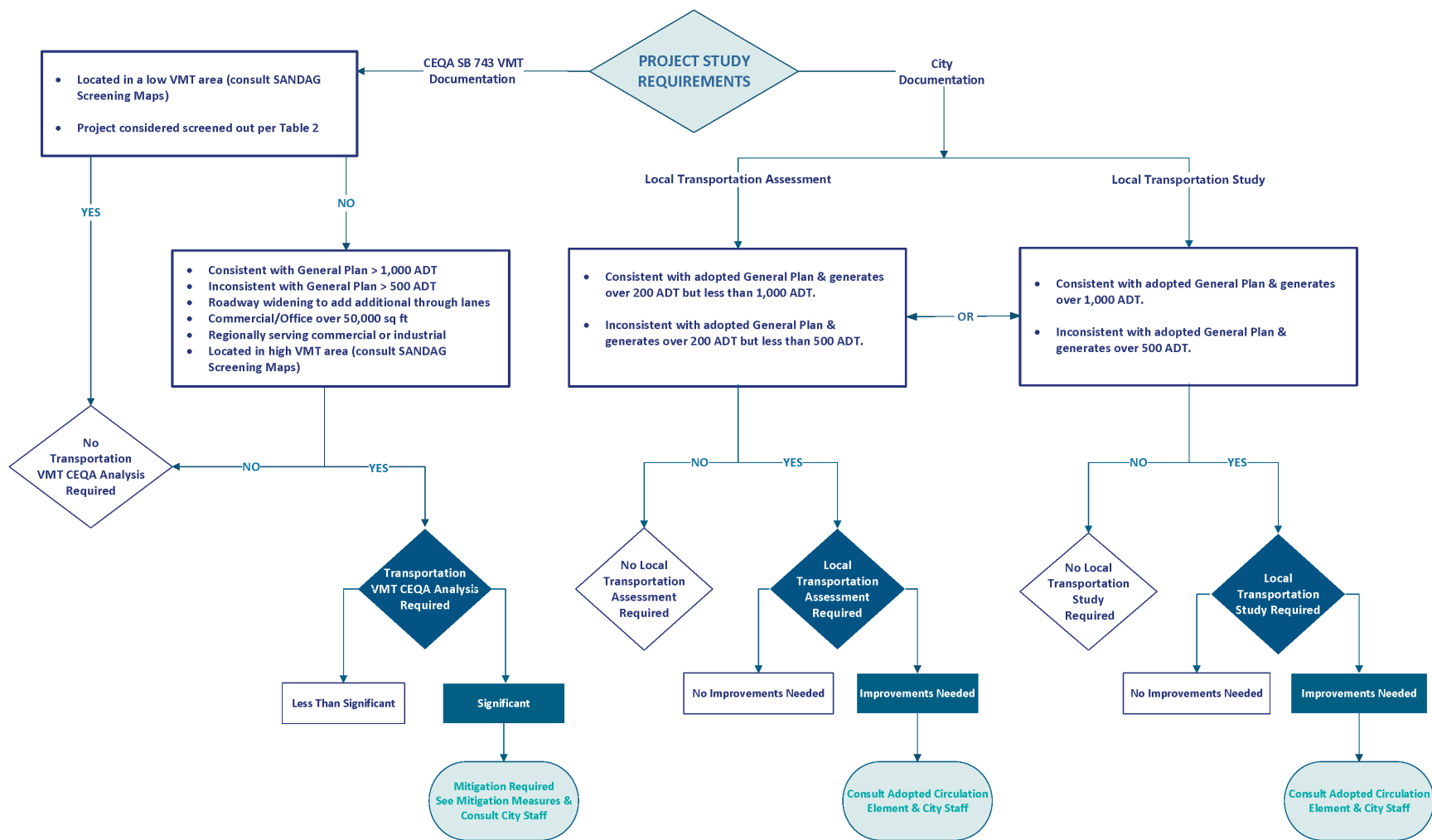
(2) Smart Growth Opportunity Area Map is provided in **Appendix B**. The most recent version available shall be used.

(3) If a project is a mix of affordable housing and market rate housing or unscreened use, only the affordable housing component would qualify as screened out. Additionally, any removal of affordable housing automatically requires CEQA VMT analysis.

8.0 DETERMINING PROJECT STUDY REQUIREMENTS

Figure 8-1 helps guide development projects in determining the requirements from a local and state perspective in order to help determine study requirements. The screening flowchart indicates an overview of the circumstances where a detailed CEQA VMT analysis would or would not be required and when a project would require a Local Transportation Study or Local Transportation Assessment. The City maintains the discretion to require a project to conduct additional analysis if needed.

Figure 8-1 Project Study Requirements



* Projects are not confined to what is listed above and will need to be coordinated with City Staff to determine study requirements for developments not listed. This flowchart is a generalization, it is up to the City's discretion to determine if additional analyses will be required and if potential mitigation or improvements are acceptable.

9.0 SAN DIEGO REGIONAL GUIDELINES FOR VMT

The City of Oceanside utilizes the Institute of Transportation Engineers (ITE) San Diego Regional Guidelines (May 2019) to establish thresholds and methodology for VMT analysis. For analysis purposes the most recent version of these guidelines shall be utilized. The following sections summarize the VMT thresholds requirements for Oceanside in alignment with ITE. Thorough analysis explanation can be found in the most recent ITE guidance.

Minimum Threshold for VMT Analysis

Based on the recommendations of the Institute of Transportation Engineers (ITE) for the San Diego section, **Table 3** indicates when a VMT analysis for CEQA is required. This is based on keeping consistent with the thresholds previously used and *SANDAG’s Not So Brief Guide Trip Generation (2002)*. These thresholds are based on the understanding that SANDAG trip generation rates differ from ITE trip generation rates which OPR’s recommendations are based on.

Projects Consistent with the Adopted General Plan

The City’s adopted General Plan represents the vision and goals the City has for the community. Projects that support these goals will adhere to the following VMT analysis thresholds identified in Table 3.

Table 3 – Threshold for VMT Analysis for Projects Consistent with the Adopted General Plan

	VMT Analysis Not Needed	VMT Analysis Needed ⁽¹⁾
Average Daily Traffic Volume (ADT)	Less than 1,000 ADT	Greater than 1,000 ADT

(1) If ADT is equal to 1,000 ADT, VMT analysis is required.

Projects Inconsistent with the Adopted General Plan

The City’s adopted General Plan represents the vision and goals the City has for the community. Projects that are not in support of the General Plan have a lower VMT threshold and will require a General Plan Amendment. The following VMT analysis thresholds for projects that are inconsistent are identified in **Table 4**.

Table 4 – Threshold for VMT Analysis for Projects Inconsistent with the Adopted General Plan

	VMT Analysis Not Needed	VMT Analysis Needed ⁽¹⁾
Average Daily Traffic Volume (ADT)	Less than 500 ADT	Greater than 500 ADT

(1) If ADT is equal to 500 ADT, VMT analysis is required.

The thresholds identified in Table 3 and Table 4 stem from the professional expertise and judgement of the ITE San Diego section. These thresholds reflect what is appropriate for the San Diego region to use for VMT and have previously helped determine LOS impacts.

VMT Thresholds

This section identifies what type of VMT analysis is required based on the land use and thresholds identified in the previous section. If a project qualifies for a VMT analysis, the VMT analysis can be compared based on City-wide, Regional, or community basis. The method of comparison shall be agreed upon by the City Traffic Engineer and shall be appropriate based on the use of the site.

The following defines the metrics identified in **Table 5**. It is important the appropriate metrics are applied for each project.

VMT/Capita:

Includes all vehicle-based person trips grouped and summed to the home location of individuals who are drivers or passengers on each trip. It includes home-based and non-home-based trips. The VMT for each home is then summed for all homes in a particular census tract and divided by the population of that census tract to arrive at Resident VMT/Capita.

VMT/Employee:

Includes all vehicle-based person trips grouped and summed to the work location of individuals on the trip. This includes all trips, not just work-related trips. The VMT for each work location is then summed for all work locations in a particular census tract and divided by the number of employees of that census tract to arrive at Employee VMT/Employee.

Small Projects

Small projects, under 2,400 ADT, shall utilize the most recent version of the SANDAG SB 743 Concept Maps. SANDAG has prepared an online mapping system that calculates average VMT/capita and VMT/employee at the census tract level. This tool determines the project's VMT/employee or VMT/capita to be compared to community, city, and/or regional averages. **Appendix C** provides an example of how to use the SANDAG Concept Maps to determine the project's VMT.

Large Projects

Projects consisting of 2,400 ADT or higher will require the use of the most recent SANDAG model to determine VMT. The SANDAG transportation model provides a systematic analytical platform so that different alternatives and inputs can be evaluated in an iterative and controlled environment.

Table 5 identifies the significance thresholds for proposed land uses. Projects that exceed the significance thresholds are considered significant and will require VMT analysis and mitigation.

Table 5 – City of Oceanside Project Threshold

Project Type	Metric	Significance Threshold ⁽¹⁾
Residential	Resident VMT / Capita	15 % below regional average
Commercial	Employee VMT / Employee	15 % below regional average
Industrial	Employee VMT / Employee	15 % below regional average
Retail ⁽²⁾	Net increase in the regional VMT	Net increase in regional VMT
Mixed-Use	Evaluate each land use separately	Based on proposed land use
Redevelopment ⁽³⁾	Based on the proposed land use	Based on the proposed land use

(1) The City may request the applicant to analyze VMT using a more localized threshold if the project requires.

(2) Locally serving retail is presumed to decrease VMT however retail projects over 50,000 square feet are considered regionally serving.

(3) A redevelopment project that reduces VMT is presumed to have less than a significant impact and is screened out. The removal of affordable housing will require VMT analysis.

10.0 MITIGATION MEASURES AND STRATEGIES FOR VMT REDUCTION

A project that exceeds the thresholds identified in the previous tables is considered to have a significant impact and will require mitigation measures and strategies. With appropriate mitigation the project may be able to apply VMT reductions to part or all of the project depending on the land use and strategy chosen. It is critical to implement strategies that are appropriate for the land use, for example, a residential project would not implement a telecommute strategy but may include providing a bike facility and amenities on-site.

SANDAG MOBILITY MANAGEMENT GUIDEBOOK

The purpose of the mitigation measures and strategies is to reduce the VMT generated by the project through a reduction of the distance driven or reducing the number of vehicle trips. It is recommended the SANDAG Mobility Management Guidebook (2019) be consulted to determine mitigation measures for the project site.

The guidebook consists of the following resources:

- Mobility Management Guidebook
- VMT Reduction Calculator Tool
- Calculator Design Document
- Recommendations for Application
- User Training Videos

Figure 10-1 identifies the potential mobility management strategies included in the guidebook that are recommended for a project exceeding the VMT thresholds. It is also recommended the SANDAG iCommute and MTS programs be utilized for projects generating employment. Several opportunities included in these programs are identified in **Table 6. Appendix D** contains the SANDAG Mobility Management Guidebook for reference.

Table 6 – Additional VMT Reduction Strategies for Employers

Additional VMT Reduction Strategies for Employers
Establish and maintain participation in SANDAG’s iCommute services for employers
Provide a monthly employer subsidy/pretax payroll deduction toward transit passes, carpool, or vanpool.
Encourage employees to register in SANDAG’s iCommute program for rideshare matches.
Provide a monthly employer subsidy or incentives for employees or patrons who regularly commute by bicycle.
Host or sponsor regional events such as Bike to Work day, Rideshare Month
Participate in MTS promotions such as Free Ride Day and EcoPass
Implement an internal carpool program for employees
Designate an on-site point of contact for employee commute inquiries.

OPR MITIGATION MEASURES

Table 7 identifies additional mitigation measures provided by the Office of Planning and Research (OPR).

Table 7 – OPR Recommended Mitigation Measures

Additional Mitigation Measures
Improve or increase access to transit.
Increase access to common goods and services, such as groceries, schools, and daycare.
Incorporate affordable housing into the project.
Incorporate a neighborhood electric vehicle network.
Orient the project toward transit, bicycle, and pedestrian facilities.
Improve pedestrian or bicycle networks, or transit service.
Implement or provide access to a commute reduction program.
Provide parking cash-out programs.
Unbundle parking costs.
Provide bicycle parking.
Limit or eliminate parking supply.
Provide traffic calming as a way to incentivize bicycling and/or walking.
Provide partially or fully subsidized transit passes.
Shift single occupancy vehicle trips to carpooling or vanpooling by providing ride-matching services or shuttle services.
Provide telework options.
Provide incentives or subsidies that increase the use of modes other than a single-occupancy vehicle.
Provide on-site amenities at places of work, such as priority parking for carpools and vanpools, secure bike parking, showers and locker rooms, and bicycle repair services.
Provide employee transportation coordinators at employment sites.
Provide a guaranteed ride home service to users of non-auto modes.
Contribute to a mobility fee program that funds multimodal transportation improvements, such as those described above.

The City may decide to implement a VMT mitigation fee bank to fund projects that would help the City reduce GHG emissions and promote VMT reduction. This would need to be developed specifically for VMT reduction projects for the City and cannot be preexisting to this document. Mitigation measures are not limited to this document and may be discussed with the City Traffic Engineer providing appropriate reduction methodologies are applied using documentation published by SANDAG, the California Air Resources Board (CARB), or the California Air Pollution Control Officers Association (CAPCOA). These resources provide quantifiable measures that may be used for project mitigation. Mitigation and reduction measures utilized should be documented and easily referenced in the document’s appendix.

SIGNIFICANT AND UNAVOIDABLE IMPACTS

Projects that are unable to mitigate to a less than significant level of impact must provide a detailed statement of overriding considerations in accordance with CEQA Guidelines Sections 15091 and 15093. The following are direct quotes from the legislation to help project applicants understand CEQA law.

Section 15091 Findings:

“ (a) No public agency shall approve or carry out a project for which an EIR has been certified which identifies one or more significant environmental effects of the project unless the public agency makes one or more written findings for each of those significant effects, accompanied by a brief explanation of the rationale for each finding.

The possible findings are:

(1) Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the final EIR.

(2) Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.

(3) Specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the final EIR.

(b) The findings required by subdivision (a) shall be supported by substantial evidence in the record.

(c) The finding in subdivision (a)(2) shall not be made if the agency making the finding has concurrent jurisdiction with another agency to deal with identified feasible mitigation measures or alternatives. The finding in subdivision (a)(3) shall describe the specific reasons for rejecting identified mitigation measures and project alternatives.

(d) When making the findings required in subdivision (a)(1), the agency shall also adopt a program for reporting on or monitoring the changes which it has either required in the project or made a condition of approval to avoid or substantially lessen significant environmental effects. These measures must be fully enforceable through permit conditions, agreements, or other measures.

(e) The public agency shall specify the location and custodian of the documents or other material which constitute the record of the proceedings upon which its decision is based.

(f) A statement made pursuant to Section 15093 does not substitute for the findings required by this section.”

Section 15093 – Statement of Overriding Considerations:

“ (a) CEQA requires the decision-making agency to balance, as applicable, the economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits, of a proposed project against its unavoidable environmental risks when determining whether to approve the project. If the specific economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits, of a proposal project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered “acceptable.”

(b) When the lead agency approves a project which will result in the occurrence of significant effects which are identified in the final EIR but are not avoided or substantially lessened, the agency shall state in writing the specific reasons to support its action based on the final EIR and/or other information in the record. The statement of overriding considerations shall be supported by substantial evidence in the record.

(c) If an agency makes a statement of overriding considerations, the statement should be included in the record of the project approval and should be mentioned in the notice of determination. This statement does not substitute for, and shall be in addition to, findings required pursuant to Section 15091.”

11.0 LOCAL TRANSPORTATION STUDY AND LOCAL TRANSPORTATION ASSESSMENT GUIDELINES

The City of Oceanside utilizes the Institute of Transportation Engineers (ITE) San Diego Regional Guidelines (May 2019) to establish thresholds and methodology for a Local Transportation Study (LTS). A Local Transportation Study is different from VMT analysis for CEQA purposes and may be required in addition to the VMT analysis or individually. A Local Transportation Study will analyze the projects influence on the surrounding intersections and roadway network utilizing level of service (LOS) for all project scenarios. The purpose of the LTS is to help quantify the local impact of the development and expected changes in transportation conditions. The LTS should include roadway, bicycle, pedestrian, and transit evaluations. The following sections identify the project requirements for a Local Transportation Study. The Local Transportation Study helps the City ensure the goals, objectives, and policies adopted by the City are supported and implemented while monitoring the capacity for the roadway networks.

Data should be collected during typical operation hours. Data should be recent and no more than 2 years old for an LTS. **The acceptable level of service for the City of Oceanside that is consistent with the adopted Circulation Element is LOS D.**

Minimum Threshold for Local Transportation Study

Based on the recommendations of the Institute of Transportation Engineers (ITE) for the San Diego section, **Table 8** indicates when a Local Transportation Study is required for the City. This is based on keeping consistent with the thresholds previously used and *SANDAG's Not So Brief Guide (2002) Trip Generation*.

Projects Consistent with the Adopted General Plan

The City's adopted General Plan represents the vision and goals the City has for the community. Projects that support these goals will adhere to the following LTS thresholds identified in Table 8.

Table 8 – Threshold for LTS for Projects Consistent with the Adopted General Plan

	LTS Analysis Not Needed	LTS Analysis Needed ⁽¹⁾
Average Daily Traffic Volume (ADT)	Less than 1,000 ADT	Greater than 1,000 ADT

(1) If ADT is equal to 1,000 ADT, an LTS is required.

A Local Transportation Study (LTS) will be required if a project exceeds 1,000 ADT and is consistent with the adopted General Plan.

Projects Inconsistent with the Adopted General Plan

The City's adopted General Plan represents the vision and goals the City has for the community. Projects that are not in support of the General Plan have a lower LTS threshold and will require a General Plan Amendment. The following LTS analysis thresholds for projects that are inconsistent are identified in **Table 9**.

Table 9 – Threshold for LTS for Projects Inconsistent with the Adopted General Plan

	LTS Analysis Not Needed	LTS Analysis Needed ⁽¹⁾
Average Daily Traffic Volume (ADT)	Less than 500 ADT	Greater than 500 ADT

(1) If ADT is equal to 500 ADT, an LTS is required.

A Local Transportation Study (LTS) will be required if a project exceeds 500 ADT and is inconsistent with the adopted General Plan.

The thresholds identified in Table 7 and Table 8 stem from the professional expertise and judgement of the ITE San Diego section. These thresholds keep consistent with regional practice and will help ensure developments will not overburden the transportation network.

If a project would add peak hour trips to any existing on- or off-ramp it is recommended to consult with the City and Caltrans to determine if an LTS would be required.

Study Scenarios

The following scenarios are included in an LTS and may be modified in agreement with the City Traffic Engineer.

- Existing Conditions
- Existing Conditions Plus Project
- Existing Conditions Plus Near-Term Cumulative Projects
- Existing Conditions Plus Near-Term Cumulative Projects Plus Project
- Buildout Conditions (2030)
- Buildout Conditions Plus Project

Local Transportation Assessment (LTA)

A Local Transportation Assessment (LTA) may be required instead of a Local Transportation Study depending on the size of the project. A helps the City monitor development impacts on the transportation network and is similar to a Local Transportation Study(LTS). The main difference between the two studies is a Local Transportation Assessment (LTA) analyzes fewer scenarios than a Local Transportation Study (LTS). A Local Transportation Assessment (LTA) will be required if a project is less than 1,000 ADT but is anticipated to influence the surrounding environment.

A Local Transportation Assessment (LTA) will be required to analyze the following scenarios based on the thresholds for identified for the project’s ADT.

- **A project that generates between 200-500 ADT will be required to analyze existing conditions and existing conditions plus project.**

-
- **A project that generates between 500-1,000 ADT will be required to analyze existing conditions, existing conditions plus project, existing conditions plus near-term cumulative projects, and existing conditions plus near-term cumulative projects plus project.**

Transportation Modes to be Included for Discussion in the LTS/LTA

Pedestrian:

- The LTS/LTA shall include pedestrian infrastructure available including any opportunities or deficiencies such as path obstructions or missing sidewalk for ½ mile walking distance from project pedestrian access points.
- All pedestrian facilities directly connected to project access points or adjacent to the project development, extending in each direction to the nearest intersection with a classified roadway or connection with a Class I path
- Facilities connecting to transit stops within two blocks of the project
- Only facilities on the side of the project or along the walking route to transit stop
- Additional geographic areas may be included in certain cases to address special cases such as schools or retail centers

Bicycle:

- The LTS/LTA shall include a discussion of bicycle infrastructure available including any opportunities or deficiencies such as bike lanes, bike buffers, or bike boxes. This section must also include discussion of what is planned based on City and regional documentation. The extents are as follows:
 - All roadways adjacent to the project, extending in each direction to the nearest intersection with a classified roadway or with a Class I path
 - Both directions of travel should be evaluated

Transit:

- The LTS/LTA shall identify any transit stops or routes existing and planned near the project site. This section shall also include a discussion and evaluation of transit stop amenities within ½ mile of each pedestrian access point.

Vehicle:

All signalized intersections and signalized project driveways shall be analyzed if:

- The project will add 50 or more peak hour (final cumulative) trips in either direction

All unsignalized intersections and unsignalized project driveways shall be analyzed if:

- The project will add 50 or more peak hour (final cumulative) trips in either direction

All freeway ramp intersections and signalized project driveways shall be analyzed if:

- The project will add 20 or more peak hour (final cumulative) trips in either direction

Intersection Level of Service analysis should be conducted using the Highway Capacity Manual (HCM) Methodology. For signalized intersections, the methodology described in the HCM for signalized intersections is used. With this methodology, the average control delay per vehicle is estimated for each lane group and aggregated for each approach and for the intersection as a whole. The relationship between control delay per vehicle and LOS for signalized intersections is summarized in **Table 10**.

Table 10 – HCM Level of Service Description for Signalized Intersections

Level of Service	Description of Traffic Conditions	Control Delay (sec/veh)
A	Insignificant delays: no approach phase is fully utilized and no vehicle waits longer than one red indication	≤ 10
B	Minimal delays: an occasional approach phase is fully utilized. Drivers begin to feel restricted.	> 10 – 20
C	Acceptable delays: major approach phase may become fully utilized. Most drivers feel somewhat restricted.	> 25 – 35
D	Tolerable delays: Drivers may wait through more than one red indication. Queues may develop but dissipate rapidly without excessive delays.	> 35 – 55
E	Significant delays: Volumes approaching capacity. Vehicles may wait through several cycles and long vehicle queues form upstream.	> 55 – 80
F	Excessive delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80

Source: Highway Capacity Manual, Transportation Research Board, 2010.

For unsignalized intersections, the methodology described in the HCM for unsignalized intersections is used. With this methodology, LOS is related to the control delay for each stop-controlled movement. The relationship between control delay per vehicle and LOS for unsignalized intersections is summarized in **Table 11**.

Table 11 – HCM Level of Service Description for Unsignalized Intersections

Level of Service	Description of Traffic Conditions	Control Delay (sec/veh)
A	No delay for stop-controlled approaches.	≤ 10
B	Operations with minor delay.	> 10 – 15
C	Operations with moderate delays.	> 15 – 25
D	Operations with some delays.	> 25 – 35
E	Operations with high delays and long queues.	> 35 – 50
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers.	> 50

Source: Highway Capacity Manual, Transportation Research Board, 2010.

Table 12 provides guidance on the levels of ADT that can be accommodated on various types of roadways, based on level of service.

Table 12 – Circulation Element Roadway Classification LOS & Capacity

Class	Lanes	Cross Section ⁽¹⁾	Level of Service (LOS)				
			A	B	C	D	E
Expressway	6	102/160 122/200	30,000	42,000	60,000	70,000	80,000
Expressway	4	102/160 122/200	25,000	35,000	50,000	55,000	60,000
Prime Arterial	6	104/124	25,000	35,000	50,000	55,000	60,000
6-Lane Major Arterial	6	104/124	20,000	28,000	40,000	45,000	50,000
5-Lane Major Arterial ⁽²⁾	5	102/122	17,500	24,500	35,000	40,000	45,000
4-Lane Major Arterial	4	80/100	15,000	21,000	30,000	35,000	40,000
Secondary Collector (4 lanes with 2-way left turn lane)	4	64/84	10,000	14,000	20,000	25,000	30,000
Secondary Collector (4 lanes without 2-way left-turn lane, with left turn pockets)	4	54/74, 60/80	9,000	13,000	18,000	22,000	25,000
Collector (commercial fronting, 2-lanes with 2-way left turn lane) ⁽³⁾	2	50/70	5,000	7,000	10,000	13,000	15,000
Collector (residential streets in the Circulation Element or industrial fronting)	2	40/60, 50/70	4,000	5,500	7,500	9,000	10,000
Local Street (residential streets NOT in the Circulation Element)	1	36/56, 40/60	–	–	2,400	–	–

(1) Cross sections are listed as curd-to-curb width/total right of way width, in feet.

(2) Vandegrift Boulevard is the only Circulation Element roadway designated as a 5-lane Major Arterial. It is not intended that other roadways be build to 5-lane Major Arterial standards.

(3) This capacity will also be assumed for a two-lane one-way collector.

Table 13 indicates when a project's effect on the roadway system is considered to justify the need for roadway improvements. That is, if a project's traffic effect causes the values in this table to be exceeded, roadway improvements should be considered as follows on a case by case basis:

- Improvements should be consistent with the General Plan
- Improvements for transit, bike and pedestrian facilities should be given priority in Transit Priority Areas or Smart Growth Opportunity Areas as identified by SANDAG.
- Projects in Transit Priority Areas or Smart Growth Opportunity Areas as identified by SANDAG, that are consistent with the General Plan at the time of project application, should not be denied due to the inability to provide roadway improvements (i.e. existing right of way is constrained, etc.)

Table 13 – Determination of the Need for Roadway Improvements

Level of Service with Project*	Allowable Change Due to Project Effect**					
	Freeways		Roadway Segments		Intersections	Ramp Metering
	V/C	Speed (MPH)	V/C	Speed (MPH)	Delay (Sec.)	Delay (Min.)
E & F (or ramp meter delays above 15 min)	0.01	1	0.02	1	2	2

12.0 TRANSPORTATION DEMAND MANAGEMENT (TDM) STRATEGIES

In general, the goal of City Staff is to help Oceanside increase connectivity and level of comfort for pedestrians, bicyclists, and transit users. Project improvements may come from the City’s adopted General Plan or other City policies that help improve the overall quality of life for the community. **Table 14** identifies some TDM improvement measures that may be considered for a project.

Table 14 – Potential TDM Improvement Measures

Potential TDM Measures	
Transit Facilities	Telecommuting
Bike Facilities	Rideshare Programs
Walkability	Flex-time
Carpool Incentives	Parking Cash-Out
Subsidized Transit Passes	Shuttle Service

A measure that is not listed may be considered if the mitigation is appropriately applied and reasonable. Additional improvement measures may be identified as future technologies and policies evolve or with consultation by City Staff.

13.0 RESOURCES

The following resources were used in the development of these guidelines. It is recommended the consultant develop a plan of action that aligns with the City Traffic Engineer's expectation prior to conducting any analyses.

City of San Diego. "Transportation Study Manual (TSM) Draft." September 2019.

Institute of Transportation Engineers (San Diego Section). "Guidelines for Transportation Impact Studies (TIS) in the San Diego Region." May 2019. Accessed April 1, 2020.

Governor's Office of Planning and Research (OPR). "Technical Advisory on Evaluating Transportation Impacts in CEQA." December 2018. Accessed April 1, 2020.

Governor's Office of Planning and Research (OPR). "Key Resources on SB 743: Studies, Reports, Briefs, and Tools." April 2018. Accessed April 1, 2020.

California Air Resources Board (CARB). "2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals." January 2019. Accessed April 1, 2020.

California Air Pollution Control Officers Association (CAPCOA). "Quantifying Greenhouse Gas Mitigation Measures." August 2010. Accessed April 1, 2020.

San Diego Association of Governments (SANDAG). "TDM Planning Resources." 2019. Accessed April 1, 2020.

Appendix C

City of Oceanside Project Information Form

PROJECT INFORMATION FORM (PIF)

THE FOLLOWING IS TO BE COMPLETED BY THE PROJECT APPLICANT:

PROJECT INFORMATION FORM			
1.	PROJECT DESCRIPTION:	Tierra Norte Subdivision (Planned Block Development with up to 400 homes)	
2.	PROJECT LOCATION:	4665 N. River Rd	
3.	LAND USE:	Residential	
3.	SIZE/DENSITY:	Approximately 25.6 Acres	
4.	ZONING AND LAND USE CONSISTENT WITH ADOPTED GENERAL PLAN?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
5.	PROJECT LOCATED IN TRANSIT PRIORITY AREA¹, SMART GROWTH AREA², OR LOW VMT AREA³?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
6.	PROJECT TRIP GENERATION:	3,200	ADT
		<input type="checkbox"/> < 200 ADT	<input type="checkbox"/> ≥ 200 ADT
		<input type="checkbox"/> ≥ 1,000 ADT	<input checked="" type="checkbox"/> ≥ 2,400 ADT
ATTACHMENTS			
A.	PROJECT LOCATION MAP	<input checked="" type="checkbox"/> Attached	
B.	PROJECT TRIP DISTRIBUTION	<input checked="" type="checkbox"/> Attached	
C.	PROJECT TRIP ASSIGNMENT	<input checked="" type="checkbox"/> Attached	

1) Projects located in a TPA must be able to access the transit station within a ½ mile walking distance or 6 minute walk continuously without discontinuity of sidewalk or obstructions to the route. Qualifying transit stops means a site containing an existing rail transit station 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 (OPR, 2017). A high-quality transit corridor may also be considered if a corridor with fixed route bus service has service intervals no longer than 15 minutes during peak commute hours (OPR, 2017).

(2) See Appendix B.

(3) Based on the most recent SANDAG SB 743 Screening Map. Example shown in Appendix C.

TO BE COMPLETED BY CITY STAFF AND RETURNED TO PROJECT APPLICANT

PROJECT STUDY REQUIREMENTS				
1)	Does the project require a CEQA VMT analysis?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Incomplete ⁽¹⁾
	A. If yes, does the project require a SANDAG Model Run?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Incomplete ⁽¹⁾
2a)	Does the project require a Local Transportation Study?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Incomplete ⁽¹⁾
OR				
2b)	Does the project require a Local Transportation Assessment?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Incomplete ⁽¹⁾

⁽¹⁾ Incomplete application or additional information is needed to determine study requirements.

Sergio Madera
Digitally signed by Sergio Madera
 DN: cn=Sergio Madera,
 ou=Planning,
 email=SMadera@oceansideca.org
 Date: 2021.11.03 13:45:27 -0700'

Tam Tran
Digitally signed by Tam Tran
 DN: cn=Tam Tran,
 ou=Engineering,
 email=TTran@oceansideca.org
 Date: 2021.11.03 13:04:06 -0700'

3.4 Project Traffic Generation

The project is a Plan Block Development Plan that will require a General Plan Amendment and rezone from light industrial uses to residential on two parcels for a total of 25.6 acres (Kawano parcel 9.7 acres and Nagata parcel 15.9 acres). A maximum of 400 dwelling units is proposed for a density of 15.6 units per acre (400 units / 25.6 acres).

The site has historically been used for agricultural, packing, and shipping uses. A trip credit was not applied because the previous uses were not in operation when off-site traffic data was collected.

The project traffic generation was calculated using SANDAG trip rates from the *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. Based on the project acreage of 25.6 acres and proposed 400 dwelling units, the density is 15.6 units per acre. The SANDAG trip rate is 8 daily trips per dwelling unit for densities between 6 and 20 units per acre.

Using SANDAG traffic generation rates, the project is calculated to generate 3,200 daily trips, 256 AM peak hour trips (51 inbound and 205 outbound), and 320 PM peak hour trips (224 inbound and 96 outbound) as shown in **Table 8**.

TABLE 8: PROJECT TRAFFIC GENERATION

Proposed Land Use	Rate	Size & Units	ADT	%	Split	AM		PM			
						IN	OUT	%	Split	IN	OUT
Residential (density 6-20 du/ac)	8 /DU	400 DU	3,200	8%	0.2 0.8	51	205	10%	0.7 0.3	224	96

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002.

ADT-Average Daily Traffic; Split-percent inbound and outbound.

The final product may have a mix of single family and multi-family units; therefore, the trip generation levels (ADT, AM & PM) as analyzed within this report will define the upper limit of traffic that can be generated by the final project type and unit count.

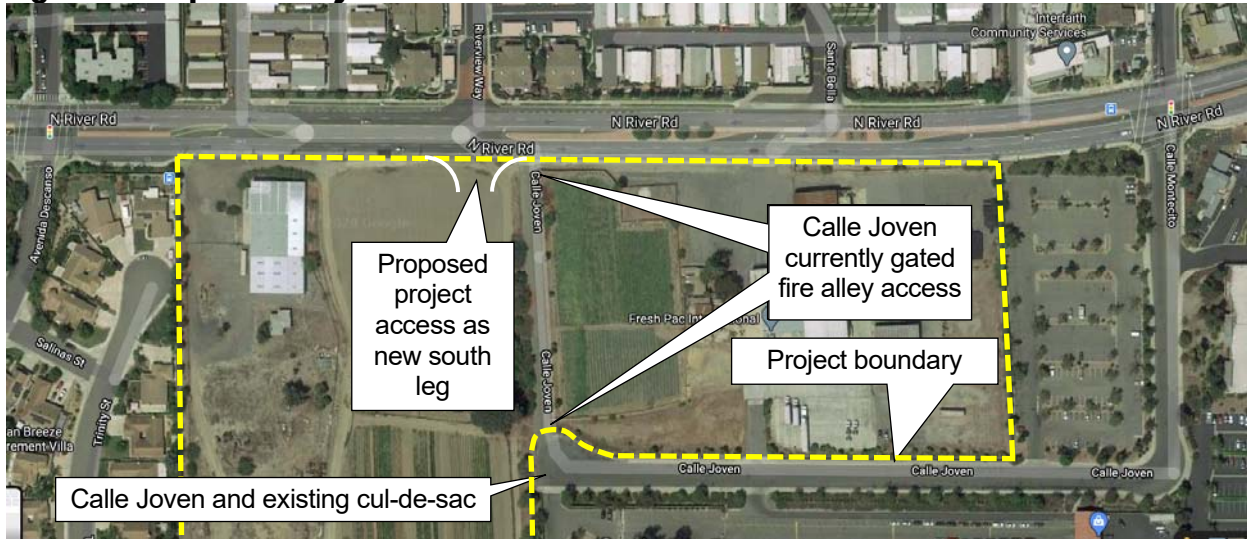
The proposed rezone will replace the existing industrial use with a proposed residential use. The existing industrial zoning could generate a range of traffic based on the type of industrial use. SANDAG trip rates document a range of 200 ADT/acre for an Industrial/Business Park (commercial included) to 90 ADT/acre for an Industrial/Business Park (no commercial). For the project site of 25.6 acres, the industrial trips could range from 5,120 ADT (Industrial/Business Park with commercial) to 2,304 ADT (Industrial/Business Park without commercial). The existing land use has the potential to generate more traffic than the proposed residential lane use. However, this is a ground to plan analysis; therefore, a trip credit was not applied for the potential industrial land uses.

3.5 Project Access

Primary project access is proposed by constructing a south leg at the intersection of N. River Road/ Riverview Way. The project applicant proposed to signalize this intersection based on Signal Warrant Condition B “Interruption of Continuous Traffic”, which is satisfied with the addition of project traffic. Signal warrant calculations for the project driveway and lane configurations are described within Section 4.16.1 of this report.

A portion of the southern project boundary borders Calle Joven. A secondary access is anticipated to connect with Calle Joven; however, a site design is not completed, thus the internal circulation and connection with Calle Joven has yet to be determined. There is currently a gated fire access alley labeled Calle Joven immediately east of Riverview Way that will be addressed in the final site design. The proposed project access, Calle Joven, and the gated fire access alley are shown in **Figure 8**.

Figure 8: Proposed Project Access

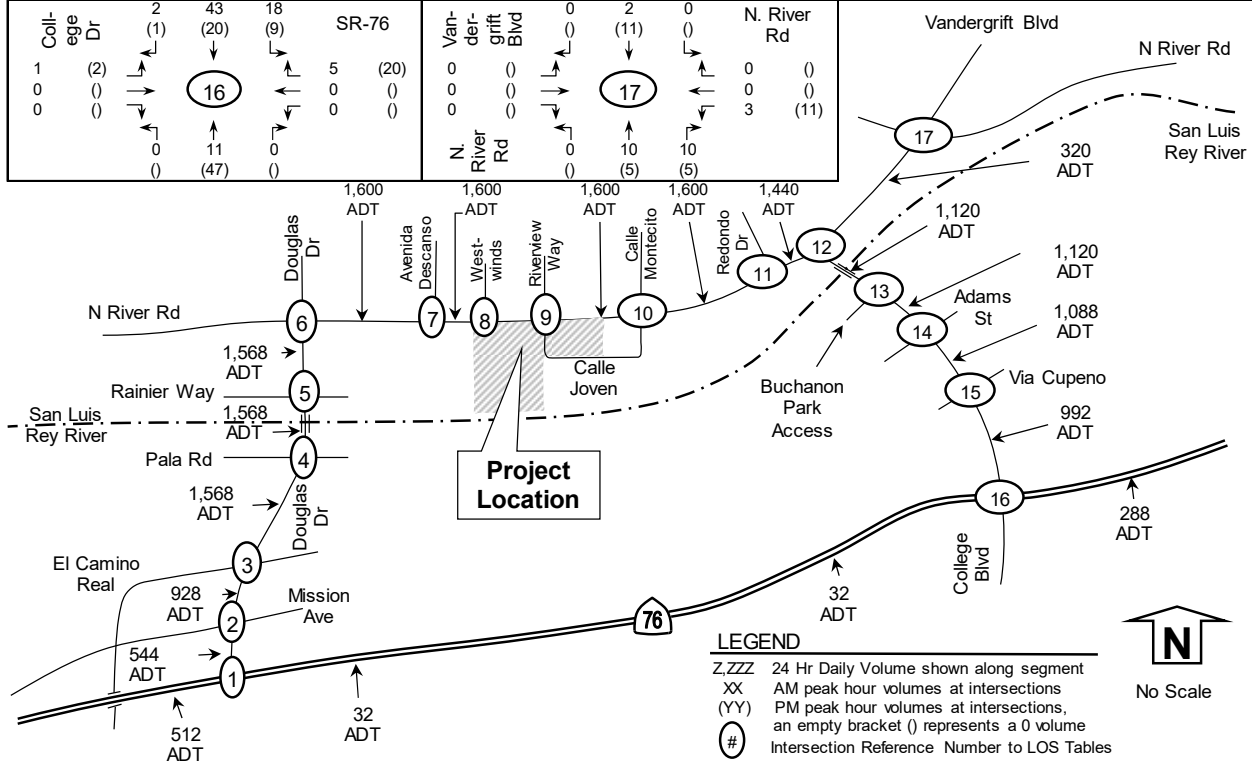


Source: Google Maps

3.6 Project Distribution and Assignment

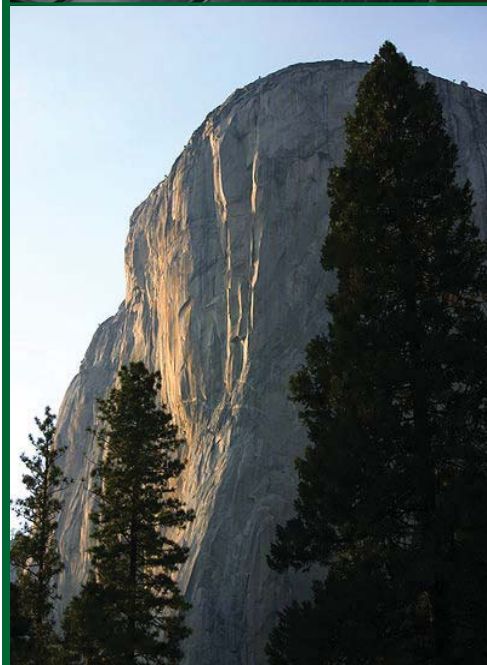
Project trips were distributed to the adjacent roadway network based on a San Diego Association of Governments (SANDAG) Series 12 Select Zone Assignment (SZA) that was reviewed and adjusted by City staff. A copy of the SZA is included in **Appendix G**. The project distribution shown in **Figure 9**. The project assignment is shown in **Figure 10**.

Figure 10: Project Volumes



Appendix D

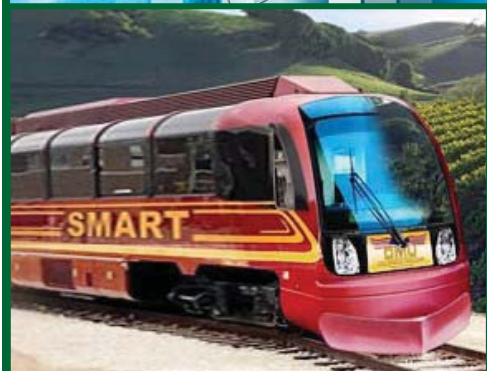
Excerpts from CAPCOA



Quantifying Greenhouse Gas Mitigation Measures

A Resource for Local Government
to Assess Emission Reductions from
Greenhouse Gas Mitigation Measures

August, 2010



Transportation

CEQA# MM D-1 & D-4
MP# LU-1.5 & LU-2.1.8

LUT-1

Land Use / Location

3.0 Transportation

3.1 Land Use/Location

3.1.1 Increase Density

Range of Effectiveness: 0.8 – 30.0% vehicle miles traveled (VMT) reduction and therefore a 0.8 – 30.0% reduction in GHG emissions.

Measure Description:

Designing the Project with increased densities, where allowed by the General Plan and/or Zoning Ordinance reduces GHG emissions associated with traffic in several ways. Density is usually measured in terms of persons, jobs, or dwellings per unit area. Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. This strategy also provides a foundation for implementation of many other strategies which would benefit from increased densities. For example, transit ridership increases with density, which justifies enhanced transit service.

The reductions in GHG emissions are quantified based on reductions to VMT. The relationship between density and VMT is described by its elasticity. According to a recent study published by Brownstone, et al. in 2009, the elasticity between density and VMT is 0.12. Default densities are based on the typical suburban densities in North America which reflects the characteristics of the ITE Trip Generation Manual data used in the baseline estimates.

Measure Applicability:

- Urban and suburban context
 - Negligible impact in a rural context
- Appropriate for residential, retail, office, industrial, and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{\text{running}}$$

Where:

traveled

for running emissions

VMT = vehicle miles

EF_{running} = emission factor

Transportation

CEQA# MM D-1 & D-4
MP# LU-1.5 & LU-2.1.8

LUT-1

Land Use / Location

Inputs:

The following information needs to be provided by the Project Applicant:

- Number of housing units per acre or jobs per job acre

Mitigation Method:

$$\% \text{ VMT Reduction} = A * B \text{ [not to exceed 30\%]}$$

Where:

A = Percentage increase in housing units per acre or jobs per job acre³³ = (number of housing units per acre or jobs per job acre – number of housing units per acre or jobs per job acre for typical ITE development) / (number of housing units per acre or jobs per job acre for typical ITE development) For small and medium sites (less than ½ mile in radius) the calculation of housing and jobs per acre should be performed for the development site as a whole, so that the analysis does not erroneously attribute trip reduction benefits to measures that simply shift jobs and housing within the site with no overall increase in site density. For larger sites, the analysis should address the development as several ½-mile-radius sites, so that shifts from one area to another would increase the density of the receiving area but reduce the density of the donating area, resulting in trip generation rate decreases and increases, respectively, which cancel one another.

B = Elasticity of VMT with respect to density (from literature)

Detail:

- A: [not to exceed 500% increase]
 - If housing: (Number of housing units per acre – 7.6) / 7.6
(See Appendix C for detail)
 - If jobs: (Number of jobs per acre – 20) / 20
(See Appendix C for detail)
- B: 0.07 (Boarnet and Handy 2010)

Assumptions:

Data based upon the following references:

- Boarnet, Marlon and Handy, Susan. 2010. “DRAFT Policy Brief on the Impacts of Residential Density Based on a Review of the Empirical Literature.” <http://arb.ca.gov/cc/sb375/policies/policies.htm>; Table 1.

³³ This value should be checked first to see if it exceeds 500% in which case A = 500%.

Transportation

CEQA# MM D-1 & D-4
MP# LU-1.5 & LU-2.1.8

LUT-1

Land Use / Location

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ³⁴
CO ₂ e	1.5-30% of running
PM	1.5-30% of running
CO	1.5-30% of running
NOx	1.5-30% of running
SO ₂	1.5-30% of running
ROG	0.9-18% of total

Discussion:

The VMT reductions for this strategy are based on changes in density versus the typical suburban residential and employment densities in North America (referred to as “ITE densities”). These densities are used as a baseline to mirror those densities reflected in the ITE Trip Generation Manual, which is the baseline method for determining VMT.

There are two separate maxima noted in the fact sheet: a cap of 500% on the allowable percentage increase of housing units or jobs per acre (variable A) and a cap of 30% on % VMT reduction. The rationale for the 500% cap is that there are diminishing returns to any change in environment. For example, it is reasonably doubtful that increasing residential density by a factor of six instead of five would produce any additional change in travel behavior. The purpose for the 30% cap is to limit the influence of any single environmental factor (such as density). This emphasizes that community designs that implement multiple land use strategies (such as density, design, diversity, etc.) will show more of a reduction than relying on improvements from a single land use factor.

Example:

Sample calculations are provided below for housing:

$$\begin{aligned} \text{Low Range \% VMT Reduction (8.5 housing units per acre)} \\ = (8.5 - 7.6) / 7.6 * 0.07 = 0.8\% \end{aligned}$$

$$\text{High Range \% VMT Reduction (60 housing units per acre)}$$

$$= \frac{60 - 7.6}{7.6} = 6.9 \text{ or } 690\% \text{ Since greater than } 500\%, \text{ set to } 500\%$$

$$= 500\% \times 0.07 = 0.35 \text{ or } 35\% \text{ Since greater than } 30\%, \text{ set to } 30\%$$

³⁴ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

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MP# LU-1.5 & LU-2.1.8

LUT-1

Land Use / Location

Sample calculations are provided below for jobs:

$$\begin{aligned} \text{Low Range \% VMT Reduction (25 jobs per acre)} \\ = (25 - 20) / 20 * 0.12 = 3\% \end{aligned}$$

$$\begin{aligned} \text{High Range \% VMT Reduction (100 jobs per acre)} \\ = \frac{100 - 20}{20} = 4 \text{ or } 400\% \\ = 400\% \times 0.12 = 0.48 \text{ or } 48\% \text{ Since greater than } 30\%, \text{ set to } 30\% \end{aligned}$$

Preferred Literature:

- -0.07 = elasticity of VMT with respect to density

Boarnet and Handy's detailed review of existing literature highlighted three individual studies that used the best available methods for analyzing data for individual households. These studies provided the following elasticities: -0.12 - Brownstone (2009), -0.07 - Bento (2005), and -0.08 - Fang (2008). To maintain a conservative estimate of the impacts of this strategy, the lower elasticity of -0.07 is used in the calculations.

Alternative Literature:

- -0.05 to -0.25 = elasticity of VMT with respect to density

The *TRB Special Report 298* literature suggests that doubling neighborhood density across a metropolitan area might lower household VMT by about 5 to 12 percent, and perhaps by as much as 25 percent, if coupled with higher employment concentrations, significant public transit improvements, mixed uses, and other supportive demand management measures.

Alternative Literature References:

TRB, 2009. *Driving and the Built Environment*, Transportation Research Board Special Report 298. <http://onlinepubs.trb.org/Onlinepubs/sr/sr298.pdf> . Accessed March 2010. (p. 4)

Other Literature Reviewed:

None

Transportation

CEQA# MM-T-6
MP# LU-4

SDT-1

Neighborhood / Site
Enhancement

3.2 Neighborhood/Site Enhancements

3.2.1 Provide Pedestrian Network Improvements

Range of Effectiveness: 0 - 2% vehicle miles traveled (VMT) reduction and therefore 0 - 2% reduction in GHG emissions.

Measure Description:

Providing a pedestrian access network to link areas of the Project site encourages people to walk instead of drive. This mode shift results in people driving less and thus a reduction in VMT. The project will provide 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. The project will minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation will be eliminated.

Measure Applicability:

- Urban, suburban, and rural context
- Appropriate for residential, retail, office, industrial and mixed-use projects
- Reduction benefit only occurs if the project has both pedestrian network improvements on site and connections to the larger off-site network.

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{\text{running}}$$

Where:

traveled	VMT = vehicle miles
for running emissions	EF _{running} = emission factor

Inputs:

The project applicant must provide information regarding pedestrian access and connectivity within the project and to/from off-site destinations.

Transportation

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SDT-1

**Neighborhood / Site
Enhancement**

Mitigation Method:

Estimated VMT Reduction	Extent of Pedestrian Accommodations	Context
2%	Within Project Site and Connecting Off-Site	Urban/Suburban
1%	Within Project Site	Urban/Suburban
< 1%	Within Project Site and Connecting Off-Site	Rural

Assumptions:

Data based upon the following references:

- Center for Clean Air Policy (CCAP) Transportation Emission Guidebook. http://www.ccap.org/safe/guidebook/guide_complete.html (accessed March 2010)
- 1000 Friends of Oregon (1997) “Making the Connections: A Summary of the LUTRAQ Project” (p. 16): http://www.onethousandfriendsoforegon.org/resources/lut_vol7.html

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁴⁵
CO _{2e}	0 - 2% of running
PM	0 - 2% of running
CO	0 - 2% of running
NO _x	0 - 2% of running
SO ₂	0 - 2% of running
ROG	0 – 1.2% of total

Discussion:

As detailed in the preferred literature section below, the lower range of 1 – 2% VMT reduction was pulled from the literature to provide a conservative estimate of reduction potential. The literature does not speak directly to a rural context, but an assumption was made that the benefits will likely be lower than a suburban/urban context.

Example:

N/A – calculations are not needed.

Preferred Literature:

⁴⁵ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

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- 1 - 2% reduction in VMT

The Center for Clean Air Policy (CCAP) attributes a 1% reduction in VMT from pedestrian-oriented design assuming this creates a 5% decrease in automobile mode share (e.g. auto split shifts from 95% to 90%). This mode split is based on the Portland Regional Land Use Transportation and Air Quality (LUTRAQ) project. The LUTRAQ analysis also provides the high end of 10% reduction in VMT. This 10% assumes the following features:

- | | |
|-------------------------|------------------------------|
| – communities | Compact, mixed-use |
| – network | Interconnected street |
| – shorter block lengths | Narrower roadways and |
| – | Sidewalks |
| – transit shelters | Accessibility to transit and |
| – and street trees | Traffic calming measures |
| – | Parks and public spaces |

Other strategies (development density, diversity, design, transit accessibility, traffic calming) are intended to account for the effects of many of the measures in the above list. Therefore, the assumed effectiveness of the Pedestrian Network measure should utilize the lower end of the 1 - 10% reduction range. If the pedestrian improvements are being combined with a significant number of the companion strategies, trip reductions for those strategies should be applied as well, based on the values given specifically for those strategies in other sections of this report. Based upon these findings, and drawing upon recommendations presented in the alternate literature below, the recommended VMT reduction attributable to pedestrian network improvements, above and beyond the benefits of other measures in the above bullet list, should be 1% for comprehensive pedestrian accommodations within the development plan or project itself, or 2% for comprehensive internal accommodations and external accommodations connecting to off-site destinations.

Alternative Literature:

Alternate:

- Walking is three times more common with enhanced pedestrian infrastructure
- 58% increase in non-auto mode share for work trips

Transportation

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The Nelson\Nygaard [1] report for the City of Santa Monica Land Use and Circulation Element EIR summarized studies looking at pedestrian environments. These studies have found a direct connection between non-auto forms of travel and a high quality pedestrian environment. Walking is three times more common with communities that have pedestrian friendly streets compared to less pedestrian friendly communities. Non-auto mode share for work trips is 49% in a pedestrian friendly community, compared to 31% in an auto-oriented community. Non-auto mode share for non-work trips is 15%, compared to 4% in an auto-oriented community. However, these effects also depend upon other aspects of the pedestrian friendliness being present, which are accounted for separately in this report through land use strategy mitigation measures such as density and urban design.

Alternate:

- 0.5% - 2.0% reduction in VMT

The Sacramento Metropolitan Air Quality Management District (SMAQMD) Recommended Guidance for Land Use Emission Reductions [2] attributes 1% reduction for a project connecting to *existing* external streets and pedestrian facilities. A 0.5% reduction is attributed to connecting to *planned* external streets and pedestrian facilities (which must be included in a pedestrian master plan or equivalent). Minimizing pedestrian barriers attribute an additional 1% reduction in VMT. These recommendations are generally in line with the recommended discounts derived from the preferred literature above.

Preferred and Alternative Literature Notes:

[1] Nelson\Nygaard, 2010. City of Santa Monica Land Use and Circulation Element EIR Report, Appendix – Santa Monica Luce Trip Reduction Impacts Analysis (p.401). <http://www.shapethefuture2025.net/>

Nelson\Nygaard looked at the following studies: Anne Vernez Moudon, Paul Hess, Mary Catherine Snyder and Kiril Stanilov (2003), Effects of Site Design on Pedestrian Travel in Mixed Use, Medium-Density Environments, <http://www.wsdot.wa.gov/research/reports/fullreports/432.1.pdf>; Robert Cervero and Carolyn Radisch (1995), Travel Choices in Pedestrian Versus Automobile Oriented Neighborhoods, <http://www.uctc.net/papers/281.pdf>;

[2] Sacramento Metropolitan Air Quality Management District (SMAQMD) Recommended Guidance for Land Use Emission Reductions. (p. 11) <http://www.airquality.org/ceqa/GuidanceLUEmissionReductions.pdf>

Other Literature Reviewed:

None